FOREST WILDLIFE STEWARDSHIP PLAN

FOR

COON CREEK WILDLIFE AREA

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

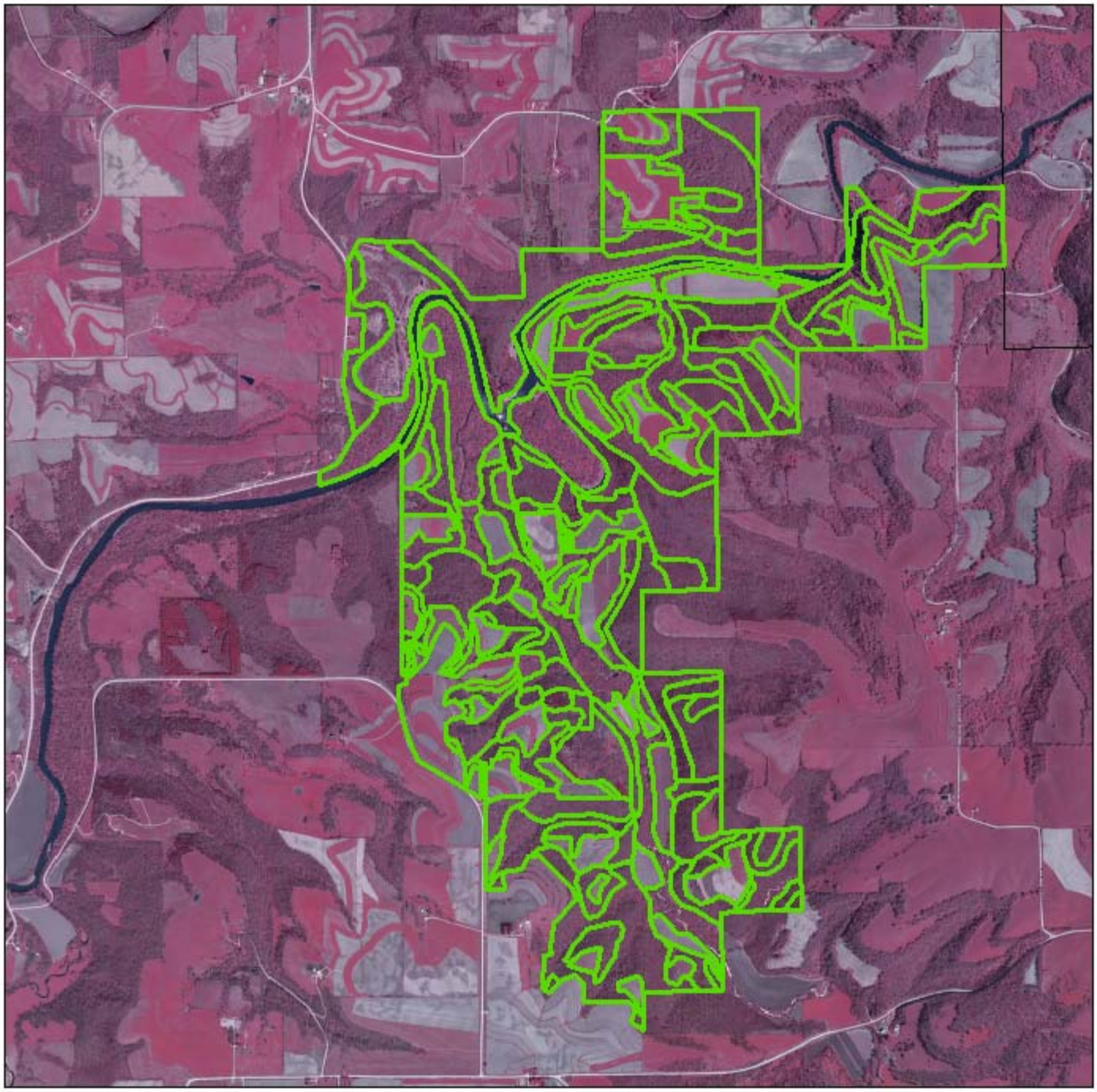
Developed by

Gary Beyer
District Forester

And

