# Broad Goals & Objectives, Driftless Area ASCC Sites (IA, MN, WI)

## Management Goals (property scale)

1) Manage for healthy, sustainable forests with an emphasis on maintaining oak cover types.
    - Diversify age classes.
    - Use forest stand improvement to increase diameter growth and abundance of large trees.
    - Increase the abundance of large downed wood.
    - Control invasive species.
    - Limit damage from insects, disease, and wildlife to the extent possible.
    - Create or maintain habitat for prairie species in oak woodlands (potentially adjacent to forest stands)
    - Consider context and manage such that stands contribute to ecological function at the landscape scale.
    - Plan for historical cover types with consideration toward potential climate change scenarios.
    - Maintain and enhance the largely undeveloped, natural scenic beauty of region.
    - Enhance water quality by protecting watersheds and preventing soil loss through erosion.

2) Contribute to local and regional economies through sustainably produced forest products.
    - Produce high-quality oak saw logs efficiently, encouraging other compatible, merchantable species (e.g. walnut) whenever possible.
    - Prioritize veneer to the extent possible.
    - Use forest stand improvement to enhance tree growth rates and vigor.
    - Harvest saw logs of merchantable species when economically feasible.

3) Demonstrate sustainable forest management and support research.
    - Create and maintain forest management demonstration areas and research areas to increase the public awareness of the value and role of forests in the Driftless Area. This could include:
        1. Establishing and maintaining forest research plots,
        2. Hosting field days and providing outdoor classrooms,
        3. Partnering with supporting private organizations, non-profit groups, and educational institutions to promote forestry education and awareness.

4) Maintain or improve habitat for game and non-game wildlife species. Protect known endangered and threatened species as well as species of concern and their habitats.
    - Emphasize importance of habitat for interior forest songbirds.
    - Be intentional about management of forest edge where appropriate to promote habitat diversity.

5) Manage to protect cultural resources and to provide opportunities for high-quality, nature-based open-space recreational uses that are compatible with the properties' capabilities and the ecological and habitat management goals.
    - This could include hunting, trapping, and wildlife viewing, fishing, paddling, picnicking, camping, hiking, equestrian use, and environmental interpretation and education.

## Management Objectives (property scale)

- Regenerate mature stands suitable for oak in order to maintain oak (with attention to maintaining age diversity, structural diversity, standing and down dead wood, and an uneven canopy).

- Develop and maintain old forest characteristics, including biologically mature trees, large diameter trees, structural diversity, standing and down coarse woody debris, and an uneven canopy using natural processes and active management that mimics natural disturbance.

- Maintain at least 50% cover in mature forest with closed canopy or near closed canopy conditions to benefit interior forest songbirds.

- Maintain and develop natural transitions between different plant communities, reducing hard edges between different cover types.

- Supplement natural regeneration with planted oak seedlings where needed.

- Monitor and control invasive species and forest pests.

**Driftless ASCC Site Summaries – Yellow River State Forest Overview**

## YRSF Management Goals

Sustainability - Manage for healthy, sustainable forests and prairies. Maintain and improve the diversity of plant species and communities on the state forests.

- Improve forest age diversity through the harvest and regeneration of over-mature forest stands
- Use forest stand improvement to enhance species diversity.
- Manage native prairies and savannahs using fire management to promote plant diversity and control unwanted woody plants and invasive species.
- Increase the quality, quantity, and connectivity of public forestlands in Iowa.

Utilization – Ensure a sustainable flow of wood products for public benefit while promoting forest vigor by applying proper forest management techniques.

- Intensify forest management practices to utilize and regenerate over-mature and declining forest stands.
- Use forest stand improvement to enhance tree growth rates and vigor.
- Reduce non-forest acreage through natural succession and tree planting.

Demonstration and Research - Create and maintain forest management demonstration areas and research areas to increase the public awareness of the value and role of forests in Iowa and provide educational opportunities for students, organizations and others.

- Establish and maintain forest research plots.
- Establish forest demonstration areas, host field days, and provide outdoor classrooms to increase awareness and understanding of forest and prairie management.
- Seek partnerships with supporting private organizations, non-profit groups, and educational institutions to promote forestry education and awareness.

Wildlife - Maintain or improve natural wildlife habitat for game and non-game species. Protect known endangered and threatened species, as well as species of concern and their habitats.

- Use forest stand improvement and other practices to improve mast production for wildlife species.
- Maintain prairie and grassland habitats, increase contiguous forest cover, and create forest edge where appropriate to promote habitat diversity.
- Identify, study, and preserve unique habitats and T & E species.

Recreation – Create and enhance primitive, low-impact recreational opportunities.

- Maintain primitive trail and camping facilities where appropriate.
- Promote hunting, fishing and other game management activities.
- Promote other primitive activities such as backpacking and bird-watching.

Water quality – Enhance water quality by protecting watersheds and preventing soil loss by erosion.

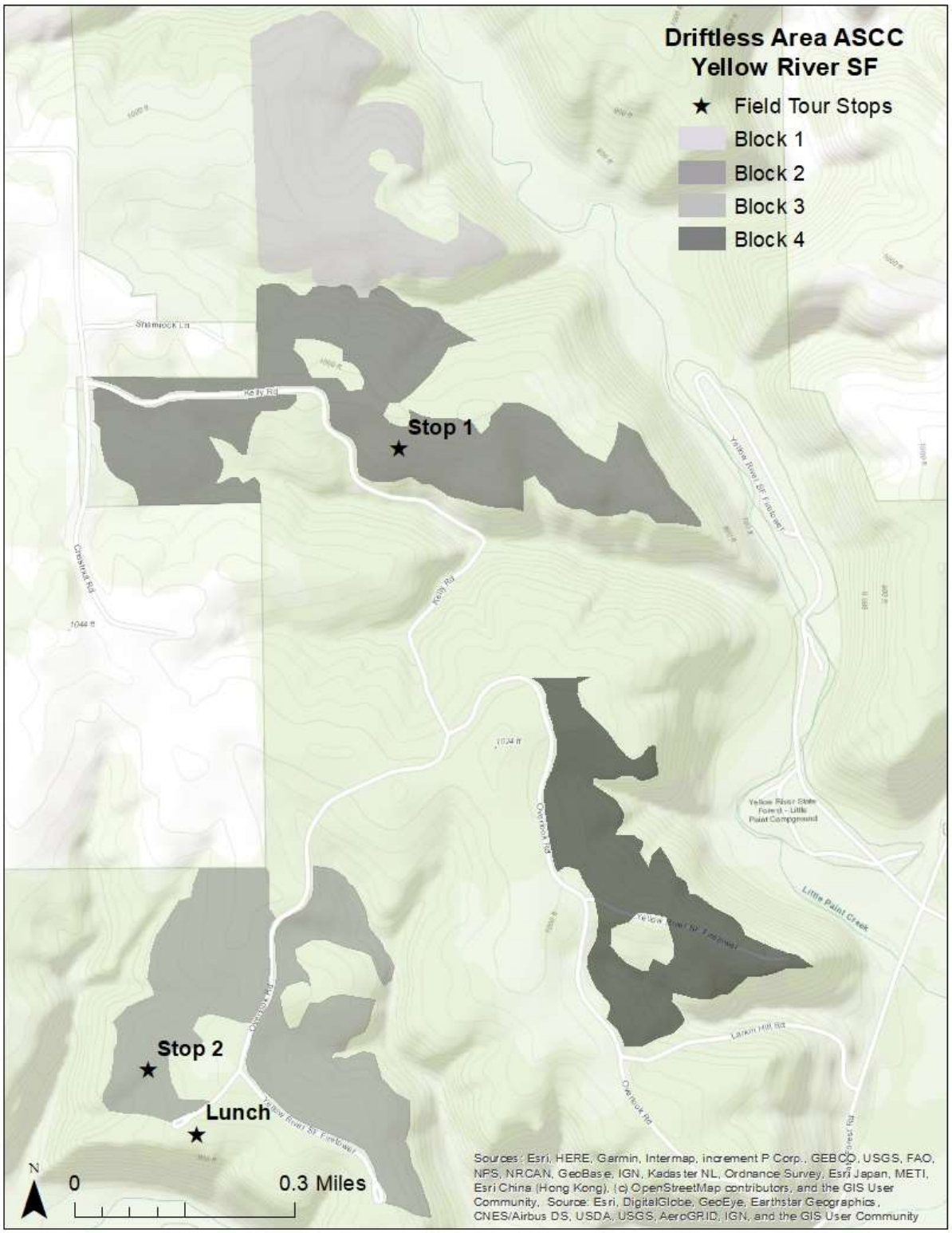
- Prevent soil erosion by employing good conservation practices
- Protect and enhance streams and waterways adjacent to agricultural land by establishing riparian
- buffers. Use “Best Management Practices (BMP’s)” in all forest management operations.

## YRSF Management Objectives

1. Approach sustainable harvest levels (40 acres per year) through timber sales and regeneration harvests on non productive forest stands, using techniques that favor maintaining a viable oak component.
2. Use forest stand improvement to affect changes in growth and diversity on 200 acres per year.
3. Increase contiguous forest cover through tree planting on open fields and reduce amount of non-forest acreage. (Since 2014, we converted 177 acres in 9 crop fields to forest cover.)

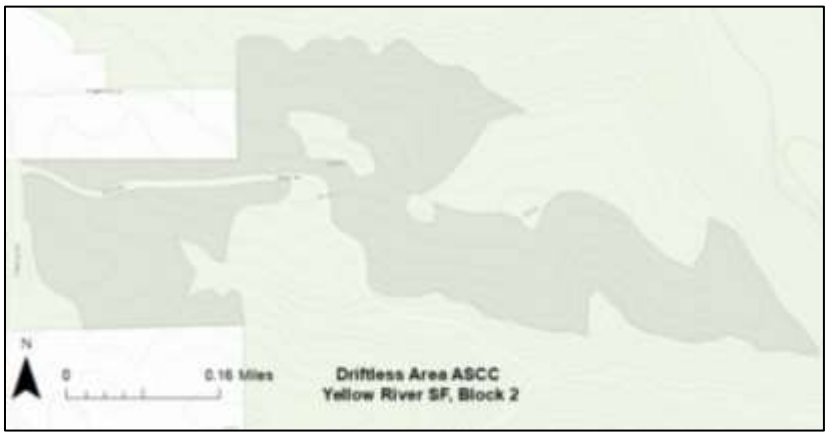
YRSF Management Objectives, Continued

4. Monitor and control invasive species and forest pests.
5. Maintain unique hill prairies through prescribed burning and control of woody encroachment.
6. Maintain demonstration areas which showcase forestry techniques to the public at Forestry Field Days and other outdoor classroom events.



