

**FOREST WILDLIFE STEWARDSHIP PLAN
HERITAGE HILLS WILDLIFE MANAGEMENT AREA
HORBACH TRACT**



Actively managing the forestlands owned by the Iowa DNR Wildlife Bureau are critical to improving habitat for a variety of wildlife species and improving the forest ecosystem structure and function. Stand maps, stand descriptions and work summary tables are provided to direct the forest management across 250 acres of forested land at Heritage Hills Wildlife Management Area in Warren County, Iowa.

**Plan developed by: Zach Nie, District Forester
Heath Van Waus, Wildlife Biologist**

Introduction

Conservation, preservation and enhancement of natural resources to ensure a legacy for future generations is the mission of the Iowa DNR. Within the DNR, the Wildlife Bureau manages more than 400,000 acres of land as wildlife management areas (WMAs) for a variety of public users. Many of these WMAs are either partially or mostly forest covered. These forests provide a unique opportunity for the DNR to carry out its mission by demonstrating science based management of these lands for enhancement and conservation of forest resources for the many species that depend on these habitats to survive.

The Wildlife Bureau recognizes the need for forest wildlife stewardship plans (FWSPs) to properly manage public forest resources. Forests, like all ecosystems, need management to sustain overall health. Although most forest management is more long term than other local ecosystems, it is still very important. Some forest stands may take more than 120 years to mature, a time span that may extend through the careers of several managers. This slow change requires managers to plan over the long term and create a detailed record of planning and work completed in the form of FWSPs.

Heritage Hills WMA is a 704 acre WMA located in southern Warren County. A relatively new public land complex, this WMA was purchased in four different tracts from the Iowa Natural Heritage Foundation from 2019 to 2020. The WMA consists of a variety of different habitats which includes 250 acres of forested habitat. The forest habitat consists of approximately 90 acres of bottomland/riparian forest and the remaining 160 acres is composed of different age classes of upland forest. Managing forests is essential to improve the areas for wildlife and recreation.

This FWSP is a cooperative effort among DNR staff including the Rathbun Wildlife Unit and District Forester. Stand mapping was completed by the District Forester. Fourteen unique stands are identified by tree species, tree size, relative stand density, topography, and management system. The biologist and forester discuss the options for each stand and how management of that stand will fit into the overall management objectives for the WMA. The forester's prescriptions are designed to manage each stand to reach the established goals and objectives for the WMA and to implement the goals and strategies of the [2020 Iowa Forest Action Plan](#) as well as the 2015 Iowa Wildlife Action Plan.

Forest Stand Map of Heritage Hills WMA (Horbach Tract)

Heritage Hills WMA Horbach Tract Stand Map
Location: Iowa Warren Virginia 36
2021 Imagery



Legend

 Forest Stands



Created by: Zach Nie
Date: 6/20/2024
Not to Scale

This map does not represent a legal survey or reflect actual ownership.

Current Distribution of Tree Size on Heritage Hills WMA (Horbach Tract)

The forest stands were cruised and mapped according to average tree size classes. Refer to the map on page 6.

Tree Size Class	Acres	% of Total Area
Seedlings (<1" DBH)	0	0%
Saplings (1-4" DBH)	0	0%
Pole size (5-11" DBH)	38.2	15%
Small sawlog size (12-18" DBH)	204.7	82%
Sawlog size (≥18" DBH)	6.9	3%
Total	249.8	100%



Proposed Management Systems for Heritage Hills WMA (Horbach Tract)

Recommendations for each stand were based on whether the area will be managed to create early successional growth, on an even age system, uneven age system, or as viewshed. The decision on what system would be used was based on the objectives for the area to maintain an oak component, develop a diverse woodland landscape, protect fragile sites, improve water quality and increase the acres of early successional growth.

