FOREST WILDLIFE STEWARDSHIP PLAN

FOR

GRANNIS CREEK
WILDLIFE MANAGEMENT AREA

A plan that will increase the diversity of forest types & wildlife habitat

Developed by:
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10/17/2024

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GRANNIS CREEK WILDLIFE MANAGEMENT AREA

MANAGER: Wildlife Biologist
Maquoketa Wildlife Unit
18670 63rd St.
Maquoketa, IA
563-682-7392

LOCATION: Sections 30 and 31, Illyria Township
Fayette County

TOTAL FOREST ACRES: 206.1

INTRODUCTION

The Iowa Department of Natural Resources (DNR) is the state government agency whose vision is to lead Iowans in caring for their natural resources. Conservation and enhancement of natural resources to ensure a legacy for future generations is part of the DNR's mission. Within the DNR, the Wildlife Bureau manages more than 410,000 acres of land as wildlife management areas (WMAs) for a variety of public users. Many of these WMAs are partially or mostly forest covered. These forests, if properly managed, provide a unique opportunity for the DNR to carry out its mission by publicly demonstrating sustainable forest management and the enhancement of these valuable resources for wildlife.

The DNR is also the agency responsible for the stewardship of indigenous and migratory wildlife species found in the state. Many of these species live near and in WMA forests. The DNR recognizes the need for forest wildlife stewardship plans (FWSPs) to properly manage the forest resources. Forests are not static systems, even though changes occur relatively slowly over a long period of time. A hands-off or "preservation" philosophy will ensure that the forest of 100 years from now will be much different and likely lower quality than the forest of today. These changes will negatively impact wildlife species. Some forest stands may take more than 120 years to mature, a time span that will extend through the careers of several managers. This slow but constant change requires managers to plan over the long term and leave a written record of these plans in the form of FWSPs. This process will help ensure the wise management of our WMA forests and will aid future managers with decision making.

There is no single type of forest stand that can provide all of the requirements for all forest wildlife species. Different species require different (and sometimes quite specific) forest types and age classes. Some generalist wildlife species use all of the forest age classes, while some specialist species have such specific requirements that only one or two particular forest types are needed to survive.

Oak forests are indisputably important in Iowa. The pre-settlement forests across the state were dominated by a mixture of oak species. Wildlife species adapted to the oak forests and thrived amidst their diversity. Today, the forests of Iowa are changing at alarming rates. It is estimated that Iowa loses approximately 5,800 acres of oak dominant forest each year. These losses are due to several factors, including both natural and human controlled. This pronounced loss of oak leads to a reduction in the quality of habitat and food sources available to wildlife, as well as the economic value and quality of the forest. The importance of managing forests for oak cannot be overstated, and the Iowa DNR has made this a high priority.

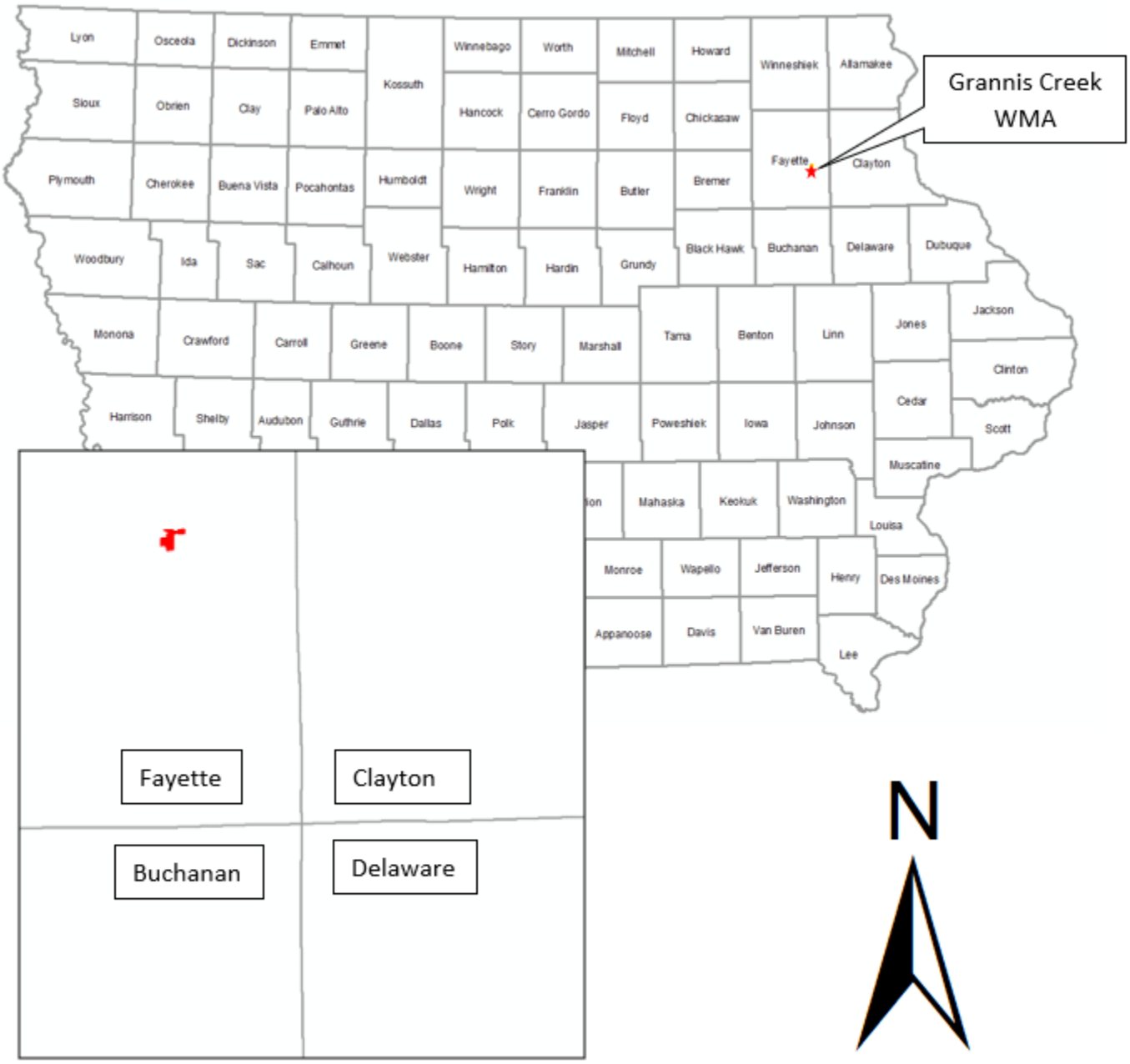
The Wildlife Bureau manages forests for the greatest diversity of forest wildlife. The FWSP will be the guiding document that prioritizes management activities to meet the needs of forest wildlife species. The DNR's comprehensive Iowa Wildlife Action Plan identifies wildlife "species of greatest conservation need" (SGCN). Habitat needs of these wildlife species will be considered when determining forest management decisions. The primary goal will be to maintain quality habitat that will support abundant and diverse wildlife populations.

