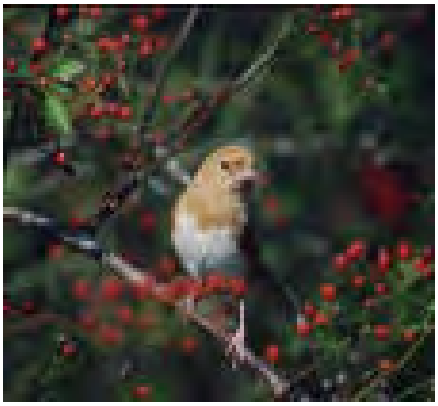
FOREST WILDLIFE STEWARDSHIP PLAN

FOR

NORTH BEAR "2" WILDLIFE AREA

A plan that will increase the diversity of forest wildlife and prioritize species of greatest concern



Developed by

Gary Beyer
District Forester

And

Terry Haindfield
Wildlife Biologist

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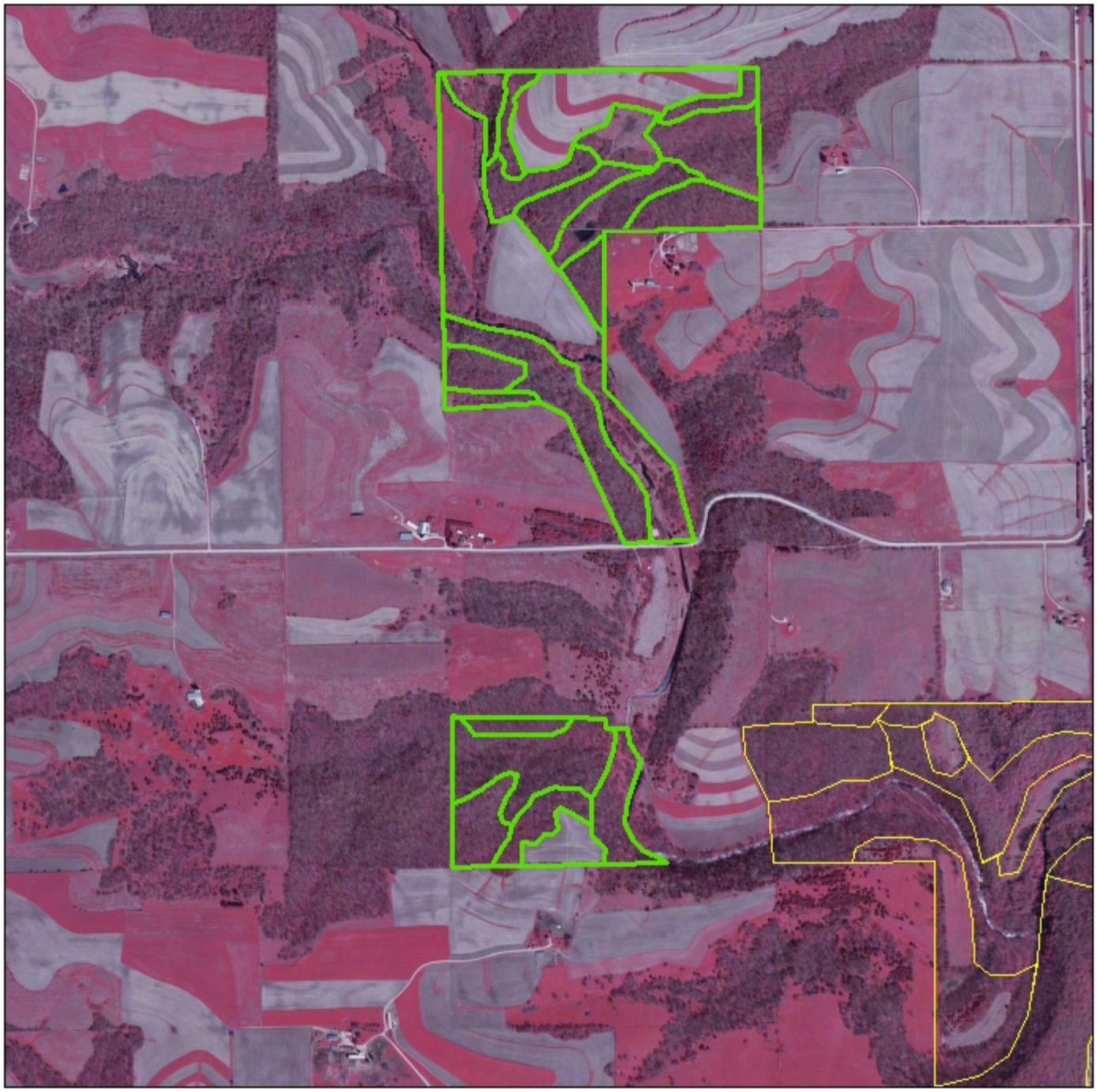
NORTH BEAR "2"



Sec. 23 & 26 Highland Twsp.,
T100N-R7W, Winneshiek Co.

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Feet

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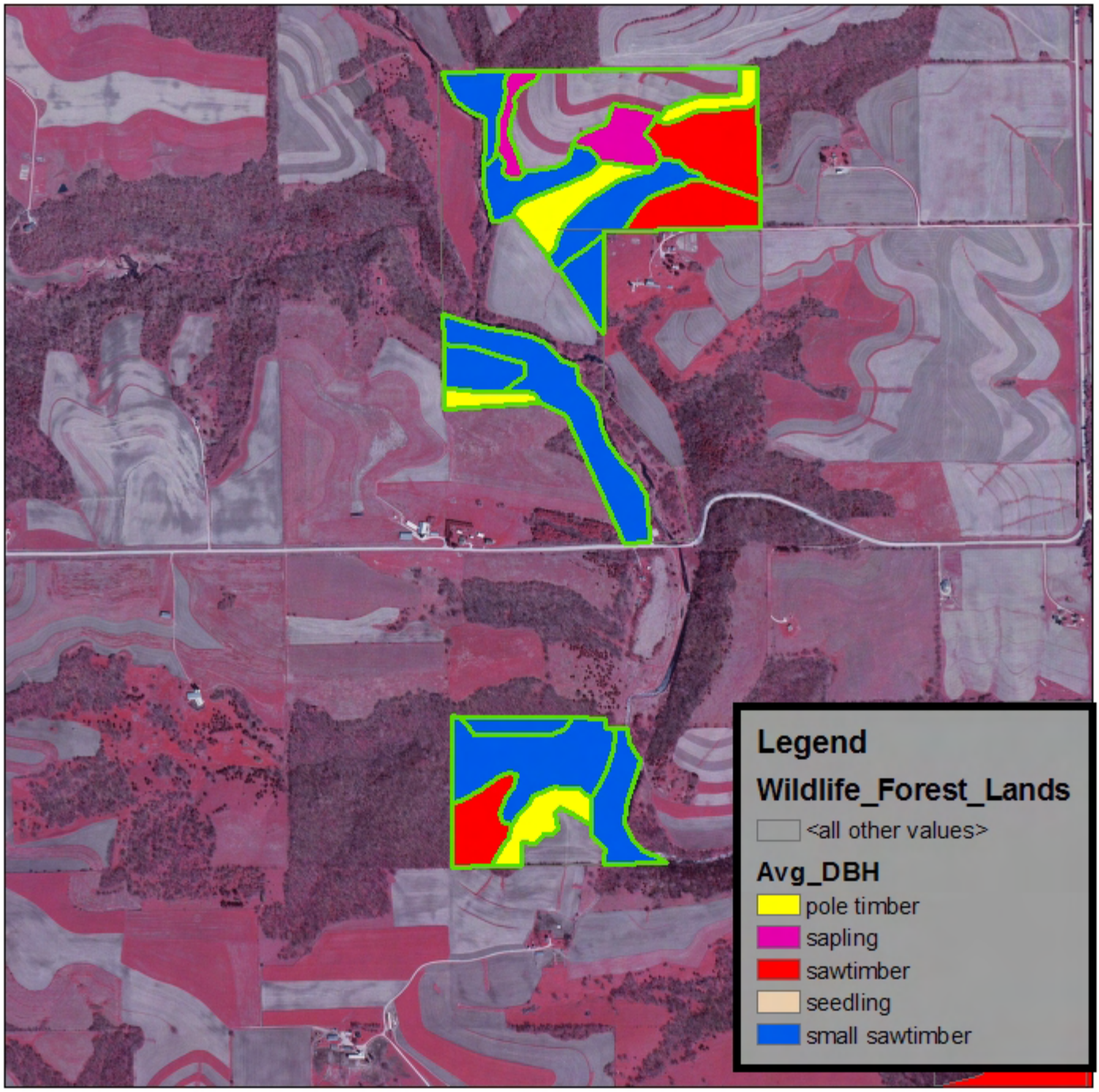
NORTH BEAR "2"
AVERAGE TREE SIZE