Terry Haindfield
Wildlife Biologist

COON CREEK WILDLIFE AREA
1,720 ACRES

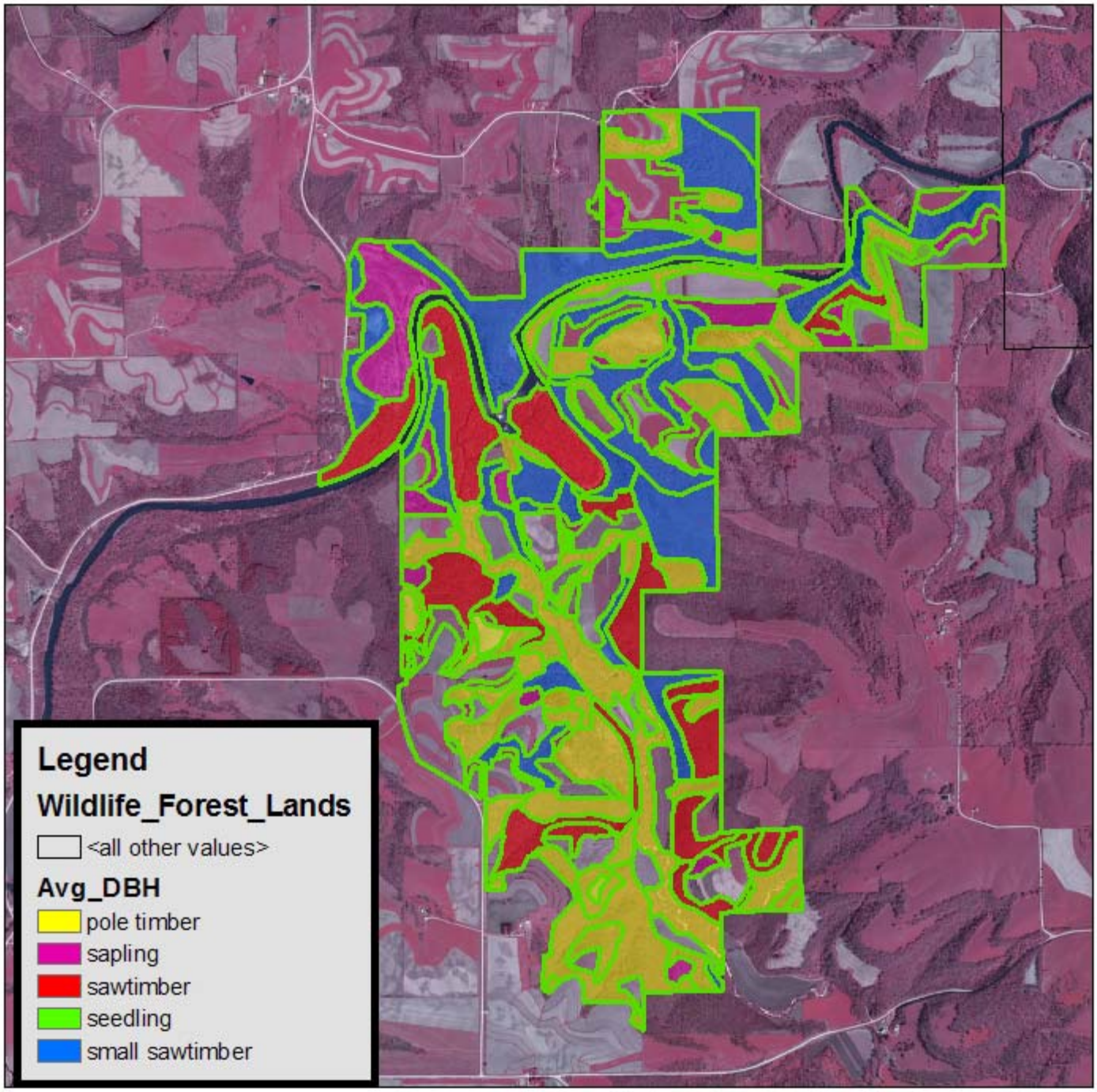


Sec. 35 & 36 Pleasant Twsp., T99N-R7W,
Sec. 2, 3, 10, & 11 Glenwood Twsp., T98N-R7W,
Winneshiek County