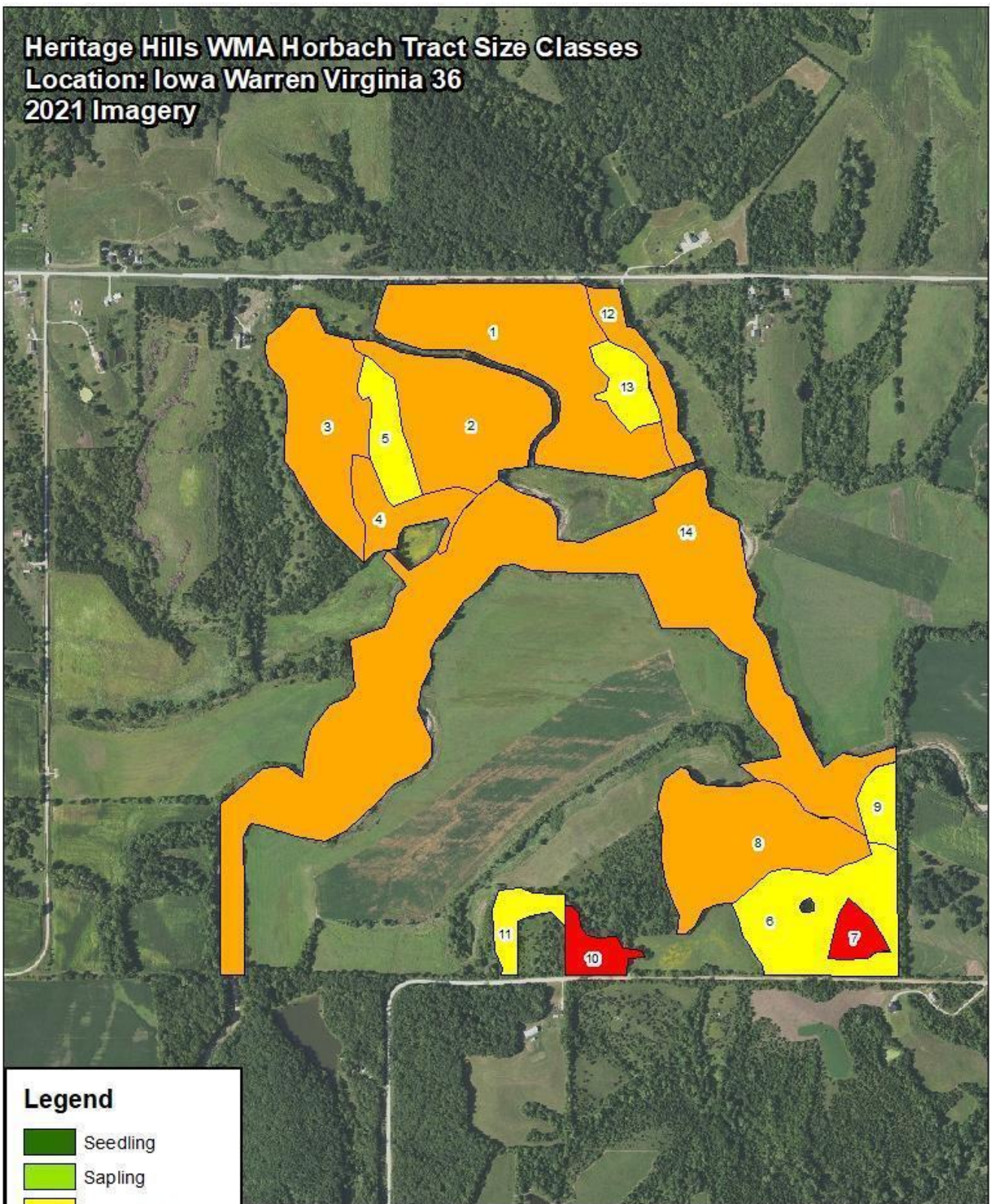
Based on recommendations for the areas, the acres under each management system are as follows. Refer to the map on page 7.

Management System	Acres	% of Total Area
Early Successional	4.1	1%
Even Age	156.3	63%
Uneven Age	0	0%
Viewshed	89.4	36%
Total	249.8	100%



Map of Average Tree Sizes for Heritage Hills WMA (Horbach Tract)

Heritage Hills WMA Horbach Tract Size Classes
Location: Iowa Warren Virginia 36
2021 Imagery