DESCRIPTION OF AREA

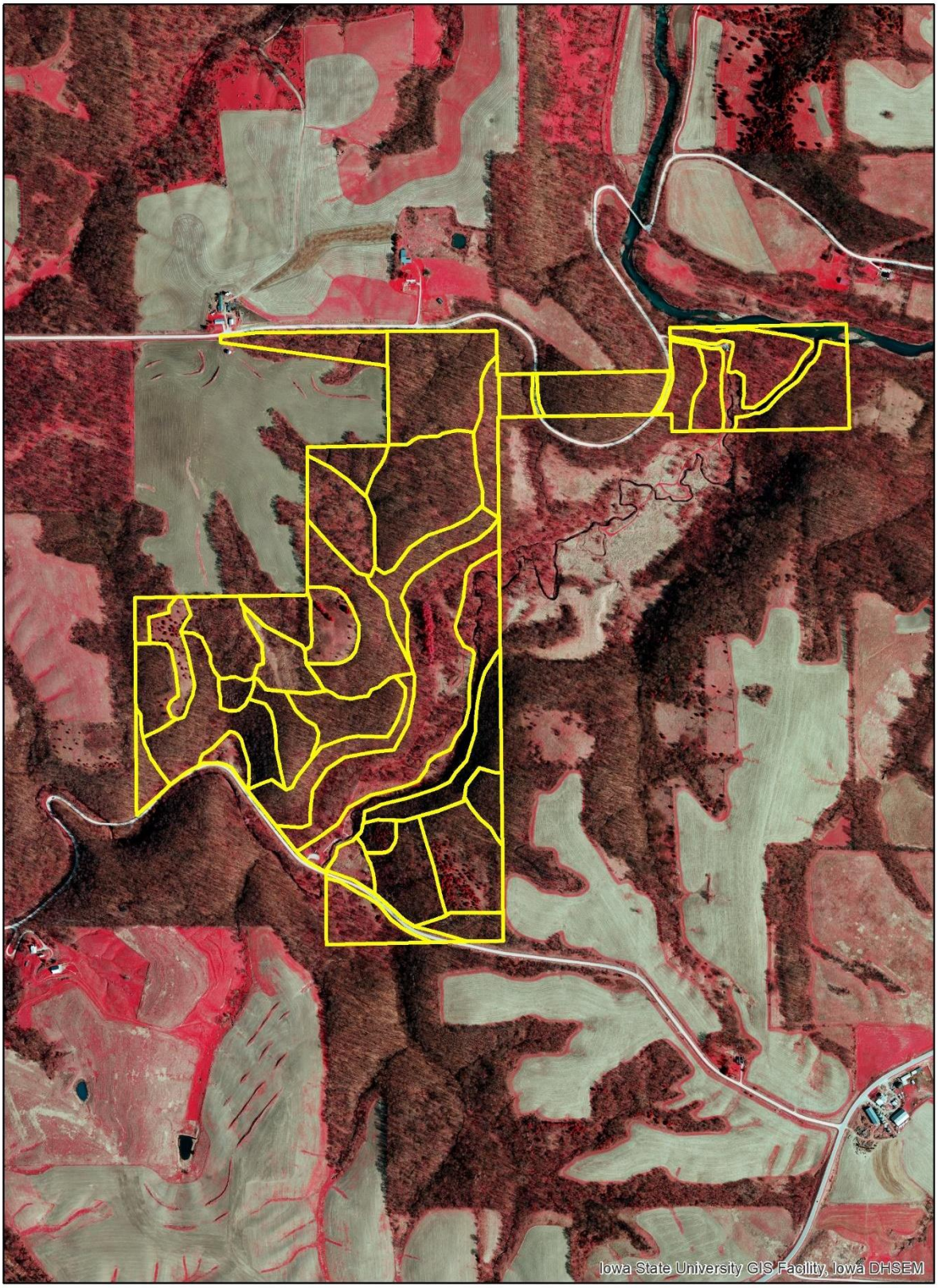
Grannis Creek WMA is located approximately 3.5 miles southeast of Fayette. The area is a popular trout fishing destination. Grannis Creek is located within the geographic region known as the *Driftless Area*, which is characterized by karst topography that features steep bluffs and ravines, rocky outcrops, sinkholes, springs and cold-water streams. Much of the area features this steep, rocky terrain.

The 206.1 acres addressed in this plan are divided into 37 different stands. Stands were delineated based on a combination of species composition, size class, topography, and management recommendations. Each stand is outlined in detail in this plan with forest management recommendations provided.

Landscape Position



Grannis Creek WMA
Stand Map



Sections 30 and 31
Illyria Township
Fayette County

0 0.25 0.5 Miles

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HOW THE FOREST WILDLIFE STEWARDSHIP PLAN WAS DEVELOPED

The wildlife biologist and the wildlife unit team are the managers of the WMA and determine the objectives for the areas. Objectives address the habitat needs of a diverse array of wildlife species and the forest condition of each area. Approximately one-third of the total land area managed by the Wildlife Bureau across the state is classified as forest. Forest management is essential to the long-term conservation of the native plant communities occurring on these areas. Actively managing the forest is also critical to improving these areas for wildlife and wildlife-related recreation.

Management of forested wildlife areas is a cooperative effort between the wildlife unit and foresters. All of the forested land on the WMA is walked by the biologist and forester. Stands are identified by tree species, tree size, 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 for the WMA. Forester recommendations are designed to manage the stand to reach the goals and objectives determined by the biologist, while utilizing strategic and sound forest management practices.

FOREST MANAGEMENT OBJECTIVES

The primary objectives for the wildlife area are as follows:

- Maintaining diverse, high quality forest habitats for the benefit of diverse wildlife populations
    - o Emphasis on oak management
    - o Emphasis on diversity of age classes
    - o Emphasis on promoting SGCN habitats
- Create and expand upon existing early successional habitat communities
    - o Emphasis on aspen and oak regeneration
    - o Introduce more sunlight to the forest floor through prescribed silvicultural practices
- Promote high quality wildlife-dependent recreational opportunities

Funding for forest management administration and procurement, as well as a portion of the land acquisition costs of the WMAs addressed in this plan can be attributed almost exclusively to hunter-generated monies via license fees and excise taxes on sporting equipment. Consequently, a primary objective for management of the area is to improve habitat for game species such as deer, turkey, rabbit, squirrel and trout. The DNR considers the effects of management actions on nongame species as well, particularly those that are threatened, endangered, or species of greatest conservation need. The DNR recognizes that it is difficult, if not impossible, to manage for all species at the same time on any given tract or WMA. However, this plan operates under the assumption that creating and maintaining diverse forest habitats will benefit the most wildlife species possible, regardless of their protective status. In other words, game and nongame species alike will benefit from good habitat management practices. Objectives address the habitat needs of a diverse array of wildlife species and the woodland condition of each area. Forest management is essential to the long-term conservation of the native plant communities occurring on these areas. Actively managing the forest is also critical to improving these areas for wildlife and wildlife-related recreation.

The FWSP will be the guiding document that prioritizes management activities to meet the needs of forest wildlife species. The DNR's comprehensive Iowa Wildlife Action Plan identifies wildlife "species of greatest conservation need" (SGCN). Habitat needs of these wildlife species will be considered when determining forest management decisions. One of the primary goals will be to maintain quality habitat that will support abundant and diverse wildlife populations.