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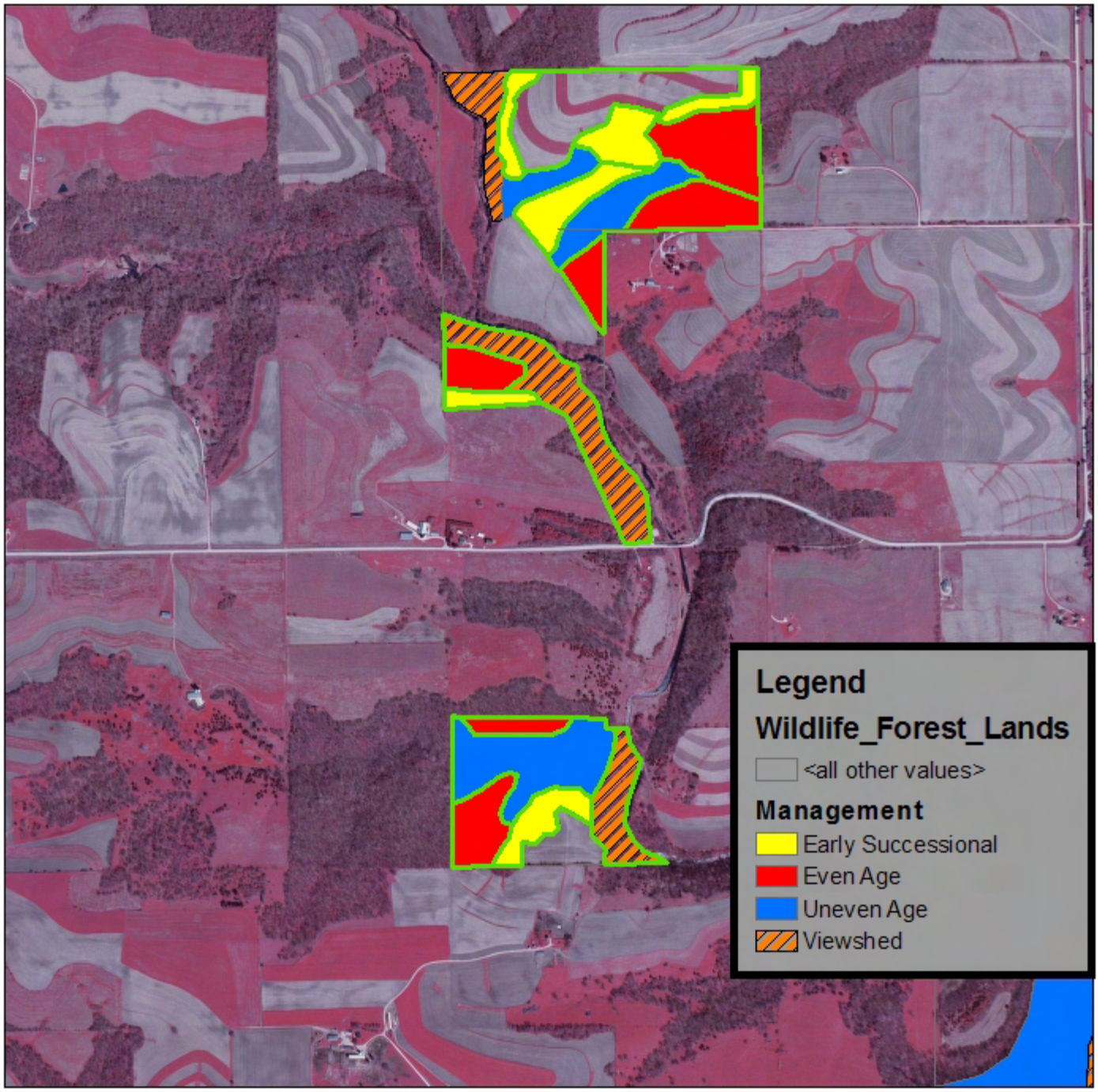
NORTH BEAR "2"
WOODLAND MANAGEMENT SYSTEMS



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HOW THE FOREST WILDLIFE STEWARDSHIP PLAN WAS DEVELOPED

The Wildlife Biologist is the manager of the area and determines the objectives for each wildlife area. Objectives address the habitat needs of "Species of Greatest Concern" and the woodland condition of each area. Seventy five per cent of the total area managed by the Wildlife Bureau is woodland. Managing woodland is essential to improve the areas for wildlife and recreation.

Management of wildlife areas is a cooperative effort by the wildlife and forestry bureaus to enhance state owned areas for a diversity of wildlife species. The property 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 area. Forester recommendations are designed to manage the stand to reach the goals and objectives of the biologist.

The Wildlife Biologist is the manager of the wildlife area. Foresters are assisting the Wildlife Bureau to implement woodland management practices.

One of four management systems are specified for each stand. This identifies the overall management system for that stand and designates the "road map" for what work will take place on the site in the future.

Each management system is described in detail in this plan. A brief description of each management system is as follows –

Early Successional **-**

Areas are clearcut every 15 years to maintain young, high stem density habitat. These areas are generally on the woodland edges to feather the edge.

Even Age **-**

Shade intolerant species such as oak and walnut require full sunlight to grow. Even age management involves a clearcut at some point to create the full sunlight condition. Even age stands are clearcut every 125 years. Clearcutting also creates early successional habitat for the first 15 years.

Uneven Age **-**

Uneven age management can be used to manage species that will grow in shade such as hard maple and basswood. Every 20 years, the stand can be selectively harvested to remove the mature and defective trees. The openings are filled with young maple and basswood, creating an all age or uneven age forest.

Viewshed **-**

These are steep slopes and buffers along the trout streams where no active management will take place.

DATE: 1/2/08

FOREST WILDLIFE STEWARDSHIP PLAN FOR NORTH BEAR "2" WILDLIFE AREA

MANAGER:

Terry Haindfield, Wildlife Biologist
2296 Oil Well Rd.
Decorah, Iowa 52101

TELEPHONE: 563/382-4895

LOCATION: Sec. 23 & 26 Highlandville Twsp., T100N-R7W, Winneshiek County

TOTAL ACRES: 118

INTRODUCTION

In Iowa, the Department of Natural Resources (IDNR) is the government agency responsible for the stewardship of indigenous and migratory wildlife species found in the state. Many of these species live near and in IDNR Wildlife Management Area (WMA) forests. Forests are a relatively slow-changing landscape with some stands reaching maturity after a period of 100 years. This time span may extend through the careers of several wildlife managers. The longevity factor emphasizes the need for a Forest Wildlife Stewardship Plans (FWSP) in order to wisely manage our WMA forests.

There are 3 primary factors emphasizing the need for FWSP's for WMA's:
1) The continued succession of many forest stands past the oak-hickory stage to the shade tolerant stands of maple and basswood.
2) The loss of early successional forest stands and associated wildlife species.
3) The lack of proper management to secure mature forest stands with proper overstory and understory tree species for associated forest-interior wildlife species.

Some wildlife species use all of the forest age classes but others have very specific needs where one or two of particular forest age classes are needed to survive. Although the over-all change in forest succession is relatively slow, changes in the early stages of forest succession occur relatively fast. For example, some populations of indigenous and migratory bird species, dependent on these short-lived forest age classes, are experiencing dramatic declines.

In Iowa, they include the indigenous game bird, the ruffed grouse and the migratory game bird the American woodcock. Nation-wide declines of both species have been detected. Many migratory non-game birds including the gold-winged warbler, blue-winged warbler, black-billed cuckoo, yellow-billed cuckoo and eastern towhee are also dependent on this early stage of forest growth. Each of these species is showing populations declines.

Conversely, some species of Neotropical migratory birds are dependent upon mature, undisturbed woodlands. The Acadian flycatcher, Cerulean warbler, and the veery are some examples of bird species needing mature forests. Management objectives will attempt to either protect these types of sites or include needed management to secure these necessary habitats for the future.

The IDNR Wildlife Bureau's, State Comprehensive Wildlife Conservation Plan, identifies all of the above species and others as species of "greatest conservation needs". (Appendix – Tables 1-6).

Generally, the Wildlife Bureau manages state-owned forest for the greatest diversity of forest wildlife and esthetic value. The IDNR Wildlife Bureau's FWSP will prioritize the "species of greatest conservation needs," and the habitat needs of these wildlife species will be guiding factors to forest management decisions. Evaluations will be conducted to monitor the success of these management decisions. Forest and wildlife inventories will be conducted on each WMA and the information will be entered into a database. This database along with the "FWSP Definitions and Guiding Factors"(Appendix) will be used to make forest management decisions on the WMA's. The primary goal will be to maintain or increase populations of wildlife species of greatest conservation needs.

DESCRIPTION OF AREA

The 118 acres addressed in this plan are outlined on the attached aerial photo. The area is divided into 18 different areas or stands, labeled 1-18 on the map. Each area is described in this plan and recommendations outlined for woodland management.

North Bear "2" is part of the North Bear Wildlife Area. These small tracts were not addressed in the North Bear Forest Wildlife Stewardship Plan which was written in 2006.

Much of the area has steep slopes with rocky soils. The North Bear trout stream runs through the properties. The major use of the areas is for trout fishing, deer hunting, turkey hunting, and squirrel hunting.

Objectives -

The primary objectives for the area are improving wildlife habitat for a variety of wildlife species, recreation, water quality, and protecting endangered species. This Forest Wildlife Stewardship Plan strives to develop a forest ecosystem that has a diversity of tree sizes and species. Developing a diverse forest will benefit the widest variety of wildlife species. Wildlife species have diverse habitat requirements. Even on a Wildlife Management Area, what is productive habitat for one species may be unproductive for another.

