

FOREST WILDLIFE STEWARDSHIP PLAN

FOR

PINE CREEK & IVERSON BOTTOMS WILDLIFE AREAS

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



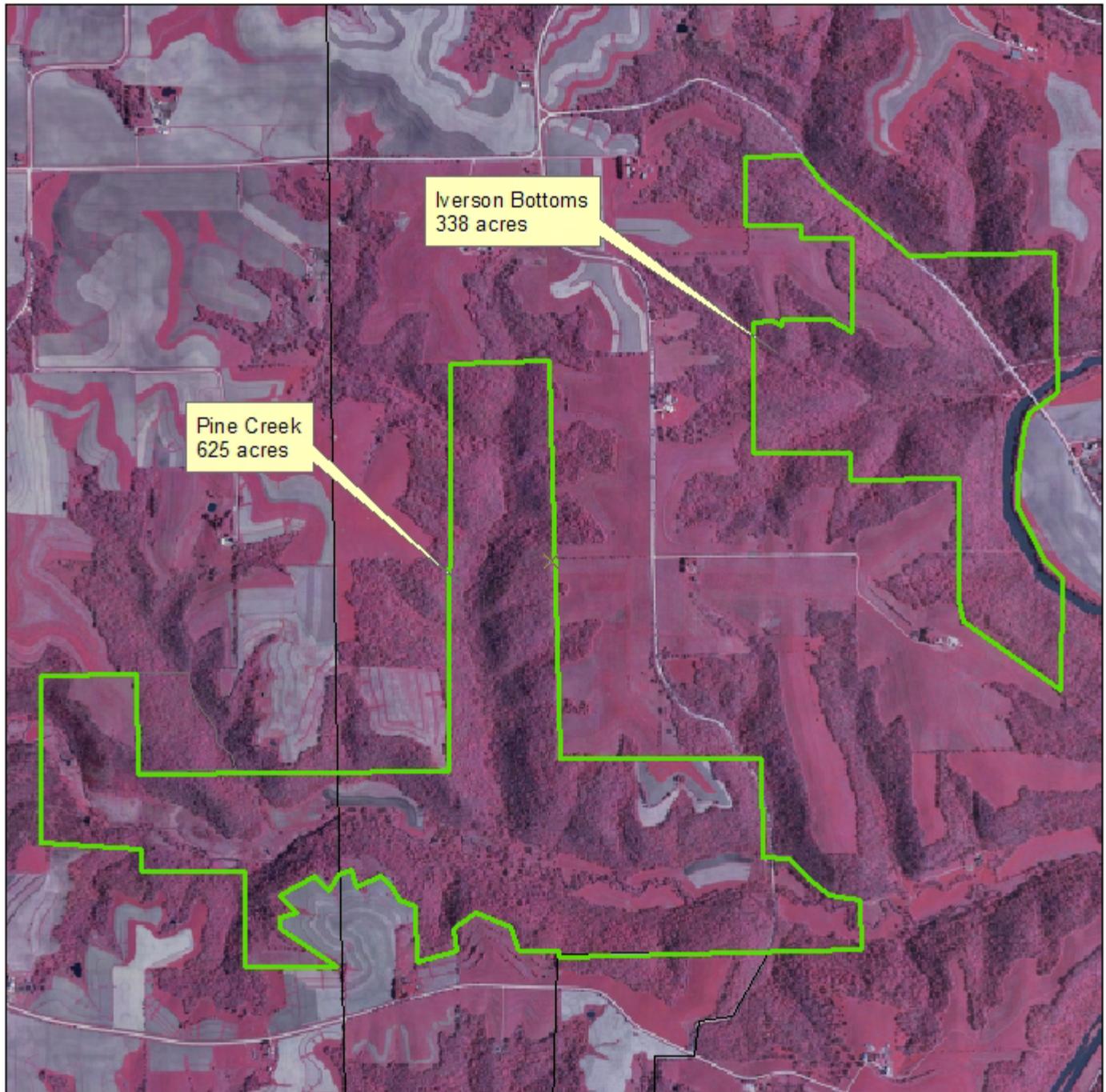
Developed by

**Gary Beyer
District Forester**

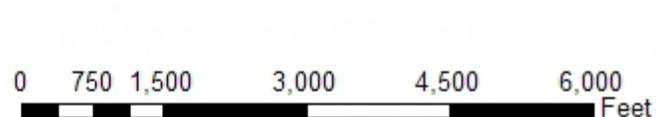
And

**Terry Haindfield
Wildlife Biologist**

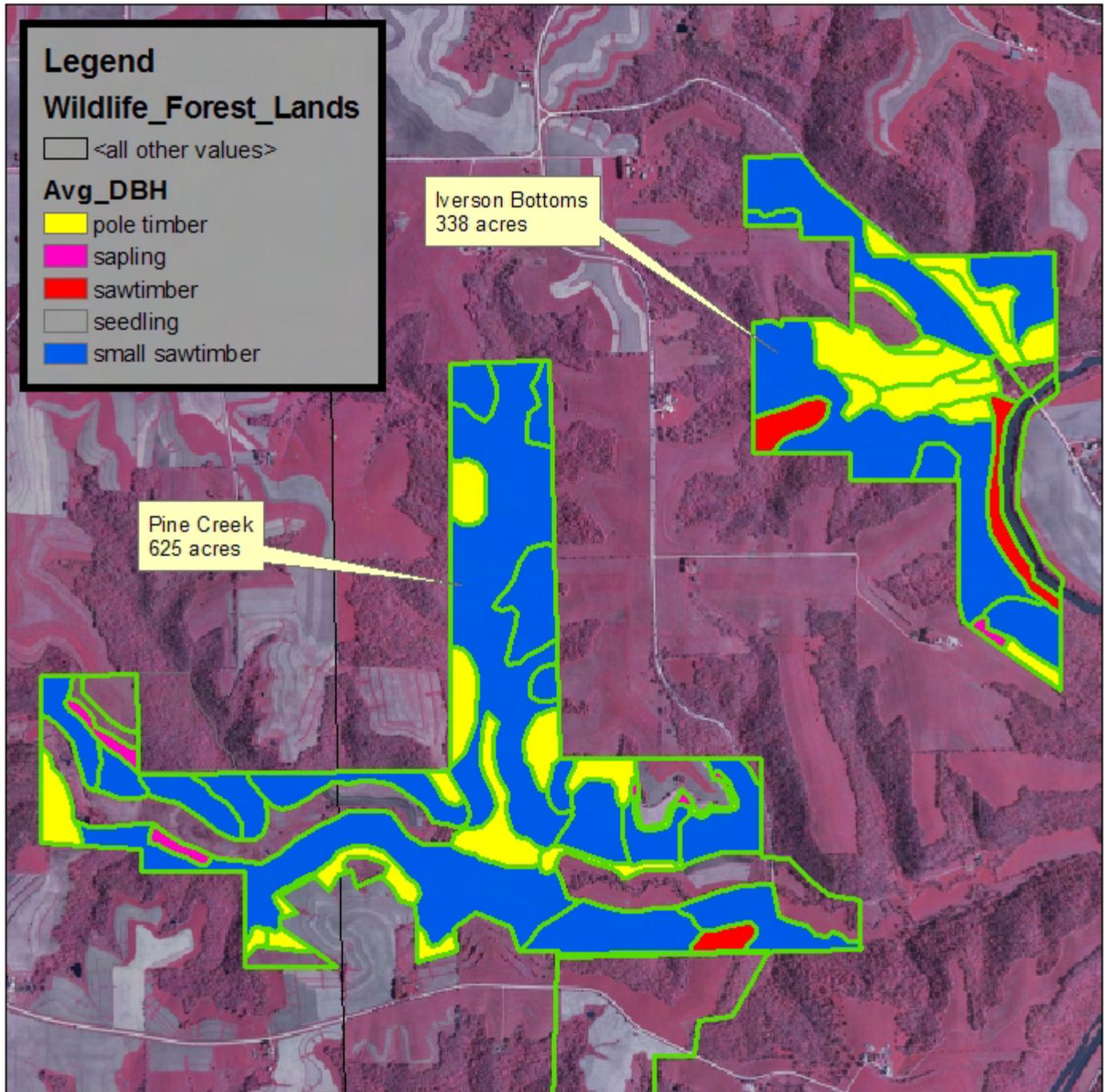
FOREST STEWARDSHIP WILDLIFE PLAN PINE CREEK & IVERSON BOTTOMS



Sec. 12 & 13 Pleasant Twsp.,
T99N-R7W, Winneshiek Co.
Sec. 5, 7, 8 & 18 Hanover Twsp.,
T99N-R6W, Allamakee Co.



PINE CREEK & IVERSON BOTTOMS Average Tree Sizes

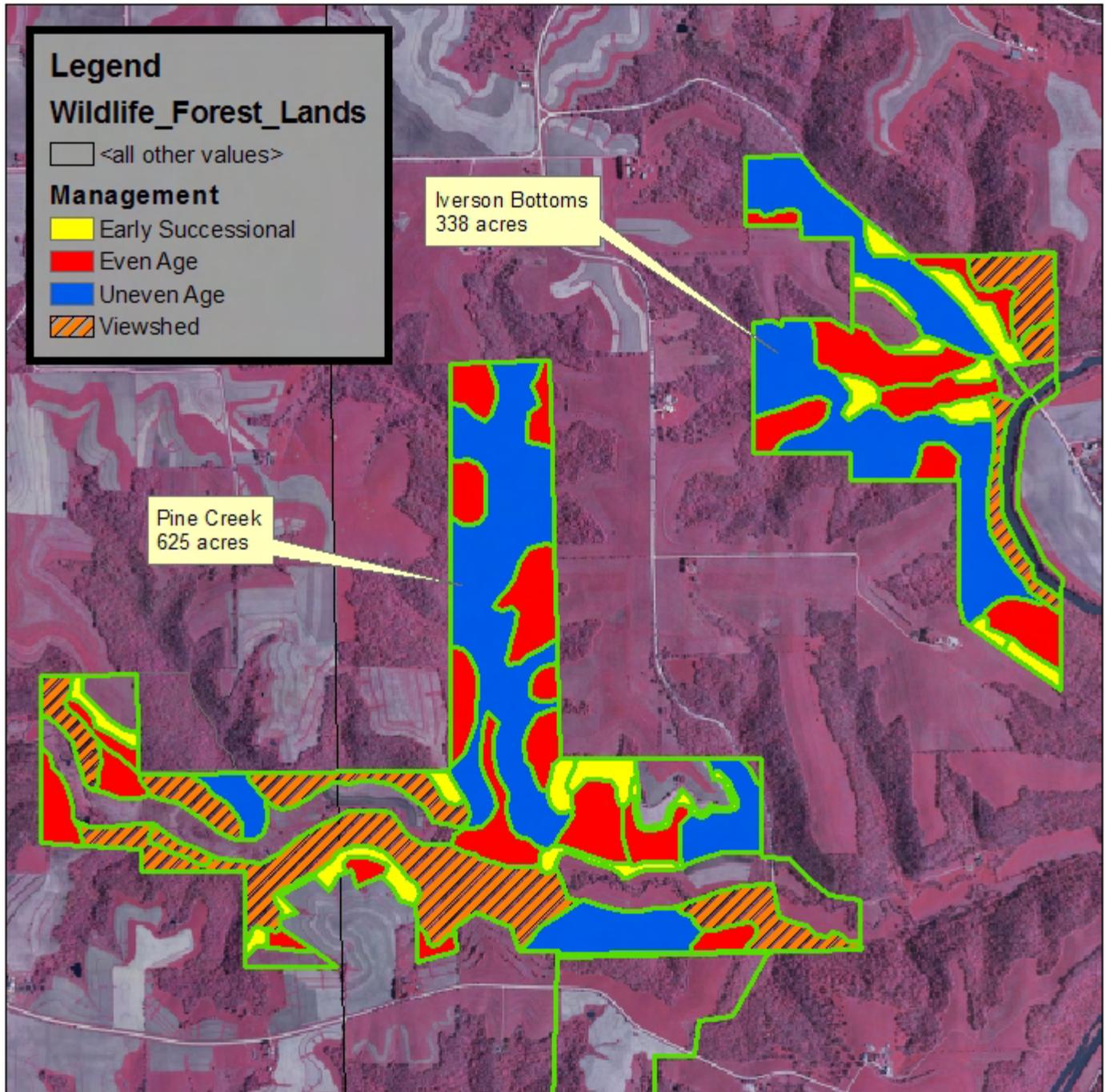


Sec. 12 & 13 Pleasant Twsp.,
T99N-R7W, Winneshiek Co.
Sec. 5, 7, 8 & 18 Hanover Twsp.,
T99N-R6W, Allamakee Co.