OAK MANAGEMENT

Oaks are a critical component to Iowa's forests. Iowa's wildlife species adapted, coexisted, and eventually became dependent on the benefits that oaks provided. The acorns of the oak provide a high level of fat and protein to wildlife at a time of year that food resources are low- and high-quality nutrients are critical. While the mast that oaks provide are a staple food source for many wildlife species, other characteristics of the oak are extremely beneficial as well. Some of those characteristics include deeply furrowed bark that host insects and invertebrates creating foraging opportunities for insect eating birds, reptiles, and mammals. The rigor and architecture of the branches provide structure for nesting, roosting, and perching. The leaves provide an important food source for many moths and butterflies, with oaks supporting higher diversity and richness of caterpillars than any other native tree family (Narango et al. 2020). Pollinators also benefit from the nectar and over wintering habitat provided by the oak. Because of the critical role that oak trees play in the ecosystem, they are emphasized heavily in this forest wildlife stewardship plan.

Iowa's oak forests are faced with many threats. There are a variety of factors that contribute to the decline of oak forests. Native and non-native pests, pathogens, and diseases contribute to the mortality of oak. The succession of shade-tolerant species creates a shaded forest floor that is not conducive to the regeneration of shade intolerant oak seedlings. Fragmentation of the landscape and invasive species also play a role in the degradation of our oak forest. In order to combat these circumstances, active forest management is essential.

The even-aged management of oak described in this plan is used to promote the ecological niche in which oaks thrive. Oak trees use a specific strategy to regenerate that requires full sunlight. This is why harvest techniques that provide high levels of sunlight to the forest floor such as shelterwoods or clearcuts are used to promote the successful regeneration of oak. These harvest techniques simulate natural disturbances that occurred on the landscape historically such as forest fires and windstorms.

HARVESTS

Harvesting is conducted primarily to regenerate stands of desirable species, thin stands to a more desirable stocking, or to achieve a diversity of tree size classes. Harvests are an essential tool for simulating natural disturbances and creating suitable growing conditions for desirable shade intolerant tree species. Harvests are scheduled based on an individual stand's rotation age. The rotation age is determined based on a variety of factors.

The forest type that is present influences the rotation age of the stand. There are a variety of forest types on any given area, with each forest type reaching biological maturity at different times. Biological maturity is the point at which a stand's volume reaches a plateau or starts to decline based on natural factors such as mortality, breakage or rotting. A species such as quaking aspen will reach biological maturity many years before a species such as white oak.

Along with forest type, site productivity influences the point of biological maturity. High site productivity will increase the growth rate, vigor, and health of the stand. This will likely extend the biological maturity of the stand.

Forest health can influence the point at which a stand is harvested. Insects, disease, and pathogens can infect a stand unexpectedly. An event like this can alter the rotation age of the stand.

Landscape level considerations also influence rotation age. Wildlife objectives may require certain age structures in targeted locations across the area due to how the stand fits in among the broader landscape. This may either increase or decrease the rotation age of the stand.

A variety of regeneration techniques will be used in this forest stewardship plan. Each of them has been selected to achieve a targeted outcome. The timing of and results of these techniques will influence the point at which a stand is harvested.

Economics and logistics can alter the timing, scope, and size of a harvest. A harvest is implemented based on a silvicultural prescription designed to reach a wildlife management or forest health objective. Any financial return is purely a byproduct of proper management and not a driving factor. Income from harvests will be reinvested into the area to complete the recommended projects within the plan. Those projects include: tree planting, thinning young stands, removing undesirable and invasive species, converting areas to more desirable species, and completing early successional cuts.

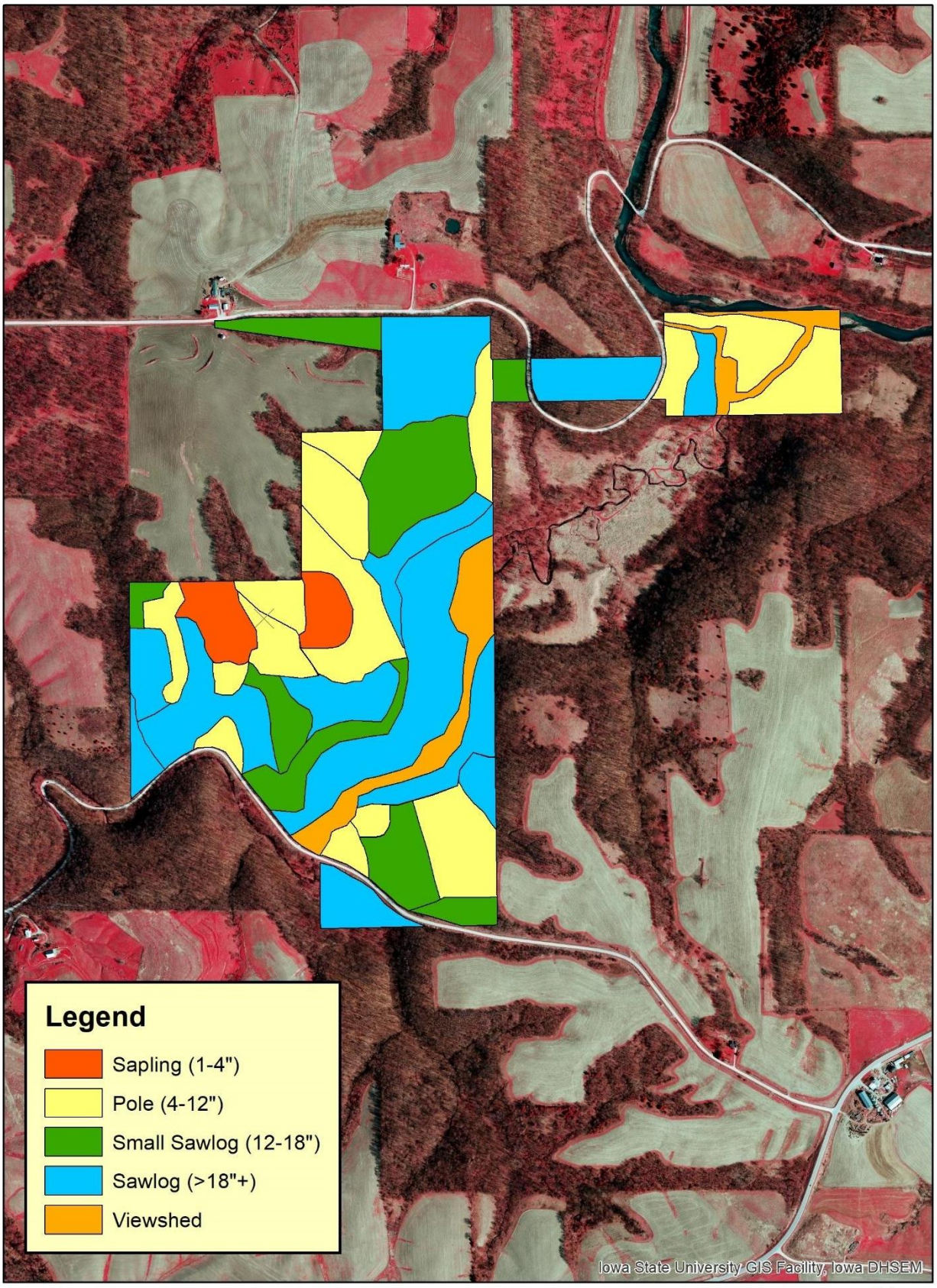
Sustainable forestry aims to manage a forest for maximum distribution of age and size classes and gives an indication of the amount of acreage or volume that can be harvested from a given geographical area periodically, without ever running out of volume or growing stock. Generally speaking, with even-aged management the sustainable harvest is the total acreage of the forest divided by the rotation age. Rotation ages for stands vary by the dominant species in each stand, but are generally set at the point of biological maturity. The majority of actively managed even-aged stands use a 120-year rotation, on average. The rotation age calculations reflect only the annual allowable harvest. In actual practice, these figures will fluctuate over and under the allowable harvest periodically.