Ruffed grouse, woodcock, and Eastern Towhee populations in northeast Iowa are declining due to a lack of early successional growth. Neotropical migratory birds dependent on early successional growth are also declining. North Bear "2" Wildlife area has many field edges and ridge tops conducive to intensive management that will be managed for early successional habitat, and even aged management to regenerate oak. There are not large blocks of woodland present that would provide suitable habitat for interior migratory bird species. Therefore, the major emphasis on the area is for early successional species and to maintain a good oak component on the landscape.

Areas adjacent to the trout streams will be managed as uneven aged forests or viewshed to minimize soil disturbance on the area.

Income from Timber Harvests -

Harvesting is conducted to regenerate stands to desirable species and to achieve a diversity of tree sizes and species. Income from timber harvesting operations will be reinvested into the area to plant trees, thin young stands, and convert areas to more desirable species, and cut the early successional cuts. Harvesting is a very minimal portion of this plan. The majority of work recommended is to thin young stands so that the oak is not shaded out by other trees, remove undesirable species to encourage natural regeneration of desirable trees, complete the early successional work, and tree planting.

Current Distribution of Tree Size on the Area -

The woodland was stand mapped according to the average tree size as follows:

Tree Size	Acres	% of Total Area
Sapling (<4" dbh)	8	7
Pole size (5-12" dbh.)	16	14
Medium Size (14-18" dbh.)	69	58
Large (>20" dbh)	25	21
Totals	118	100

Proposed Management Systems for the Area -

Recommendations for each stand were based on whether the area will be managed to create early successional growth, or 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 where feasible, develop a diverse woodland landscape, protect fragile sites, improve water quality in the trout stream, and increase the acres of early successional growth.

Based on my recommendations for South Bear Wildlife Area, the acres under each management system are as follows -

Management System	Acres	% of Total Area
Early Successional	24	20
Even Age	37	32
Uneven Age	28	24
Viewshed	29	24
Total	118	100

Early Successional Management -

Many species of birds such as ruffed grouse, American woodcock, gold winged warbler, blue winged warbler, black billed cuckoo, yellow billed cuckoo, and eastern towhee are dependent on the early stages of woody growth. The high stem density of both trees and shrubs provides suitable nesting habitat and protection from predators. Because aspen will sprout from the roots when the parent tree is cut, aspen is an excellent species to create the dense growth needed by these species. Aspen also is a short lived tree species, and cutting the aspen will rejuvenate and expand the aspen stands through root sprouting.

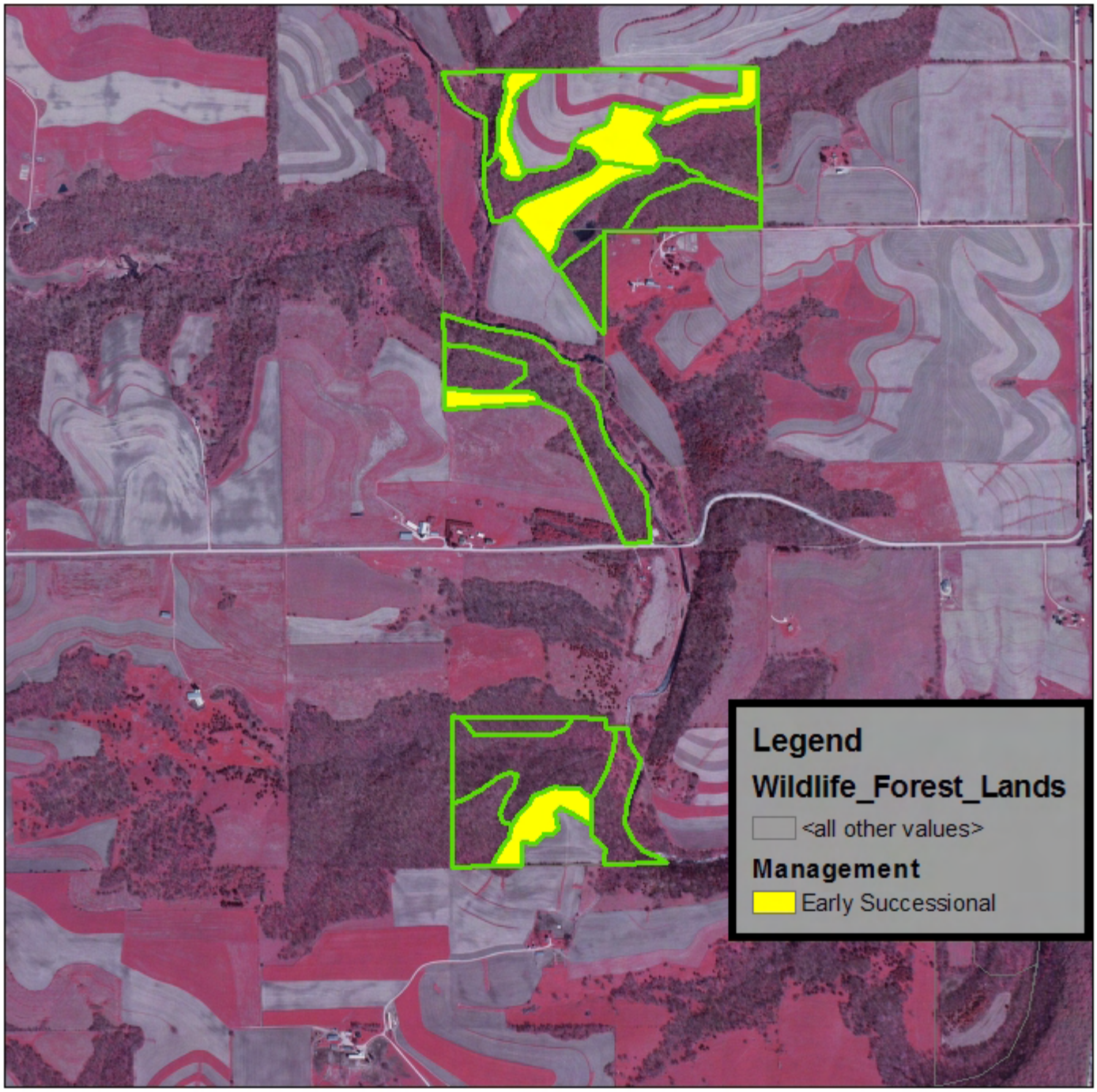
The majority of early successional management is on the woodland edges and aspen stands. This work will "feather" the edges and make a gradual transition from the field edges to the larger trees. Feathering or softening the edges results in less nest parasitism of interior forest bird species by brown-headed cowbirds.

Aspen provides critical habitat for ruffed grouse. Aspen is most easily regenerated by root suckering. Once aspen is allowed to become over mature, its ability to root sucker is decreased. The best method to maintain aspen and expand the aspen clone is to cut the stand while the trees are in a healthy condition. Ideally, 1/3 of the aspen would be sapling size (1-4" dia.), 1/3 pole sized (5-10" dia.), and 1/3 medium sized (12-16" dia.). Big tooth aspen will grow to 16-20" in diameter, but small tooth aspen generally begins to die at 14-16" in diameter.

The early successional management areas will be managed on a 15-20 year rotation. In other words, every 15-20 years the area will be cut to rejuvenate the aspen and create areas with high stem density.

North Bear 2 has 24 acres scheduled for early successional management. Applying sustainable forestry guidelines, 8 acres could be cut every 5 years.

NORTH BEAR "2"
EARLY SUCCESSIONAL MANAGEMENT
24 ACRES



Sec. 23 & 26 Highland Twsp.,
T100N-R7W, Winneshiek Co.

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Feet

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Even Age Management -

Even age management is essential for wildlife species depending on oak/hickory forests. Even though large blocks of forest are needed on some Wildlife Management Areas 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, golden-winged warbler, blue-winged warbler, black-billed cuckoo, yellow-billed cuckoo, Eastern towhee, along with ruffed grouse and American woodcock.

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

Mature stands of 60 to 125 years of age are used by birds such as the wood thrush, Acadian flycatcher, ovenbird, worm eating warbler, and scarlet tanagers.

Even age management involves growing a stand of trees which are close to the same age. At some point in the stands life, the area is clearcut which creates the even age structure. Even age management creates excellent habitat for deer, turkey, and grouse and is essential for 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.