0 750 1,500 3,000 4,500 6,000
Feet



PINE CREEK & IVERSON BOTTOMS Woodland Management Systems



Sec. 12 & 13 Pleasant Twsp.,
T99N-R7W, Winneshiek Co.
Sec. 5, 7, 8 & 18 Hanover Twsp.,
T99N-R6W, Allamakee Co.

0 750 1,500 3,000 4,500 6,000
Feet



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: 3/17/08

**FOREST WILDLIFE STEWARDSHIP PLAN
FOR
PINE CREEK & IVERSON BOTTOMS
WILDLIFE AREAS**

MANAGER:

Terry Haindfield, Wildlife Biologist
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Decorah, Iowa 52101

TELEPHONE: 563/382-4895

LOCATION: Sec. 12 & 13 Pleasant Twsp., T99N-R7W, Winneshiek County,
and Sec. 5, 7, 8, & 18 Hanover Twsp., T99N-R6W, Allamakee
County

TOTAL ACRES: 781

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 Pine Creek and Iverson Bottoms wildlife areas are outlined on the map. The two areas are located less than one mile apart. Pine Creek is a long, narrow property with a trout stream running through it. The area consists of two large valleys with steep side slopes. Iverson Bottoms borders the Upper Iowa River. The area has steep bluffs along the river and deep valleys leading to the river.

Pine Creek is a total of 625 acres. 497 acres are wooded, or 80% of the area. Iverson Bottoms is a total of 338 acres of which 276 acres are wooded, or 82% of the area. Most of the area was logged heavy



25-30 years ago before the property was purchased by the state.

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. Pine Creek and Iverson Bottoms have field edges and ridge tops conducive to intensive management that will be managed for early successional habitat, and even aged management to regenerate oak. Large blocks of woodland will be maintained in larger trees under uneven age management and viewshed to provide suitable habitat for interior migratory bird species. 64% of the area will be managed as uneven age forests or viewshed.



Because much of the timber is converting to hard maple and basswood, and there is a lack of young growth on both areas, early successional and even age management will be implemented wherever it is feasible.

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:

<u>Tree Size</u>	<u>Acres</u>	<u>% of Total Area</u>
Sapling (<4" dbh)	12	1
Pole size (5-12" dbh.)	160	21
Medium Size (14-18" dbh.)	573	74
Large (>20" dbh)	28	4
Totals	773	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 Pine Creek & Iverson Bottoms Wildlife Areas, the acres under each management system are as follows -

<u>Management System</u>	<u>Acres</u>	<u>% of Total Area</u>
Early Successional	69	9
Even Age	209	27
Uneven Age	317	40
Viewshed	186	24
Total	781	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.

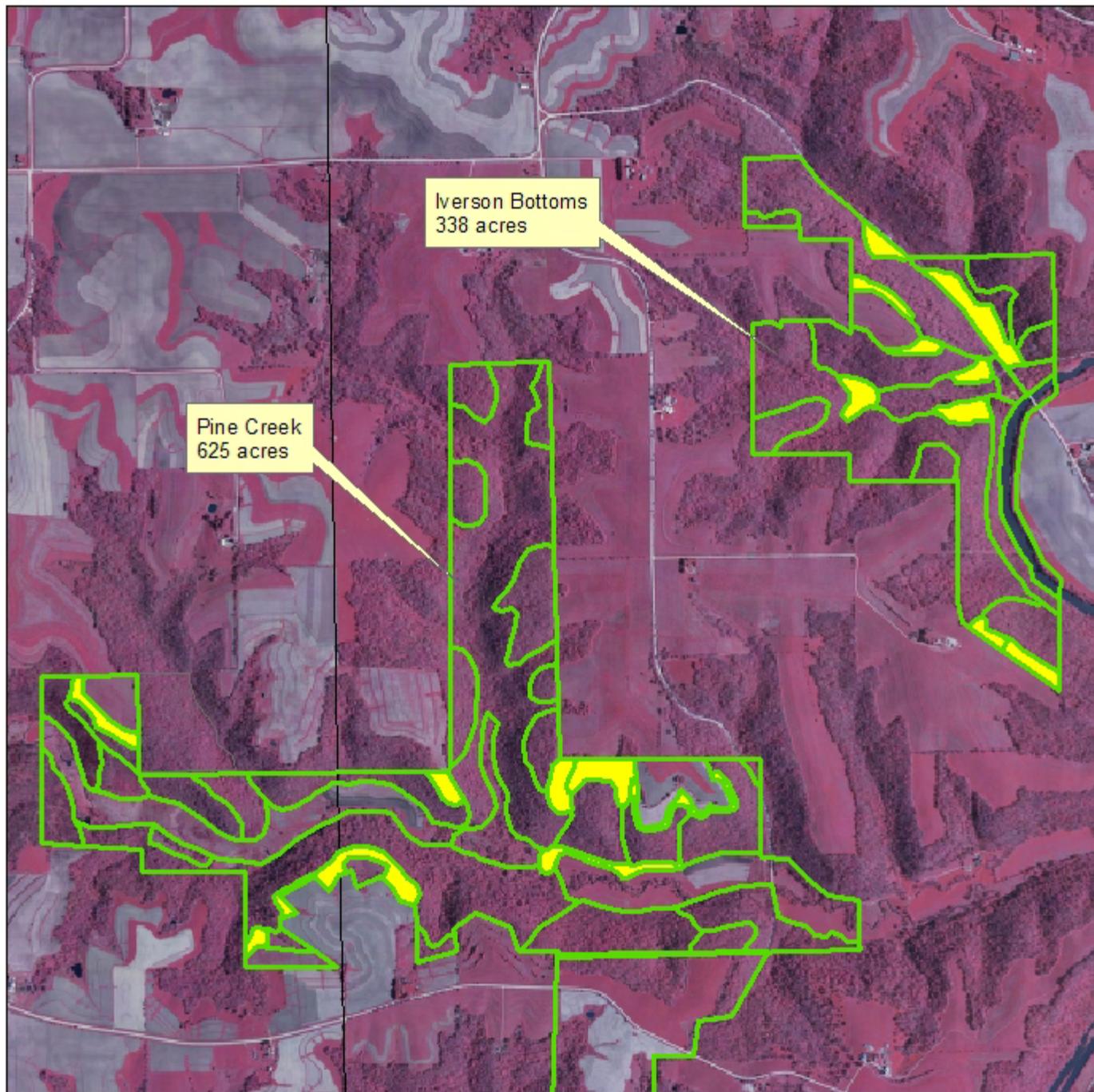


Aspen provides critical habitat for ruffed grouse. Aspen is most easily regenerated by root suckering. Once aspen is allowed to become over mature, its ability to root sucker is decreased. The best method to maintain aspen and expand the aspen clone is to cut the stand while the trees are in a healthy 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.

Pine Creek & Iverson Bottoms have 69 acres scheduled for early successional management. Applying sustainable forestry guidelines, **23 acres could be cut every 5 years.**

PINE CREEK & IVERSON BOTTOMS
Early Successional Management
69 acres (9% of area)



Sec. 12 & 13 Pleasant Twsp.,
T99N-R7W, Winneshiek Co.
Sec. 5, 7, 8 & 18 Hanover Twsp.,
T99N-R6W, Allamakee Co.

0 750 1,500 3,000 4,500 6,000
Feet



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 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.

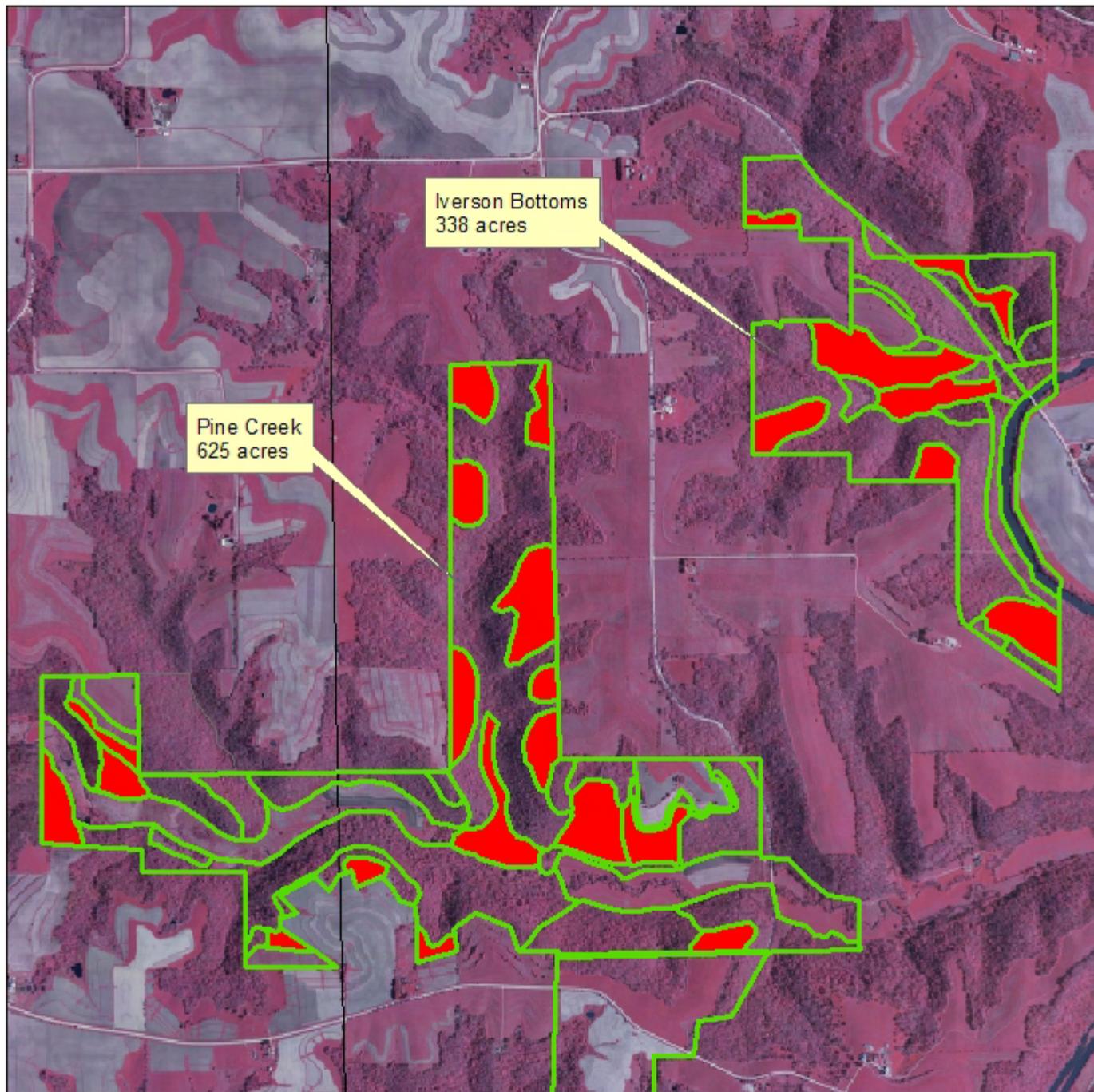


Clearcutting to create full sunlight is essential at some point in the stands life to successfully regenerate oak. If stands are not clearcut, the oak component of the forest will be lost to shade tolerant species. Clearcuts also provide additional early successional habitat in the early stages. The 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.