**Driftless ASCC Site Summary – Yellow River SF Block 2**

| | |
|---|---|
| Property | Yellow River State Forest |
| Location | Allamakee County, Iowa (near Harper's Ferry) |
| Ownership | Iowa DNR |
| Area (acres) | 57 |
| Compartment | 5 |
| Stands | 1, 10 |
| Plots (#) | 21 |

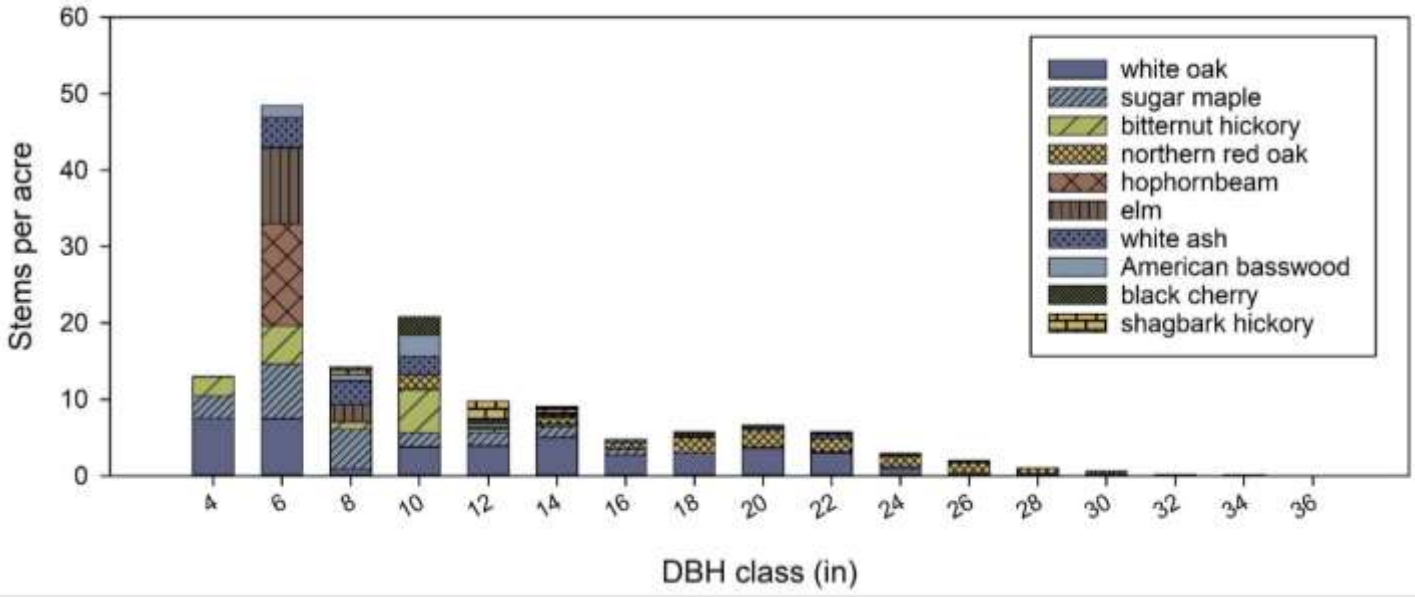



Site (block) characteristics

| | |
|---|---|
| Soil series and texture | Village silt loam, Fayette silt loam, Paintcreek silt loam, Lacrescent silt loam |
| Aspect | E, S, SE, SW |
| Mean slope | 18% |
| Year of origin | uneven-aged, purchased in 1936 |
| Basal area ($ft^2$/acre) | 107 |
| AGS/UGS (%) | 58/43 |
| Total volume (cords/acre) | 13 |
| Total volume (BF/acre) | 9034 |

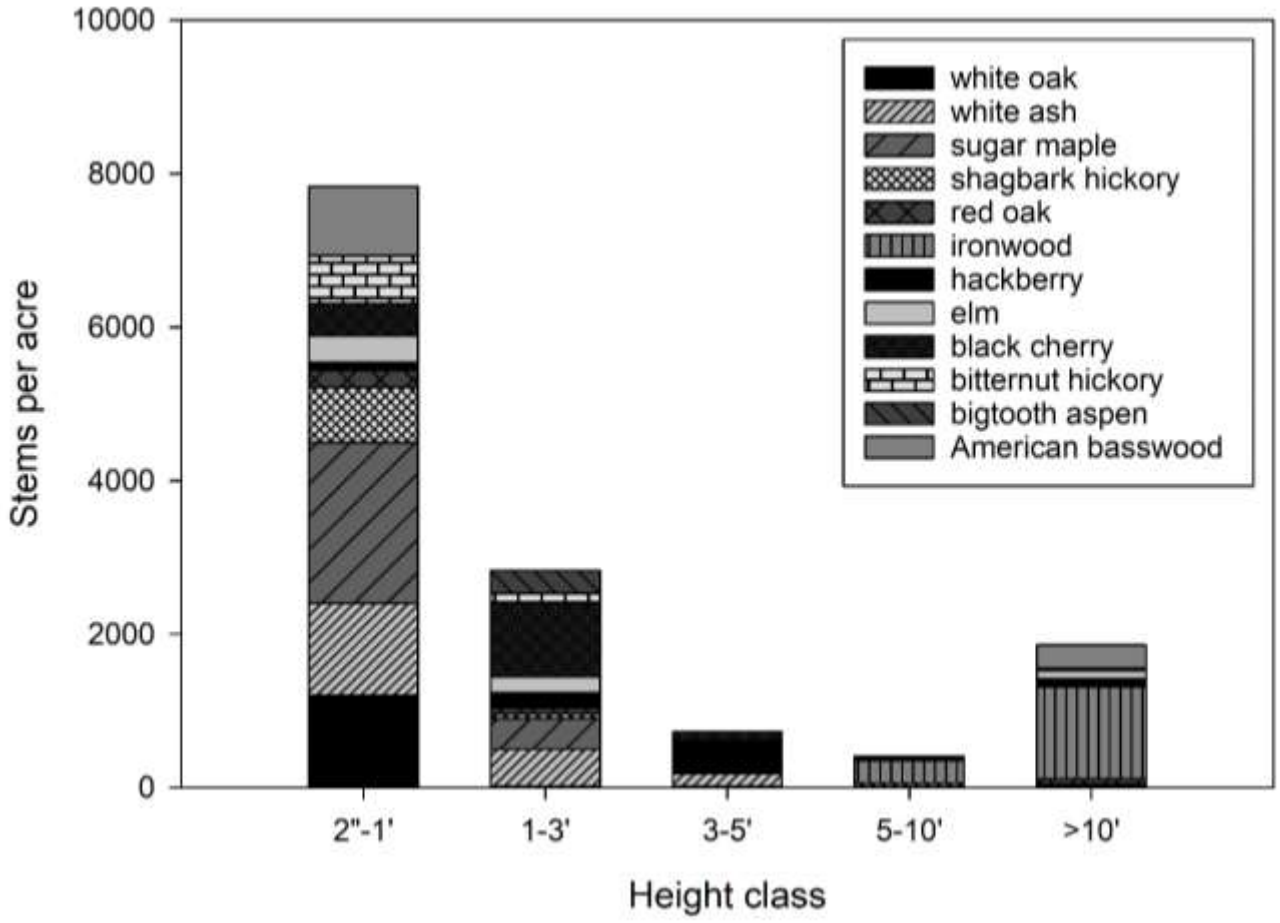
Inventory summary (2021)

| | All | white oak | northern red oak | sugar maple | bitternut hickory | white ash | black cherry | American basswood | shagbark hickory | elm | ironwood | back walnut | bigtooth aspen |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Basal area ($ft^2$/acre) | 106.5 | 41.6 | 27.1 | 9.7 | 4.5 | 4.5 | 4.1 | 3.5 | 3.2 | 2.8 | 2.5 | 2.3 | 0.8 |
| BA (%) | 100 | 39 | 25.4 | 9.1 | 4.2 | 4.2 | 3.8 | 3.3 | 3 | 2.6 | 2.3 | 2.2 | 0.8 |
| TPA | 132.8 | 39.5 | 10.2 | 21.4 | 11.6 | 6.7 | 4.2 | 6.2 | 4.2 | 12.3 | 13.4 | 3.2 | 0.2 |
| Medial DBH | 17.6 | 18.3 | 23.7 | 11.5 | 9.2 | 15.6 | 14.1 | 14.0 | 13.2 | 6.6 | 5.9 | 22.5 | 31.4 |
| QMD | 12.4 | 14.8 | 22.3 | 9.2 | 8.0 | 12.4 | 12.5 | 10.3 | 11.5 | 6.5 | 5.9 | 9.2 | 31.4 |




Advance Regeneration

**Driftless ASCC Site Summary – Yellow River SF Block 2**




Management History

There are no records of harvests in stand 1 since purchase in 1936, but some selective harvesting was likely. Aerial photographs suggest that the westernmost part of the block (stand 10) regenerated in the 1930s. This stand also has an abundance of Missouri gooseberry and other species that suggest it was grazed prior to purchase.

Forest Health Issues

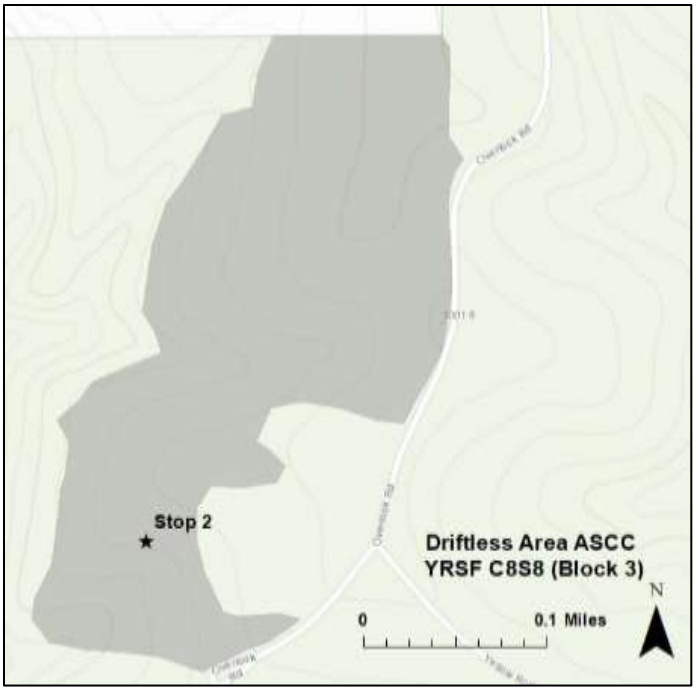
Some oak wilt is present within the block. Emerald ash borer is also present throughout the forest and causing mortality. Dutch elm disease is established. Deer browse is limited.

Invasive species and other potentially interfering vegetation

Garlic mustard is abundant in some places, and there is some bush honeysuckle. Wood nettle is also particularly dense in parts of stand 1.