Legend

- Seedling
- Sapling
- Pole-Timber
- Small Sawtimber
- Sawtimber

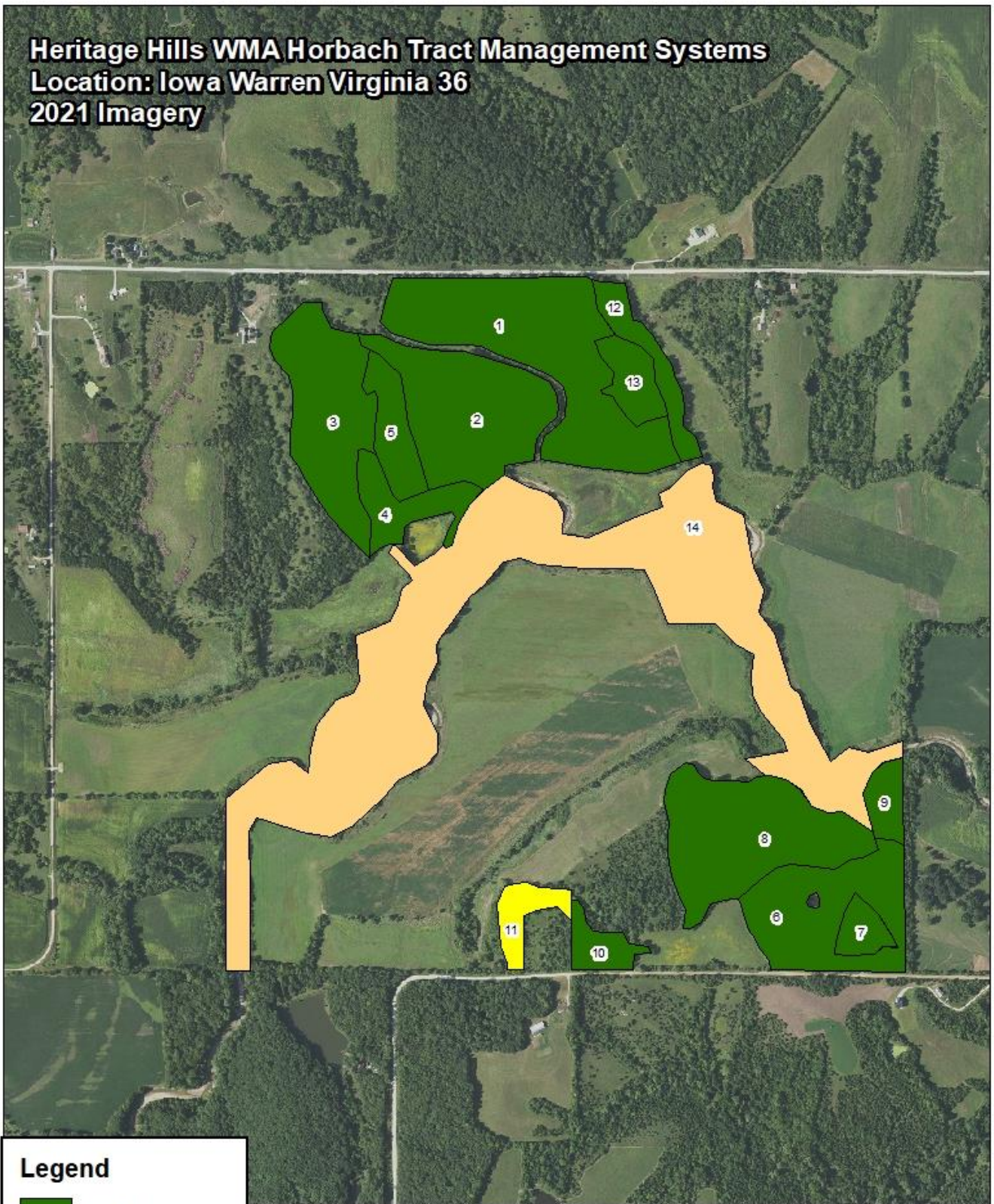


Created by: Zach Nie
Date: 1/16/2024
Not to Scale




This map does not represent a legal survey or reflect actual ownership.

Map of Management Systems for Heritage Hills WMA (Horbach Tract)

Heritage Hills WMA Horbach Tract Management Systems
Location: Iowa Warren Virginia 36
2021 Imagery



Legend

-  Even Age
-  Early- Succession
-  Viewshed



Created by: Zach Nie
Date: 8/8/2024
Not to Scale

This map does not represent a legal survey or reflect actual ownership.

Even Age Management

Even Age Management involves growing a stand of trees which are close to the same age. At some point in a stand's life, the area is clearcut which results in the even age structure. This type of management creates excellent habitat for deer, turkey, squirrels and other game and nongame wildlife species. It is essential for regeneration of oak, which requires full sunlight. The only way that oak can be maintained as a component of the forest over the long run is by practicing some form of even age management. The target rotation age for the Horbach Tract is 120 years.

Each stage or age class of an even age stand provides habitat for a suite of wildlife species. For example, regenerating stands (1-10 years old) benefit the same species as do early successional stands, i.e. blue-winged warblers, black-billed cuckoo, yellow-billed cuckoo, eastern towhee, as well as bobwhite quail and American woodcock. These young stands with ample sunlight also often support pollinators and other insects.

Sapling to small pole size stands between 10-20 years old may be used by black-and-white, Kentucky, and worm-eating warblers. Pole size to medium sized trees (20-60 years) tend to be used by canopy nesters such as scarlet tanagers and ground nesters such as ovenbirds and black-and-white warblers.