There are 209 acres that will be managed as even aged woodlands to regenerate oak. **Approximately 8-9 acres could be clearcut every 5 years, or 16-17 acres could be clearcut every 10 years.**

PINE CREEK & IVERSON BOTTOMS
Even Age Management
209 acres (27% of area)



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T99N-R6W, Allamakee Co.

0 750 1,500 3,000 4,500 6,000
Feet



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.

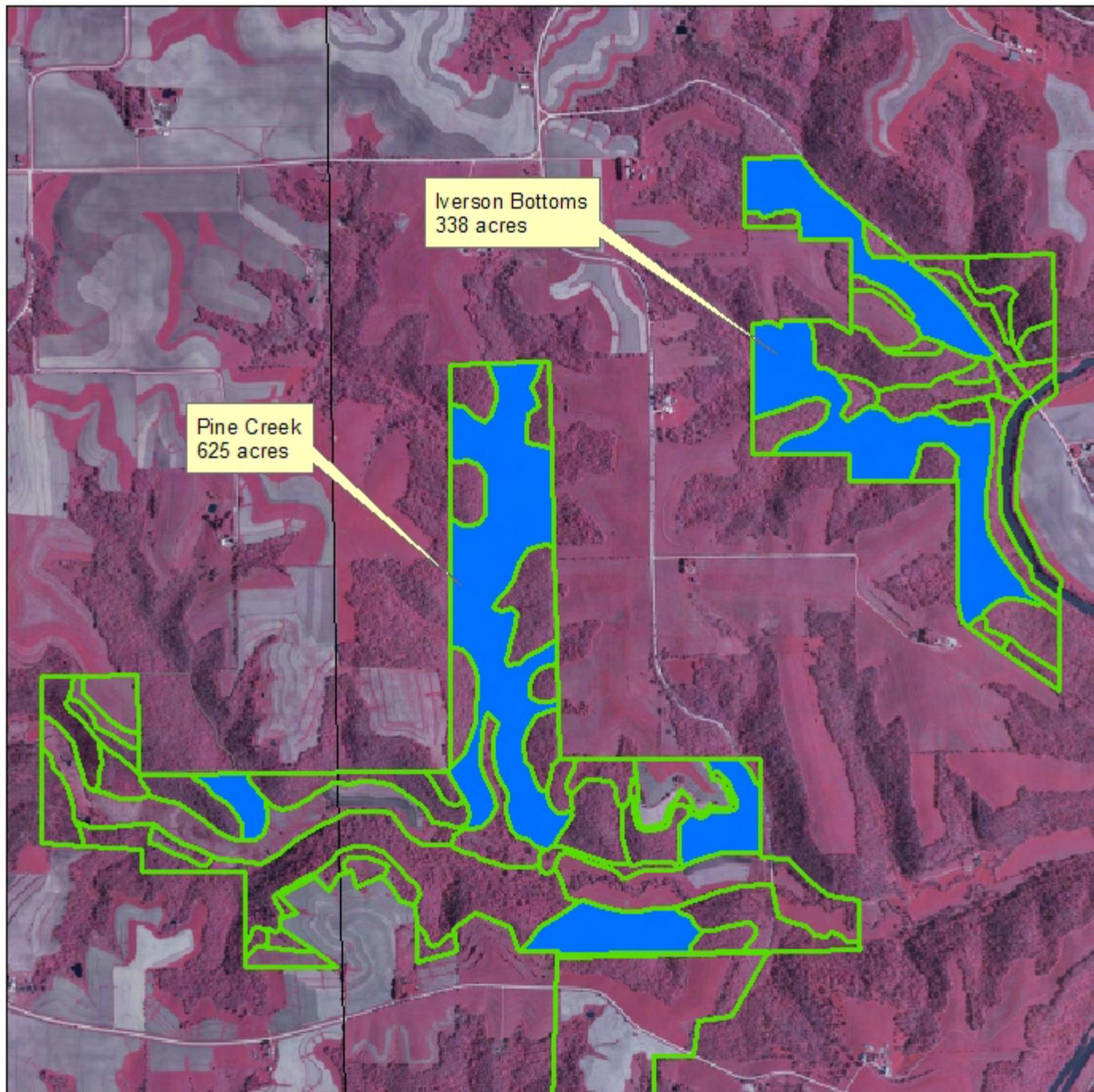
Uneven age management will maintain blocks of woodland that will always have larger trees. Uneven age management is desirable where the understory is mainly hard maple, on steep slopes, and on areas where always having large trees is important.



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.

There are 317 acres that will be managed as uneven aged forests. The areas could be selectively harvested every 20 years. Based on a 5 year working cycle, **80 acres could be selectively harvested every 5 years under sustainable forestry guidelines.**

PINE CREEK & IVERSON BOTTOMS
Uneven Age Management
317 acres (40% of area)



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0 750 1,500 3,000 4,500 6,000
Feet



Viewshed Management -

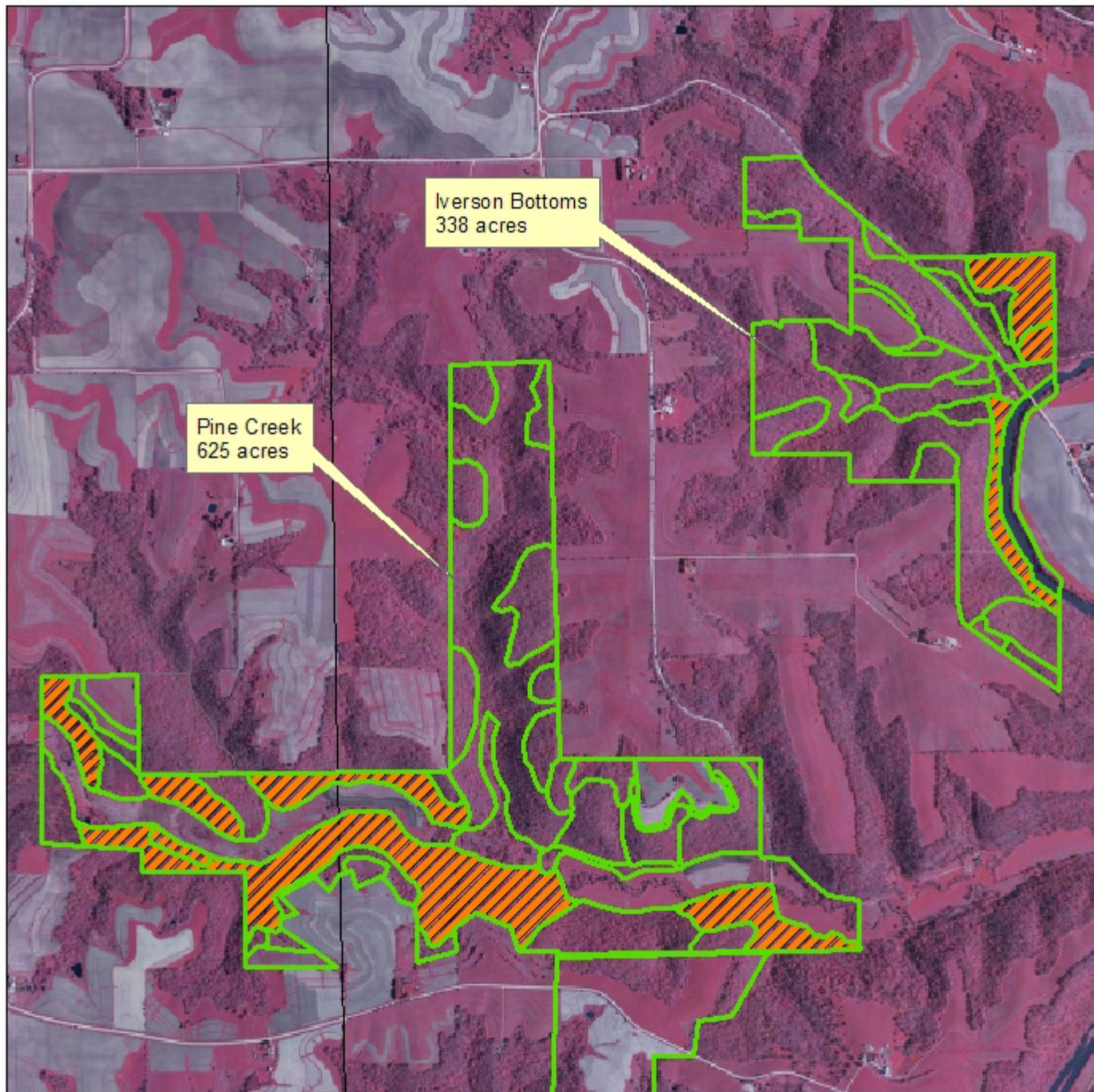
Viewshed areas are typically steep slopes and areas along streams which are fragile and are best left to naturally progress through succession. Areas where endangered plant or animal species exist will also be under viewshed management. Management can take place on these areas where desirable, but the 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 moderate 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 186 acres on the area, or 24% of the forest resource.

PINE CREEK & IVERSON BOTTOMS
Viewshed Management
186 acres (24% of area)



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0 750 1,500 3,000 4,500 6,000
Feet



SOILS

The bottomland has Arenzil, Volney, Eitzen, and Orion. These soils are moist, alluvial soils. They tend to be fertile, but are subject to periodic flooding and high water table.

The ridge tops and gentle slopes have Fayette, Paint Creek, and Village silt loams. Fayette, Paint Creek and Village 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.