**Driftless ASCC Site Summary – Yellow River SF Block 3**

| | |
|---|---|
| Property | Yellow River State Forest |
| Location | Allamakee County, Iowa (near Harper's Ferry) |
| Ownership | Iowa DNR |
| Area (acres) | 28 (40+ in block) |
| Compartment | 8 (Stand 8) |
| Soil series and texture | Village silt loam |

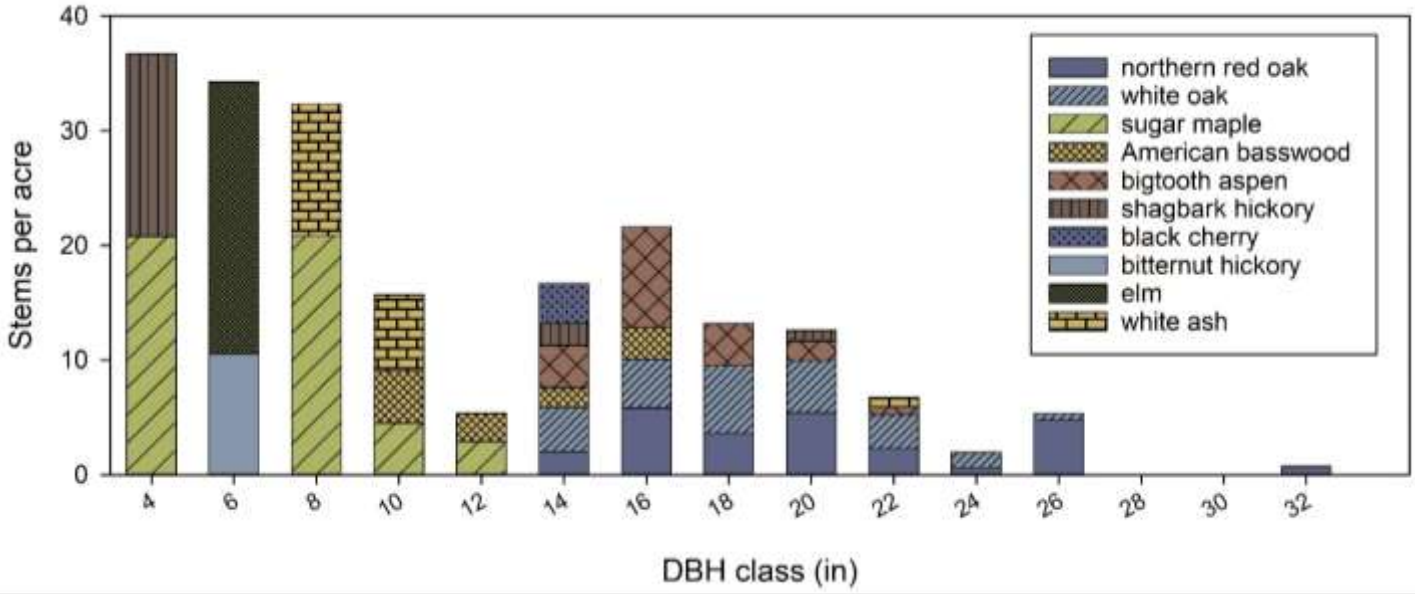



Site (block) characteristics

| | |
|---|---|
| Aspect | SW |
| Mean slope | 13% |
| Basal area ($ft^2$/acre) | 140 |
| AGS/UGS (%) | 55/45 |
| Total volume (cords/acre) | 16 |
| Total volume (BF/acre) | 13663 |

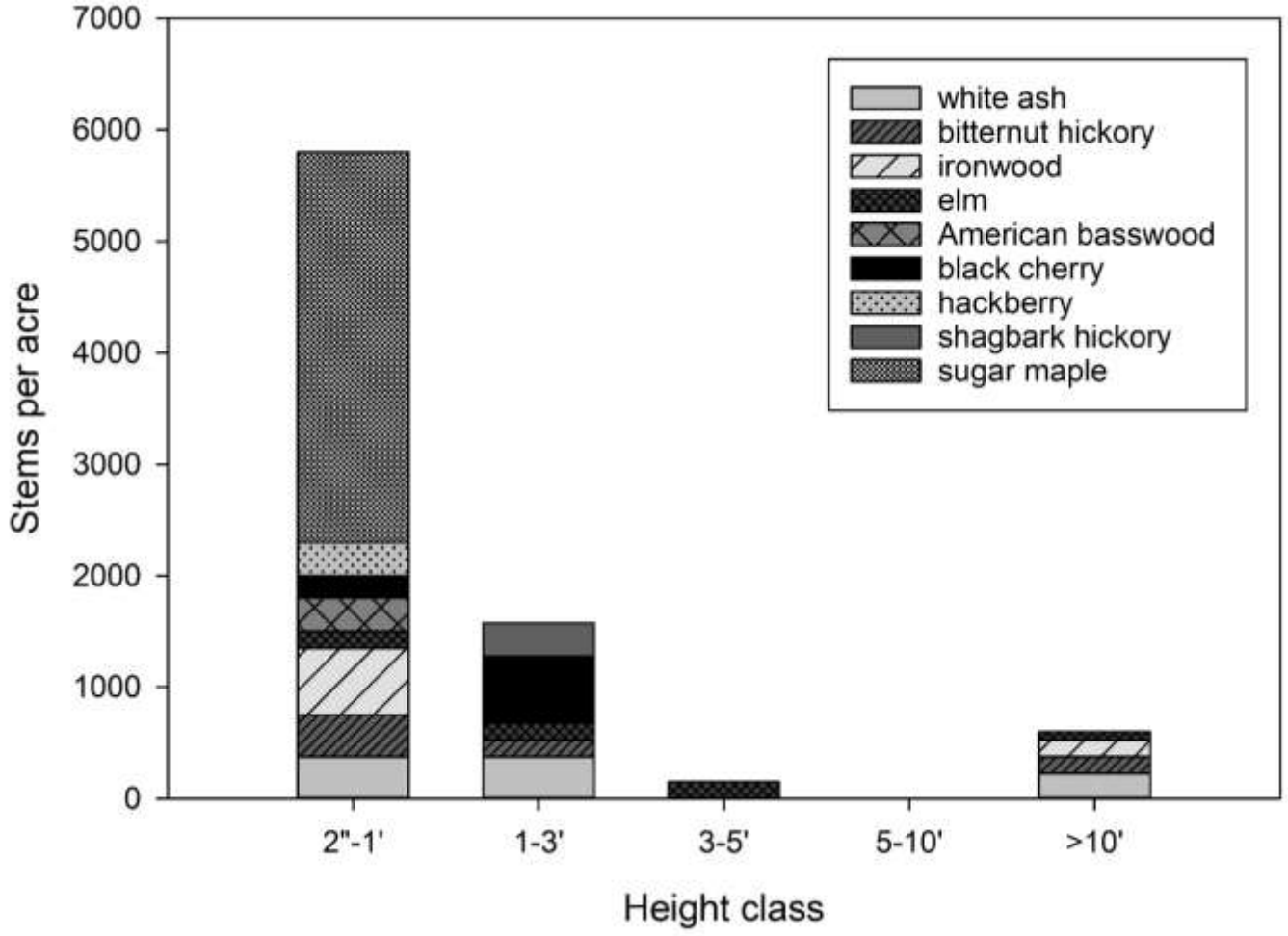
Inventory summary (2021)

| | All | northern red oak | white oak | sugar maple | American basswood | bigtooth aspen | shagbark hickory | black cherry | bitternut hickory | elm |
|---|---|---|---|---|---|---|---|---|---|---|
| Basal area ($ft^2$/acre) | 140.0 | 54.0 | 40.0 | 12.0 | 10.0 | 10.0 | 6.0 | 4.0 | 2.0 | 2.0 |
| BA (%) | 100.0 | 38.6 | 28.6 | 8.6 | 7.1 | 7.1 | 4.3 | 2.9 | 1.4 | 1.4 |
| TPA | 153.2 | 23.6 | 21.1 | 49.1 | 11.3 | 5.2 | 18.7 | 3.4 | 10.5 | 10.2 |
| Medial DBH | 18.3 | 22.1 | 19.5 | 7.7 | 13.8 | 19.2 | 12.9 | 14.6 | 5.9 | 6.0 |
| QMD | 12.9 | 20.5 | 18.6 | 6.7 | 12.7 | 18.7 | 7.7 | 14.6 | 5.9 | 6.0 |



**Driftless ASCC Site Summary – Yellow River SF Block 3**

Advance Regeneration




Stand History

Most of this stand was purchased in 1960, but a small portion has been part of the state forest since 1936. There are no records of harvests, but selective logging was likely in the 1930s and 1950s.

Forest Health Issues

Deer browse is minimal. Emerald ash borer is established throughout the forest and causing mortality. Dutch elm disease is also established. Oak wilt is present, but limited.

Invasive species and other potentially interfering vegetation

Garlic mustard is present in the stand.

# Driftless ASCC Site Summary

| | |
|---|---|
| **Tract Name:** | **Bridle Trail** |
| **Property**: | Lower Wisconsin State Riverway (LWSR) |
| **Unit:** | Millville Unit |
| **Property Owner:** | State of Wisconsin |
| **Compartment:** | 6 |
| **Stand:** | 29 |
| **Acres:** | 55 (79) |
| **Land Mgmt. Classification:** | Native Community Management Area (NCMA)<br>Millville Woodlands and Prairies: Millville Managed Old Forests |
| **Location**: | Town of Millville, Grant County, Wisconsin<br>T6N R5W Sec. 3<br>Lat: 43.030749 N<br>Long: -90.946645 W |

**LWSR Property Goals**

1. At a landscape scale, maintain and enhance the ecological function and exceptional values of the Lower Wisconsin State Riverway; specifically, the diversity of high quality natural communities in a continuum of connected habitats from river to hilltop.

2. Protect and enhance natural communities of high importance; particularly, closed-canopy older forest, southern mesic forest, floodplain forest, oak barrens, dry prairie, oak woodland, oak openings, open wetlands, and aquatic features, such as springs and seeps, oxbow lakes, sloughs, mussel beds.

3. Protect and enhance habitat for common wildlife and for wildlife species of greatest conservation need, including forest interior birds, grassland birds, rare fish, reptiles, and amphibians, and rare aquatic and terrestrial invertebrates, and bats.

4. Maintain and enhance the largely undeveloped, natural scenic beauty of the LWSR, particularly those areas visible from the river.

5. Manage forest lands using principles of sustainable forestry to support habitat and scenic management goals and to provide a variety of renewable forest products.

6. Provide opportunities for high-quality, nature-based open-space recreational uses that are compatible with the property's capabilities and the ecological and habitat management goals. Nature based activities are uses like, hunting, trapping, and wildlife viewing, fishing, paddling, picnicking, camping, hiking, equestrian use, and environmental interpretation and education.

7. Provide access to recreational opportunities for people of all ages and physical abilities in ways that are sustainable and protect the ecological resources and unique features of the Riverway.

8. Protect, and interpret where appropriate, historic, cultural, and archeological resources.

9. Contribute benefits to local and regional economies through management of wildlife and recreational resources and sustainably produced forest products.