Mature stands of 60-125+ years of age are used by birds such as the wood thrush, Acadian flycatcher, ovenbird, worm-eating warbler and scarlet tanager. In addition, oaks serve as the host plants for the larval stages of many species of butterflies and moths.

As woodland stands age, they constantly lose trees to competition, insects, disease, etc. The dead and dying trees provide habitat for cavity nesters such as woodpeckers, nuthatches, titmice, and creepers. The state and federally endangered Indiana bat and federally endangered northern long-eared bats use live trees with loose bark such as shagbark hickory as well as the sloughing bark from dying trees for their maternity colonies, and these areas may also be used by nesting brown creepers.

Thus, even age management has the potential to provide a large variety of age classes that can meet the needs of a variety of wildlife species.

While there are many methods to open a stand to sunlight, clearcutting and shelterwood harvesting are the most common. Clearcutting is a practice that opens the stand all at once. Clearcutting also provides highly desired early successional habitat for the first 15-20 years until the tree canopy closes. Regeneration via clearcutting requires there be sufficient oak seedlings or advanced regeneration present. Minus these seedlings, bare root planting may be necessary following clearcutting.

Shelterwood harvests are one way of recruiting seedling production prior to a clearcut. Shelterwood harvests include several thinnings done prior to the final clearcut. If the shelterwood harvest is done correctly, the trees left after the thinnings will provide seed and the forest will be open enough to allow sunlight to reach the forest floor. The trees left will also help provide shade that limits the growth of undesirable or invasive plant species. This method can take 15-20 years to create the next oak stand and may need mechanical or fire disturbance to keep out undesirable species. After sufficient seedling or advanced regeneration is present, the stand needs to be clearcut to successfully regenerate the oak stand.

Crop tree release is discussed in this plan as a type of timber stand improvement. This practice is done most frequently when the trees are pole sized. The goal of the practice is to choose up to 50 trees per acre that are considered to have the best genetics. These trees are typically tallied and marked with paint, and then the trees that touch the canopy of the crop tree are killed to allow the crop tree to reach maximum growth potential, increase mast production, and improve forest health. In some cases, trees may be girdled to increase dead snags used by wildlife, while still effectively releasing the crop tree.

Thinning from below, also known as understory removal or weed tree removal is a practice also used in even age management. This practice involves removing trees that are below the main canopy to allow more sunlight to get to the

forest floor. Ironwood, bitternut hickory, buckeye, elm, hackberry and other shade tolerant species warrant this practice when species like oak are desired in the future.

Prescribed fire is an effective and relatively inexpensive tool that has a long history of use, and continues to be studied, in managing oak stands. Occasional burning of the leaf litter in the woods will kill thin barked species that are less than two-inches in diameter such as invasive shrubs, hackberry, hard maple, buckeye, cherry, elm, bitternut hickory and ironwood. Fire will expose mineral soil and open up the ground to sunlight. These conditions favor the natural regeneration of oak. Depending on the extent of root system development, some oak seedlings will tolerate fire better than others, but as a whole, oaks tolerate fire better than other tree species. The top of an oak seedling often will die back following fire, but the roots will send up new growth soon thereafter. Oaks have a superior competitive advantage thanks to their strong root collar and ability to sprout. Most shade tolerant trees, such as elm, bitternut hickory, ironwood and hackberry do not possess strong resprouting capabilities. Varying the timing of fire used in a stand (both interval and time of year) can also increase habitat heterogeneity and benefit wildlife, though fire should be avoided when nesting birds and roosting bats are present.

Uneven Age Management

Uneven age management develops a stand of trees with all DBH size classes. The stand structure is developed by selectively harvesting mature and defective trees, and removing unwanted small trees that are damaged or defective. Because uneven age stands always have large trees present, this system favors species that will grow in shade such as hackberry, hickory, hard maple and basswood. Sustainable harvest guidelines dictate the ability to selectively harvest mature and defective trees every 20 to 25-years in these stands.

Uneven age management will maintain blocks of woodland that will always have larger trees. This system is desirable where the overstory is lacking oaks, on steep slopes, and in areas where always having large trees is important.