N

0 1,000 2,000 4,000 6,000 8,000
Feet

COON CREEK WILDLIFE AREA
AVERAGE TREE SIZE

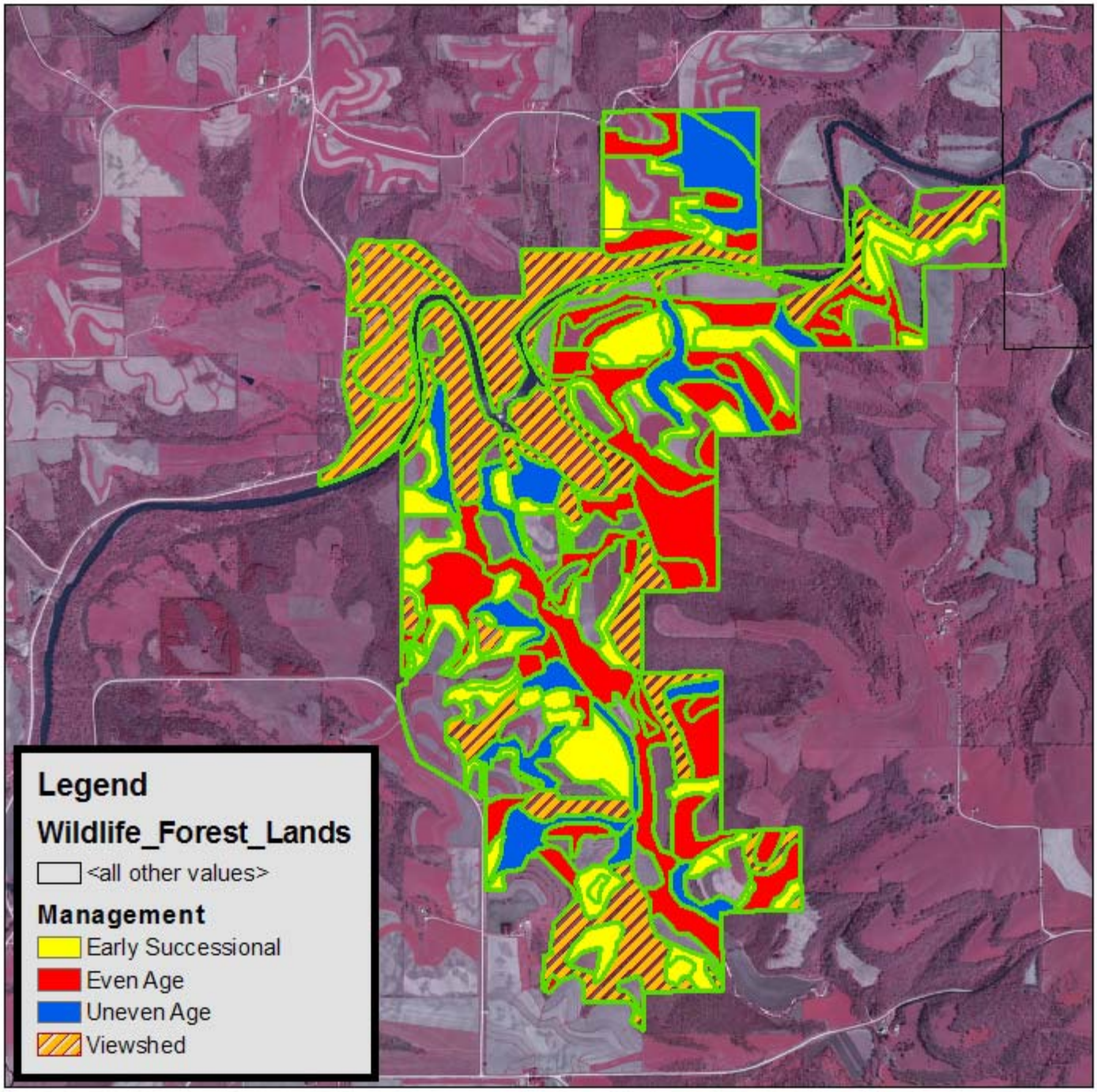


Sec. 35 & 36 Pleasant Twsp., T99N-R7W,
Sec. 2, 3, 10, & 11 Glenwood Twsp., T98N-R7W,
Winneshiek County