**Millville Managed Old Forests (NCMA)**

**Long Term Management Objectives (100 Years)**
Sustain a managed old forest with characteristics including biologically mature trees, large diameter trees, structural diversity, standing and down coarse woody debris, and an uneven canopy. To this end, promote long-term research and demonstration projects that seek to balance the development of old forest characteristics with active forest management practices that maintain mid-successional species such as oak.

**Short Term Management Objectives (50 Years)**

- Develop and maintain old forest characteristics, including biologically mature trees, large diameter trees, structural diversity, standing and down course woody debris, and an uneven canopy using natural processes and active management that mimics natural disturbance.

- Develop and maintain natural transitions between different plant communities. Reduce hard edges between different cover types.

- Develop and maintain natural transitions with "soft edges" between different plant communities or cover types.

- Regenerate oak (along with other mid-successional tree species) in order to maintain the species within oak-dominated or mixed cover types. Improve the oak age class distribution for long-term sustainability of the species.

- Maintain at least 50% in mature forest with closed canopy or near closed canopy conditions to benefit interior forest songbirds.

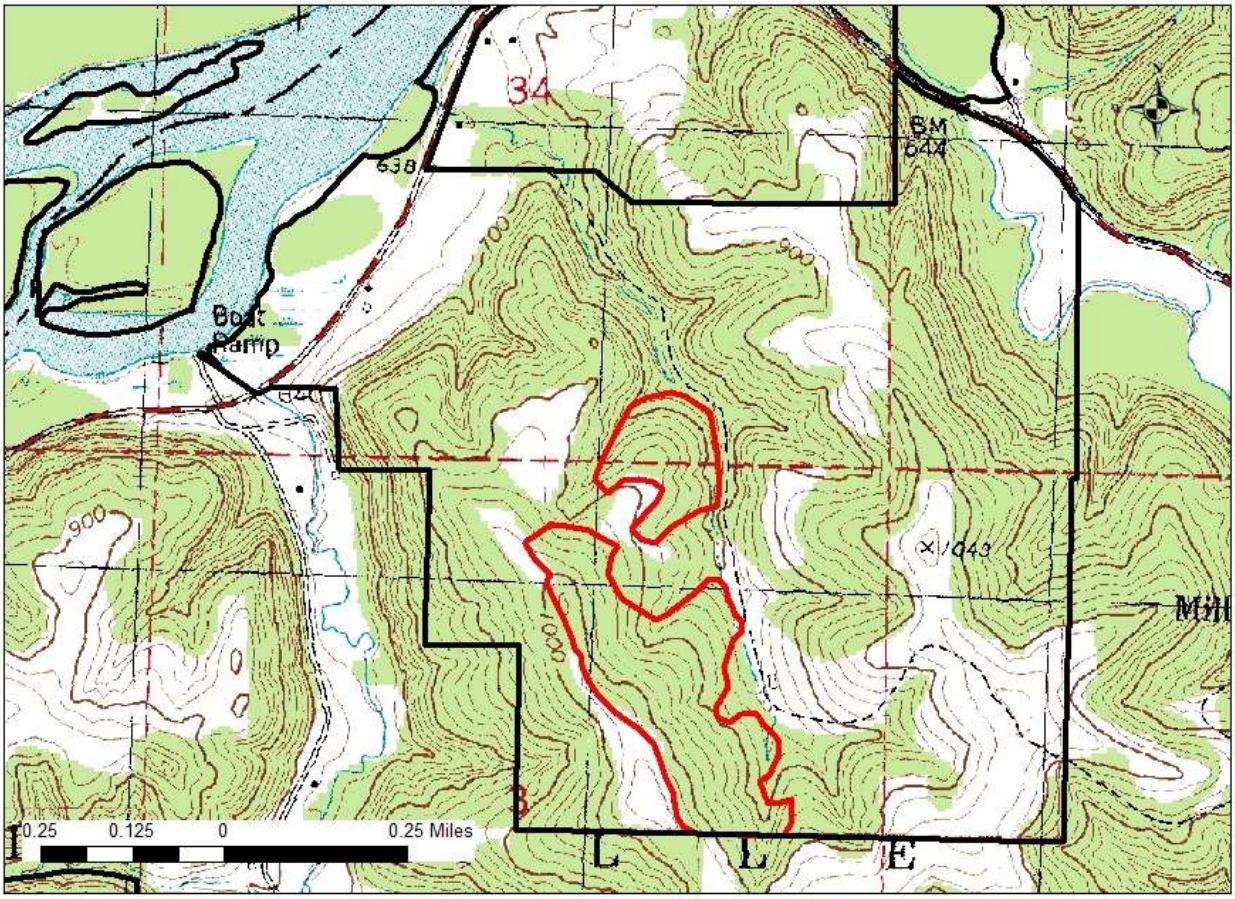
- Maintain the aesthetic qualities of old forest habitat.

- Support scientific research and silvicultural demonstrations that are compatible with and support the ecological objectives.

**Management Prescriptions**
Generally, the management prescriptions allow active management that mimics natural processes in order to sustain and enhance the old forest characteristics. Specific authorized management prescriptions are outlined below.

1. Oak
    a. Maintain oak through management techniques that mimic natural disturbance of limited size and scale relative to the size of the management area (i.e., see area canopy objectives above). Retain vigorous younger oak by thinning surrounding areas from below.
    b. Use natural regeneration systems for oak; overstory removal when sufficient advanced regeneration is present or coppice when stump sprout potential is adequate. Use shelterwood and group selection systems when advance regeneration or stump sprout potential is not adequate. Consider modifying these regeneration systems as necessary to accommodate the overall old forest objectives, such as through the retention of reserve trees for better stand structure or by limiting the size of regeneration patches to maintain canopy.
    c. Use prescribed fire with other management techniques to help regenerate oak, to restore ground layer composition, to control invasive species, and to restore ecosystem processes.

**Stand Map**:




**Site Description**:
Compartment 6 stand 29 (C6s29) is a northeast facing slope dominated by sawtimber sized northern red oak, white oak, and black walnut. Based on site review, there may be two age classes of oak with an additional age class consisting mostly of central hardwood tree species. The WDNR natural community type is Southern Dry-Mesic Forest. For the ASCC study, 2 units, north and south have been proposed. C6s29 between the north and south units differs in that it is predominantly bigtooth aspen. On the lower slope of the south unit, eastern cottonwood is more prevalent. An equestrian trail runs along the north order of both units and bisects the southern unit. Deer browse severity appears to be low, but the lack of preferred browse species may complicate this assessment.

**Forest Habitat Type (Kotar):**
ATiDe (Acer saccharum – Tilia/Desmodium) (Region 7): Most stands representing the ATiDe type were dominated by sugar maple-basswood prior to European settlement. The stands pf the Pr phase developed from oak openings or communities dominated by shrubs. Although there are no mesic hardwoods present in most of the current stands, the soils and understory vegetation suggest that these species are lacking only because of the absence of seed source (Kotar Burger 1996)

**Soils**:
Fayette silt loam, 12 to 20 percent slopes, moderately eroded
Fayette silt loam, 18 to 35 percent slopes, moderately eroded
Gale silt loam, 20 to 30 percent slopes, moderately eroded
Palsgrove silt loam, 12 to 20 percent slopes, moderately eroded

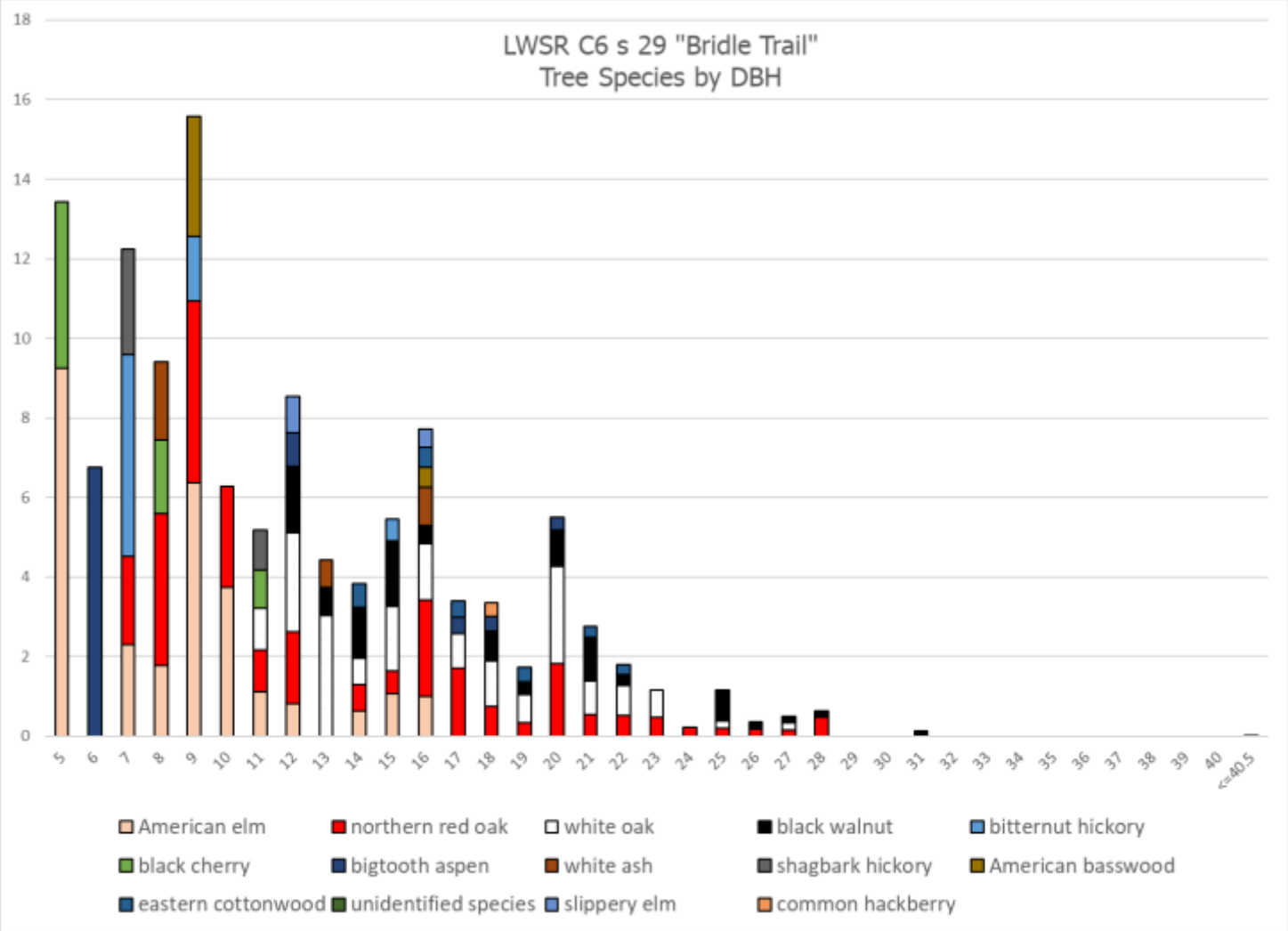
**Stand Summary Information**:

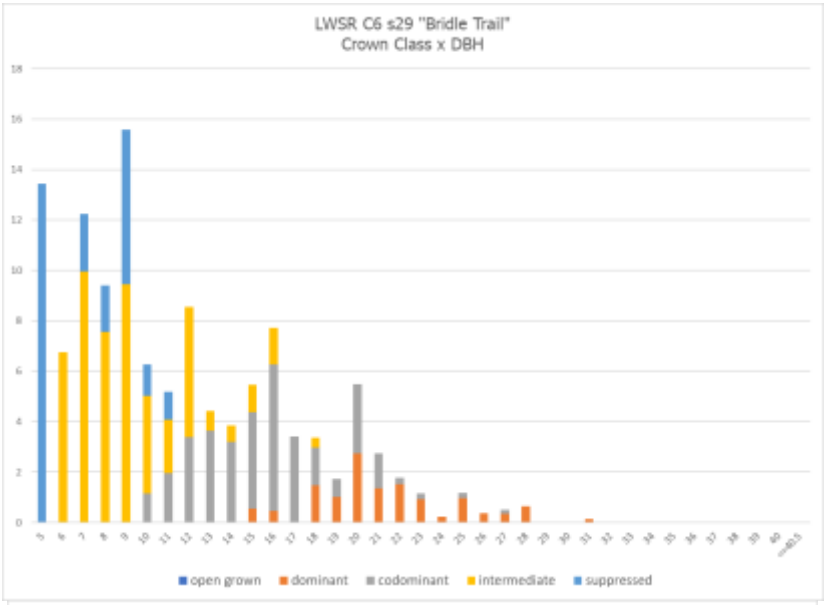
2021

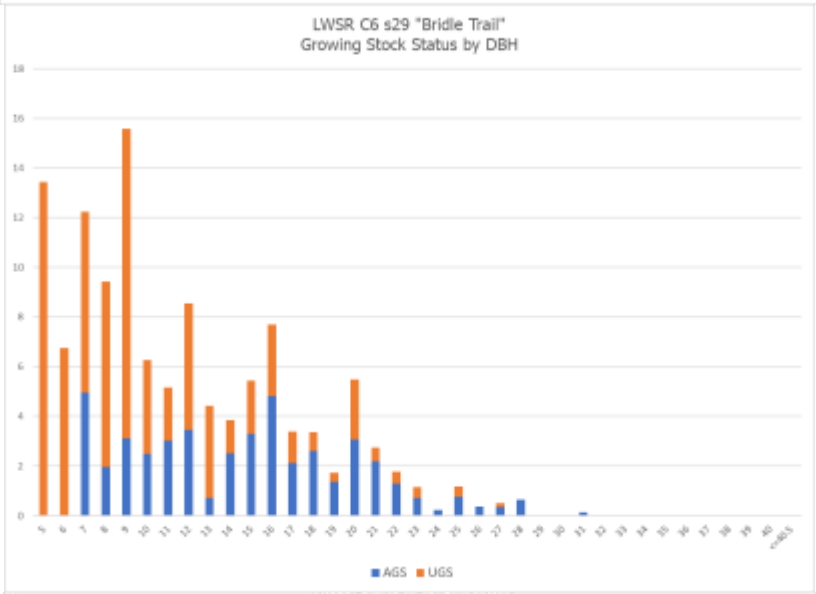
| | |
|---|---|
| Primary Type / Size / Density | Oak / 15+ / 3 (71-110) |
| Secondary Type / Size / Density | Central Hardwoods / 5-11 / 1 (10-30) |
| Year of origin | 1937 |
| Total Height | 75’ |
| Site Index Species / Site Index | OR / 65 |
| Basal area (sq.ft./ac.) | 108 |
| AGS / UGS (%) | 38 / 62 |
| Total Volume (cords/ ac.) | 15 |
| Total Volume (BF/ ac.) | 7970 |

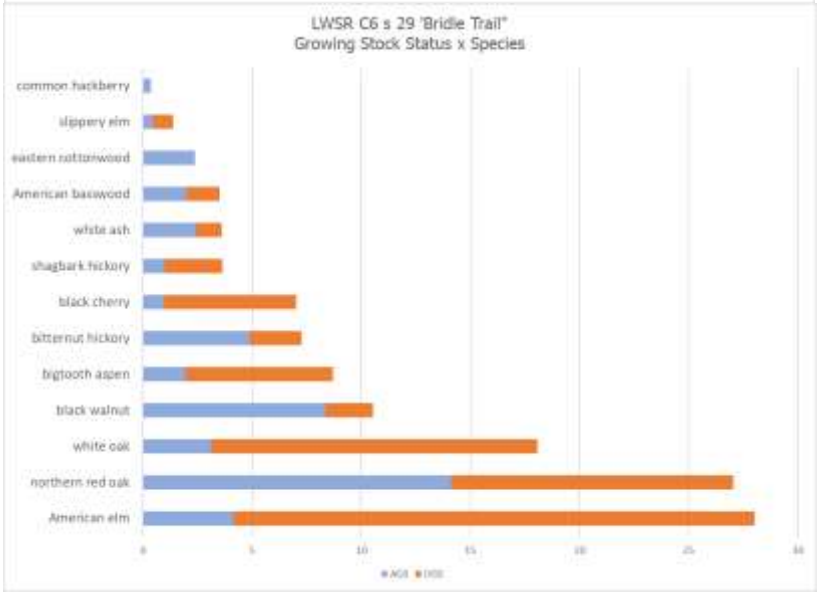
2021

| | All species | northern red oak | white oak | black walnut | American elm | bigtooth aspen | eastern cottonwood | bitternut hickory | white ash | black cherry | American basswood | shagbark hickory | Misc. Spp. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Basal area (sq.ft./ac.) | 108.7 | 29.3 | 27.3 | 19.3 | 12 | 4 | 4 | 2.7 | 2.7 | 2 | 2 | 1.3 | 2.0 |
| Percent of stand basal area (%) | 100 | 27.0 | 25.2 | 17.8 | 11.0 | 3.7 | 3.7 | 2.5 | 2.5 | 1.8 | 1.8 | 1.2 | 1.8 |
| Stems/area (stems/ac.) | 121.5 | 27.1 | 18.1 | 10.5 | 28.0 | 8.7 | 2.4 | 7.3 | 3.6 | 7.0 | 3.5 | 3.6 | 1.8 |
| Medial DBH (in.) | 17 | 17.5 | 18.0 | 23.3 | 10.5 | 13.2 | 18.2 | 9.3 | 13.3 | 8.2 | 11.3 | 9.0 | |
| Quadratic Mean DBH (in.) | 12.8 | 14.1 | 16.7 | 18.3 | 8.9 | 9.2 | 17.5 | 8.2 | 11.7 | 7.2 | 10.2 | 8.2 | |

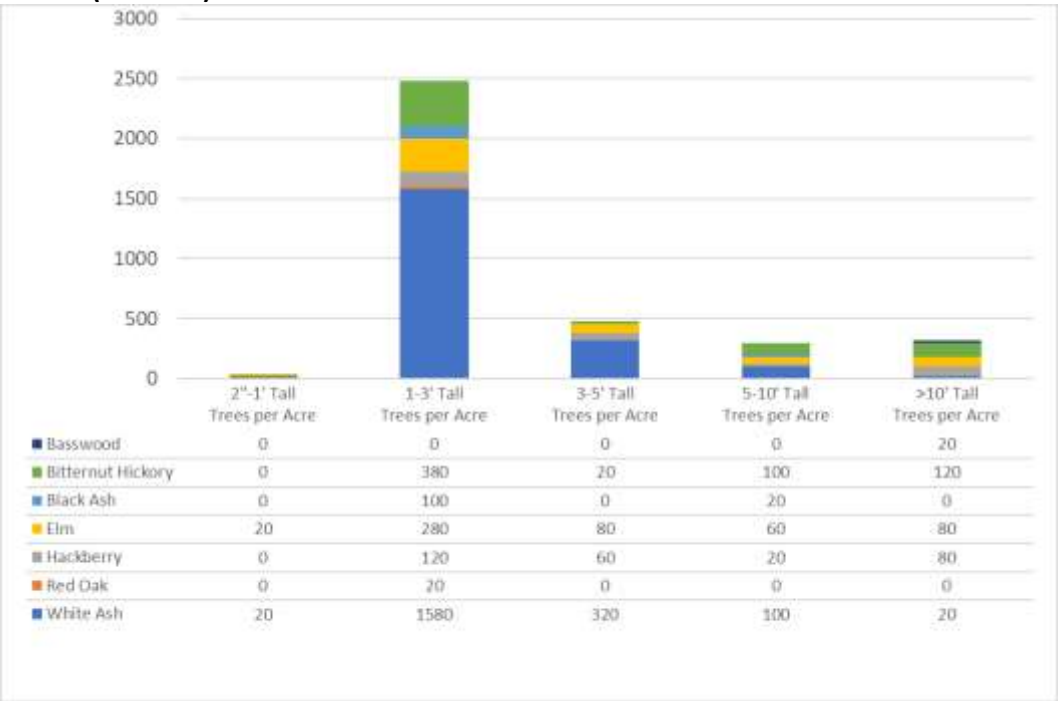



LWSR C6 s29 "Bridle Trail"
Crown Class x DBH
open grown
dominant
codominant
intermediate
suppressed


LWSR C6 s29 "Bridle Trail"
Growing Stock Status by DBH
AGS
UGS


LWSR C6 s 29 "Bridle Trail"
Growing Stock Status x Species
common hackberry
slippery elm
eastern cottonwood
American basswood
white ash
shagbark hickory
black cherry
bitternut hickory
bigtooth aspen
black walnut
white oak
northern red oak
American elm

**Advance Regeneration (<5" DBH)**




| | 2"-1' Tall Trees per Acre | 1-3' Tall Trees per Acre | 3-5' Tall Trees per Acre | 5-10' Tall Trees per Acre | >10' Tall Trees per Acre |
|---|---|---|---|---|---|
| Basswood | 0 | 0 | 0 | 0 | 20 |
| Bitternut Hickory | 0 | 380 | 20 | 100 | 120 |
| Black Ash | 0 | 100 | 0 | 20 | 0 |
| Elm | 20 | 280 | 80 | 60 | 80 |
| Hackberry | 0 | 120 | 60 | 20 | 80 |
| Red Oak | 0 | 20 | 0 | 0 | 0 |
| White Ash | 20 | 1580 | 320 | 100 | 20 |

**Interfering Vegetation (present):**
Multiflora rose
Morrow's honeysuckle
Garlic mustard

**Management History:**
Though stumps and some slash were encountered in the stand, the history of previous harvests is unknown. Due to the presence of open grown trees, erosion gullies, and old fence lines, this stand was likely grazed by cattle prior to State acquisition.