Uneven age management areas will provide continuous tracts of woodland with infrequent disturbance. Large tracts of uneven age management will provide necessary habitat for Neotropical migratory bird species such as cerulean, hooded, Canada, and Kentucky warblers and is also important post-fledging habitat for songbirds that breed in early successional forest. Selective harvesting will create small openings in the canopy, which will increase ground cover, and enhance stand structure. Den trees will be left to provide cavities for wildlife such as woodpeckers, bats, and squirrels. Large oaks that are healthy will be left to provide acorns and host caterpillars, important food sources for many wildlife species. Timber stand improvement and selective harvesting will create woody debris on the forest floor for reptiles and amphibians and small mammals.

Early Successional Management

Many bird species such as bobwhite quail, American woodcock, blue-winged warbler, black-billed cuckoo, yellow-billed cuckoo, brown thrasher, field sparrow, and eastern towhee are dependent on the early successional stages of woody growth. The high stem density of both trees and shrubs provides suitable nesting habitat and protection from predators. Feathering and softening the edges may lessen nest parasitism of interior forest bird species by brown-headed cowbirds. These areas of high sunlight also support many insects and soft-masting species, providing an important food source for bats and migrating birds. The early successional management areas will be managed on a 15-year rotation. In other words, every 15-years the stands will be cut to create areas with high stem density. Shelterwood and clearcut harvesting in even age stands will also increase the overall early successional acreage on the WMA during certain periods of time.

Viewshed Management

Viewshed areas are typically areas with poor access, steep/fragile slopes and areas along streams that are best left to naturally progress through succession. Viewsheds may also be used to protect areas for endangered species or be used to protect certain public use facilities. Management can take place in these areas where desirable, but the major objective is to have minimal disturbance.

Income from Timber Harvests

Income generated from timber harvesting operations must be reinvested into the WMA to promote oak regeneration and manage the forest for wildlife by thinning young stands, removing weed trees in the understory, providing

conditions favorable to oak regeneration, and controlling invasive species. Without this reinvestment, there is little chance that the WMA annual budget will allow the recommendations in this plan to be implemented. Harvesting is not a significant portion of this plan. The majority of work recommended is directed at thinning young stands so the oak is not shaded by other trees and removing undesirable species to encourage regeneration of desirable oak species.

Work Plan for Heritage Hills WMA (Horbach Tract)

The work plan for the Horbach Tract of Heritage Hills WMA is designed to aid foresters and natural resource managers in the implementation of forest management practices. It is written with the presumption that these professionals have a basic understanding of forest management principles and techniques. Every detail has not been outlined in the plan because the plan would become too long to be of practical use. This plan is intended to get work accomplished on the ground.

Stand 1: 33.8 acres

The overstory of this small sawtimber size oak-hickory stand includes, but is not limited to, black oak, bur oak, shagbark hickory, red oak, basswood, and bitternut hickory. Average relative stocking is 85%. This stand had scattered tree cover in 1930 and 1950 based on aerial photos. By 1970 it appeared to have full canopy closure. The understory consists of pole size elm, black cherry, hackberry, basswood, and some scattered eastern red cedar. There is hickory, hackberry, and to a lesser degree black oak regeneration. Invasive species present in this stand are honeysuckle, multiflora rose, autumn olive, white mulberry and garlic mustard. Honeysuckle is the greatest forest health threat in this stand and is the worst along the road on the north side.

Prescription: Honeysuckle control should be the highest priority, followed by a thinning from below (cutting trees in the understory that are suppressed or intermediate canopy class regardless of species, and undesirable species that are co-dominant should be cut). This stand should also be burned on approximately a 5-year burn interval.

Stand 2: 22.9 acres

This oak-hickory stand is very similar to Stand 1. It is small sawtimber size black oak, bur oak, shagbark hickory and honey locust with overtopped shagbark hickory and shade tolerant species in the midstory, with some scattered cedar. Overall the honeysuckle in this stand is less severe than Stand 1, with there being more in the north and west portion of the stand.

Prescription: Honeysuckle control should be the highest priority, followed by a thinning from below (cutting trees in the understory that are suppressed or intermediate canopy class regardless of species, and undesirable species that are co-dominant should be cut). This stand should also be burned on a 5-year burn interval.

Stand 3: 20.6 acres

On average this is a small sawtimber size oak-hickory stand with some sawtimber size trees throughout. The overstory is dominated by bur oak, shagbark hickory, some black walnut, honey locust and hackberry mixed in. The midstory consists of overtopped shagbark hickory, hackberry and elm. Invasive species present are multiflora rose, garlic mustard and honeysuckle. The honeysuckle is very dense in areas.

Prescription: Honeysuckle control should be the highest priority, followed by a thinning from below (cutting trees in the understory that are suppressed or intermediate canopy class regardless of species, and undesirable species that are co-dominant should be cut). This stand should also be burned on a 5-year burn interval.