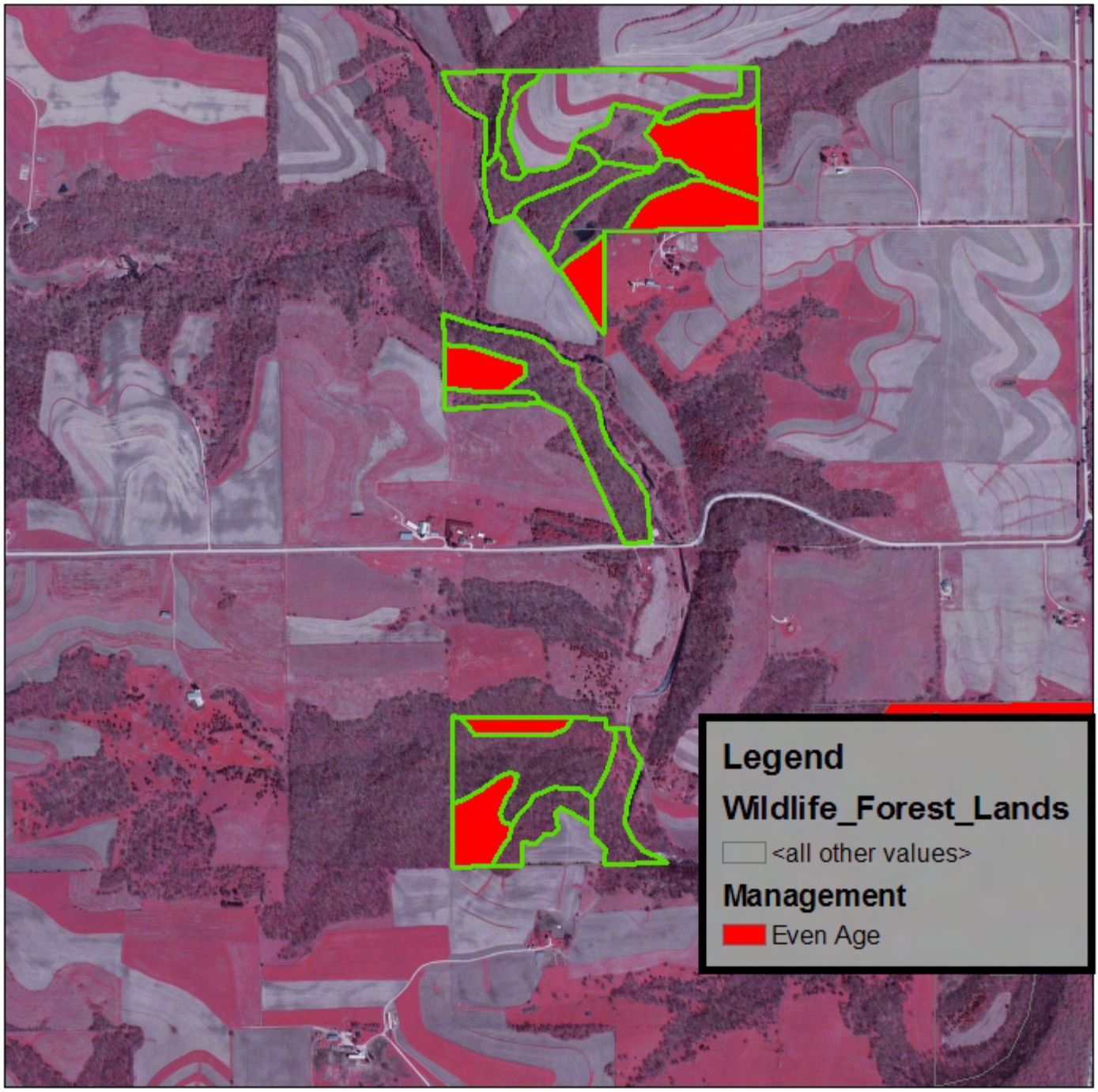
Even age management involves clearcuttting and planting, clearcutting with regeneration already established, or a shelterwood system to develop desirable seedlings on the ground.

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 stands life to successfully regenerate oak. If stands are not clearcut, the oak component of the forest will be lost to shade tolerant species. 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 (5-10" dia.) stand of trees.

Fire is a tool in managing oak stands that is currently being studied. Frequent burning of the leaf layer in the woods 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 a good number of oak seedlings are present, these stands will have to be clearcut or the young oak will die from lack of sunlight.

NORTH BEAR "2"
EVEN AGED MANAGEMENT
37 ACRES



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T100N-R7W, Winneshiek Co.

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Feet

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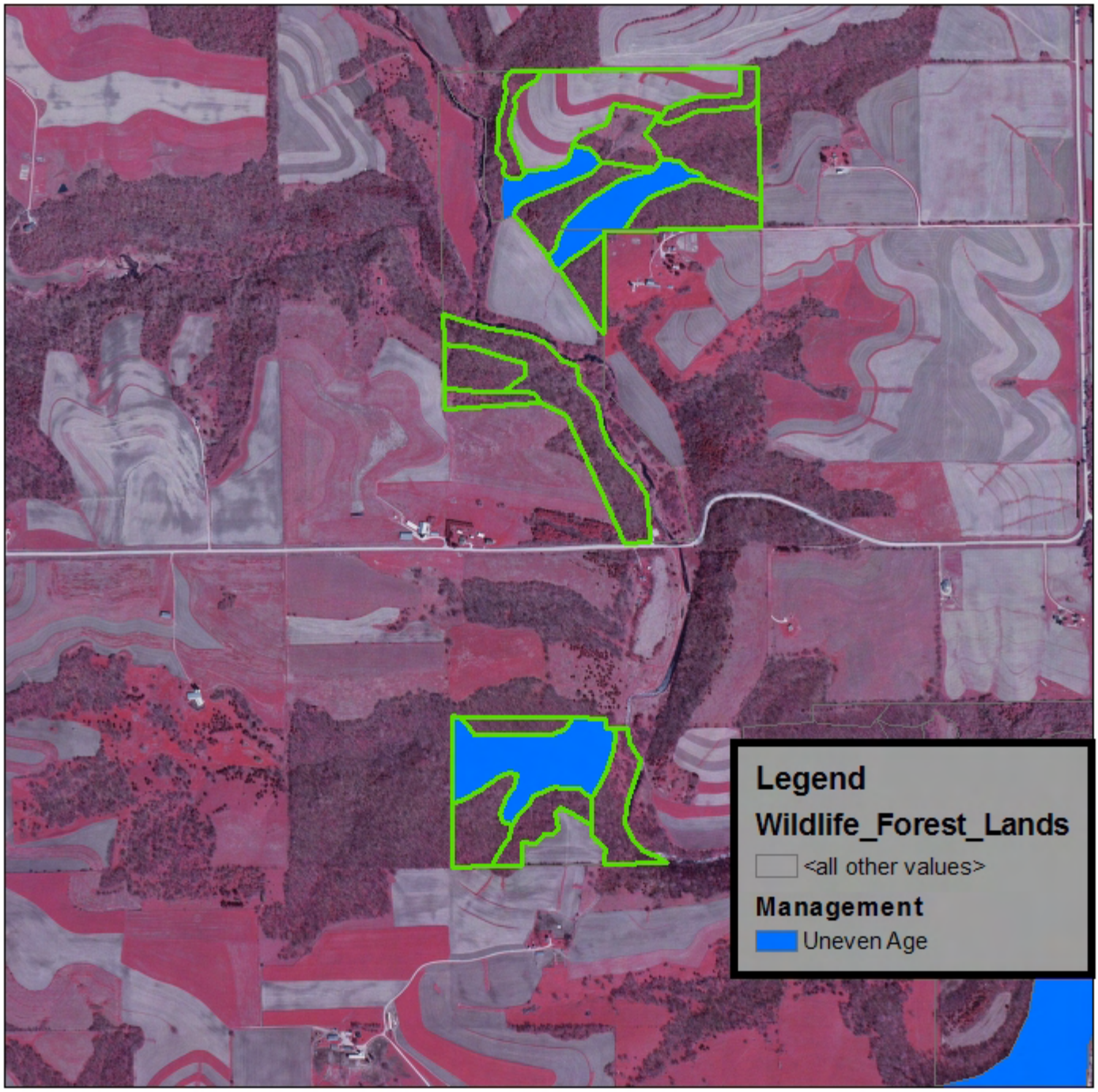
Uneven Age Management -

Uneven age management develops a stand of trees with all tree 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 age stands always have large trees present, this system favors species that will grow in shade such as hard maple and basswood.

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

Uneven age management areas will provide continuous tracts of woodland with minimal disturbance. Large tracts of uneven age management will provide necessary habitat for neotropical migratory bird species such as cerulean, hooded, Canada, and Kentucky warblers. 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, including the Northern myotis and red squirrel, species of greatest conservation need. Timber stand improvement and selective harvesting will create woody debris on the forest floor for reptiles and amphibians.

NORTH BEAR "2"
UNEVEN AGE MANAGEMENT
46 ACRES



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T100N-R7W, Winneshiek Co.