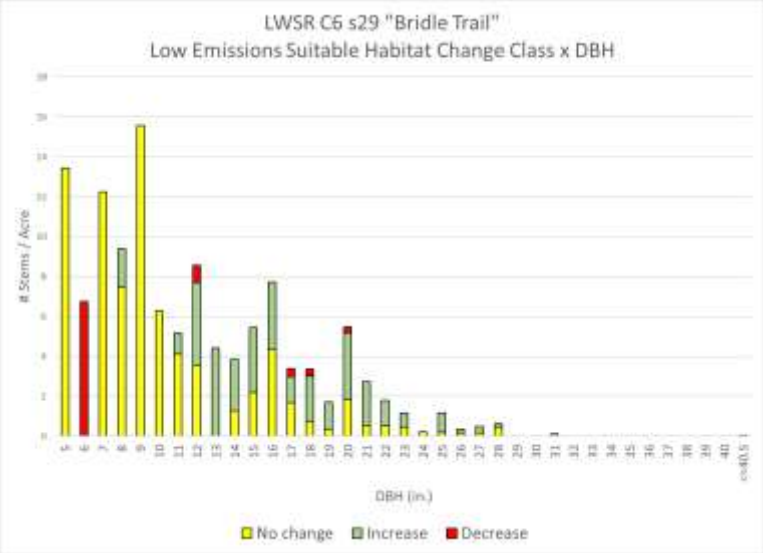
**Forest Health**:
Emerald ash borer and Dutch elm disease are present in the stand. White ash are heavily impacted with nearly all dead or dying. Oak wilt is also present but not widespread.

**Endangered, Threatened, Special Concern Species**: Though not necessarily found on this stand, these species should be considered when exploring management options.

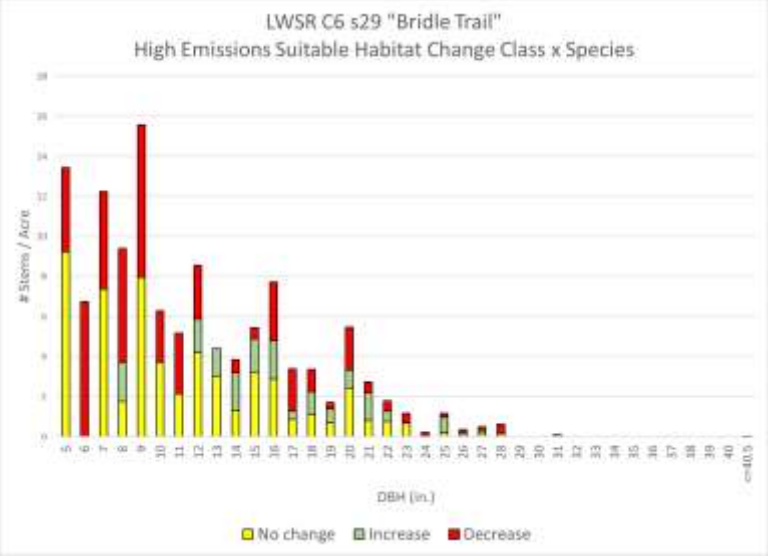
| Common Name | Scientific Name | Type | S Status | F Status | Group | # EOs |
|---|---|---|---|---|---|---|
| Red-headed Woodpecker | Melanerpes erythrocephalus | T | SC/M | | Bird | 1 |
| Golden-seal | Hydrastis canadensis | T | SC | | Plant | 1 |
| Ornate Box Turtle | Terrapene ornata | T | END | | Turtle | 1 |
| Prairie Ragwort | Packera plattensis | T | SC | | Plant | 1 |
| Great Water-leaf | Hydrophyllum appendiculatum | T | SC | | Plant | 1 |
| Acadian Flycatcher | Empidonax virescens | T | THR | | Bird | 1 |
| Southern Dry-mesic Forest | Southern dry-mesic forest | T | NA | | Community | 2 |
| Dry-mesic Prairie | Dry-mesic prairie | T | NA | | Community | 1 |
| Oak Woodland | Oak woodland | T | NA | | Community | 1 |
| Snow Trillium | Trillium nivale | T | THR | | Plant | 1 |
| Timber Rattlesnake | Crotalus horridus | T | SC/P | | Snake | 1 |
| Kentucky Warbler | Geothlypis formosa | T | THR | | Bird | 1 |
| Purple Milkweed | Asclepias purpurascens | T | END | | Plant | 1 |
| Cerulean Warbler | Setophaga cerulea | T | THR | SOC | Bird | 1 |

# LWSR Bridle Trail Climate Review: Tree Species Suitable Habitat (2070-2099)

| Species | Adaptability | Model Reliability | Stems Per Acre | Frequency | Basal Area | Importance Value (IV) | Low Emissions Suitable Habitat Change (2070-2099) | Low Emissions Habitat Suitability Decrease (IV %) | High Emissions Suitable Habitat Change (2070-2099) | High Emissions Habitat Suitability Decrease (IV %) |
|---|---|---|---|---|---|---|---|---|---|---|
| northern red oak | High | Medium | 27.1 | 93.33 | 29.3 | 23.18 | No change | 0 | Decrease | 23.18 |
| white oak | High | Medium | 18.1 | 73.33 | 27.3 | 18.65 | Increase | 0 | No change | 0 |
| American elm | Medium | Medium | 28 | 73.33 | 12 | 16.68 | No change | 0 | No change | 0 |
| black walnut | Medium | Low | 10.5 | 73.33 | 19.3 | 14.14 | Increase | 0 | Increase | 0 |
| bigtooth aspen | Medium | Medium | 8.7 | 26.67 | 4 | 5.54 | Decrease | 5.54 | Decrease | 5.54 |
| bitternut hickory | High | Low | 7.3 | 20 | 2.7 | 4.26 | No change | 0 | No change | 0 |
| black cherry | Low | Medium | 7 | 20 | 2 | 3.99 | No change | 0 | Decrease | 3.99 |
| white ash | Low | Medium | 3.6 | 26.67 | 2.7 | 3.74 | Increase | 0 | Increase | 0 |
| American basswood | Medium | Medium | 3.5 | 13.33 | 2 | 2.54 | No change | 0 | Decrease | 2.54 |
| shagbark hickory | Medium | Medium | 3.6 | 13.33 | 1.3 | 2.37 | No change | 0 | Decrease | 2.37 |
| eastern cottonwood | Medium | Low | 2.4 | 6.67 | 4 | 2.36 | Increase | 0 | Increase | 0 |
| slippery elm | Medium | Low | 1.4 | 13.33 | 1.3 | 1.76 | No change | 0 | No change | 0 |
| common hackberry | High | Medium | 0.4 | 6.67 | 0.7 | 0.79 | Increase | 0 | Increase | 0 |
| Total | | | 121.55 | 460 | 108.67 | 100 | | 5.54 | | 37.62 |




| Low Emissions Suitable Habitat Change (2070-2099) | Low Emissions Habitat Suitability Change (IV %) | High Emissions Suitable Habitat Change (2070-2099) | High Emissions Habitat Suitability Change (IV %) |
|---|---|---|---|
| No change | 54.8 | No change | 41.4 |
| Increase | 39.7 | Increase | 21.0 |
| Decrease | 5.5 | Decrease | 37.6 |



# Driftless ASCC Site Summary

**Property**: **Hallock Demonstration Forest (HDF)**
**Property Owner**: State of Wisconsin
**Compartment**: 01
**Stand**: 12
**Acres**: 44
**Land Mgmt. Classification:** Forest Production Area (FPA)

**Location**: Town of Millville, Grant County, Wisconsin
T6N R5W Sec. 10
Lat: 43.014168 N
Long: -90.948944 W

**Property Goals and Objectives**:

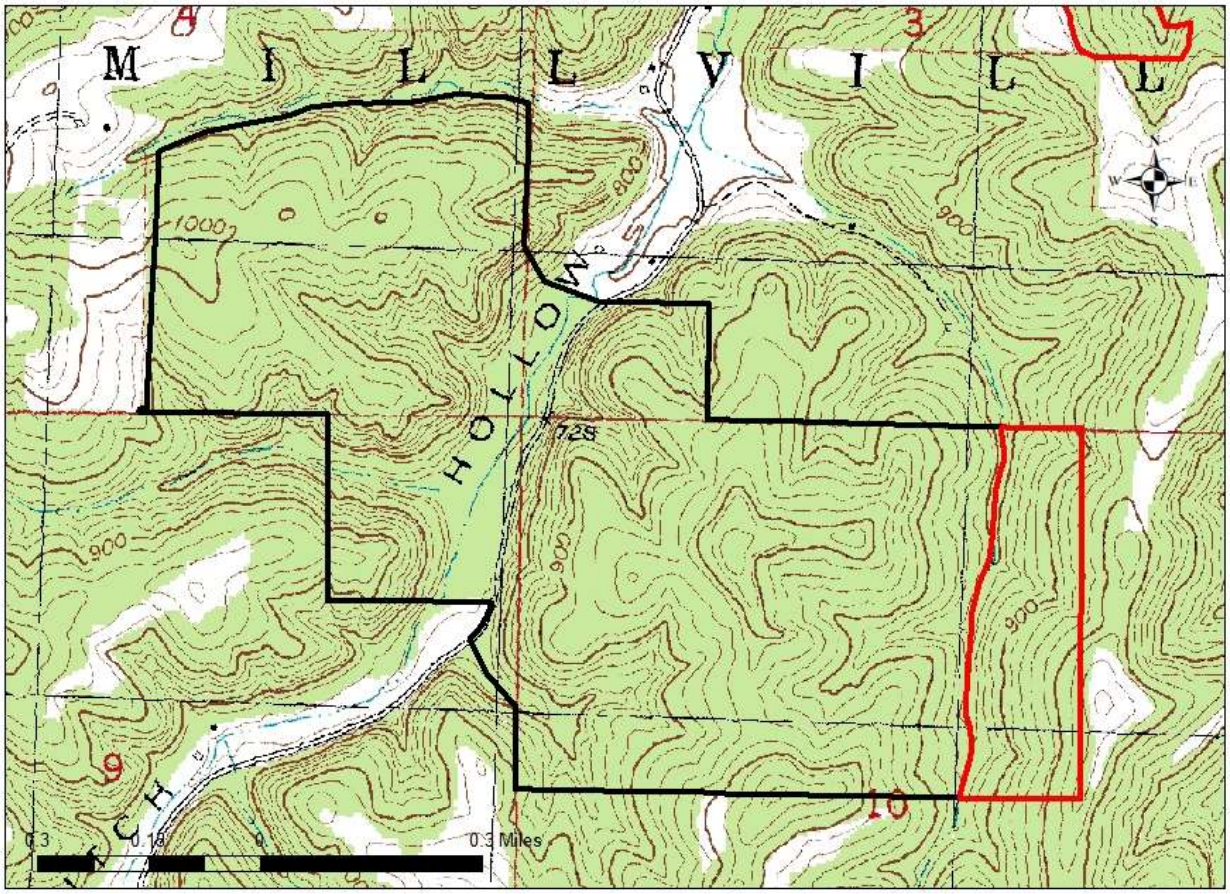
*Purpose*
The purpose of the stewardship demonstration forests is to demonstrate sustainable forest management and responsible stewardship, while also using these lands as educational tools for students, professional foresters, and non-industrial private forest landowners. The forests provide an opportunity to demonstrate active timber management and sustainable forest management. While growth and yield records are no longer maintained on a regular basis, most of the tracts do have good historical information that may be useful in research, and the lands are open for potential "new" research opportunities.