Stand 4: 7 acres

This stand is dominated by small sawtimber size black walnut, honey locust, hackberry and bitternut hickory. There is bitternut hickory and hackberry in the understory. There is honeysuckle and multiflora rose present.

Prescription: Control honeysuckle and perform a crop tree release.

Stand 5: 6.6 acres

This stand is a cedar thicket that includes a strong component of bur oak and black oak. There is also a component of honey locust, elm, black walnut and hickory. The average tree is pole size, but there are scattered small sawtimber size oak throughout. The honeysuckle is establishing aggressively under the cedars in this stand.

Prescription: Crop tree release should be performed to keep oak as a vigorous component of this stand. Keep most of the cedar for thermal cover and because of the heavy seedling layer of honeysuckle. The honeysuckle will need to be addressed in this stand at some point in the future. This stand will also have prescribed fire implemented as part of a larger burn unit.

Stand 6: 18.9 acres

This stand was open with very scattered tree cover in 1970 based on the historical aerial photo. It is now pole size black oak, bur oak, black walnut, honey locust, hackberry and bitternut hickory in the overstory. Average relative stocking is 80% with a basal area of 90 square feet per acre and average tree size of 9 inches DBH. In the midstory there is elm, bitternut hickory, hackberry and eastern red cedar. There are light populations of honeysuckle seedlings.

Prescription: In 5-10 years perform a crop tree release favoring oak, walnut and hickory. Burn this stand on a 5-year burn interval. Monitor the honeysuckle population. Control methods will likely be needed within the next 10 years.

Stand 7: 3.1 acres

The overstory of this oak-hickory stand is dominated by sawtimber size bur oak and other species associated with this forest type. The basal area is 120 square feet per acre. In the midstory there are elm and hackberry saplings. There is some invasive honeysuckle and multiflora rose present, but it has not yet become a major issue in this stand.

Prescription: Thin from below to remove the shade tolerant species and to kill overtopped and intermediate oak. Prescribed fire in this stand will help suppress shade tolerant tree seedlings, control invasive shrubs, and encourage oak regeneration. Monitor the honeysuckle population. Control methods will likely be needed within the next 10 years.

Stand 8: 25.2 acres

This stand is very similar to Stand 7, but the average size of the overstory is slightly smaller (small sawtimber). There is also a dense midstory of elm, buckeye, hackberry and bitternut hickory. The average relative stocking is 95% based on basal area of 120 square feet per acre and average tree size of 13.9 inches DBH.

Prescription: Same as Stand 7.

Stand 9: 3.6 acres

This stand mostly consists of pole size black walnut with some honey locust, hackberry, bitternut hickory and bur oak. Average relative stocking of 83% based on a basal area of 100 square feet per acre and average tree size of 10.7 inches DBH. The understory has been removed with a brush mower.

Prescription: Perform a light crop tree release.

Stand 10: 3.8 acres

This stand is similar to Stands 7 and 8. The average size is sawtimber and consists of bur oak with some basswood and bitternut hickory. The midstory consists of elm and bitternut hickory. On the north east edge of this stand there is some pole size mixed oak and cedar. Invasive species present are honeysuckle, multiflora rose and Siberian elm (on the north edge on this stand).

Prescription: Same as Stand 7 and 8 plus remove the Siberian elm.

Stand 11: 4.1 acres

This stand consists of a mix of poor quality trees including box elder, honey locust, black walnut, hackberry, bitternut hickory and Siberian elm.

Prescription: Remove any invasive species and maintain as early successional habitat.

Stand 12: 5.8 acres

This stand consists of small sawtimber black walnut, honey locust, bur oak, hackberry, elm and scattered large cottonwood. There are also areas of dense honeysuckle.

Prescription: Control the honeysuckle and perform a crop tree release favoring oak and walnut.

Stand 13: 5 acres

This stand was very open in 1980 based on aerial images. It has reforested since and is now pole size bitternut hickory, red oak, black oak, bur oak, hackberry and black walnut. There is also eastern red cedar present.

Prescription: Perform a crop tree release favoring oak and walnut. The stand should have prescribed fire implemented on the same fire regime as the surrounding stands, and can be included in the burn units. Honeysuckle should also be monitored and controlled when needed, likely within the next 10 years.

Stand 14: 89.4 acres

This stand includes both first and second bench bottomland hardwoods along the riparian area that flows through the center of the Horbach tract. The trees range in size from sapling on the edges to sawtimber size silver maple and cottonwood. The majority of this stand consists of silver maple, cottonwood and willow especially in the first bench bottomland hardwoods. On the second bench there is a mix a black walnut, hackberry, honey locust, black cherry and elm. On some of the second bench areas there is some established honeysuckle.