Stands managed under an uneven-aged system have no rotation age because regeneration in these systems is ever-present and different age classes occur within the same stand. Sustainable harvest volume is estimated by calculating the growth in volume over a period of time, generally 20 years.

Current Distribution of Tree Size on the Area
***DBH = Diameter at Breast Height**

Tree Size	Active Forested Acres	% of Total Area
Seedling	0.0	0 %
Sapling (1-4” DBH)	10.2	5.0 %
Pole Timber (4-12” DBH)	65.8	31.9 %
Small Sawlog (12-18” DBH)	41.5	20.1 %
Sawlog (>18+” DBH)	88.6	43.0 %
Totals	206.1 (excludes parking lots/streams/etc)	100%

Grannis Creek WMA
Diameter Distribution



Sections 30 and 31
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Fayette County

0 0.25 0.5 Miles

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PROPOSED MANAGEMENT SYSTEMS FOR THE AREA

Recommendations for each stand were based on whether the area will be managed to create early successional growth, an even-aged system, an uneven-aged system, or viewshed. The decision on which management system would be used was based on the objectives for the area to create a certain structural cover, maintain an oak component where feasible, develop a diverse woodland landscape, protect fragile sites, and increase the acres of early successional growth.

Based on forester recommendations for Grannis Creek WMA, the acres under each management system are as follows:

Management System	Acres	% Total
Early Successional	40.9	19.9 %
Even Age	144.1	70.3 %
Uneven Age	8.3	4.0 %
Viewshed	12.0	5.8 %
Total	**206.1**	**100 %**

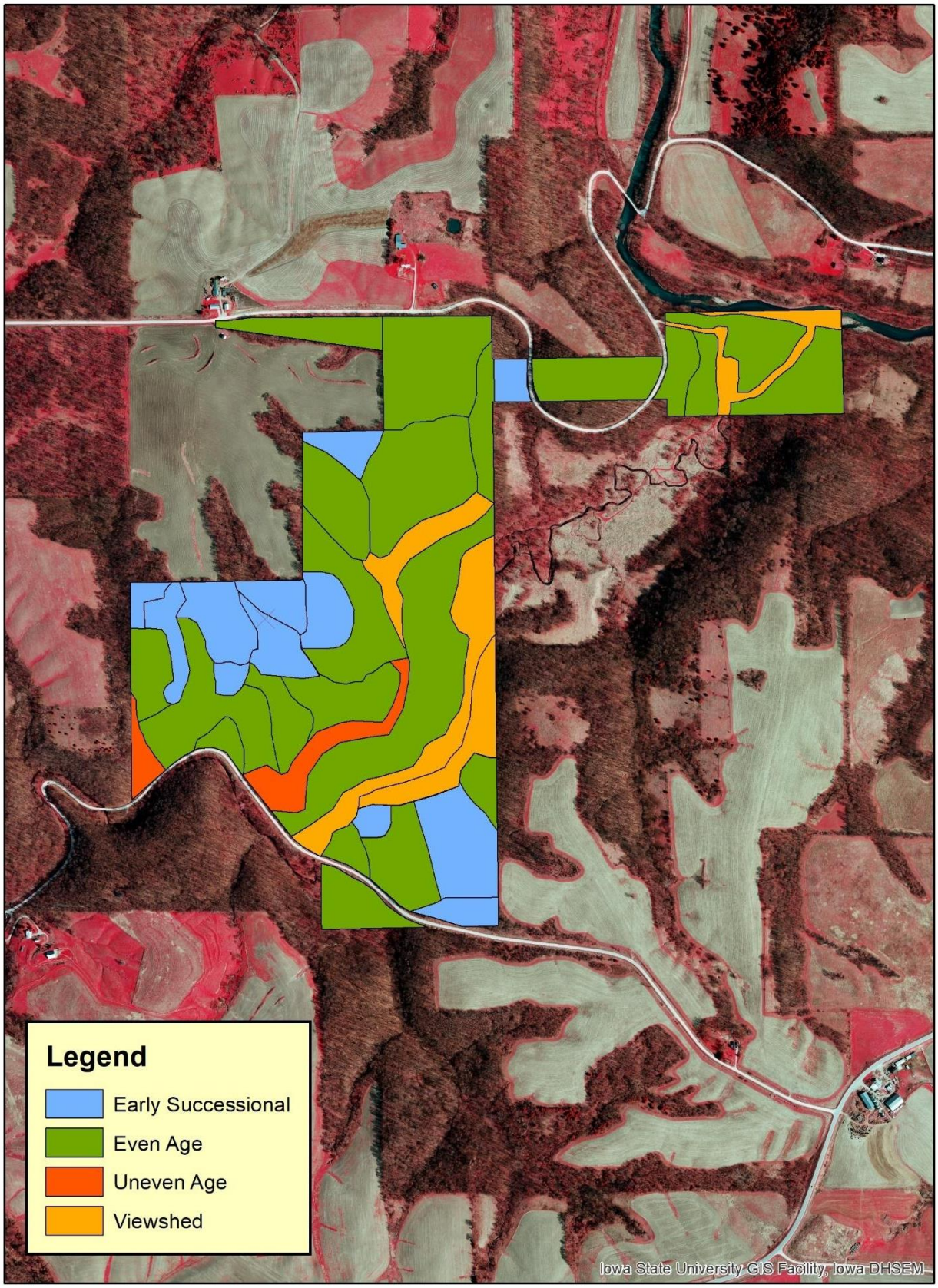
LANDSCAPE CONSIDERATIONS

Forest wildlife management plans should take into consideration factors beyond the target property. Wildlife do not recognize property lines, and move freely to satisfy their life cycle needs. Land managers need to think on a broader scale to maximize benefits to local wildlife populations. Current and future conditions on surrounding properties may directly affect the planning and effective results of management actions carried out on the area.

The cumulative effect of early successional management and the regeneration management (clearcuts) in stands managed as even-aged will create and maintain an ever-shifting patchwork of young forest that varies spatially and temporally. This mosaic will provide critically important habitat to vast array of wildlife that depend on or prefer early successional forest types. Young forest is a habitat type that is often considered a limiting factor in forested landscapes in Iowa.

The cumulative effect of uneven-aged management and viewshed management will be to ensure a portion of the area remains in relatively undisturbed, mature forest.

Grannis Creek WMA
Management Systems



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EARLY SUCCESSIONAL MANAGEMENT

Many species of birds such as American woodcock, blue-winged warbler, black-billed cuckoo, yellow-billed cuckoo, and eastern towhee are dependent on the early stages of woody growth for breeding. Many mature-forest birds also use early successional forests during the post-fledging and migratory periods. The high stem density of both trees and shrubs provides suitable foraging and/or nesting habitat, and protection from predators. One way that this habitat can be created is by cutting a stand and allowing all of the desirable species to re-sprout. Many tree and shrub species stump sprout vigorously after being cut, especially when cut at a younger stand age.