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

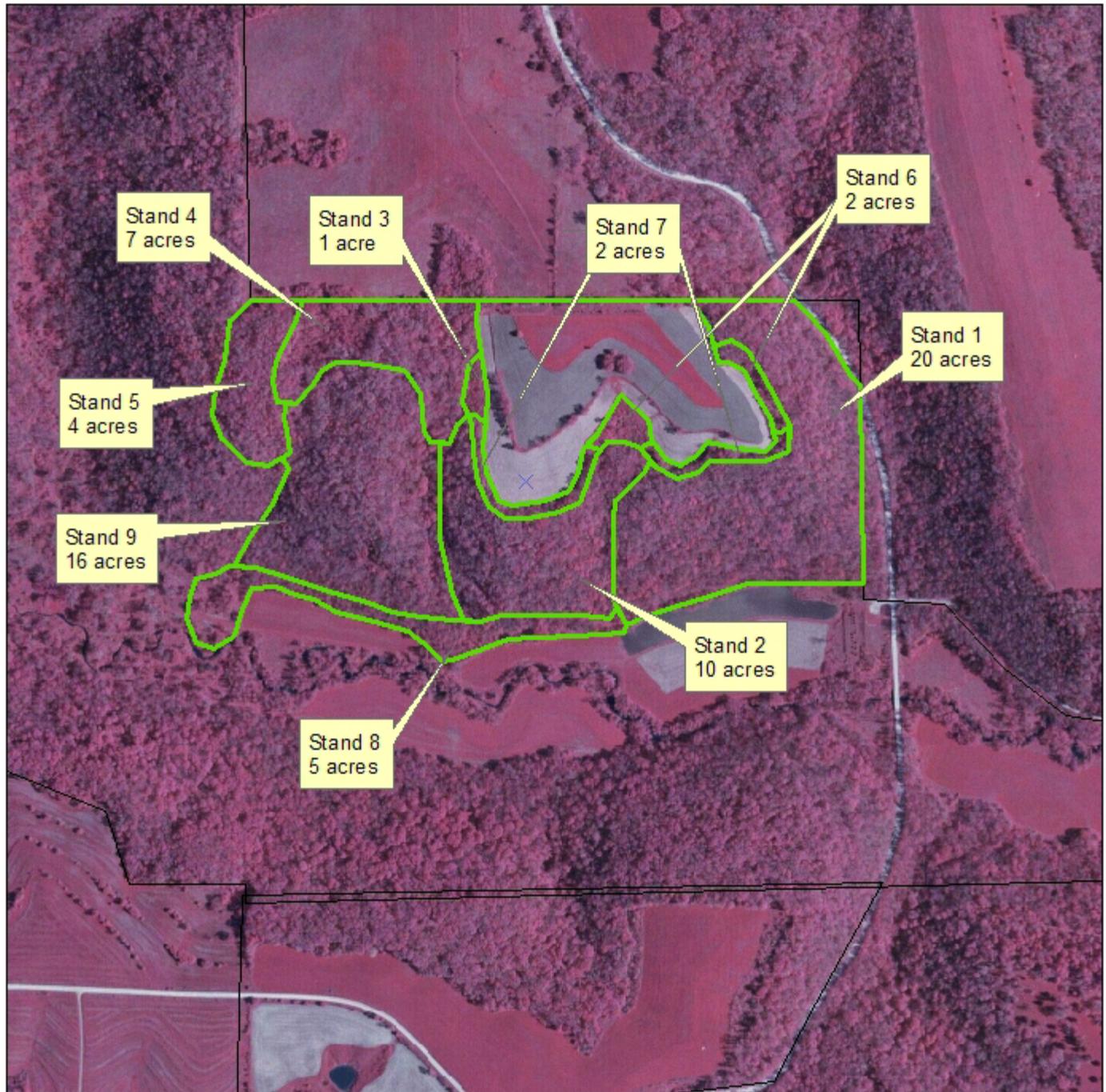
WORK PLAN

FOR

PINE CREEK & IVERSON BOTTOMS WILDLIFE AREAS

This is the “working plan” 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.

PINE CREEK WILDLIFE AREA Stands 1-9



Sec. 12 & 13 Pleasant Twsp.,
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Sec. 5, 7, 8 & 18 Hanover Twsp.,
T99N-R6W, Allamakee Co.

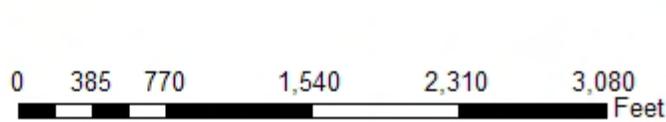


PINE CREEK WILDLIFE AREA

Stands 10 - 18

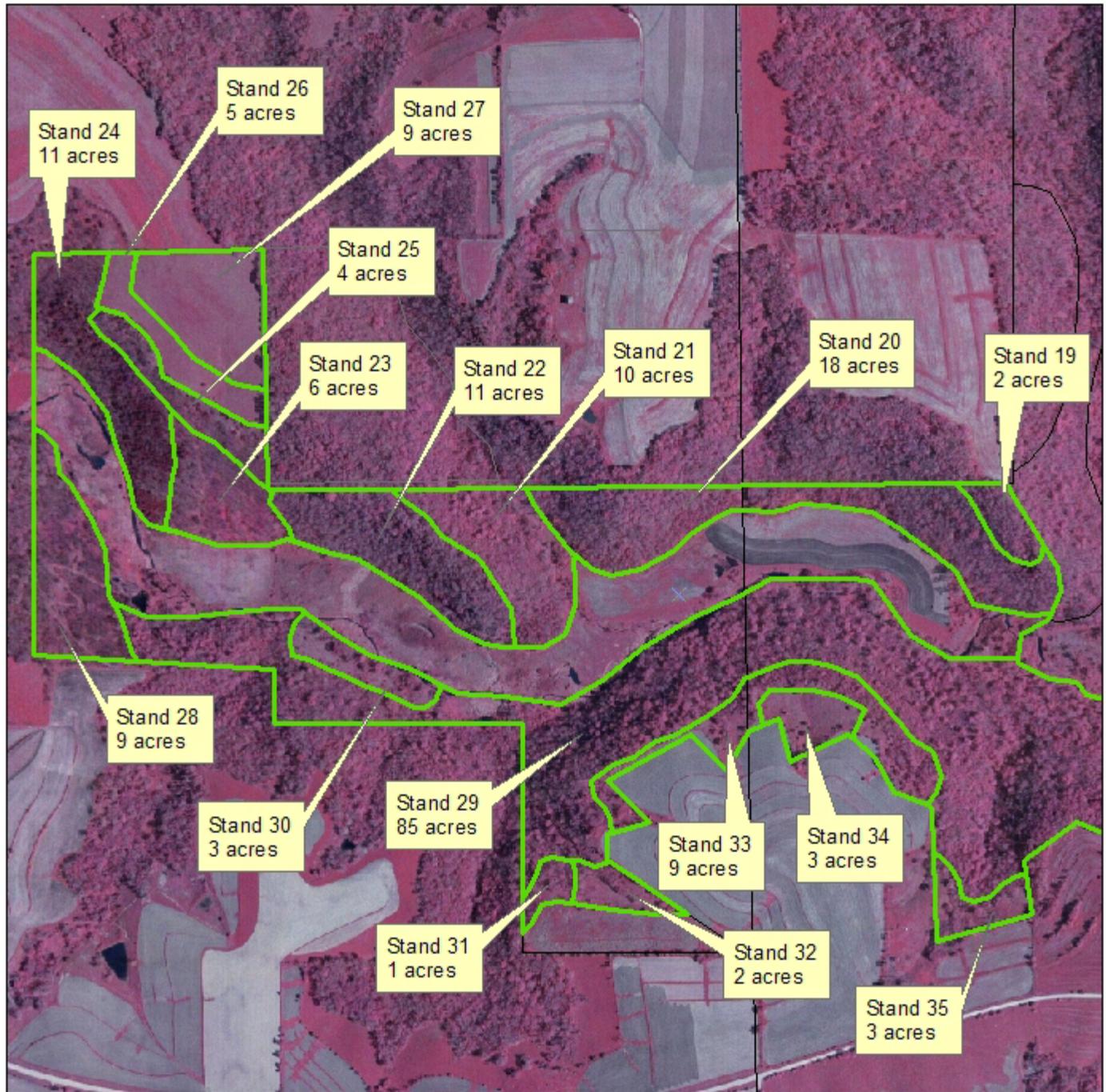


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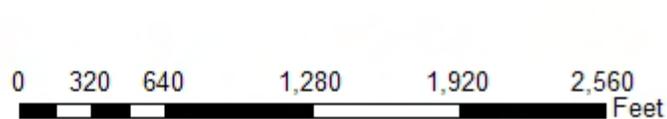


PINE CREEK WILDLIFE AREA

Stands 19-35

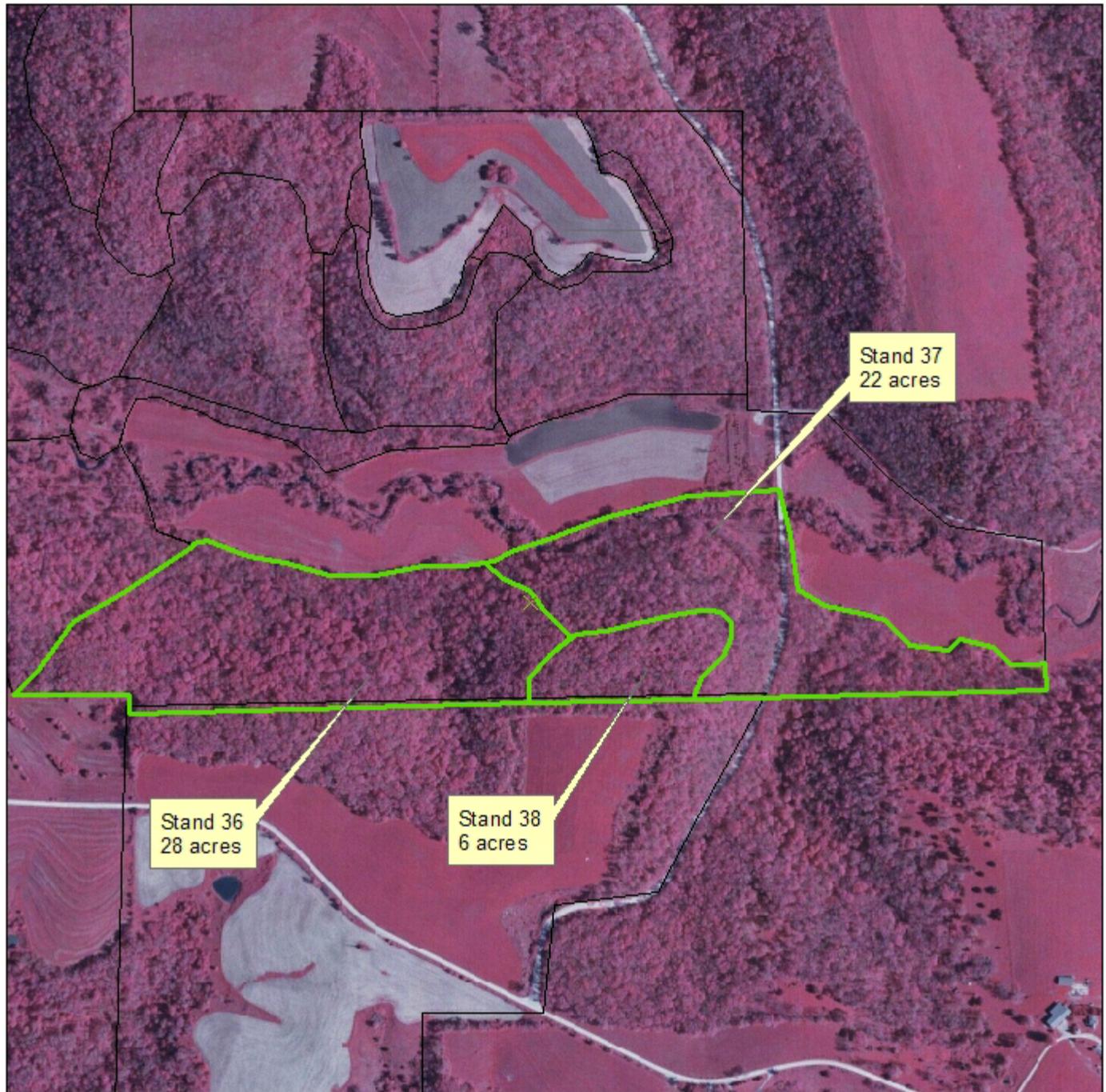


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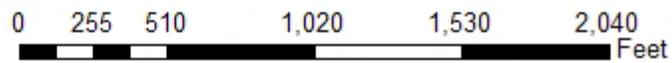