Prescription: There are pockets, especially where there is black walnut, that would benefit from light crop tree release in the next 10 years. Any honeysuckle present should be controlled. This stand will be maintained as a viewshed.

High Priority Projects

Invasive Species Control:

- Stand 1, 33.8 acres
- Stand 3, 20.6 acres

Timber Stand Improvement:

- Stand 1, 33.8 acres, Thin from Below
- Stand 3, 20.6 acres, Thin from Below
- Stand 7, 3.1 acres, Thin from Below
- Stand 10, 3.8 acres, Thin from Below
- Stand 13, 5 acres, Crop Tree Release

Table 1. Summary of Stands

Stand #	Acres	Overstory	Size Class	Management	Prescriptions	Priority
1	33.8	Oak-Hickory	Small Sawtimber	Even Age	Honeysuckle Control- H, Thin from Below, Prescribed Fire	H
2	22.9	Oak-Hickory	Small Sawtimber	Even Age	Honeysuckle Control- M, Thin From Below, Prescribed Fire	M
3	20.6	Oak-Hickory	Small Sawtimber	Even Age	Honeysuckle Control- H, Thin from Below, Prescribed Fire	H
4	7	Central Hardwoods	Small Sawtimber	Even Age	Honeysuckle Control- L, Crop Tree Release	L

Stand #	Acres	Overstory	Size Class	Management	Prescriptions	Priority
5	6.6	Oak-Cedar	Pole Timber	Even Age	Honeysuckle Control- VH, Crop Tree Release, Prescribed Fire	M
6	18.9	Oak-Hickory	Pole Timber	Even Age	Honeysuckle Control- L, Crop Tree Release, Prescribed Fire	L
7	3.1	Oak-Hickory	Sawtimber	Even Age	Honeysuckle Control- L, Thin from Below, Prescribed Fire	H
8	25.2	Oak-Hickory	Small Sawtimber	Even Age	Honeysuckle Control- L, Thin from Below, Prescribed Fire	M
9	3.6	Central Hardwoods	Pole Timber	Even Age	Crop Tree Release- Light	L
10	3.8	Oak-Hickory	Sawtimber	Even Age	Honeysuckle Control- L, Thin from Below, Prescribed Fire	H
11	4.1	Central Hardwoods	Pole Timber	Early Successional	Clearcut	M
12	5.8	Central Hardwoods	Small Sawtimber	Even Age	Honeysuckle Control- M, Crop Tree Release	M
13	5	Oak-Hickory	Pole Timber	Even Age	Honeysuckle Control- L, Crop Tree Release Prescribed Fire	H
14	89.4	Bottomland Hardwoods First & Second Bench	Small Sawtimber	Viewshed	Viewshed	

Threatened and Endangered Species

While habitat management activities are intended to have an overall conservation benefit through habitat improvement, at times these activities may have unintended consequences for a variety of species. For this reason, prior to implementation, forest management activities described here will be reviewed internally to assess potential impacts to both state and federal species of concern.

When protected species are known to occur in the management area or if suitable habitat for these species is present, management biologists implement conservation measures as described in the Operations & Maintenance Plan for Wildlife Management Areas in the State along with recommendations from NAI staff for specific projects. Management activities are not initiated until this review has been completed and T/E comments/concerns have been addressed.

The information included here represents the status of listed species at the time this plan was written. Managers understand that these lists continue to change and that updated references must be consulted before undertaking management actions recommended by the plan, in order to avoid and minimize impacts on listed species.

Although surveys for threatened and endangered plants and animals have not been completed for the Heritage Hills WMA to date, numerous state- and federally-protected species are known to occur or may occur in Warren County and could be present in the WMA, in areas of suitable habitat if present (Table 2).

Special Note on Northern Long-Eared Bat, Indiana Bat, and Tricolored Bat

The Indiana Bat (*Myotis sodalis*) is a federal (50CFR Part 17) and state (Code of Iowa, Chapter 481B) endangered species that occurs in southern Iowa as far north as Highway 30. The Northern Long-Eared Bat (*Myotis septentrionalis*) is a federally Endangered Species that can occur in any county of Iowa. The Tricolored Bat (*Perimyotis subflavus*) is a federally Proposed Endangered Species that can occur in any county in Iowa. All three bats can be active from April through September in forested areas. Female Indiana bat and Northern Long-Eared Bats may roost and rear young in standing trees 3" DBH and larger, either dead or alive, with loose, shaggy, or peeling slabs of bark, cavities in the trunk

or large limbs, or large cracks or openings. Tricolored bats roost in similar forested habitat but roost within leaf clusters instead of under loose bark.