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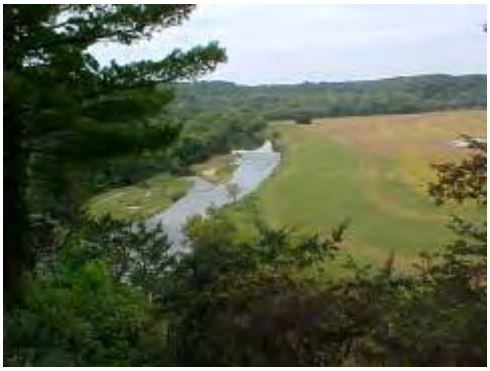
Viewshed Management -

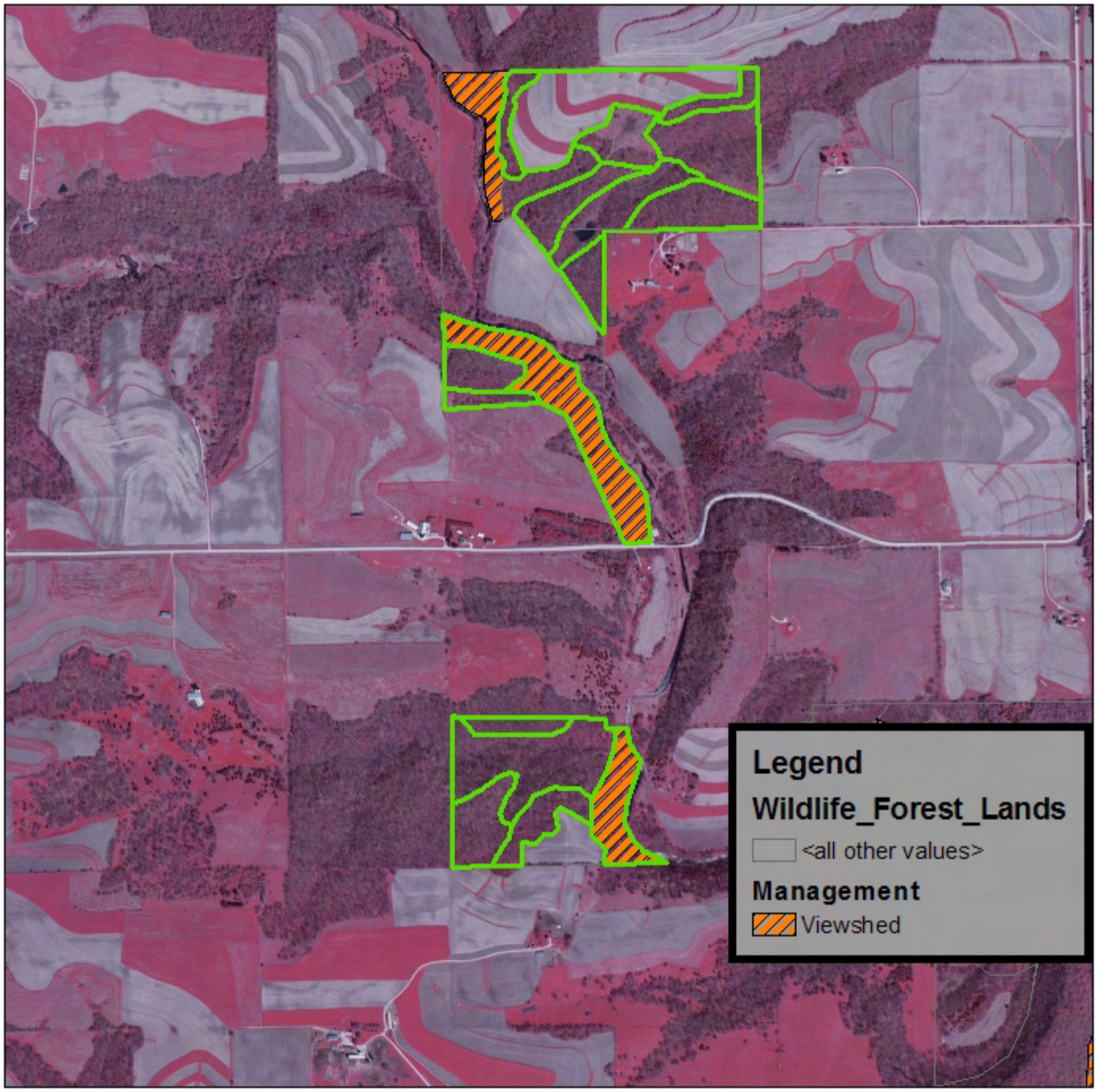
Viewshed areas are typically steep slopes and areas along streams which are fragile and are best left to naturally progress through succession. Areas where endangered plant or animal species exist will also be under viewshed management. Management can take place on these areas where desirable, but the major objective is to have very minor disturbance if any.



Many neotropical birds will benefit greatly from the areas designated as viewshed. Algific slopes and maderate slopes will be under viewshed management which will protect 8 species of land snails listed as species of greatest conservation need.

Viewshed management is designated for 29 acres on the area, or 24% of the forest resource.

NORTH BEAR "2"
VIEWSHED MANAGEMENT
11 ACRES



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SOILS

The bottomland has Dorchester silt loams. These soils are moist, alluvial soils. They tend to be fertile, but are subject to periodic flooding.

The ridge tops and gentle slopes have Fayette, Nordness, and Dubuque silt loams. Fayette and Dubuque soils are well drained, fertile loams. These are good sites for upland hardwood trees such as red oak, white oak, bur oak, walnut, hard maple, basswood, and cherry. Nordness is a shallow soil to limestone that is droughty and trees grow slowly.

The steep slopes have Nordness and steep, rock land. These steep slopes have shallow soils over limestone. Viewshed and uneven age management is recommended for much of this area.

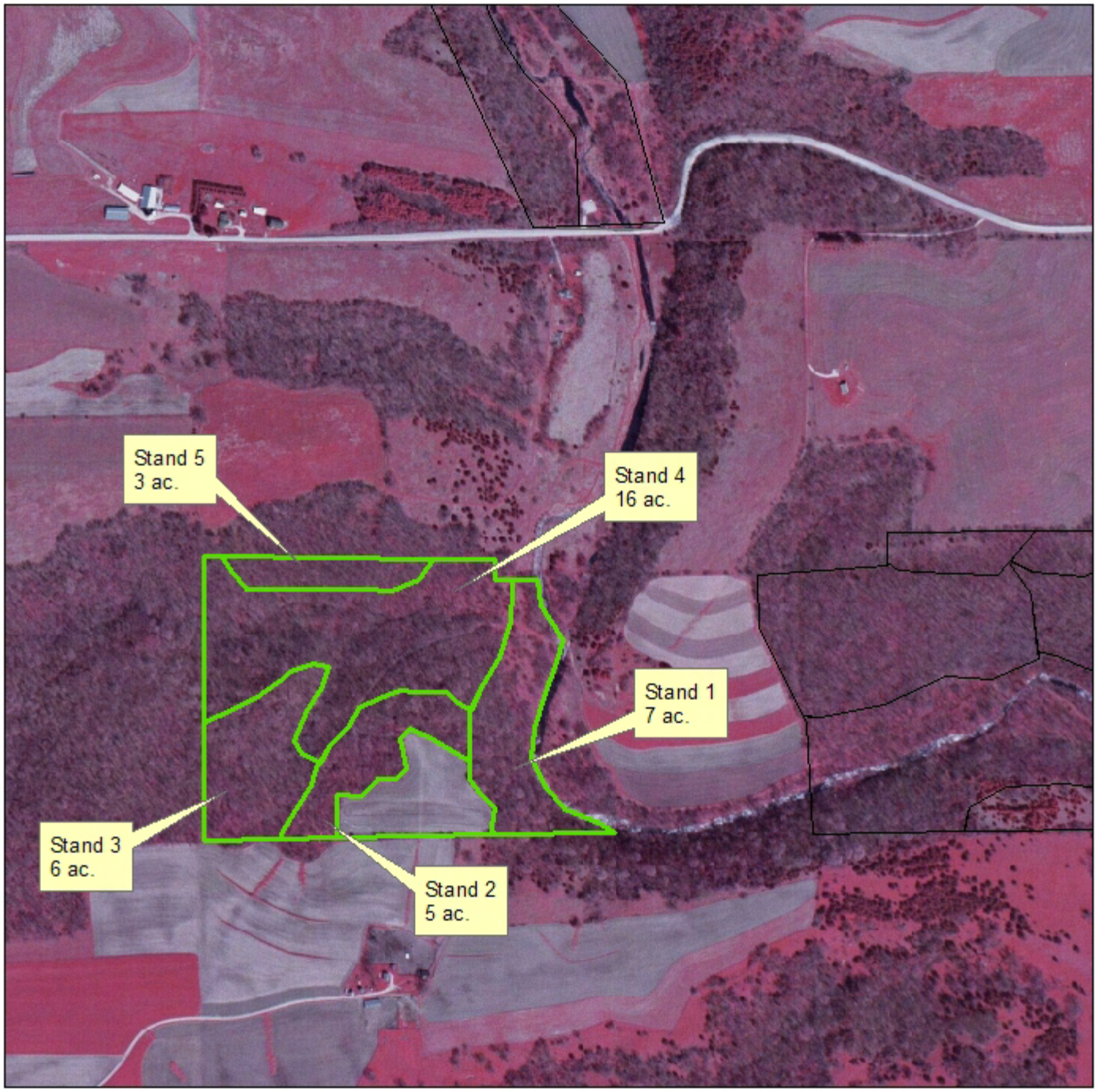
WORK PLAN

FOR

NORTH BEAR "2" WILDLIFE AREA

This is the "working plan" for North Bear "2" is designed to aid professional biologists and foresters 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.