PINE CREEK WILDIFE AREA

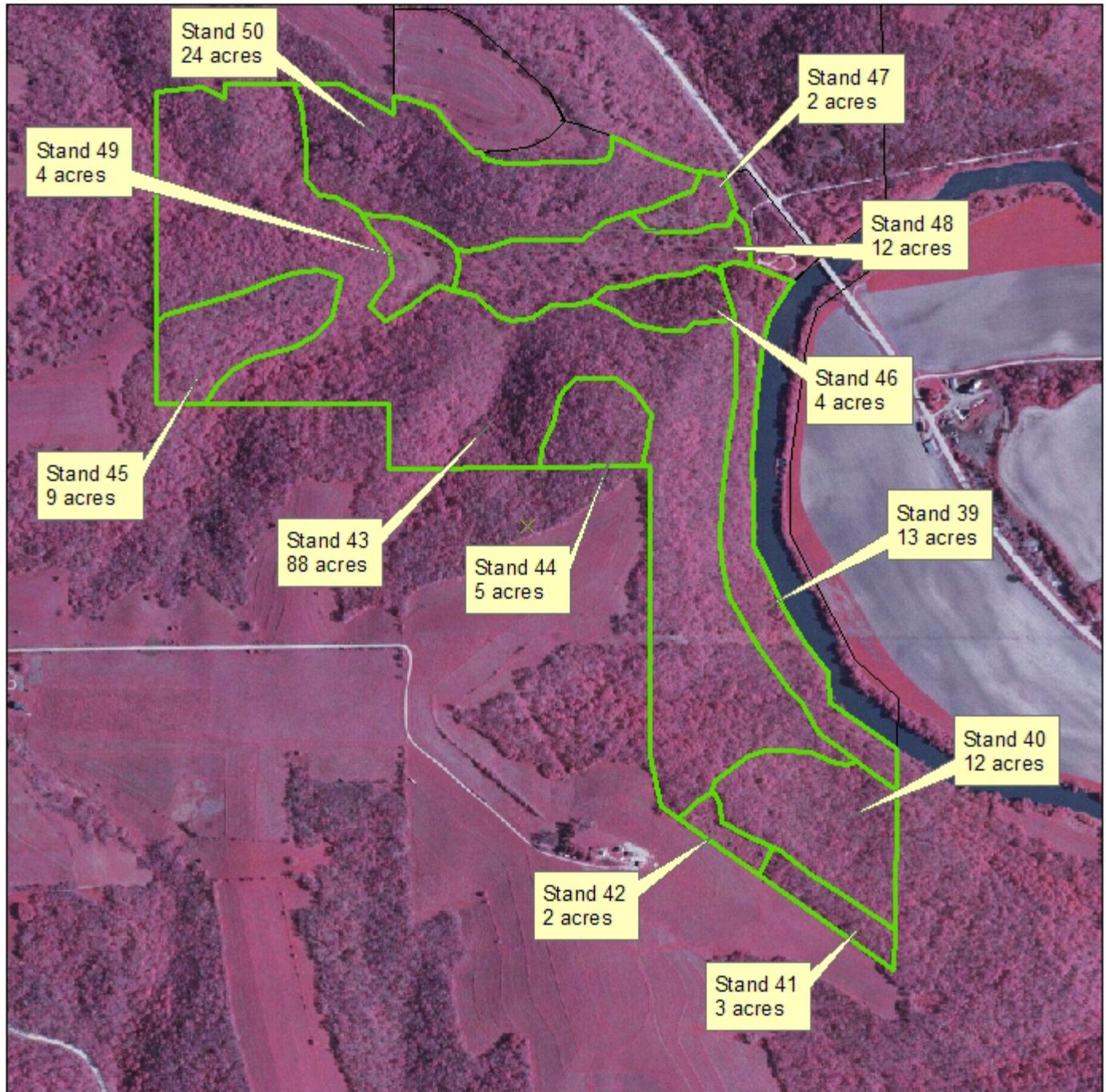
Stands 36-38



Sec. 12 & 13 Pleasant Twsp.,
T99N-R7W, Winneshiek Co.
Sec. 5, 7, 8 & 18 Hanover Twsp.,
T99N-R6W, Allamakee Co.



IVERSON BOTTOMS WILDLIFE AREA Stands 39-50



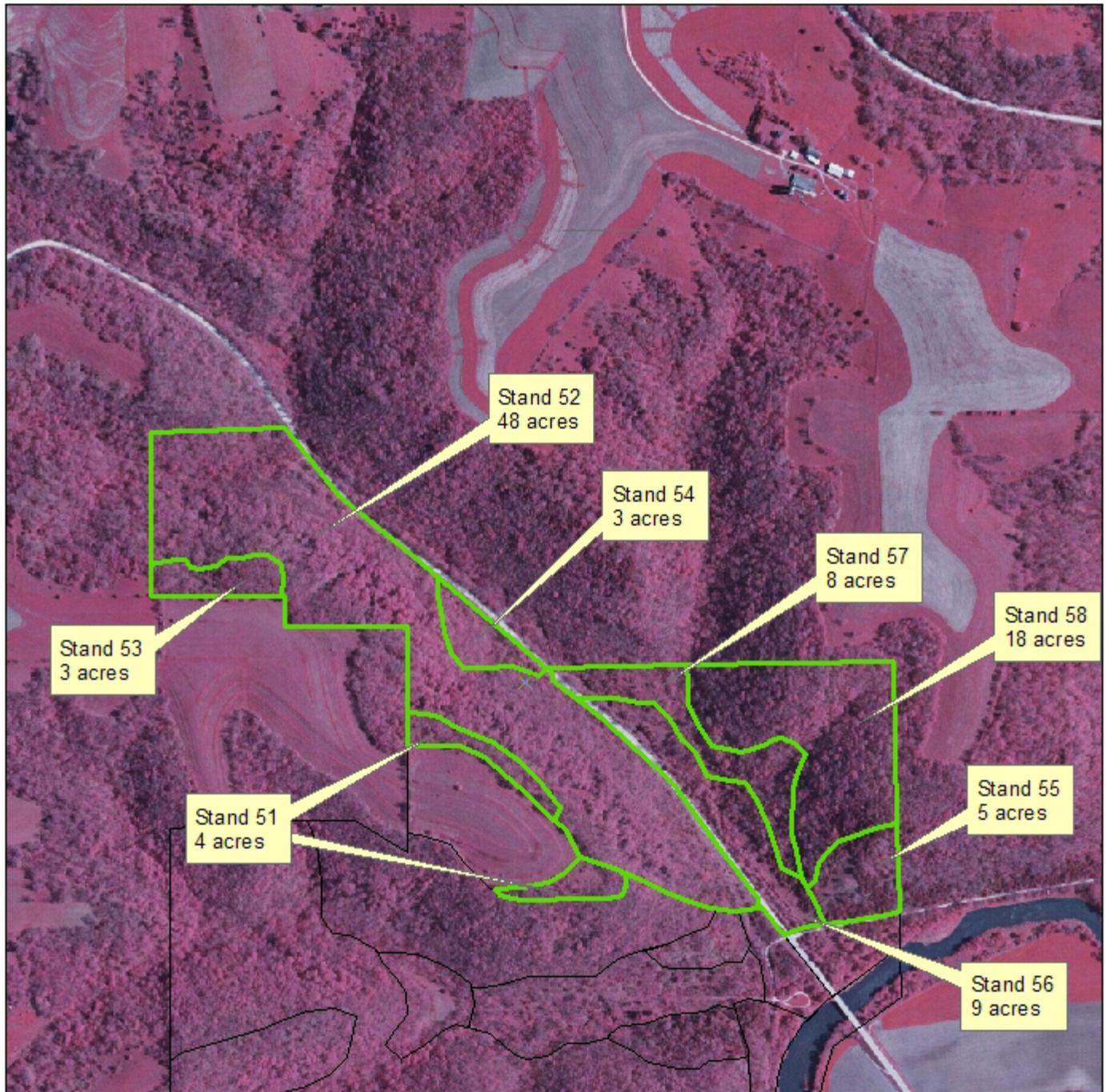
Sec. 12 & 13 Pleasant Twsp.,
T99N-R7W, Winneshiek Co.
Sec. 5, 7, 8 & 18 Hanover Twsp.,
T99N-R6W, Allamakee Co.

0 320 640 1,280 1,920 2,560 Feet



IVERSON BOTTOMS WILDLIFE AREA

Stands 51-58



Sec. 12 & 13 Pleasant Twsp.,
T99N-R7W, Winneshiek Co.
Sec. 5, 7, 8 & 18 Hanover Twsp.,
T99N-R6W, Allamakee Co.

0 320 640 1,280 1,920 2,560 Feet

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DESCRIPTION AND RECOMMENDATIONS FOR INDIVIDUAL STANDS

Stand 1: 20 acres

Site Description -

Steep east and south facing slope with LaCrescent soils.

Woodland Description-

The area is medium sized (12-18" dia.) red oak, bur oak, and walnut. The understory is elm, ironwood, hackberry, and hard maple.

Management Recommendations – Uneven Age

The undesirable species could be removed now to encourage desirable young trees in the understory. The area could be selectively harvested in 10-15 years to remove the mature and damaged trees.

Timber Stand Improvement (Weed Tree Removal) -

The undesirable species such as elm, ironwood, bitternut hickory, and boxelder could be killed. The trees should be cut off or girdled. Pathfinder II should be applied to the cut surface to prevent resprouting. This work can be done anytime except spring during heavy sap flow. Remove undesirable species that are 1" and larger in diameter.

In addition, desirable species that are poor formed or damaged should be coppiced. This is cutting the trees at ground level so the stumps will sprout. No herbicide should be used on the stumps of desirable species.



Stand 2: 10 acres

Site Description –

South facing slope with LaCrescent soils.

Woodland Description -

Medium sized (14-18” dia.) red oak, black oak, bur oak, and shagbark hickory. The understory is ironwood, shagbark hickory, elm, hackberry, hard maple, and a few red and white oak.

Management Recommendations – Even Age

Stand 2 can be managed as a “Shelterwood” to encourage the natural regeneration of oak. The undesirable species in the understory can be removed now to allow more sunlight to reach the forest floor. Once there are a sufficient number of young oak at least 3-4 ft. tall, the stand can be clearcut to provide full sunlight for the young oak. A shelterwood can take 15-20 years to establish young oak.

Timber Stand Improvement (Weed Tree Removal) -

The undesirable species such as elm, ironwood, bitternut hickory, and boxelder could be killed. The trees should be cut off or girdled. Pathfinder II should be applied to the cut surface to prevent resprouting. This work can be done anytime except spring during heavy sap flow. Remove undesirable species that are 1” and larger in diameter.

In addition, desirable species that are poor formed or damaged should be coppiced. This is cutting the trees at ground level so the stumps will sprout. No herbicide should be used on the stumps of desirable species.

Stand 3: 1 acre

Site Description –

West facing slope along woods road.

Woodland Description -

Sapling (1-4” dia.) aspen, oak, and cherry. The area was cut 10 years ago to create young, dense growth and expand the aspen.

Management Recommendations – Early Successional

Clearcut the area again in 5 years to maintain dense, young growth with a mixture of shrubs.

Stand 4: 7 acres

Site Description –

South facing slope with Village and Fayette soils.

Woodland Description -

Pole sized (5-10” dia.) aspen, elm, and black ash. The understory is a mixture of shrubs with gooseberry and pagoda dogwood. The area was clearcut 15 years ago to develop habitat for ruffed grouse and woodcock.

Management Recommendations – Early Successional

The area should be clearcut now to maintain early successional habitat. The trees have grown too large to provide the high stem density needed. There will be a few merchantable trees along the edges of the area.



Stand 5: 4 acres

Site Description -

Ridge with Fayette and Village soils.

Woodland Description -

Medium size (12-18” dia.) aspen, shagbark hickory, black oak, and cottonwood. The understory is gooseberry and sapling white oak.

Management Recommendations – Early Successional

Clearcut the area now to regenerate the aspen and provide dense cover. There are scattered, merchantable trees. Stands 4 and 5 can be harvested together.

Stand 6: 2 acres

Site Description -

Upland ridge adjoining crop field.