*Goals*

1. The production of high-quality saw logs at maximum growth rate is the highest priority for the property. Oak is the dominant merchantable cover type. Management will include other merchantable, compatible species whenever possible, including reforestation work.
    a. Veneer production will be the goal unless specifically stated otherwise. Oak and walnut will normally receive the benefit of management when site conflict occurs.
    b. Sawlogs of all merchantable species will be harvested when economically feasible from all stands. Management will favor of oak, walnut, and high value species or softwoods in established plantations.
2. Maintain oak cover types where feasible
    a. Diversify age classes-regenerate stands so that all age classes of oak are represented on the property
    b. Thin to achieve larger diameter trees
    c. Increase course woody debris
    d. Crop tree release oak in young stands
    e.
3. Emphasize importance of forest interior songbirds
4. Thin scattered pine plantations to promote growth and maintain for forest diversity
5. Control invasive species as needed
6. Continued management and possible expansion of small prairie openings in oak woodlands. Prescribed fires have been previously used in these areas to benefit native prairie species.

Current and Planned Land Management Objectives and Prescriptions - Maintain oak cover types by conducting regeneration harvests in stands suitable for oak. Shelterwood and strip clearcuts are already in use at the property. Plant oak seedlings in areas where natural regeneration is lacking. When regeneration is adequate, remove shelterwood trees and conduct regeneration harvests once stand rotation age is reached. Sale design will consider effects on forest interior songbirds.

**Stand Map**:




**Site Description**: Stand 12 is a 44-acre oak-dominated stand with a west-facing aspect that is located on the far east side of the Hallock Demonstration Forest. The natural community type is Southern Dry-Mesic Forest. The overstory is dominated by large saw red and white oak, with a lesser component of black walnut and American elm. Access into the stand is via the main woods road off Barker Hollow Road. Though there are multiple trails which follow contours within the stand, they do not link up to the main woods road. Access requires crossing an intermittent stream.

**Soils**:

*Major* – Fayette silt loam, 18 to 35 percent slopes, moderately eroded (69%)

*Minor* - LaCrescent-Dunbarton complex, very stony, 30 to 60 percent slopes (22%)
Sogn silt loam, 15 to 20 percent slopes, moderately eroded (7%)
Chaseburg silt loam, moderately well drained, 2 to 6 percent slopes (2%)

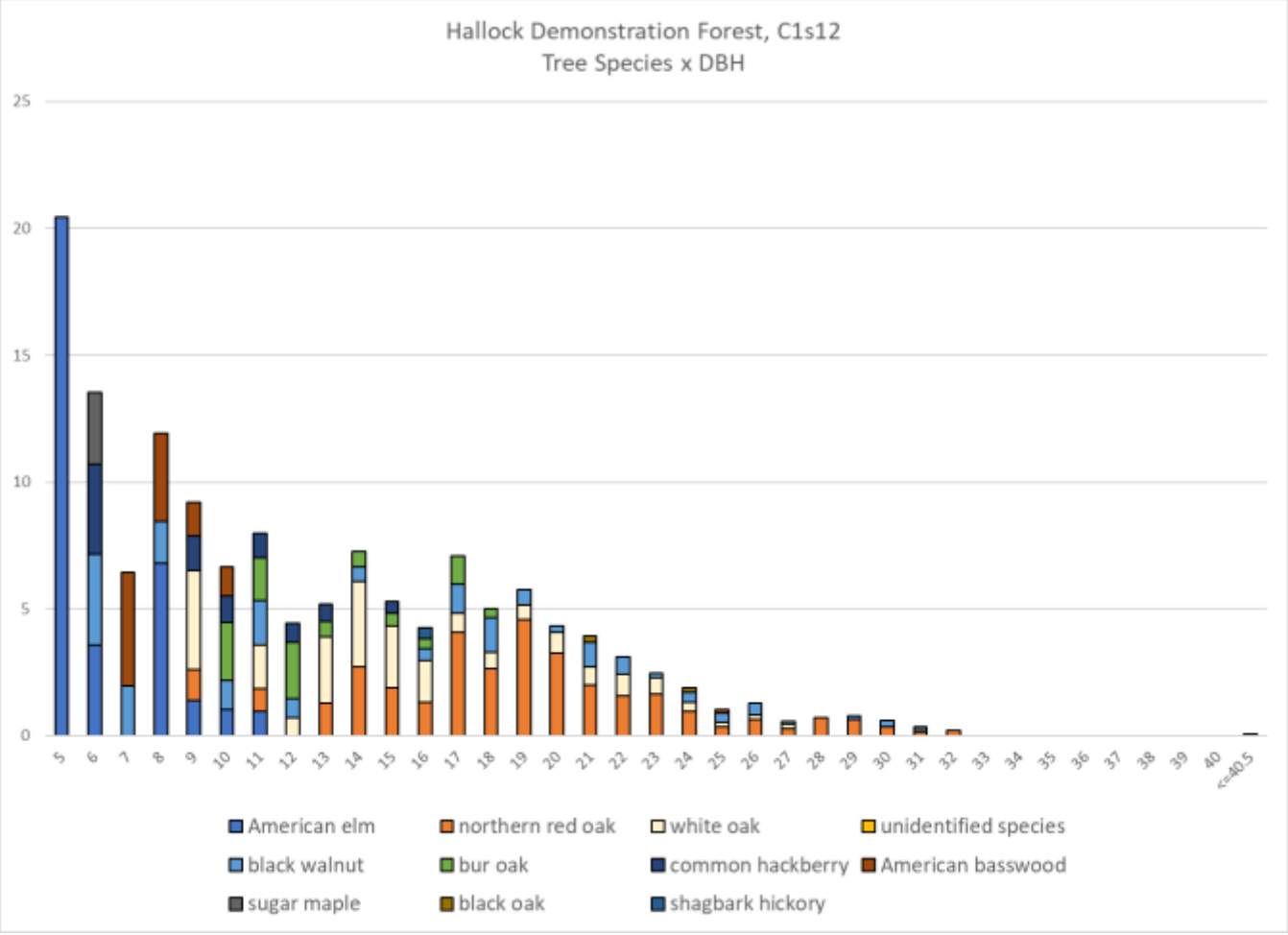
**Stand Summary Information**:

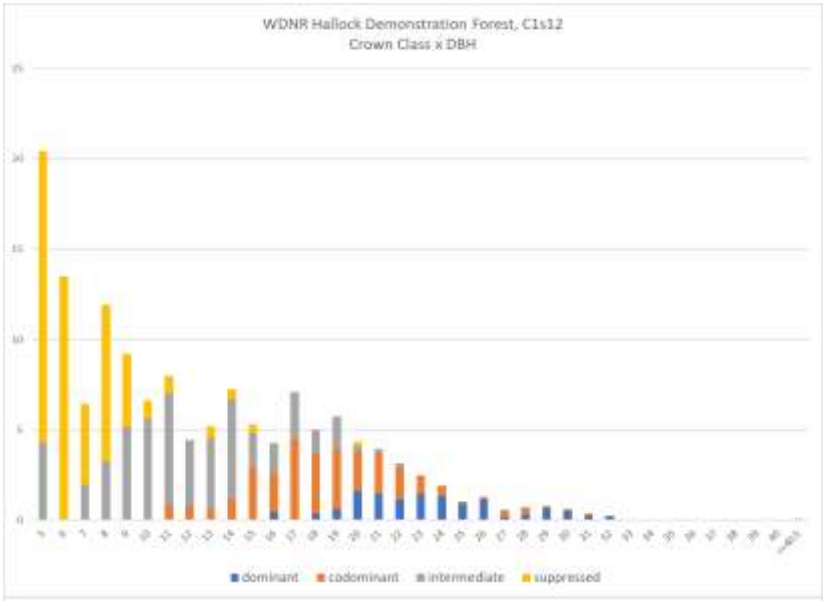
2021

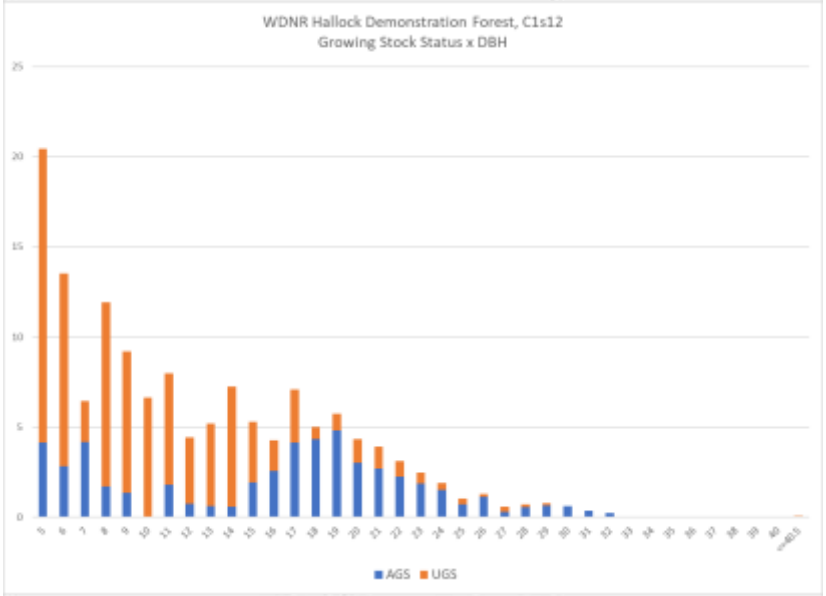
| | |
|---|---|
| Primary Type / Size / Density | Oak / 15+ / 4 (111-150) |
| Secondary Type / Size / Density | Central Hardwoods / 5-11 / 1 (10-30) |
| Year of Origin | 1911 |
| Total Height | 75 |
| Quadratic Mean Stand Diameter | 13.9 |
| Site Index Species / Site Index | OR / 70 |
| Total Basal Area ($ft^2$/acre) | 148.8 |
| Total Volume (cords/acre) | 20 |
| Total Volume (bd. ft./acre) | 12,184 |