Keeping the woody species growth "low and dense" in these areas will create more attractive habitat for shrubland and "edge" wildlife species. This will "feather" the edges and make a gradual transition to the larger adjacent trees. Feathering or softening the woodland edges creates attractive cover for many species and often results in less nest parasitism of interior forest bird species by brown-headed cowbirds.

The early successional management areas will be managed on a 10-15-year rotation. In other words, every 10-15 years the area will be cut to rejuvenate the desirable species and create areas with high stem density.

Grannis Creek WMA has 40.9 acres (19.9%) of all actively managed woodland acres) scheduled for early successional management. To keep these areas on rotation, around 8.2 acres could be cut every 5 years.

EVEN-AGE MANAGEMENT

Even-age management is essential for wildlife species depending on oak/hickory forests. Even though large blocks of forest are needed for some wildlife species, each stage of an even-age stand provides habitat for wildlife. For example, regenerating stands (1-10 years old) benefit the same species of birds as does early successional stands, such as the blue-winged warbler, black-billed cuckoo, yellow-billed cuckoo, eastern towhee and American woodcock.

Sapling to small pole-sized stands between 10 and 20 years old, may be used by species such as the Kentucky warbler. From age 20-60 years, pole to medium-sized trees tend to be used by canopy nesters such as the scarlet tanager, and ground nesters such as the ovenbird. Mature stands of 60 to 125 years of age are used by birds such as the wood thrush, Acadian flycatcher, ovenbird and scarlet tanagers. All size classes are important for many game species such as bobcat, deer, squirrel, and wild turkey.

As forest stands age, they constantly lose trees to shading, insects, disease and other factors. The dead and dying trees provide habitat for cavity nesters such as wood ducks, woodpeckers, nuthatches and titmice. Over 30 species of Iowa nesting birds nest in the cavities of trees. Iowa's seven species of woodpeckers (including two SGCN) are the primary cavity builders and nesters, and these woodpeckers are the keystone species that provide the cavities for so many other secondary nesting birds, as well as providing homes for flying squirrels, gray and fox squirrels, bats, and a host of other species. In northeast Iowa, the federally endangered northern long-eared bats use loose-barked, live trees such as shagbark hickory as well as the sloughing bark from dying trees for their maternity colonies.

Even-age management involves growing a stand of trees which are close to the same age. At some point in the stand's life, the area is clearcut which creates the even-age structure. Even-age management creates excellent habitat for deer and turkey, and is essential to the regeneration of oak which require full sunlight. The only way that oak can be maintained as a component of the forest is by practicing some form of even-age management.

Common forms of even-age management in Iowa include clearcutting and planting, clearcutting with regeneration already established, or a shelterwood system to develop desirable seedlings on the ground.

Shelterwood is a form of even-age management. The final cut is a clearcut, but several thinnings are done prior to the final cut. The large, healthy trees are left to provide seed for naturally reseeding the stand, and to create partial shade to inhibit the growth of weeds and brush until the desirable seedlings are well established. The final cut, or clearcut, is normally done when there are a sufficient number of desirable trees that are 3-5 ft. tall. The shelterwood system can take many years to develop a good stocking of desirable young trees. You may have to kill the undesirable species several times to favor the species you want. The final clearcut should not be made until you are satisfied with the stocking of desirable young trees.

Clearcutting to create full sunlight is essential at some point in the stand's life to successfully regenerate oak. If stands are not clearcut, the oak component of the forest will be lost to shade tolerant species such as sugar maple and basswood. Clearcuts also provide additional early successional habitat in the early stages. The area is in the brushy stage for a very short period, normally 10-15 years. After that time, the trees will totally shade the ground, and the area becomes a pole-sized (4-12" DBH) stand of trees.

Prescribed fire can be an important tool in managing oak stands. Frequent burning of the leaf layer in the woodland will kill thin barked species such as hard maple, 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. Oak seedlings will tolerate light fires. The top will be killed by the fire, but the deep root systems survive and sprout. Fire will be utilized on a limited scale to encourage oak regeneration in oak stands. Once an adequate number of oak seedlings are present, the over story will need to be removed or the young oak will die from lack of sunlight.

Fire is also an important tool in promoting a more diverse herbaceous plant community on the forest floor. The conditions that favor oak regeneration also favor many native plants that thrive on periodic disturbance. Fire can combat invasive species such as garlic mustard and multiflora rose that crowd out desirable native plants. Periodic fire, coupled with the practices to provide more sunlight through the canopy, will set the stage for more diversity across even-aged stands. It has become apparent that fire is not used frequently enough in many upland forests.

Grannis Creek WMA has 144.1 acres (70.3%) of all actively managed woodland acres that will be managed as even-aged. Applying sustainable forestry guidelines, approximately 6 acres could be clearcut every 5 years assuming a 120-year rotation age.

UNEVEN-AGE MANAGEMENT

Uneven-age management develops a stand of trees with multiple tree ages and sizes represented. The stand structure is developed by selectively harvesting mature and defective trees, and removing unwanted small trees that are damaged or defective. Because uneven-aged stands always have large trees present, this system favors species that will grow in shade such as sugar maple and basswood.

Uneven-age management will maintain blocks of forest that will always have larger trees. Uneven-age management is desirable where the understory is mainly sugar maple, on steep slopes, and on areas where always having large trees is important.

Uneven-age management areas will provide continuous tracts of forest with minimal disturbance. Large tracts of uneven-age management will provide necessary habitat for nesting Neotropical migratory bird species such as eastern wood-pewee, Acadian flycatcher, wood thrush, cerulean warbler, worm-eating warbler, Kentucky warbler, and for migrant Neotropical migratory species such as golden-winged warbler, bay-breasted warbler, and Canada warbler. 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, raccoons and squirrels. Retaining live loose bark tree species (e.g., shagbark hickory) whenever possible and 6-10 snags per acre benefits bats and other wildlife. Timber stand improvement and selective harvesting, along with allowing some natural tree mortality,

will create woody debris on the forest floor that will serve as important habitat for reptiles, amphibians and small mammals.

Grannis Creek WMA has 8.3 acres (4% of all forest acres) that will be managed as uneven-aged forest. Applying sustainable forestry guidelines, approximately 2.1 acres can be selectively harvested (single tree or group selection) every 5 years assuming a 20-year re-entry harvest cycle for those acres. Selective harvests may be used on this area (in conjunction with other management practices) as an important step in the process of creating more species diversity in the forest stand. For logistics, this small amount of uneven age management acres will have more acres harvested at one entry more infrequently.

VIEWSHED MANAGEMENT

Viewshed areas are typically steep slopes, areas along streams which are fragile and are best left to naturally progress through succession, or other particularly sensitive sites (ecologically or socially). Areas where endangered plant or animal species exist may also be under the viewshed system of management. Management can take place on these areas where desirable, but the primary objective is to have very minor disturbance if any. Such management typically includes lower impact practices such as prescribed fire and invasive species control. Managers will monitor these stands and may choose to implement these practices when they integrate with management of surrounding stands or when degradation threatens the entire stand or surrounding areas.