Woodland Description –

Sapling (1-4” dia.) aspen, red oak, elm, and cherry. The area was clearcut 10 years ago.

Management Recommendations – Early Successional

Clearcut the area again in 5 years. This area has a good stocking of young aspen that can be promoted with cutting.

Stand 7: 2 acres

Site Description -

Ridge top along crop field.

Woodland Description -

Pole sized (5-10" dia.) aspen, shagbark hickory, and elm. There are scattered, merchantable red oak, black oak, and white oak.

Management Recommendations - Early Successional

A narrow strip could be clearcut along the woods to feather the edge. The aspen on the edge will be allowed to root sucker into the field, creating a wider strip of early successional habitat. There are scattered trees that can be sold along with Stands 4 and 5.

Stand 8: 5 acres

Site Description -

Bench and bottom land along the crop fields in the valley.

Woodland Description -

Pole sized (5-10" dia.) elm, hackberry, boxelder, and a few walnut. There are scattered, large bur oak trees.

Management Recommendations - Early Successional

Clearcut this area to feather the edge of the woods and create young, dense tree growth with a mixture of shrubs. Leave the large bur oak to provide acorns.

Stand 9: 16 acres

Site Description -

South facing slope with LaCrescent soils.

Woodland Description -

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

Management Recommendations - Even Age

Stand 9 can be managed as a "Shelterwood" to encourage additional natural regeneration of oak and provide more sunlight for the existing young oak. The undesirable species and poor formed trees should be removed now. In 15 years, the stand can be clearcut to provide full sunlight for the young oak.

Stand 10: 8 acres

Site Description –

Ridge with Paint Creek and LaCrescent soils.

Woodland Description -

Pole sized elm, shagbark hickory, basswood, white oak, red oak, black oak, and cherry.

Management Recommendations – Even Age

Stand 10 has a fair stocking of young oak and hickory. This stand could be thinned to provide more growing space for the oak.

Timber Stand Improvement (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 the 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 to favor as crop trees are red oak, white oak, black oak, and shagbark hickory.

The trees to be removed can be felled or double girdled. No herbicide is necessary.

Stand 11: 3 acres

Site Description –

Ridge adjoining open field on private land.

Woodland Description -

Medium sized (12-18” dia.) white oak, bur oak, and shagbark hickory. The understory is elm, basswood, and ironwood.

Management Recommendations – Even Age

Stand 11 can be managed as a shelterwood. The undesirable species in the understory can be killed in 5-10 years. If oak regeneration is established, the stand can be clearcut harvested in 15-20 years.

Stand 12: 18 acres

Site Description -

Ridge top bordering open field on private land.

Woodland Description -

Medium sized white oak, black oak, shagbark hickory, and red oak. The understory is ironwood, elm, basswood, hard maple, and clumps of pole sized white oak, black oak, red oak, and hickory.

Management Recommendations - Even Age

Kill the undesirable species in the understory now to encourage additional oak seeding and release the existing young oak. Clearcut the stand in 10 years to maintain a good oak component.

Stand 13: 6 acres

Site Description -

Ridge top with gentle slopes. Borders field on private land.

Woodland Description -

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

Management Recommendations - Even Age

In approximately 30 years, clearcut the area and plant oak.

Stand 14: 8 acres

Site Description -

Ridge top and southeast facing slopes.

Woodland Description -

Medium sized white oak, red oak, and shagbark hickory. The understory is elm, ironwood, and hard maple.

Management Description - Even Age

In 20-25 years, this area could be clearcut and replanted with oak.

Stand 15: 123 acres

Site Description –

Valley with steep east and west facing slopes.

Woodland Description –

Medium sized (12-18” dia.) bur oak, white oak, red oak, basswood, and hard maple. There are walnut scattered through the valley. The understory is elm, ironwood, bitternut hickory, hard maple, and basswood.

Management Recommendations – Uneven Age

Due to the steep slopes and the amount of hard maple and basswood already present in the understory, Stand 15 can best be managed as an uneven age or all age forest. The undesirable species and poor formed trees could be removed now to encourage the development of the young hard maple and basswood. The scattered young oak could be released by removing competing trees. The stand could be selectively harvested in 20 years.

The thinning will increase the amount of ground cover which will provide better wildlife habitat.

Stand 16: 16 acres

Site Description -

Bottom with Arenzville and Volney soils. These soils are poorly drained.

Woodland Description -

Pole sized (5-10” dia.) elm, boxelder, and walnut. Many of the walnut are poor formed and the tops have died back due to the wet soil conditions and cold injury that can occur in wet bottoms.

Management Recommendations – Even Age

All of the elm and boxelder 1 inch and larger in diameter could be killed. Cut the trees and treat the stumps with Pathfinder II to prevent sprouting. Prune the walnut with good form, and coppice the walnut with dead tops or poor form.

Interplant the openings created by the killing of the boxelder and elm with bur oak and swamp white oak. Plant the trees 30 ft. apart, or 50 trees per acre. Place a 4 ft. tall, vented tree shelter over each tree. Support the shelter with a 1 inch diameter bamboo stake.

Control competing vegetation by spot spraying a combination of Roundup and Princep 4L herbicides. Protect the seedling from the spray and spray an area 4 ft in diameter around each tree. Apply 2 quarts of Roundup and 4 quarts of Princep 4L per acre treated. The herbicides must be applied when the vegetation is actively growing.

150 bur oak and 150 swamp white oak should be planted.

Stand 17: 10 acres

Site Description –

Steep, east facing slope.

Woodland Description -

Pole sized red oak, white oak, walnut, elm, and black oak. This area was commercially clearcut 20-25 years ago.

Management Recommendations – Even Age

This is a nice stand of young trees to thin to favor the growth of the oak and walnut.

Timber Stand Improvement (Crop Tree Release) -

Select the best tree every 30 ft. apart. Fell or double girdle trees with crowns that are touching or overtopping the crowns of the selected trees. Oak should be favored.

Stand 18: 8 acres

Site Description -

Ridge with Village and Paint Creek soils.

Woodland Description -

Pole sized (5-10” dia.) red oak, black oak, white oak, aspen, elm, shagbark hickory, and cherry. There are scattered white oak and walnut which are 14-18” in diameter. This area has a good component of young oak.

Management Recommendations – Even Age

Stand 18 is a good area to thin to favor the growth and development of the young oak.

Timber Stand Improvement (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. 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 to favor because of mast production are red oak, white oak, black oak, shagbark hickory, and walnut.

The trees to be removed can be felled or double girdled. No herbicide is necessary.

Stand 19: 2 acres

Site Description -

Ridge and south facing slope on shallow soils.

Woodland Description -

Pole sized (5-10" dia.) aspen, bur oak, and red oak. The understory is gray dogwood, hazel, and prickly ash.

Management Recommendations - Early Successional

The stand has a good component of aspen and shrubs. This area would be excellent to clearcut to create early successional habitat. The cut would be non commercial.

Stand 20: 18 acres

Site Description -

Steep, south facing slope with shallow soils.

Woodland Description -

Medium sized (12-18" dia.) bur oak, red oak, white oak, and aspen. The understory is red cedar, elm, ironwood, prickly ash, hazel, and cherry.

Management Recommendations - Viewshed

Due to the steep slope and shallow soils, I suggest leaving this area like it is with no intensive management.

Stand 21: 10 acres

Site Description -

Southeast facing slope.

Woodland Description –

Medium sized red oak, white oak, shagbark hickory, and bur oak. The understory is dense ironwood, hard maple, elm, cherry, and basswood. There are a few pole sized red oak where the canopy is open.

Management Recommendations – Uneven Age

The undesirable species in the understory could be killed now to establish a diversity of desirable species in the understory. The stand could be selectively harvested in 15-20 years. The thinning will also create denser ground cover for wildlife.

Timber Stand Improvement (Weed Tree Removal) -

The undesirable species such as elm, ironwood, bitternut hickory, and boxelder could be killed. The trees should be cut off or girdled. Pathfinder II should be applied to the cut surface to prevent resprouting. This work can be done anytime except spring during heavy sap flow. Remove undesirable species that are 1” and larger in diameter.

In addition, desirable species that are poor formed or damaged should be coppiced. This is cutting the trees at ground level so the stumps will sprout. No herbicide should be used on the stumps of desirable species.

Stand 22: 11 acres

Site Description -

Steep, southwest facing slope with shallow soils.

Woodland Description -

Medium sized bur oak and black oak. The understory is red cedar, prickly ash, and ironwood.

Management Recommendations – Viewshed

This area is very steep and rocky and is not conducive to management.

Stand 23: 6 acres

Site Description -

South facing slope with shallow soils. The slope is less than Stands 22 and 24.

Woodland Description -

Medium sized (14-18" dia.) bur oak, black oak, white oak, and shagbark hickory. The understory is elm, ironwood, black oak, white oak, prickly ash, and a few walnut.

Management Recommendations - Even Age

Stand 23 could be managed on a "Shelterwood" system to regenerate oak. Oak is already present in the understory. Kill all undesirable species 1 inch and larger in diameter. Cut the trees and treat the stumps with Pathfinder II to prevent sprouting. Kill ironwood, elm, boxelder, bitternut hickory, and prickly ash.

Also, fell stunted and poor formed oak and hickory. Cut these trees at ground level and do not treat the stumps with herbicide. The thinning should allow roughly 50% of the sunlight to reach the ground.

The stand could be clearcut in 10-15 years after there is a good stocking of young oak well established.

Stand 24: 11 acres

Site Description -

Steep southwest facing slope with limestone bluffs.

Woodland Description -

Medium sized (12-18" dia.) bur oak, black oak, and shagbark hickory. The understory is red cedar.

Management Recommendations - Viewshed

Leave this area as is due to the steep slopes and shallow soils.

Stand 25: 4 acres

Site Description -

Ridge with Fayette silt loam soils.

Woodland Description -

This area has naturally reseeded into the abandoned field. The stand is sapling (1-4" dia.) shagbark hickory, black oak, elm, and scattered red cedar.

Management Recommendations – Even Age

In 10 years, this area could be thinned to provide more growing space for the best trees. Select a tree every 30 ft. apart and remove the competing trees.

Stand 26: 5 acres

Site Description -

Brome grass field with Fayette silt loam soils.

Woodland Description -

Open grass field.

Management Recommendations – Early Successional

This area could be planted to a mixture of aspen and shrubs to create a good “edge” on the woods. The area should be mowed in August and broadcast sprayed with Roundup in September to kill the brome prior to planting. Plant the aspen on a 6 X 10 ft. spacing, or 700 trees per acre. Plant 3 rows of shrubs along the east edge. Plant the shrubs on a 4 X 10 ft. spacing and leave 20 ft. between the aspen and shrub rows. Suggested shrubs species are wild plum, hazelnut, and ninebark.

Control competing vegetation by spraying a 4 ft. band down each row with 4 quarts of Pendulum per acre treated. The Pendulum is a preemergent and must be applied before any vegetation begins to grow in the spring. The area between the rows should be mowed 2-3 times throughout the growing season.

2,200 aspen and 300 shrubs can be planted on the site.

Stand 27: 9 acres

Site Description -

Upland with Fayette silt loam soils.

Woodland Description -

Brome grass field.

Management Recommendations – Early Successional

This field will be seeded with native prairie grasses and forbs.

Stand 28: 9 acres

Site Description -

North facing slope with shallow soils.

Woodland Description -

Pole sized bitternut hickory, cherry, ironwood, birch, hard maple, elm, and walnut.

Management Recommendations – Even Age

Timber Stand Improvement (Crop Tree Release) -

In approximately 5 years, identify the best tree every 30 ft. apart and remove the competing trees. The selected walnut trees should be pruned to improve their quality.