FOREST STEWARDSHIP PLAN
NORTH BEAR "2"



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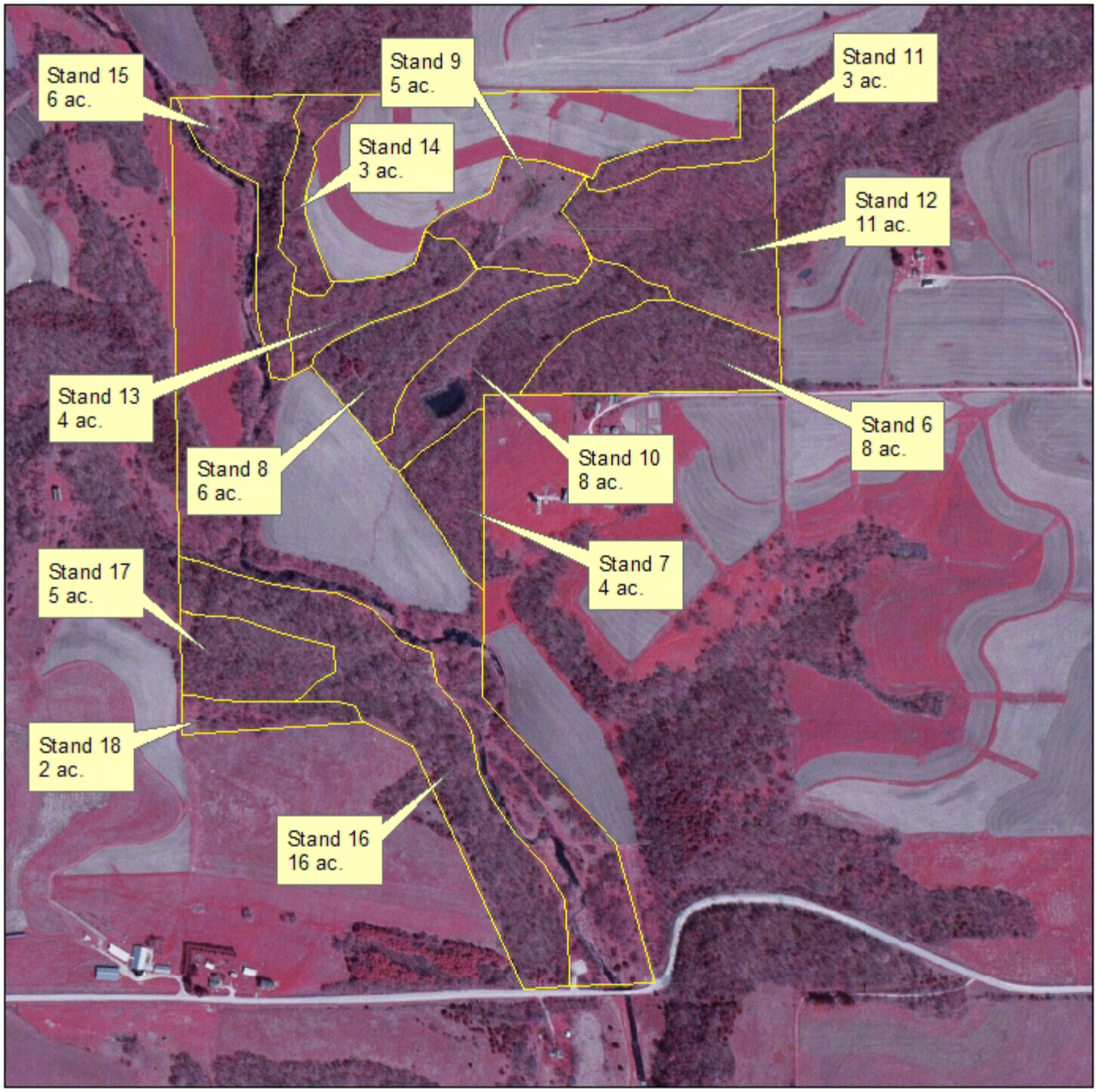
FOREST STEWARDSHIP PLAN
NORTH BEAR "2"



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T100N-R7W, Winneshiek Co.

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DESCRIPTION AND RECOMMENDATIONS FOR INDIVIDUAL STANDS

Stand 1: 7 acres

Site Description -

Steep, east facing slope along trout stream.

Woodland Description-

The area is medium sized (12-18" dia.) basswood, hard maple, and white oak. There are pole sized (4-10" dia.) boxelder along the stream bank. The understory is ironwood, hard maple, and basswood.

Management Recommendations – Viewshed

This slope should be left as it is due to the steep slope and bordering trout stream.

Stand 2: 5 acres

Site Description –

Ridgetop adjacent to crop field.

Woodland Descripton -

Pole sized (5-10" dia.) aspen, birch, elm, bitternut hickory, cherry, and a few walnut. There are scattered, large bur oak, red oak, black oak, and walnut. The understory is elm, bitternut hickory, ironwood, and hard maple.

Management Recommendations – Early Successional

Stand 2 has a good aspen component that would create dense, young aspen when cut. This area could be clearcut to create desirable habitat for ruffed grouse, wood cock, eastern towhee, and other species that need dense, young growth. The scattered, large oak and walnut could be sold before the area is clearcut.

Stand 3: 6 acres

Site Description –

Ridge top with Fayette silt loam soils and steep, rocky land.

Woodland Description -

Large (20" and larger in diameter) white oak, black oak, walnut, and red oak. There are several nice walnut 18-22 inches in diameter. The understory is elm, ironwood, bitternut hickory, and hard maple.

Management Recommendations – Even Age

Stand 3 could be clearcut and replanted with oak. All trees 14 inches and larger in diameter can be sold. Following the harvest, all remaining trees 1 inch and larger in diameter should be felled. The stumps of the undesirable species should be treated with Pathfinder II herbicide to prevent sprouting.

Plant the area with white oak, red oak, and bur oak seedlings. The seedlings should be 2-3 feet tall with large root systems. Plant the trees 30 ft. apart, or 50 trees per acre. Protect each tree with a 4 ft. tall, vented, plastic tree shelter. Support each shelter with a bamboo stake that is 1 inch or larger in diameter.

Stand 4: 16 acres

Site Description –

Drainage with steep south and north facing slopes.

Woodland Description -

Medium sized (12-18" dia.) bur oak, white oak, and red oak. The understory is ironwood, hard maple, and elm. There is dense regeneration of hard maple.

Management Recommendations – Uneven Age

The area could be selectively harvested in approximately 10 years to remove the mature and defective trees. Following the harvest, the undesirable species and damaged trees should be killed. The openings created will then fill in with hard maple.

Stand 5: 3 acres

Site Description -

South facing slope with shallow soils.

Woodland Description -

Medium size (12-18" dia.) bur oak, white oak, and black oak. The black oak are beginning to die and the tops are falling out. The understory is ironwood, elm, and a few hard maple.

Management Recommendations – Even Age

In 10 years, the area could be clearcut and planted. This will create early successional habitat for 10-15 years and establish young oak on the area. The harvest could be completed along with the selective harvest in Stand 4.

Stand 6: 8 acres

Site Description -

Upland ridges with Fayette silt loam soils.

Woodland Description –

Large white oak, black oak, red oak, and black cherry. The understory is ironwood, elm, cherry, hard maple, and boxelder. There is buckthorn along the west edge of the stand. This is a very nice stand of large oak.

Management Recommendations – Even Age

Stand 6 could be managed on a "Shelterwood" system of management to encourage the natural regeneration of oak. A shelterwood removes the declining and poor quality trees to allow more sunlight to penetrate the canapy. The healthy trees are left to naturally seed the area. The undesirable species are killed following the harvest to allow more sunlight to reach the ground. This system of harvesting trees in the overstory and killing unwanted trees in the understory is repeated every 10 years until young oak seedlings are established. Once there is a good stocking of young oak 3-4 ft. tall, the stand is clearcut to provide full sunlight for the young oak. A shelterwood system can take 20-25 years from the first shelterwood harvest to the final clearcut that regenerates the stand to young oak.

The first harvest would remove the declining black oak and trees that are stunted and damaged. After the harvest, all non oak species in the understory should be cut and treated with Pathfinder II to prevent stump sprouting.

Stand 7: 4 acres

Site Description -

West facing slope with rock outcrops.

Woodland Description –

Medium sized (12-18" dia.) bur oak. There are a few aspen along the field edge. The understory is elm, basswood, and buckthorn. Buckthorn is an invasive shrub that will try to take over the understory of the woods.

Management Recommendations – Even Age

Stand 7 could be clearcut and planted in 10 years. This area is low priority due to the buckthorn that is present in the understory. Buckthorn could easily overtake the site once the large trees are removed.

Stand 8: 6 acres

Site Description -

Ridge with Fayette and Nordness soils.

Woodland Description –

Pole sized (5-10" dia.) aspen, elm, black oak, black cherry, and red cedar. There are scattered, large bur and black oak. The understory is hazel, prickly ash, and buckthorn. Stand 8 has an excellent aspen component.

Management Recommendations – Early Successional

Clearcut the area to develop a dense stand of aspen and shrubs. Leave the large trees for mast production, and leave the cedars for winter habitat.

Stand 9: 5 acres

Site Description –

Upland bordering the crop fields.

Woodland Description -

Sapling (1-4" dia.) aspen, elm, and black oak. The area was cut 5 years ago to create early successional habitat.

Management Recommendations – Early Successional

Clearcut this area again in 10 years to maintain early successional habitat. There is a good aspen component which will expand through root sprouting. This would be a non commercial cut.

Stand 10: 8 acres

Site Description –

Ravine and slopes above the pond.

Woodland Description -

Medium sized (12-18" dia.) bur oak, white oak, and red oak. The understory is hard maple, ironwood, elm, and basswood.