N

0 1,000 2,000 4,000 6,000 8,000
Feet

COON CREEK WILDLIFE AREA
FOREST MANAGEMENT SYSTEMS



Sec. 35 & 36 Pleasant Twsp., T99N-R7W,
Sec. 2, 3, 10, & 11 Glenwood Twsp., T98N-R7W,
Winneshiek County

N

0 1,000 2,000 4,000 6,000 8,000
Feet

DATE: 6/12/06

FOREST WILDLIFE STEWARDSHIP PLAN FOR COON CREEK WILDLIFE AREA

MANAGER:

Terry Haindfield
2296 Oil Well Rd.
Decorah, Iowa 52101

TELEPHONE: 563/382-4895

LOCATION: Sec. 35 & 36 Pleasant Twsp., T99N-R7W, Sec. 2,3,10, & 11 Glenwood Twsp., T98N-R7W, Winneshiek Co.

TOTAL ACRES: 1,291

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 1,291 acres addressed in this plan are outlined on the attached aerial photo. The area is divided into 138 different areas or stands, labeled 1-138 on the map. Each area is described in this plan and recommendations outlined for woodland management.

Coon Creek Wildlife Area is 73% forested. The Upper Iowa River runs through the north end of the area. Even though much of the area is woodland, the property is fragmented by many small fields. In 1995, a tornado hit the area, damaging many acres of the woodland. A salvage timber sale was conducted in 1996.

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.

Oak acorns are an important food source for many species of wildlife. Maintaining large oak trees and regenerating young stands of oak to replace the older trees are a major focus of the recommendations. Oak is by far the most important tree for a variety of wildlife species.

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. Coon Creek Wildlife area is fragmented by many small fields. This provides abundant edge habitat. The woodland edges combined with the tornado damage in 1995 has resulted in many acres of early successional habitat. Because Coon Creek has more early successional habitat that most of the state owned wildlife areas, there is still a fair population of ruffed grouse and woodcock. Increasing the habitat for these species is a primary objective of the woodland management recommendations.

Fragile sites and areas that are important for their visual impact will be left as viewshed or old growth forests to provide areas where natural beauty, stream protection, and erosion control are the primary focus.

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
Seedling	8.5	1
Sapling (<4" dbh)	127	10
Pole size (5-12" dbh.)	390.5	31
Medium Size (14-18" dbh.)	479	38
Large (>20" dbh)	259	20
Totals	1,264	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, and increase the acres of early successional growth.

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

Management System	Acres	% of Total Area
Early Successional	263.5	20
Even Age	424	33
Uneven Age	245	19
Viewshed	358.5	28
Total	1,291	100