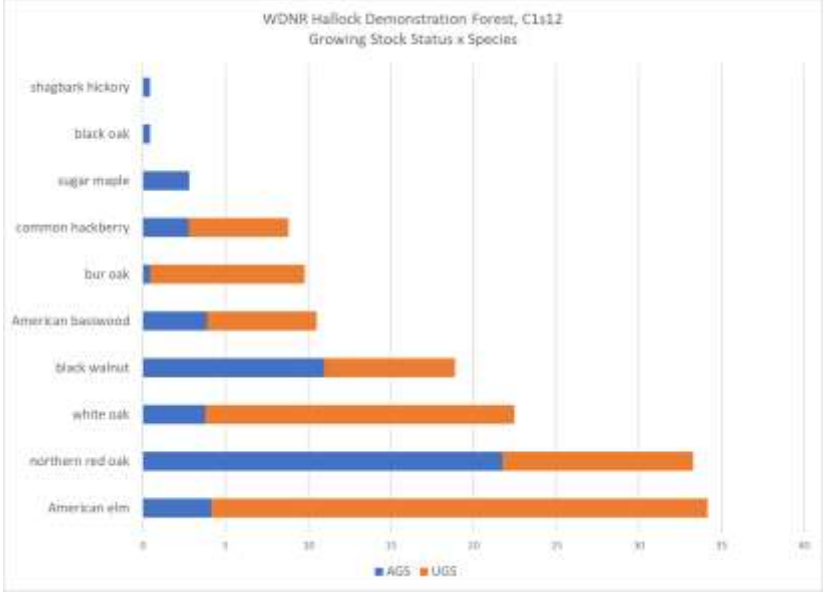
2021

| | All species | northern red oak | white oak | black walnut | bur oak | American elm | American basswood | common hackberry | black oak | sugar maple | shagbark hickory |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Basal area (sq.ft./ac.) | 148.8 | 68.8 | 30 | 22.9 | 8.8 | 7.6 | 4.1 | 4.1 | 1.2 | 0.6 | 0.6 |
| Percent of stand basal area (%) | 100 | 46.2 | 20.2 | 15.4 | 5.9 | 5.1 | 2.8 | 2.8 | 0.8 | 0.4 | 0.4 |
| Stems/area (stems/ac.) | 141.7 | 33.3 | 22.5 | 18.9 | 9.8 | 34.2 | 10.5 | 8.8 | 0.4 | 2.8 | 0.4 |
| Medial DBH (in.) | 20.4 | 24.5 | 20 | 19.7 | 13.6 | 7.1 | 10.6 | 10.7 | 22.3 | 6.2 | 15.8 |
| Quadratic Mean DBH (in.) | 13.9 | 19.5 | 15.6 | 14.9 | 12.9 | 6.4 | 8.5 | 9.3 | 22.1 | 6.2 | 15.8 |

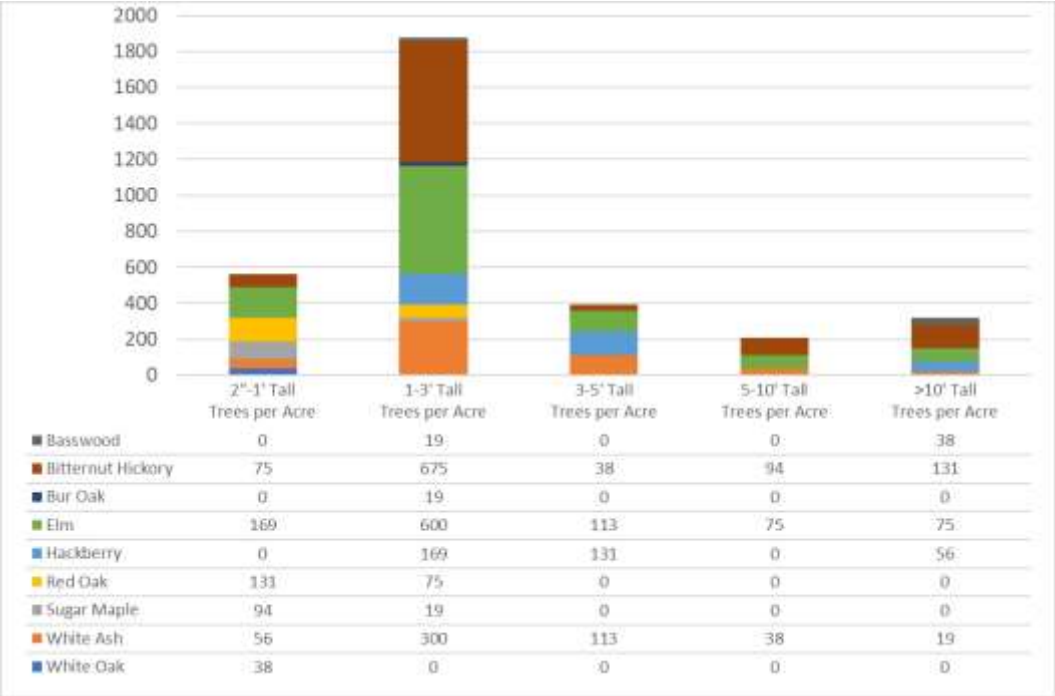



WDNR Hallock Demonstration Forest, C1s12
Crown Class x DBH
dominant
codominant
intermediate
suppressed


WDNR Hallock Demonstration Forest, C1s12
Growing Stock Status x DBH
AGS
UGS


WDNR Hallock Demonstration Forest, C1s12
Growing Stock Status x Species
shagbark hickory
black oak
sugar maple
common hackberry
bur oak
American basswood
black walnut
white oak
northern red oak
American elm
AGS
UGS

**Advance Regeneration (<5”DBH)**




| | 2"-1' Tall Trees per Acre | 1-3' Tall Trees per Acre | 3-5' Tall Trees per Acre | 5-10' Tall Trees per Acre | >10' Tall Trees per Acre |
|---|---|---|---|---|---|
| Basswood | 0 | 19 | 0 | 0 | 38 |
| Bitternut Hickory | 75 | 675 | 38 | 94 | 131 |
| Bur Oak | 0 | 19 | 0 | 0 | 0 |
| Elm | 169 | 600 | 113 | 75 | 75 |
| Hackberry | 0 | 169 | 131 | 0 | 56 |
| Red Oak | 131 | 75 | 0 | 0 | 0 |
| Sugar Maple | 94 | 19 | 0 | 0 | 0 |
| White Ash | 56 | 300 | 113 | 38 | 19 |
| White Oak | 38 | 0 | 0 | 0 | 0 |

**Interfering Vegetation (present):** Note, this list is not exhaustive.
Multiflora rose
Morrow’s honeysuckle
Garlic mustard

**Management History:**
No stumps were encountered during recent stand inventory. The history of previous timber harvests is unknown.

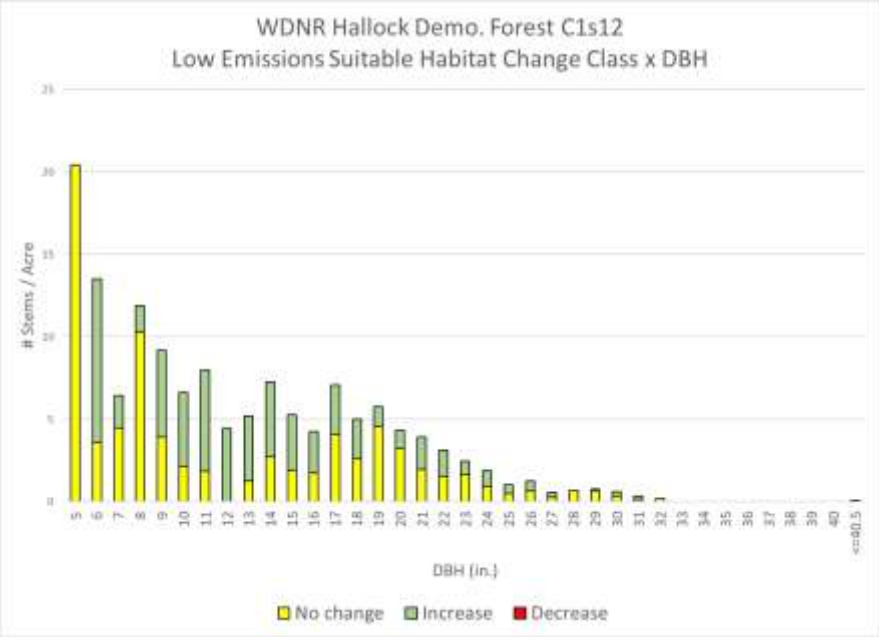
**Forest Health**:
Though not noted in this stand, emerald ash borer is common in the surrounding landscape. Oak Wilt is found at multiple points within the stand but appears to be advancing slowly. Dutch elm disease is also common in the stand.

**Endangered, Threatened, Special Concern Species**: Though not necessarily found on this stand, these species should be considered when exploring management options.

Acadian Flycatcher – State THR
Cerulean Warbler – State THR
Purple Milkweed – State END
Timber Rattlesnake – State SC/P

# WDNR Hallock Demo. Forest Climate Review: Tree Species Suitable Habitat (2070-2099)

| Species | Adaptability | Model Reliability | Stems Per Acre | Frequency | Basal Area | Importance Value (IV) | Low Emissions Suitable Habitat Change (2070-2099) | Low Emissions Habitat Suitability Decrease (IV %) | High Emissions Suitable Habitat Change (2070-2099) | High Emissions Habitat Suitability Decrease (IV %) |
|---|---|---|---|---|---|---|---|---|---|---|
| northern red oak | High | Medium | 33.3 | 94.12 | 68.8 | 31.59 | No change | 0 | Decrease | 31.59 |
| white oak | High | Medium | 22.5 | 70.59 | 30 | 18.26 | Increase | 0 | No change | 0 |
| black walnut | Medium | Low | 18.9 | 70.59 | 22.9 | 15.83 | Increase | 0 | Increase | 0 |
| American elm | Medium | Medium | 34.2 | 35.29 | 7.6 | 12.88 | No change | 0 | No change | 0 |
| bur oak | High | Medium | 9.8 | 29.41 | 8.8 | 6.88 | Increase | 0 | No change | 0 |
| common hackberry | High | Medium | 8.8 | 29.41 | 4.1 | 5.6 | Increase | 0 | Increase | 0 |
| American basswood | Medium | Medium | 10.5 | 23.53 | 4.1 | 5.48 | No change | 0 | Decrease | 5.48 |
| black oak | Medium | High | 0.4 | 11.76 | 1.2 | 1.41 | Increase | 0 | Increase | 0 |
| sugar maple | High | High | 2.8 | 5.88 | 0.6 | 1.31 | Increase | 0 | Increase | 0 |
| shagbark hickory | Medium | Medium | 0.4 | 5.88 | 0.6 | 0.75 | No change | 0 | Decrease | 0.75 |
| Total | | | 141.6 | 376.46 | 148.7 | 100 | | 0 | | 37.82 |




| Low Emissions Suitable Habitat Change (2070-2099) | Low Emissions Habitat Suitability Change (IV %) | High Emissions Suitable Habitat Change (2070-2099) | High Emissions Habitat Suitability Change (IV %) |
|---|---|---|---|
| No change | 50.7 | No change | 38.0 |
| Increase | 49.3 | Increase | 24.2 |
| Decrease | 0.0 | Decrease | 37.8 |