Viewshed management is an important component of the overall forest management in many localized areas in Iowa. Some landform regions, such as the Paleozoic Plateau, experience a greater need for this system of management than do other regions. Like uneven age forest management, viewshed areas provide an important core area of relatively stable natural habitat. Many Neotropical birds benefit greatly from the areas designated as viewshed. Algific slopes and moderate slopes under viewshed management protect several of Iowa's rarest species and SGCN.

In addition to the viewshed acres for Grannis Creek WMA, there are additional areas that will not be actively managed for forest habitat including the trout stream, river, parking lots, lanes, and walkways.

Grannis Creek WMA has 12 acres that will be designated as viewshed.

SOILS

All forested acres of this plan are located within the Paleozoic Plateau landform. This landform is dominated by rock outcroppings, deep narrow valleys, and coldwater streams. The native vegetation of this landform is mostly forested.

Soil is the medium for plant growth and can dictate current and future forest composition. Soil type is a variable that is considered for all forest management decisions. The most common soil type found across the majority of the area is Fayette silt loam. Nordness silt loam and Nordness rock-outcrop complexes are also present on the steeper slopes. Dorchester-Volney Complex is present in the lower areas near the trout stream.

The Fayette series consists of very deep, well drained soils formed in loess. These soils are on convex crests, interfluves and side slopes on uplands and on treads and risers on high stream terraces. Slope ranges from 0 to 40 percent.

The Nordness series consists of shallow, well drained soils formed in loamy or silty material and a paleosol over limestone bedrock. These soils are on high structural benches, crests, and convex side slopes on uplands. Much of the area also includes Nordness-Rock Outcrop complex, which is very shallow, excessively well-drained and dominated by rock.

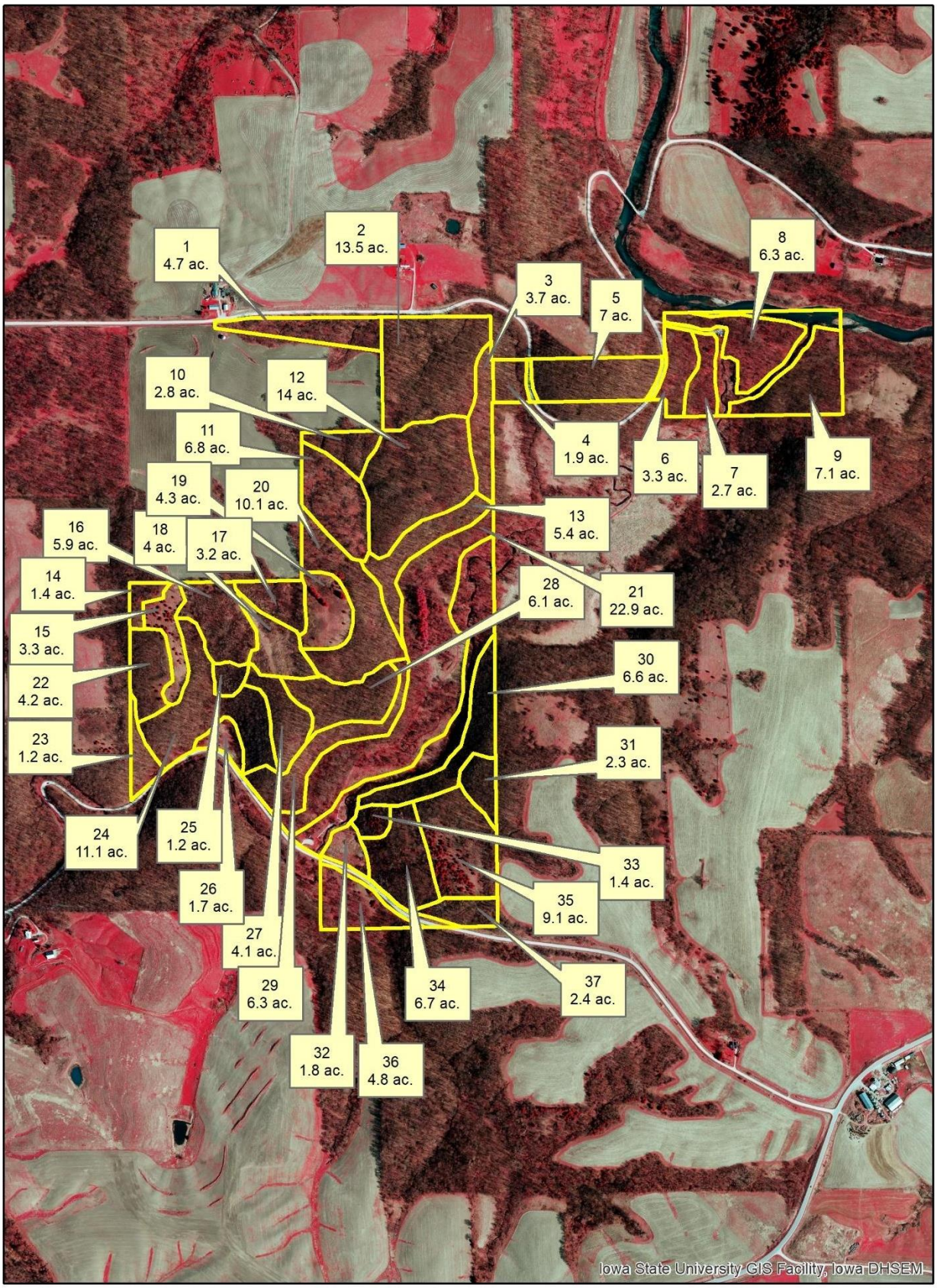
The Dorchester-Volney series consists of very deep, well drained to moderately poorly drained soils formed in silty and loamy slope alluvium. These soils are on narrow flood plains, drainageways, foot slopes and toe slopes of hills, and alluvial fans. Permeability is moderate. Slopes range from 0 to 5 percent.

WORK PLAN FOR GRANNIS CREEK WMA

This is the “working plan” designed to aid foresters, biologists, and technicians in the implementation of forest management practices. It is written with the understanding 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.

Before implementation of any prescribed harvests, the project plan will be reviewed internally to determine potential impacts to both state and federal threatened or endangered species. Harvests will not be initiated until this review has been completed and all T/E comments/concerns have been addressed.