Stand 29: 85 acres

Site Description -

Steep, north facing slopes above the trout stream.

Woodland Description -

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

Management Recommendations – Viewshed

Leave this area as is to provide a wooded buffer along the trout stream.

Stand 30: 3 acres

Site Description -

Upland bench.

Woodland Description -

Semi open area with sapling ironwood, elm, and scattered red cedar.

Management Recommendations – Viewshed

This area could be planted with oak to improve the species composition. Plant the area with 50 large oak seedlings per acre. Plant the trees 30 ft. apart. Protect each tree with a 4 ft. tall, vented tree shelter.

Control competing vegetation by spot spraying a combination of Roundup and Princep 4L herbicides. Protect the seedling from the spray and spray an area 4 ft in diameter around each tree. Apply 2 quarts of Roundup and 4 quarts of Princep 4L per acre treated. The herbicides must be applied when the vegetation is actively growing.

100 oak could be planted on the area.

Stand 31: 1 acre

Site Description -

Ridge along the woodland edge.

Woodland Description -

Pole sized elm and aspen.

Management Recommendations – Early Successional

Clearcut this area to create dense, young growth. Treat the stumps of elm and boxelder with Pathfinder II to prevent sprouting.

Stand 32: 2 acres

Site Description -

North facing slope and narrow valley.

Woodland Description -

Pole sized (5-10" dia.) walnut.

Management Recommendations – Even Age

Timber Stand Improvement (Crop Tree Release) -

Select the best tree every 30 ft. apart. Remove trees with crowns that are touching or overtopping the crowns of the selected trees. Prune the walnut trees that are selected as crop trees.

Stand 33: 9 acres

Site Description -

Upland with Paint Creek silt loam soils.

Woodland Description -

Pole sized elm, ironwood, boxelder, black oak, and scattered aspen.

Management Recommendations – Early Successional

Within the next 5 years, clearcut this area to feather the edge and create a dense growth of young trees and shrubs. The cut would be noncommercial.

Stand 34: 3 acres

Site Description -

North facing slope with Paint Creek soils.

Woodland Description -

Mainly brome grass and golden rod with clumps of prickly ash.

Management Recommendations - Even Age

The area could be planted with oak to improve the species composition of the site. Plant a large oak seedling every 30 ft. apart, or 50 trees per acre. Protect each tree with a 4 ft. tall, vented tree shelter. Support the shelter with a 1 inch diameter bamboo stake.

Control competing vegetation by spot spraying a combination of Roundup and Princep 4L herbicides. Protect the seedling from the spray and spray an area 4 ft in diameter around each tree. Apply 2 quarts of Roundup and 4 quarts of Princep 4L per acre treated. The herbicides must be applied when the vegetation is actively growing.

Stand 35: 3 acres

Site Description -

North facing slope and narrow valley.

Woodland Description -

Pole sized walnut, elm, cherry, red oak, and black oak.

Management Recommendations – Even Age

Good stand to thin to favor the growth of the oak and walnut. Select your best tree (Crop Tree or Target Tree) every 30 ft. apart. Remove trees with crowns that are touching or overtopping the crowns of the “target tree”. Prune the walnut that are selected.

Stand 36: 28 acres

Site Description -

Steep, north facing slope that borders the open field on the bottom.

Woodland Description -

Medium sized (12-18” dia.) red oak, hard maple, and basswood. The understory is hard maple, ironwood, and bitternut hickory.

Management Recommendations – Uneven Age

Stand 36 is accessible and could be managed as an uneven age or all age forest. In 10 years, the undesirable species and poor formed trees in the understory could be removed. In approximately 20 years, the stand could be selectively harvested to remove the damaged and defective trees. This will place more habitat on the ground for reptiles and amphibians and make the understory thicker.

Stand 37: 22 acres

Site Description -

Steep, north facing slope above the trout stream.

Woodland Description -

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

Management Recommendations – Viewshed

Leave this area as is for a buffer along the trout stream.

Stand 38: 6 acres

Site Description –

Ridge top and north facing slope with Fayette and Village soils.

Woodland Description –

Large (20" and larger in dia.) red oak, white oak, hard maple, and basswood. The understory is ironwood, bitternut hickory, elm, and hard maple.

Management Recommendations – Even Age

In 5 years, clearcut harvest the area and plant oak. After the harvest, fell all trees 1 inch and larger in diameter. Treat the stumps of undesirable species with Pathfinder II to prevent sprouting. Plant 50 large oak seedlings per acre and protect each tree with a 4 ft. tall, vented tree shelter.

Stand 39: 13 acres

Site Description –

Steep, east facing slope along the Upper Iowa River.

Woodland Description –

Large red oak and white oak. The understory is ironwood, basswood, elm, and hard maple. There are scattered red cedar on the north end.

Management Recommendations – Viewshed

Leave this area as it to provide a buffer along the Upper Iowa River.

Stand 40: 12 acres

Site Description -

East facing slope with LaCrescent soils.

Woodland Description -

Medium sized (12-18" dia.) red oak, white oak, basswood, and hard maple. The understory is ironwood, elm, hard maple, bitternut hickory, and basswood. There are a few red oak poles.

Management Recommendations – Even Age

Clearcut the area and replant with oak. All trees 14" and larger in diameter can be sold. Following the harvest, fell all trees 1" and larger in diameter. Treat the stumps of ironwood, elm, and bitternut hickory with Pathfinder II to prevent sprouting. Plant the area with large red and white oak seedlings. Protect each tree with a 4 ft. tall, vented tree shelter. Support the shelter with a 1" in diameter bamboo stake. Plant 50 trees per acre.

600 trees will be needed to plant the area.



Stand 41: 3 acres

Site Description –

Ridge along the edge of the woods.

Woodland Description -

Pole sized birch, cherry, aspen, elm, and shagbark hickory. There are scattered, merchantable trees.

Management Recommendations – Early Successional

Clearcut the area along with Stand 40 to create early successional habitat.

Stand 42: 2 acres

Site Description -

Ridge top along the woodland edge.

Woodland Description -

Sapling (1-4" dia.) aspen, elm, and black oak. The area was clearcut 8 years ago to promote the aspen and create early successional cover.

Management Recommendations – Early Successional

Clearcut the area again in 10 years to maintain early successional habitat.

Stand 43: 88 acres

Site Description –

Steep, east and north facing slopes.

Woodland Description -

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

Management Recommendations – Uneven Age

Stand 43 can be managed as an uneven age or all age forest. The undesirable species and poor formed trees can be killed now to encourage the development of desirable trees in the understory. The stand could be selectively harvested in 15-20 years.

Timber Stand Improvement (Weed Tree Removal) -

The undesirable species such as elm, ironwood, bitternut hickory, and boxelder could be killed. The trees should be cut off or girdled. Pathfinder II should be applied to the cut surface to prevent resprouting. This work can be done anytime except spring during heavy sap flow. Remove undesirable species that are 1" and larger in diameter.

In addition, desirable species that are poor formed or damaged should be coppiced. This is cutting the trees at ground level so the stumps will sprout. No herbicide should be used on the stumps of desirable species.

Stand 44: 5 acres

Site Description -

Ridge top and north facing slope.

Woodland Description -

Medium sized (12-18" dia.) red oak, white oak, ash, and walnut. The understory is ironwood, elm, ash, basswood, hackberry, and bitternut hickory.

Management Recommendations - Even Age

In 10-15 years, clearcut this area and replant with large white and red oak seedlings.

Stand 45: 9 acres

Site Description -

Southeast facing slope with Paint Creek soils.

Woodland Description -

Large (20" and larger in diameter) red oak. There are many broken tops from past storm damage. The understory is elm, ironwood, ash, and hard maple.

Management Recommendations - Even Age

This stand is ready to be clearcut and regenerated with oak. After the clearcut harvest, fell all remaining trees 1 inch and larger in diameter. Treat the stumps of elm, ironwood, boxelder, and bitternut hickory with Pathfinder II to prevent sprouting. Plant the area with large white and red oak seedlings. Plant the trees 30 ft. apart, or 50 trees per acre. Protect each tree with a 4 ft. tall, vented tree shelter. Support the shelter with a 1 inch diameter bamboo stake.

Stand 46: 4 acres

Site Description -

North facing slope.

Woodland Description -

Pole size (5-10" dia.) red cedar, Norway spruce, and aspen. The understory is elm and ironwood.

Management Recommendations - Early Successional

Cut all trees except the red cedar and Norway spruce. Treat the stumps of elm and ironwood with Pathfinder II to prevent sprouting.

Stand 47: 2 acres

Site Description -

South facing slope.

Woodland Description -

Pole sized aspen, red cedar, black oak, walnut, and red oak. There are scattered, large white oak.

Management Recommendations – Early Successional

Clearcut the area in approximately 5 years to create dense, young growth. The red cedar and large oak could be left to provide winter cover and mast production.

Stand 48: 12 acres

Site Description -

Valley with Arenzdale and Volney soils.

Woodland Description -

Sapling to pole sized walnut, red oak, black oak, bitternut hickory, and elm. There is a good stocking of young oak and walnut.

Management Recommendations – Even Age

This area has a good stocking of young oak and walnut in areas. The stand should be thinned now to release the crop trees or target trees. The thinning should favor the oak to maintain a good oak component on the area. Walnut selected as target trees could be pruned to improve their quality.

Stand 49: 4 acres

Site Description –

Small opening in the woods with young trees on the borders.

Woodland Description -

Pole sized elm, aspen, birch, cherry, black oak, and walnut.

Management Recommendations – Early Successional

Clearcut the area in 5-10 years to create early successional habitat. No merchantable trees area present on the area.

Stand 50: 24 acres

Site Description -

South facing slope with LaCrescent soils.

Woodland Description -

The scattered, mature trees were harvested in 2001 to create an even aged stand. The woods now is pole sized (5-10" dia.) red oak, walnut, bitternut hickory, elm, shagbark hickory, and hackberry. There are scattered, medium sized (12-18" dia.) walnut, red oak, and bur oak. The understory is elm and hackberry.

Management Recommendations – Even Age

The stand could be thinned to provide more growing space for the most desirable trees.

Timber Stand Improvement (Crop Tree or Target Tree Release) -

Select a crop tree every 30-35 ft. apart. Remove trees with crowns that are touching or overtopping the crowns of the crop trees. Favor the oak, hickory, and walnut as crop trees.

The trees to be removed can be felled or double girdled. No herbicide is necessary.

Stand 51: 4 acres

Site Description -

Ridge top along grass field.

Woodland Description -

Pole sized aspen, walnut, elm, and shagbark hickory. There are scattered, medium sized cottonwood, walnut, and white oak.

Management Recommendations – Early Successional

Clearcut the area to feather the woodland edge and create a dense growth of young trees and shrubs. There will be scattered trees large enough to sell.

Stand 52: 48 acres

Site Description -

Steep, north and east facing slopes.

Woodland Description -

Medium sized (12-18" dia.) red oak, white oak, walnut, basswood, ash, shagbark hickory, and hard maple. The understory is elm, hackberry, bitternut hickory, basswood, hard maple, and ironwood.

The stand was selectively harvested in 2001 to remove trees with storm damage and fire scars. Many of the red oak in the stand have fire scars on the bases.

Management Recommendations – Uneven Age

The undesirable species in the understory could be killed now to make the understory denser and to improve the species composition of the young trees. In addition, trees that are damaged or poor formed should be felled. Leave a 50 ft. buffer along the gravel road.

The stand can be selectively harvested in 15 years to remove the mature and defective trees.

Stand 53: 3 acres

Site Description -

Gentle, north facing slope.

Woodland Description -

Medium sized (12-18" dia.) red oak, white oak, and shagbark hickory. The understory is bitternut hickory, elm, and hazel. This stand was logged heavy in 2001 with the intent of clearcutting the area, but the followup work was not completed.