Management Recommendations – Uneven Age

Due to the steep slopes, Stand 10 is best suited to uneven age management. Hard maple is already dominant in the understory. The area could be selectively harvested along with the shelterwood harvest in Stand 6. The selective harvest would remove trees that are damaged, and all elm and ash due to disease problems. Following the harvest, the undesirable species and damaged trees should be removed. This will increase the density of the understory.

Stand 11: 3 acres

Site Description –

Ridge bordering the crop field.

Woodland Description -

Pole sized (5-10" dia.) boxelder, aspen, elm, cherry, and shagbark hickory. The understory has buckthorn, gooseberry, nannyberry, boxelder, and shagbark hickory.

Management Recommendations – Early Successional

Clearcut the area in 5 years to feather the woodland edge and create early successional habitat. There are trees large enough to sell in the area prior to felling the remaining trees.

Stand 12: 11 acres

Site Description -

Drainage with south and north facing slopes.

Woodland Description –

Large (20" in diameter and larger) white oak, bur oak, red oak, black oak, black ash, and black cherry. The understory is ironwood, elm, ash, hard maple, buckthorn, and basswood.

Management Recommendations – Even Age

Clearcut and replant with large oak seedlings to regenerate oak. Divide the area into two separate harvests. The north side of the drainage could be harvested in 5 years. South of the drainage could be harvested in 15 years.

Stand 13: 4 acres

Site Description -

South and southwest facing slopes with shallow soils.

Woodland Description -

Medium sized (12-18" dia.) bur oak, black oak, cherry, and basswood. The understory is elm, hard maple, boxelder, and basswood.

Management Recommendations – Uneven Age

In 5 years, selective harvest the area to remove the commercial elm and defective trees. Following the harvest, kill the undesirable species and damaged trees to encourage the development of young hard maple and basswood.

Stand 14: 3 acres

Site Description -

West facing slope along the crop field.

Woodland Description -

Sapling (1-4" dia.) aspen, cherry, basswood, elm, buckthorn, and black oak. The area was clearcut 7-8 years ago.

Management Description – Early Successional

Clearcut this area in 10 years to feather the timber edge and create early successional habitat.

Stand 15: 6 acres

Site Description –

Very steep west facing slope with limestone bluffs.

Woodland Description –

Medium sized (12-18" dia.) bur oak, basswood, and red cedar. The understory is elm and ironwood.

Management Recommendations – Viewshed

Because of the steep slopes, this area is not conducive to management.

Stand 16: 16 acres

Site Description -

Steep, north and east facing slopes. Much of the area borders the trout stream.

Woodland Description -

Medium sized (12-18" dia.) hard maple, basswood, bur oak, and red oak. The understory is hard maple, black ash, basswood, elm, and ironwood. There are small areas with pole sized black oak and red oak.

Management Recommendations – Viewshed

Due to the steep slopes above the trout stream, Stand 16 should be managed a viewshed. When Stand 17 is harvested, the mature and damaged trees could be harvested on the upper slope bordering Stand 17, but no further management is recommended.

Stand 17: 5 acres

Site Description –

Ridge with Dubuque silt loam soils.

Woodland Description -

Medium sized (12-18" dia.) red oak, black oak, white oak, black cherry, elm, and ash. The understory is elm, ash, cherry, hard maple, boxelder, and bitternut hickory. There are scattered, mature black oak, red oak, and white oak.

Management Recommendations – Even Age

In 10 years, clearcut the area and plant large oak seedlings. Plant 50 trees per acre and protect each tree with a vented tree shelter.

Stand 18: 2 acres

Site Description -

Drainage on south edge of woodland.

Woodland Description –

Pole sized (5-10" dia.) boxelder, aspen, and cherry. There are scattered, merchantable cherry, white oak, and elm.

Management Recommendations – Early Successional

In 10 years, the stand could be clearcut to create early successional habitat. Fell all trees 1 inch and larger in diameter. Treat the stumps of elm, ironwood, bitternut hickory, boxelder, and buckthorn with Pathfinder II to prevent sprouting. The merchantable trees could be sold along with Stand 17.

SUSTAINABLE FORESTRY GUIDELINES

Sustainable forestry is managing a forest to maximize the distribution of age classes on the property, and insure there is a balanced distribution of tree sizes. With even age management, the acres of even age management divided by the rotation age is the allowable cut per year. The target rotation age for the area is 125 years. This insures that large oaks will always be present on the area.

Early Successional Management -

The early successional areas will be managed on a 15 year rotation. There are 24 acres designated for early successional management. The allowable cut is 1.6 acres per year (24 acres divided by 15 yrs.). With a working cycle of 5 years, approximately **8 acres could be cut every 5 years**.

Even Age Management Area –

There are 37 acres under even age management. Dividing 37 acres by 125 years, yields an allowable cut of 0.3 acres per year, or **1.5 acres every 5 years**. This small acreage would not be economical to harvest. I suggest harvesting 3 acres every 10 years, or 6 acres every 20 years.

Uneven Age Management Area –

Stands can be selectively harvested every 20 years to remove mature and defective trees. There are 28 acres under uneven age management. The allowable harvest is **7 acres of selective harvest every 5 years, or 14 acres every 10 years**.

HIGH PRIORITY PROJECTS

Timber Stand Improvement – Weed Tree Removal

Stand #	Acres	Comments
6	8	Following shelterwood harvest
10	8	Following selective harvest
Total	16	

Early Successional Clearcuts – 15 yr. rotation

Stand #	Acres	Comments
2	5	Commercial timber sale
8	6	
Total	11	

Even Age Clearcuts – 125 yr. rotation

Stand #	Acres	Prescription
3	6	Clearcut and plant
6	8	Shelterwood harvest and kill undesirable species
Total	14	

Selective Harvest – 20 yr. cycle

Stand #	Acres	Prescription
10	8	Kill undesirable species following harvest

APPENDIX

NORTH BEAR "2" WILDLIFE AREA

SUMMARY OF WOODLAND STANDS

No.	Acres	Timber Type	TreeSize	Mngt. System	Prescription	Priority	Year Complete	Comments
1	7	Basswood H. Maple W. Oak	Medium	View Shed				
2	5	Aspen Elm B. Hickory	Pole	Early Successional	Clearcut	High	2009	Commercial Sale
3	6	W. Oak Bl. Oak Walnut	Large	Even Age	Clearcut & Plant	High	2009	
4	16	Bur Oak W. Oak Red Oak	Medium	Uneven Age	Selective Harvest	Medium	2019	Selective harvest in 10 years
5	3	Black Oak Bur Oak White Oak	Medium	Even Age	Clearcut and plant	High	2019	
6	8	White Oak Red Oak Bl. Oak	Large	Even Age	Shelterwood harvest & kill weed trees	High	2009	
7	4	Bur Oak	Medium	Even Age	Clearcut & Plant	Low	2019	Buckthorn understory
8	6	Aspen Black Oak Elm	Pole	Early Successional	Clearcut	High	2009	Non commercial
9	5	Aspen Black Oak	Sapling	Early Successional	Clearcut	High	2019	Non commercial
10	8	Bur Oak W. Oak Red Oak	Medium	Uneven Age	Selective harvest & kill weed trees	Medium	2009 2009	
11	3	Aspen Boxelder Elm	Pole	Early Successional	Clearcut	High	2014	Commercial sale
12	11	W. Oak Bur Oak Black Oak	Large	Even Age	Clearcut & Plant	High	2014	Cut 5 acres north of drainage

No.	Acres	Timber Type	TreeSize	Mngt. System	Prescription	Priority	Year Complete	Comments
13	4	Bur Oak Black Oak Cherry	Medium	Uneven Age	Selective harvest & kill weed trees	Medium	2014	
14	3	Aspen Cherry Bass	Sapling	Early Successional	Clearcut	High	2019	Non commercial
15	6	Bur Oak Basswood	Medium	View Shed				
16	16	H. Maple Basswood Oak	Medium	View Shed				
17	5	Red Oak Black Oak W. Oak	Medium	Even Age	Clearcut and Plant	High	2019	
18	2	Aspen Boxelder	Pole	Early Successional	Clearcut	High	2019	Commercial Sale

Table 1. Forest Breeding Birds of Greatest Conservation Need in NE Iowa

Common Name	Scientific Name
Bald eagle	*Haliaeetus leucocephalus*
Red-shouldered hawk	*Buteo lineatus*
Broad-winged hawk	*Buteo platypterus*
Peregrine falcon	*Falco peregrinus*
Ruffed grouse	*Bonasa umbellus*
American woodcock	*Scolopax minor*
Black-billed cuckoo	*Coccyzus erythropthalmus*
Yellow-billed cuckoo	*Coccyzus americanus*
Long-eared owl	*Asio otus*
Whip-poor-will	*Caprimulgus vociferus*
Red-headed woodpecker	*Melanerpes erythrocephalus*
Acadian flycatcher	*Empidonax virescens*
Willow flycatcher	*Empidonax traillii*
Least flycatcher	*Empidonax minimus*
Brown creeper	*Certhia americana*
Veery	*Catharus fuscescens*
Wood thrush	*Hylocichla mustelina*
Blue-winged warbler	*Vermivora pinus*
Cerulean warbler	*Dendroica cerulea*
Black-and-white warbler	*Mniotilta varia*
Prothonotary warbler	*Protonotaria citrea*
Worm-eating warbler	*Helmitheros vermivorus*
Louisiana waterthrush	*Seiurus motacilla*
Kentucky warbler	*Oporornis formosus*
Hooded warbler	*Wilsonia citrina*
Eastern towhee	*Pipilo erythrophthalmus*