Grannis Creek WMA
Stand Map



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Grannis Creek WMA
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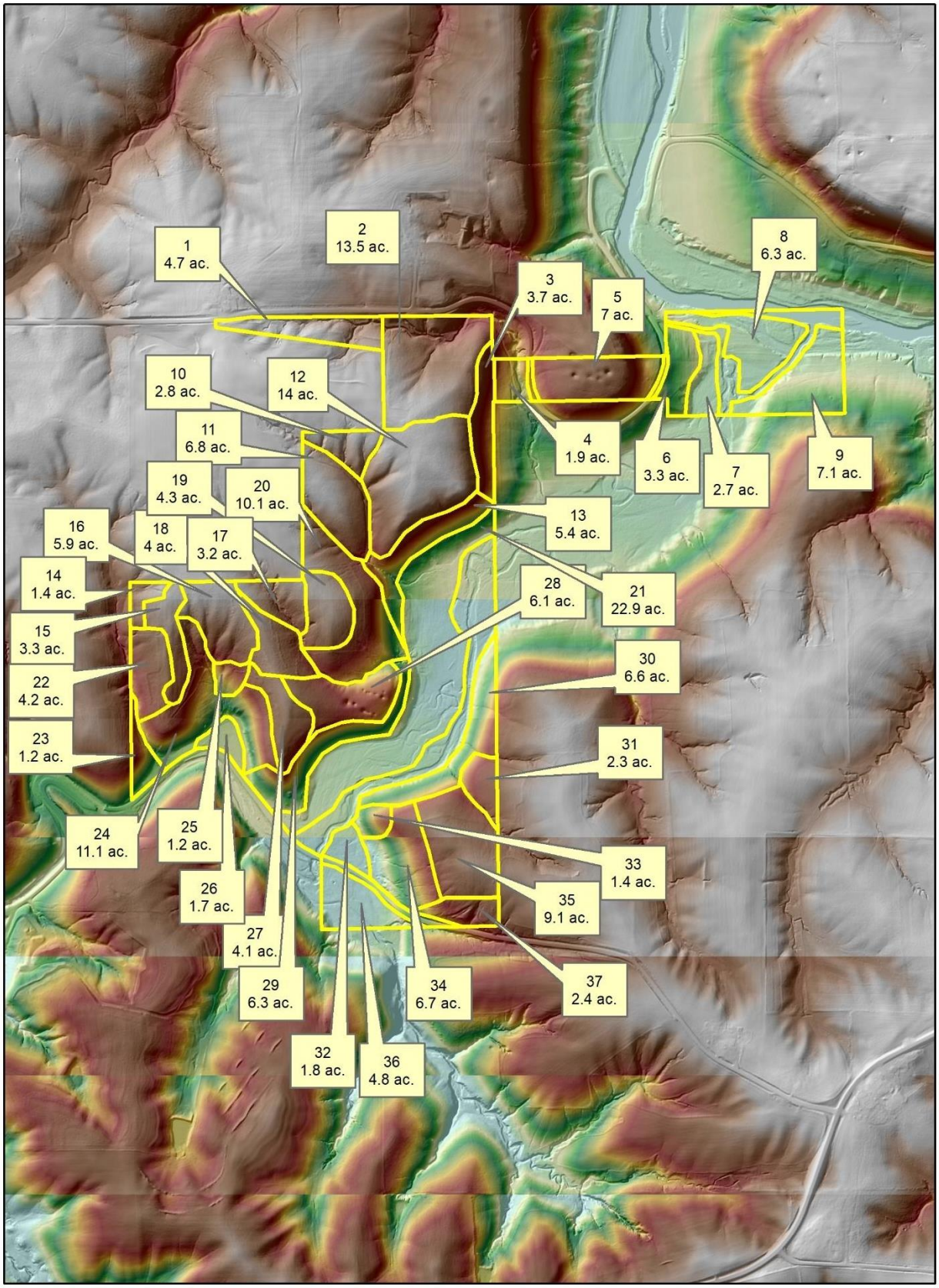

Sections 30 and 31
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0 0.25 0.5 Miles

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STAND SUMMARIES & RECOMMENDATIONS

Stand	Acres	Overstory	Intermediate/ Understory	Size Class	Management System	Prescription	Priority	Year	Stand Comments
1	4.7	Walnut, basswood	boxelder, basswood, walnut, gooseberry	Small sawlog	Even Age	Leave, thin in 20 years	Very low	2045	Low basal area. Leave and let walnut fill in / shade out gooseberry
2	13.5	Red oak, white oak, shagbark hickory, walnut, basswood, sugar maple	Sugar maple, ironwood, bitternut hickory	Sawlog	Even Age	Rx Fire / Clearcut + Plant	High	2028	Burn to set back maple regen
3	3.7	Scattered red oak	Ironwood, basswood	Pole	Even Age	Stand conversion	Very low	2045	Steep
4	1.9	Bigtooth aspen, walnut	Sugar maple, ironwood	Small sawlog	Early Successional Management	ESM cut	Medium	2030	May harvest in conjunction with nearby harvest stands
5	7	Red oak, bigtooth aspen, white oak	Bitternut hickory, ironwood, sugar maple	Sawlog	Even Age	Rx Fire / Clearcut + Plant	Medium	2030	May harvest in conjunction with nearby harvest stands
6	3.3	Walnut, sugar maple, basswood	Sugar maple, cherry, honeysuckle	Pole	Even Age	Invasive control	Medium	2035	Remove honeysuckle, thin in 10-15 years
7	2.7	Walnut	Elm, boxelder	Sawlog	Even Age	Weed tree removal	Medium	2032	Try for natural regen
8	6.3	Walnut, basswood, elm, boxelder	Honeysuckle	Pole	Even Age	Invasive control	Medium	2035	Remove honeysuckle, thin in 10-15 years
9	7.1	Walnut, hackberry, bitternut hickory, sugar maple, red oak, bur oak, cherry, elm	Honeysuckle	Pole	Even Age	Crop tree release	High	2025	Diverse stand. Thin first, remove honeysuckle
10	2.8	Bigtooth aspen, walnut, cherry	Bitternut hickory, ironwood	Pole	Early Successional Management	ESM cut	Medium	2030	
11	6.8	Red oak, sugar maple, basswood, hackberry, bitternut hickory	Ironwood, sugar maple, basswood, walnut,	Pole	Even Age	Stand conversion	Very low	2045	

			shagbark hickory, honeysuckle						
12	14	Walnut, white oak, shagbark hickory, aspen, basswood, bitternut hickory	Bitternut hickory, ironwood sugar maple	Small sawlog	Even Age	Rx Fire	Medium	2030	Burn with nearby stand 2 if possible but lower priority
13	5.4	Red oak, bur oak, Sugar maple	Sugar maple	Sawlog	Viewshed	Viewshed			Extremely steep and rocky
14	1.4	Cherry, elm, bitternut hickory, boxelder	Boxelder, hackberry, elm, sumac	Small sawlog	Early Successional Management	ESM cut	Low	2035	Very little merchantability but could lump in with Stand 22 harvest
15	3.3	Eastern red cedar	Sumac, prickly ash, brome between	Pole	Early Successional Management	Plant	Low	2035	Fairly open. Interplant oak and allow nearby aspen cuts to fill in
16	5.9	Quaking aspen, hazelnut, boxelder	Sumac	Sapling	Early Successional Management	ESM cut	Low	2035	
17	3.2	Bigtooth and quaking aspen, red oak	Elm, hackberry	Pole	Early Successional Management	ESM cut	Medium	2030	Leave oak
18	4	Quaking aspen, hazelnut, boxelder	Sumac	Pole	Early Successional Management	ESM cut	Medium	2030	
19	4.3	Sumac, eastern red cedar, red pine	Sumac	Sapling	Early Successional Management	ESM cut	Low	2033	May do some site prep to help aspen response
20	10.1	Sugar maple, red oak, walnut, basswood, bigtooth aspen, white oak, bitternut hickory	Sugar maple	Pole	Even Age	Crop tree release	High	2025	Oak and walnut distributed well throughout.
21	22.9	Cottonwood, elm, boxelder	Boxelder, planted oak, reed canary grass, nettles	Sawlog	Even Age	Weed tree removal / Plant	Low	2038	Site prep pockets and interplant throughout
22	4.2	White oak, red oak, basswood, walnut, aspen	Bitternut hickory, ironwood, sugar maple	Sawlog	Even Age	Rx Fire / Clearcut + Plant	High	2030	Burn to set back maple / ironwood regen