Early Successional Management -

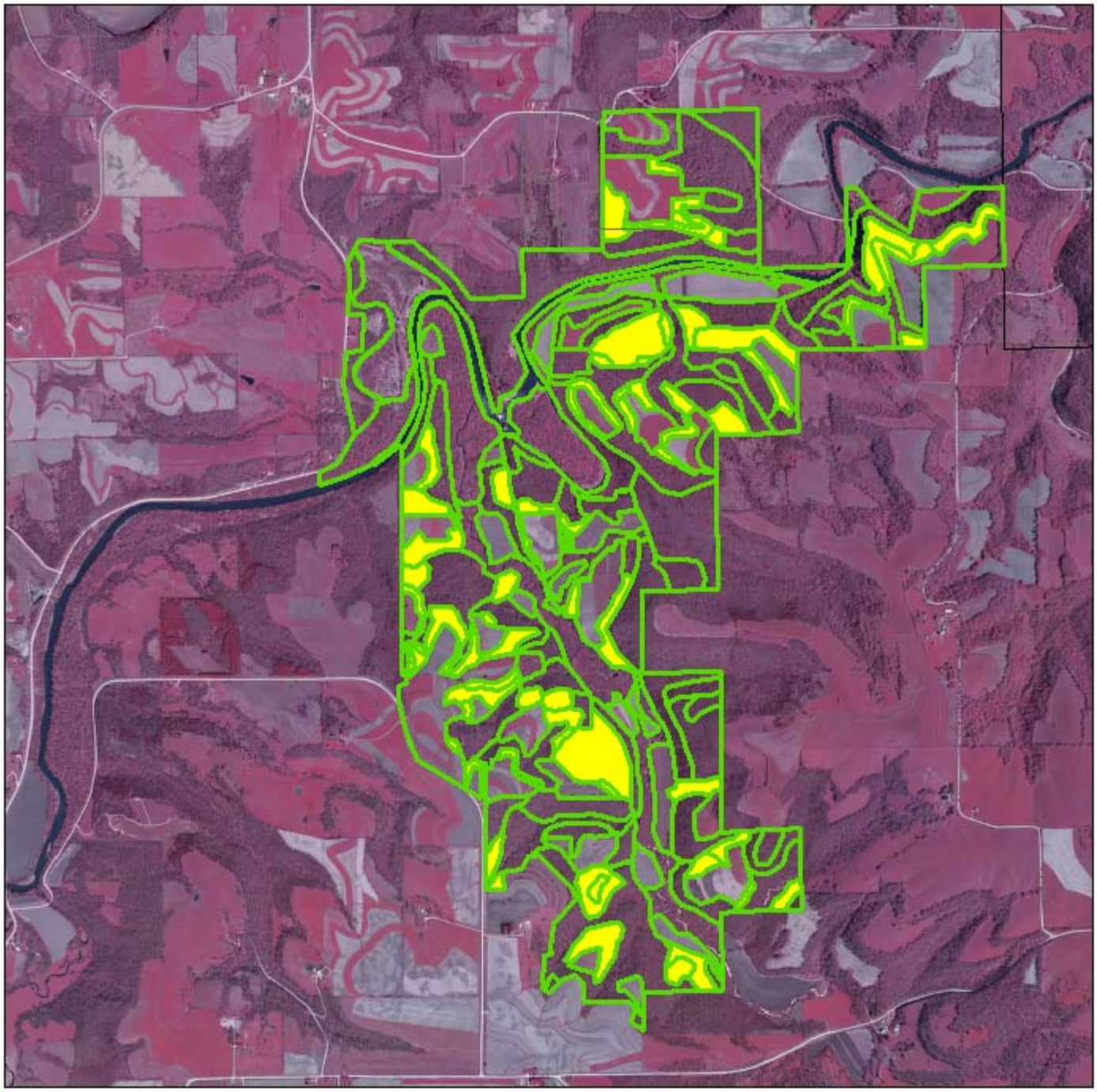
Many species of birds such as ruffed grouse, American woodcock, gold winged warbler, blue winged warbler, black billed cuckoo, yellow billed cuckoo, and eastern towhee are dependent on the early stages of woody growth. The high stem density of both trees and shrubs provides suitable nesting habitat and 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.

COON CREEK WILDLIFE AREA
EARLY SUCCESSIONAL MANAGEMENT AREAS - 263.5 AC.



Sec. 35 & 36 Pleasant Twsp., T99N-R7W,
Sec. 2, 3, 10, & 11 Glenwood Twsp., T98N-R7W,
Winneshiek County

N

0 1,000 2,000 4,000 6,000 8,000
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.