Table 2. Forest Migratory Birds of Greatest Conservation Need in NE Iowa

Common Name	Scientific Name
Golden-winged warbler	*Vermivora chrysoptera*
Canada warbler	*Wilsonia canadensis*

Table 3. Forest Mammals of Greatest Conservation Need in NE Iowa

Common Name	Scientific Name
Northern myotis	*Myotis septentrionalis*
Red squirrel	*Tamiasciurus hudsonicus*
Woodland vole	*Microtus pinetorum*
Spotted skunk	*Spilogale putorius*
Southern Flying Squirrel	*Glaucomys volans*

Table 4. Forest Reptiles and Amphibians of Greatest Conservation Need in NE Iowa

Common Name	Scientific Name
Cricket Frog	*Acris crepitans*
Northern Prairie Skink	*Eumeces septentrionalis*
Bullsnake	*Pituophis catenifer sayi*
Timber Rattlesnake	*Crotalus horridus*

Table 5. Forest Land Snails of Greatest Conservation Need in NE Iowa (Restricted to Algific Talus Slopes and Maderate Slopes)

Common Name	Scientific Name
Iowa Pleistocene Snail	*Discus macclintocki*
Frigid Ambersnail	*Catinella gelida*
Minnesota Pleistocene Succinea	*Novasuccinea n. Sp. Minnesota a*
Iowa Pleistocene Succinea	*Novasuccinea n. Sp. Minnesota b*
Briarton Pleistocene Snail	*Vertigo brierensis*
Hubricht's Vertigo	*Vertigo hubrichti*
Iowa Pleistocene Vertigo	*Vertigo iowaensis*
Bluff Vertigo	*Vertigo occulta*

Table 6. Forest Butterflies of Greatest Conservation Need in NE Iowa

Common Name	Scientific Name
Pepper and Salt Skipper	*Amblyscirtes hegon*
Sleepy Duskywing	*Erynnis brizo*
Dreamy Duskywing	*Erynnis icelus*
Columbine Duskywing	*Erynnis lucilius*
Silvery Blue	*Glaucopsyche lygdamus*
Hickory Hairstreak	*Satyrium caryaevorum*
Edward's Hairstreak	*Satyrium edwardsii*
Striped Hairstreak	*Satyrium liparops*

FWSP DEFINITIONS AND GUIDING FACTORS

Upland Forest Wildlife – Representative tree species include oak, hickory, hard maple, cherry, elm, walnut, ash, and red cedar. This habitat factor will provide habitat for wildlife such as ruffed grouse, woodcock, songbirds and woodpeckers, deer, turkey, raptors, owls, squirrels, and associated furbearing predators.

Floodplain Forest Wildlife –Characterized by species such as silver maple, cottonwood, walnut, green ash, elm, hackberry and willows. This habitat factor will benefit wildlife such as songbirds and woodpeckers, furbearers, raptors, reptiles and amphibians on relatively level areas inundated by water from time to time.

Woodland Edge – An area of habitat transition that consists of vegetation (herbaceous and woody) of different heights and densities. This habitat factor will favor early successional vegetation for wildlife benefiting from edge cover.

Conifer/Wildlife Plantation – A conifer or tree/shrub planting designed for wildlife habitat. This habitat factor will provide nesting sites, food and cover for wildlife. Conifers are also important to wildlife during the winter providing thermal benefits and areas of decreased snow depths.

Restoration – A new planting of seedlings, direct seeding, or regeneration of roots. This habitat factor will create new forest habitat that will be of higher quality for wildlife.

Conversion – An existing shade tolerant forest stand converted to nut and fruit bearing species of trees and shrubs to provide more food and cover. This habitat factor is a timber stand improvement increasing the forest quality. It will begin forest succession from early stages to old growth.

Riparian Buffer – Woodland next to streams, lakes, and wetlands that is managed to enhance and protect aquatic resources from adjacent fields. This habitat factor will provide a woody cover buffer to enhance soil and water conservation while providing wildlife habitat.

Old Growth – Natural forests that have developed over a long period of time, generally at least 120 years, without experiencing severe, stand-replacing disturbance---a fire, windstorm, or logging. This habitat factor will provide necessary wildlife habitat for species requiring mature woodlands.

Viewshed – A physiographic area composed of land, water, biotic, and cultural elements which may be viewed from one or more viewpoints and which has inherent scenic qualities and/or aesthetic values as determined by those who view it. Viewshed's are a habitat factor that will be primarily a "hands-off" area for aesthetics, proper soil and water conservation, along with providing special wildlife habitats.

Unique Natural Sites – Sites that contain unusual or rare natural components that should be preserved for their unique characteristics, such as algific slopes. This habitat factor will identify these uncommon sites for management considerations.

Preserve Status – An area of land or water formally dedicated for maintenance as nearly as possible in its natural condition though it need not be completely primeval in character at the time of dedication or an area which has floral, fauna, geological, archeological, scenic, or historic features of scientific or educational value. This habitat factor will recognize the quality of preserve sites and apply proper maintenance to protect its integrity.

Recreation –Leisure activities involving the enjoyment and use of natural resources. This habitat factor will favor hunting activities while taking into consideration secondary activities such as wildlife watching, mushroom picking, photography, and hiking.

Special Restrictions – Certain limitations or conditions on the use or enjoyment of a natural resource area. This habitat factor will take into consideration these limitations or conditions to select proper management.

EXPLANATION OF TIMBER MANAGEMENT PRACTICES:

Timber Stand Improvement:

Timber stand improvement (TSI) is the removal of undesirable or low value trees. Removing these unwanted trees will provide more space and sunlight for desirable trees to grow. Timber stand improvement is a "weeding" to increase the growth of your forest.

Weed Tree Removal-

In older timber, the undesirable species can be killed to encourage the natural reseeding of desirable species. The removal of the "weed" trees allows sunlight to reach the ground so that seedlings can become established. The undesirable species can be killed standing by cutting flaps in the trunk and applying Tordon RTU or Pathway into the cuts. The cuts must be in a circle around the trunk and overlapping. The trees can also be cut off and the stumps treated with Tordon RTU or Pathway to prevent resprouting. Wet the outer rim of freshly cut stumps. The work can be done anytime except spring during heavy sap flow.

Desirable trees that are poor formed or damaged should also be removed. These trees should not be treated with herbicide. The stumps will resprout and produce another tree. Cut the stumps close to the ground so that the sprout will originate near the ground.

Crop-Tree Release-

In pole-sized stands (4-10" dia.), potential crop trees can be selected and released. At maturity, there is room for 35-50 trees per acre. Now you can select the trees you want to comprise your future stand of mature trees and thin around them to give them more growing space. Select a crop tree every 30-35 ft. apart. Remove trees with crowns that are touching or overtopping the crowns of your crop trees. Crop trees can be selected based on criteria that meets your objectives. Normally, the crop trees will be a desirable species, show good form without large side limbs, and be free of major defects. Species normally favored are black walnut, red oak, white oak, white ash, basswood, cherry, and hard maple.

Walnut Pruning-

Walnut trees that are 2-12" in diameter can be pruned to promote veneer quality trees. You should prune during the dormant season. Limbs less than 1 inch in diameter are providing foliage which produces food for the tree and should be left. When the limbs approach 1 1/2 to 2" in diameter, they should be removed. Do not remove over 1/3 of the live crown in any one year. At least 50% of the total height of the tree should be maintained in live crown.

Harvest:

Uneven-Age Management:

Uneven-age management can be implemented to manage shade tolerant species. The timber is selectively harvested to remove mature, damaged, and defective trees. Because large trees are always present in the timber, only species that can grow in the shade can reproduce. Hard maple and basswood can be managed on an uneven-age system of management. Uneven-age management involves maintaining a good distribution of all tree sizes in your timber. It is critical that following a selective harvest, the smaller trees are thinned to remove the trees damaged by logging, poor formed trees, and low value species. The thinning following the harvest insures that you have high quality trees ready to replace the older trees as they are harvested.

Even-Age Management:

Even-age management involves a clearcut at some point in the stands rotation. Clearcutting creates full sunlight to the ground. All trees 2" and larger in diameter are felled. Oak, ash, hickory, and walnut require full sunlight to grow. Even-age management must be applied to successively manage these species. Clearcutting creates stands of trees all the same age. The trees compete equally for sunlight and are forced to grow straight and tall, resulting in high quality timber. Clearcutting also provides excellent browse and cover for wildlife.

Shelterwood:

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 first thinning can be a killing of the undesirable species such as ironwood, elm, bitternut hickory, and boxelder. This removes the seed source for the undesirable species and opens up the ground to sunlight.

The mature and defective trees can be harvested if additional sunlight is needed for the development of desirable seedlings. The harvest should be light, removing the trees that are deteriorating and leaving the high quality trees for seed.

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.