23	2	Red oak, white oak, sugar maple	Sugar maple, ironwood	Sawlog	Uneven Age	Selection Harvest	Low	2040	May lump in with nearby harvest but stand is steep and access is poor
24	11.1	Red oak, walnut, white oak, bur oak, shagbark hickory, sugar maple	Sugar maple, ironwood	Sawlog	Even Age	Rx Fire / Shelterwood	Medium	2034	Burn to set back maple. Somewhat sloped and rocky
25	1.2	Bigtooth aspen, walnut		Pole	Early Successional Management	ESM cut	Medium	2030	Lump in cutting and burning with Stand 24
26	1.7	Willow, boxelder	Reed canary grass	Pole	Even Age	Planting	Low	2035	Site prep, interplant
27	4.1	White oak, red oak, shagbark hickory, walnut, sugar maple, basswood	Shagbark hickory, sugar maple, ironwood	Small sawlog	Even Age	Rx Fire / Clearcut + Plant	Low	2040	Monitor for oak wilt. Shift harvest sooner if oak wilt pocket still active
28	6.1	Red oak, walnut, aspen, sugar maple, hackberry	Sugar maple, hackberry, ironwood, bitternut hickory	Sawlog	Even Age	Clearcut + Plant	Very high	2025	Significant oak wilt and EAB mortality. Stand is quickly transitioning.
29	6.3	Basswood, sugar maple, red oak, bur oak, chinkapin oak	Sugar maple, ironwood, basswood	Small sawlog	Uneven Age	Oak release	High	2028	Release around all oak in the stand to maintain them as long as possible. Stand is steep.
30	6.6	Sugar maple, basswood, red oak	Ironwood, sugar maple, leatherwood	Sawlog	Viewshed	Viewshed			Extremely steep and rocky. Includes spring.
31	2.3	Red oak, basswood, white oak, bigtooth aspen	Sugar maple	Sawlog	Even Age	Clearcut + Plant	Medium	2036	Difficult access, would need lumped in with other nearby harvest
32	1.8	Walnut, boxelder, willow	Boxelder, reed canary grass, nettles	Pole	Even Age	Planting	Low	2035	Site prep, interplant
33	1.4	Eastern red cedar	Ironwood, honeysuckle	Pole	Early Successional Management	Clear and burn	Medium	2031	Potential goat prairie
34	6.7	Red oak, black oak, basswood, bitternut hickory, elm	Ironwood, sugar maple, elm, honeysuckle	Small sawlog	Even Age	Crop tree release	Low	2036	Control honeysuckle

35	9.1	Eastern red cedar, cherry, aspen, elm, mulberry	Sumac, prickly ash, dogwood, honeysuckle	Pole	Early Successional Management	Interplant oak / Invasive control / ESM Cut	Low	2038	Kill honeysuckle, interplant oak, ESM cut aspen, cherry, sumac
36	4.8	Walnut, elm,	Elm, boxelder, walnut, honeysuckle	Sawlog	Even Age	Weed tree removal	Low	2039	Kill honeysuckle, weed trees and let walnut fill in
37	2.4	Bigtooth aspen, bitternut hickory, elm, red oak	Ironwood, bitternut hickory, cherry, honeysuckle	Small sawlog	Early Successional Management	Kill honeysuckle / ESM Cut	Low	2039	

THREATENED AND ENDANGERED SPECIES FOR FAYETTE COUNTY

The following list is taken from the Iowa DNR Natural Areas Inventory webpage

Common Name	Scientific Name	Class	State Status	Federal Status
Mudpuppy	Necturus maculosus	AMPHIBIANS	T	
Bald Eagle	Haliaeetus leucocephalus	BIRDS	S	
Henslow's Sparrow	Ammodramus henslowii	BIRDS	T	
Northern Harrier	Circus cyaneus	BIRDS	E	
American Brook Lamprey	Lampetra appendix	FISH	T	
Black Redhorse	Moxostoma duquesnei	FISH	T	
Creek Heelsplitter	Lasmigona compressa	FRESHWATER MUSSELS	T	
Ellipse	Venustaconcha ellipsiformis	FRESHWATER MUSSELS	T	
Slippershell Mussel	Alasmidonta viridis	FRESHWATER MUSSELS	E	
Columbine Dusky Wing	Erynnis lucilius	INSECTS	S	
Hickory Hairstreak	Satyrium caryaevorum	INSECTS	S	
Wild Indigo Dusky Wing	Erynnis baptisiae	INSECTS	S	
Northern Long-eared Bat	Myotis septentrionalis	MAMMALS		E
Alderleaf Buckthorn	Rhamnus alnifolia	PLANTS (DICOTS)	S	
Bearberry	Arctostaphylos uva-ursi	PLANTS (DICOTS)	E	
Bicknell Northern Crane's-bill	Geranium bicknellii	PLANTS (DICOTS)	S	
Brook Lobelia	Lobelia kalmii	PLANTS (DICOTS)	S	
Cliff Conobea	Leucospora multifida	PLANTS (DICOTS)	E	
Earleaf Foxglove	Tomanthera auriculata	PLANTS (DICOTS)	S	
Flat Top White Aster	Aster pubentior	PLANTS (DICOTS)	S	
Glade Mallow	Napaea dioica	PLANTS (DICOTS)	S	
Golden Aster	Heterotheca villosa	PLANTS (DICOTS)	S	
Golden Saxifrage	Chrysosplenium iowense	PLANTS (DICOTS)	T	
Hill's Thistle	Cirsium hillii	PLANTS (DICOTS)	S	
Kitten Tails	Besseya bullii	PLANTS (DICOTS)	T	
Lupine	Lupinus perennis	PLANTS (DICOTS)	T	
Muskroot	Adoxa moschatellina	PLANTS (DICOTS)	S	

Northern Lungwort	Mertensia paniculata	PLANTS (DICOTS)	E	
Pearly Everlasting	Anaphalis margaritacea	PLANTS (DICOTS)	S	
Prickly Rose	Rosa acicularis	PLANTS (DICOTS)	E	
Prince's Pine	Chimaphila umbellata	PLANTS (DICOTS)	T	
Queen-of-the-prairie	Filipendula rubra	PLANTS (DICOTS)	T	
Rock Sandwort	Minuartia michauxii	PLANTS (DICOTS)	S	
Roundstem Foxglove	Agalinis gattingeri	PLANTS (DICOTS)	T	
Sage Willow	Salix candida	PLANTS (DICOTS)	S	
Shining Willow	Salix lucida	PLANTS (DICOTS)	T	
Small Fringed Gentian	Gentianopsis procera	PLANTS (DICOTS)	S	

LITERATURE CITED

Narango, D. L. , D. W. Tallamy, and K. J. Shropshire. 2020. Few keystone plant genera support the majority of Lepidoptera species. Nature Communications 11:5751. https://doi.org/10.1038/s41467-020-19565-4