To protect summer habitat for all three species of bats, adhere to the following guidance:

- Avoid felling any dead standing or live trees 3" DBH and larger that contain cavities, cracks or crevices, or loose, platy, peeling, or shaggy bark from April 1st through September 30th.
 - Such trees meeting the above criteria may be felled beginning October 1 through March 31; however, in all forest management projects, retain a minimum of 9 suitable habitat trees per acre if present above this rate.
 - Live trees may be girdled any time of year to create habitat snags in Forest Stand Improvement operations.
- Avoid conducting prescribed burns in woodlands from May 15 until August 15.
- Avoid clearcuts, seed tree harvests, or site preparation projects larger than 10 acres that could negatively affect suitable habitat.

Table 2. List of Endangered, Threatened & Special Concern Species in Warren county.

County	Common Name	Scientific Name	Class	State Status	Federal Status	Link to Species Profile
WARREN	Bald Eagle	Haliaeetus leucocephalus	BIRDS	S		Bald Eagle
WARREN	Barn Owl	Tyto alba	BIRDS	E		Barn Owl
WARREN	Henslow's Sparrow	Ammodramus henslowii	BIRDS	T		Henslow's Sparrow
WARREN	King Rail	Rallus elegans	BIRDS	E		King Rail
WARREN	Northern Harrier	Circus cyaneus	BIRDS	E		Northern Harrier
WARREN	Short-eared Owl	Asio flammeus	BIRDS	E		Short-eared Owl
WARREN	Byssus Skipper	Problema byssus	INSECTS	T		
WARREN	Purplish Copper	Lycaena helloides	INSECTS	S		
WARREN	Regal Fritillary	Speyeria idalia	INSECTS	S		
WARREN	Wild Indigo Dusky Wing	Erynnis baptisiae	INSECTS	S		
WARREN	Zabulon Skipper	Poanes zabulon	INSECTS	S		
WARREN	Indiana Bat	Myotis sodalis	MAMMALS	E	E	Indiana Bat
WARREN	Northern Long-eared Bat	Myotis septentrionalis	MAMMALS	E	E	Northern Long-Eared Bat
WARREN	Cream Violet	Viola striata	PLANTS (DICOTS)	S		
WARREN	Earleaf Foxglove	Tomanthera auriculata	PLANTS (DICOTS)	S		
WARREN	Early Cudweed	Gnaphalium purpureum	PLANTS (DICOTS)	S		
WARREN	False Loosestrife	Ludwigia peploides	PLANTS (DICOTS)	S		
WARREN	Mead's Milkweed	Asclepias meadii	PLANTS (DICOTS)	E	T	Mead's Milkweed
WARREN	Prairie Bush Clover	Lespedeza leptostachya	PLANTS (DICOTS)	T	T	Prairie Bush Clover
WARREN	Blue Mud-plantain	Heteranthera limosa	PLANTS (MONOCOTS)	S		
WARREN	Broom Sedge	Andropogon virginicus	PLANTS (MONOCOTS)	S		
WARREN	Bush's Sedge	Carex bushii	PLANTS (MONOCOTS)	S		
WARREN	Glomerate Sedge	Carex aggregata	PLANTS (MONOCOTS)	S		
WARREN	Great Plains Ladies'-tresses	Spiranthes magnicamporum	PLANTS (MONOCOTS)	S		Great Plains Ladies'-tresses

County	Common Name	Scientific Name	Class	State Status	Federal Status	Link to Species Profile
WARREN	Meadow Bluegrass	<i>Poa wolfii</i>	PLANTS (MONOCOTS)	S		
WARREN	Slender Ladies'-tresses	<i>Spiranthes lacera</i>	PLANTS (MONOCOTS)	T		
WARREN	Slim-leaved Panic Grass	<i>Dichanthelium linearifolium</i>	PLANTS (MONOCOTS)	T		
WARREN	Crowfoot Clubmoss	<i>Lycopodium digitatum</i>	PLANTS (PTERIODOPHYTES)	S		
WARREN	Ground Pine	<i>Lycopodium clavatum</i>	PLANTS (PTERIODOPHYTES)	E		Ground Pine
WARREN	Smooth Green Snake	<i>Liochlorophis vernalis</i>	REPTILES	S		Smooth Green Snake

Legend

E= Endangered

T= Threatened

S= Special Concern