Management Recommendations – Even Age

Stand 53 could be clearcut and planted. Fell all trees 1 inch and larger in diameter. Treat the stumps of all species except oak, shagbark hickory, walnut, and aspen. Plant the open areas with large oak seedlings. Plant the trees 30 ft. apart and protect each tree with a 4 ft. tall, vented tree shelter. Support the shelter with a 1 inch diameter bamboo stake.

Plant 100 trees on the area.

Stand 54: 3 acres

Site Description -

East facing slope along the road.

Woodland Description -

Pole sized ironwood, elm, hard maple, aspen, red cedar, and walnut. The understory is hard maple, bladdernut, and nannyberry.

Management Recommendations – Early Successional

Clearcut the area now to create dense, young growth needed by ruffed grouse, woodcock, and many non game species. Leave the cedar for winter cover.

Stand 55: 5 acres

Site Description –

Steep, rocky, south facing slope.

Woodland Description -

Pole sized (5-10” dia.) red cedar, bur oak, and a nice goat prairie.

Management Recommendations - Viewshed

Continue to remove the cedar to enlarge the goat prairie.

Stand 56: 9 acres

Site Description -

Small valley along the gravel road.

Woodland Description -

Pole sized elm, boxelder, cottonwood, aspen, walnut, black oak, and bur oak. The understory is gooseberry, prickly ash, gray dogwood, and honeysuckle.

Management Recommendations – Early Successional

This area could be clearcut in roughly 5 years to provide early successional habitat. This area along with the cedars in Stand 55 will provide excellent wildlife cover.

Stand 57: 8 acres

Site Description -

West facing slopes with LaCrescent soils.

Woodland Description -

Pole sized (5-10" dia.) black oak, walnut, bur oak, white oak, red oak, aspen, elm, and red cedar.

Management Recommendations – Even Age

Timber Stand Improvement (Crop Tree or Target Tree Release) -

Select the best tree every 30 ft. and remove the competing trees. Species to favor are red oak, white oak, bur oak, black oak, and walnut.

Stand 58: 18 acres

Site Description -

Steep, west facing slope with shallow soils.

Woodland Description -

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

Management Recommendations – Viewshed

Due to the steep slopes and difficult access, I suggest leaving this area as is.

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 69 acres designated for early successional management. The allowable cut is 4.6 acres per year (69 acres divided by 15 yrs.). With a working cycle of 5 years, approximately **23 acres could be cut every 5 years.**

Even Age Management Area -

There are 209 acres under even age management. Dividing 209 acres by 125 years, yields an allowable cut of 1.7 acres per year, or **8-9 acres every 5 years, or 16-17 acres every 10 years.**

Uneven Age Management Area -

Stands can be selectively harvested every 20 years to remove mature and defective trees. There are 317 acres under uneven age management. The allowable harvest is **80 acres of selective harvest every 5 years.**

HIGH PRIORITY PROJECTS

Open Tree Planting -

<u>Stand #</u>	<u>Acres</u>	<u>Prescription</u>
16	16	Kill weed trees and plant oak with shelters
26	5	Plant aspen and shrubs in brome field
30	3	Plant oak with shelters in grass opening
34	3	Plant oak with shelters in grass opening
Total	27	

Timber Stand Improvement – Crop Tree Release

<u>Stand #</u>	<u>Acres</u>
10	8
17	10
18	8
28	9
35	3
48	12
50	24
57	8
Total	82

Timber Stand Improvement – Weed Tree Removal

<u>Stand #</u>	<u>Acres</u>	<u>Prescription</u>
1	20	Uneven Age
2	10	Shelterwood
9	16	Shelterwood
12	18	Shelterwood
15	123	Uneven Age
21	10	Uneven Age
23	6	Shelterwood
43	88	Uneven Age
52	48	Uneven Age
Total	339	

Early Successional Clearcuts – 15 yr. rotation

<u>Stand #</u>	<u>Acres</u>	<u>Comments</u>
4	7	Commercial timber sale
5	4	Commercial timber sale
7	2	Commercial timber sale
19	2	
31	1	
41	3	Commercial timber sale
46	4	
54	3	
Total	26	

Even Age Clearcuts – 125 yr. rotation

Stand #	Acres	Prescription
40	12	Clearcut and plant
45	9	Clearcut and plant
Total	21	

Selective Harvest – 20 yr. cycle

No selective harvesting is recommended at this time.

APPENDIX

PINE CREEK & IVERSON BOTTOMS WILDLIFE AREA

SUMMARY OF WOODLAND STANDS

No.	Acres	Timber Type	TreeSize	Mngt. System	Prescription	Priority	Year Complete	Comments
1	20	Red Oak Bur Oak Walnut	Medium	Uneven Age	TSI – kill weed trees	Medium	2009	Selective cut in 10-15 years.
2	10	Red Oak Bur Oak S. Hickory	Medium	Even Age	Shelterwood – TSI – weed tree removal	High	2009	Shelterwood cut in 15 years.
3	1	Aspen	Sapling	Early Successional	Clearcut	High	2014	Noncommercial
4	7	Aspen Elm Black Ash	Pole	Early Successional	Clearcut	High	2009	Few commercial Trees.
5	4	Aspen Hickory Black Oak	Medium	Early Successional	Clearcut	High	2009	Commercial Sale
6	2	Aspen Red Oak Elm	Sapling	Early Successional	Clearcut	High	2014	Noncommercial
7	2	Aspen S. Hickory Elm	Pole	Early Successional	Clearcut	High	2009	Scattered Merchantable trees
8	5	Elm Hackberry Boxelder	Pole	Early Successional	Clearcut	High	2014	Leave large Bur oak. Noncommercial
9	16	Bur Oak Black Oak S. Hickory	Medium	Even Age	Shelterwood – TSI – kill weed trees	High	2009	Shelterwood cut In 15-20 years
10	8	Oak S. Hickory Cherry	Pole	Even Age	TSI – Crop Tree Release	High	2009	
11	3	White Oak Bur Oak S. Hickory	Medium	Even Age	Shelterwood – TSI – kill weed trees	Medium	2019	Clearcut in 20 years.
12	18	W. Oak Bl. Oak Red Oak	Medium	Even Age	Shelterwood – TSI – kill weed trees	High	2009	Clearcut in 2019

No.	Acres	Timber Type	TreeSize	Mngt. System	Prescription	Priority	Year Complete	Comments
13	6	White Oak Red Oak	Medium	Even Age	Clearcut and plant oak	High	2039	
14	8	White Oak Red Oak S. Hickory	Medium	Even Age	Clearcut and plant oak.	High	2034	
15	123	Oak Basswood H. Maple	Medium	Uneven Age	TSI – kill weed trees.	Medium	2009	Selective harvest in 15-20 years.
16	16	Elm Boxelder Walnut	Pole	Even Age	Kill weed trees and interplant oak in openings.	Medium	2009	
17	10	Red Oak White Oak Walnut	Pole	Even Age	TSI – Crop tree release	High	2009	
18	8	Red Oak White Oak Cherry	Pole	Even Age	TSI – Crop tree release	High	2009	
19	2	Aspen Bur Oak Red Oak	Pole	Early Successional	Clearcut	High	2009	Non commercial
20	18	Bur Oak White Oak Red Oak	Medium	View Shed				
21	10	Red Oak White Oak S. Hickory	Medium	Uneven Age	TSI – kill undesirable species	Medium	2009	Selective harvest in 15-20 years
22	11	Bur Oak Black Oak Cedar	Medium	View Shed				
23	6	Bur Oak White Oak S. Hickory	Medium	Even Age	Shelterwood TSI – kill undesirable species	High	2009	Clearcut in 10-15 years.
24	11	Bur Oak S. Hickory Cedar	Medium	View Shed				
25	4	Black Oak S. Hickory	Sapling	Even Age	TSI – crop tree release	High	2019	
26	5	Brome Grass	Pole	Early Successional	Plant aspen and shrubs	High	2009	
27	9	Brome grass	Sapling	Early Successional	Plant native prairie	Medium	2014	
28	9	B. hickory H. maple Walnut	Pole	Even Age	TSI – crop tree release	Medium	2009	

No.	Acres	Timber Type	TreeSize	Mngt. System	Prescription	Priority	Year Complete	Comments
29	85	Oak Maple Basswood	Medium	View shed				
30	3	Ironwood Elm	Sapling	View Shed	Plant oak with tree shelters	High	2009	
31	1	Elm Aspen	Pole	Early Successional	Clearcut	High	2009	Noncommercial
32	2	Walnut	Pole	Even Age	TSI – crop tree release	High	2014	
33	9	Aspen Elm Ironwood	Pole	Early Successional	Clearcut	High	2014	Noncommercial
34	3	Brome grass		Even Age	Plant oak with tree shelters	High	2009	
35	3	Walnut Cherry Red Oak	Pole	Even Age	TSI – crop tree release	High	2009	
36	28	Red Oak H. Maple Basswood	Medium	Uneven Age	TSI – crop tree release	Medium	2019	Selective cut in 2029
37	22	Red Oak H. Maple	Medium	View Shed				
38	6	Red Oak White Oak H. Maple	Large	Even Age	Clearcut & Plant	High	2014	
39	13	Red Oak White Oak	Large	View shed				
40	12	Oak H. Maple Basswood	Medium	Even Age	Clearcut and plant oak	High	2009	
41	3	Aspen Birch Elm	Pole	Early Successional	Clearcut	High	2009	Commercial Sale with Stand 40
42	2	Aspen Elm	Sapling	Early Successional	Clearcut	High	2019	Noncommercial
43	88	Red Oak W. Oak Basswood	Medium	Uneven Age	TSI – weed tree removal	Medium	2009	Selective cut In 15-20 yrs.
44	5	Red Oak W. Oak Walnut	Medium	Even Age	Clearcut and plant oak	High	2019	

No.	Acres	Timber Type	Tree Size	Mngt. System	Prescription	Priority	Year Complete	Comments
45	9	Red Oak	Large	Even Age	Clearcut and plant oak	High	2009	
46	4	Cedar Spruce Aspen	Pole	Early Successional	Clearcut – leave evergreens	High	2009	
47	2	Aspen Cedar Oak	Pole	Early Successional	Clearcut	High	2014	
48	12	Walnut Red Oak B. Hickory	Pole	Even Age	TSI – release crop trees	High	2009	
49	4	Aspen Birch	Pole	Early Successional	Clearcut	High	2014	Noncommercial
50	24	Red Oak Walnut S. Hickory	Pole	Even Age	TSI – crop tree release	High	2009	
51	4	Aspen Elm Walnut	Pole	Early Successional	Clearcut	High	2014	Commercial sale
52	48	Oak H. Maple Basswood	Medium	Uneven Age	TSI – remove undesirable species	Medium	2009	Selective harvest in 10-15 yrs.
53	3	W. Oak Red Oak S. Hickory	Medium	Even Age	Clearcut and plant oak seedlings	High	2014	
54	3	Ironwood Elm H. Maple	Pole	Early Successional	Clearcut	High	2009	Noncommercial
55	5	Red cedar Bur oak	Pole	View Shed				Goat Prairie
56	9	Elm Boxelder Aspen	Pole	Early Successional	Clearcut	High	2014	Noncommercial
57	8	Oak Aspen Walnut	Pole	Even Age	TSI – Release crop trees	High	2009	
58	18	Bur Oak Black Oak S. Hickory	Medium	View Shed				

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

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

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

Common Name	Scientific Name
Golden-winged warbler	<i>Vermivora chrysoptera</i>
Canada warbler	<i>Wilsonia canadensis</i>

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

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

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

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

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

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

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

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 algal 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.