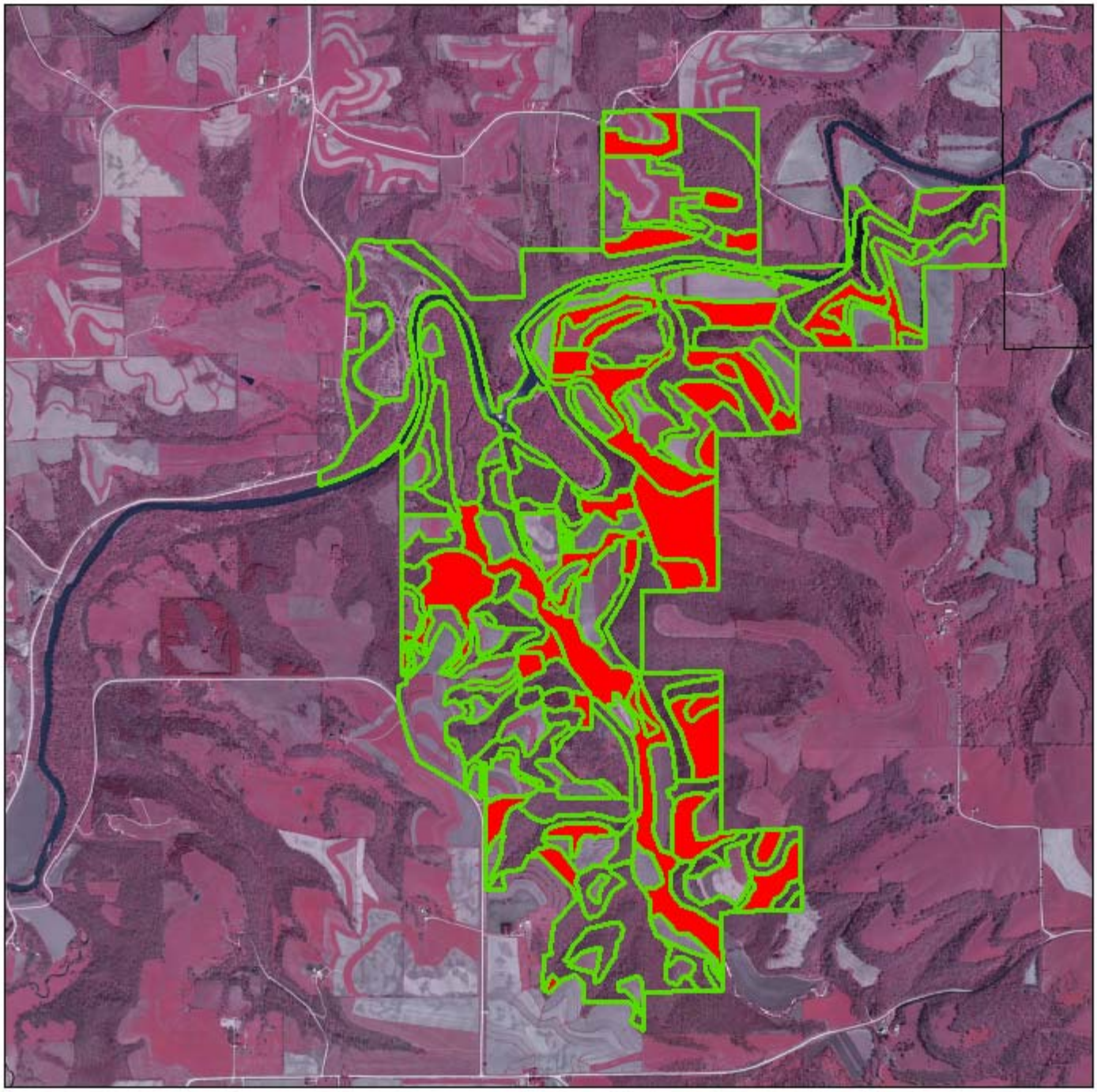
Even age management involves clearcuttting and planting, clearcutting with regeneration already established, or a shelterwood system to develop desirable seedlings on the ground.

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.

COON CREEK WILDLIFE AREA
EVEN AGE MANAGEMENT AREAS - 424 AC.



Sec. 35 & 36 Pleasant Twsp., T99N-R7W,
Sec. 2, 3, 10, & 11 Glenwood Twsp., T98N-R7W,
Winneshiek County

N

0 1,000 2,000 4,000 6,000 8,000
Feet

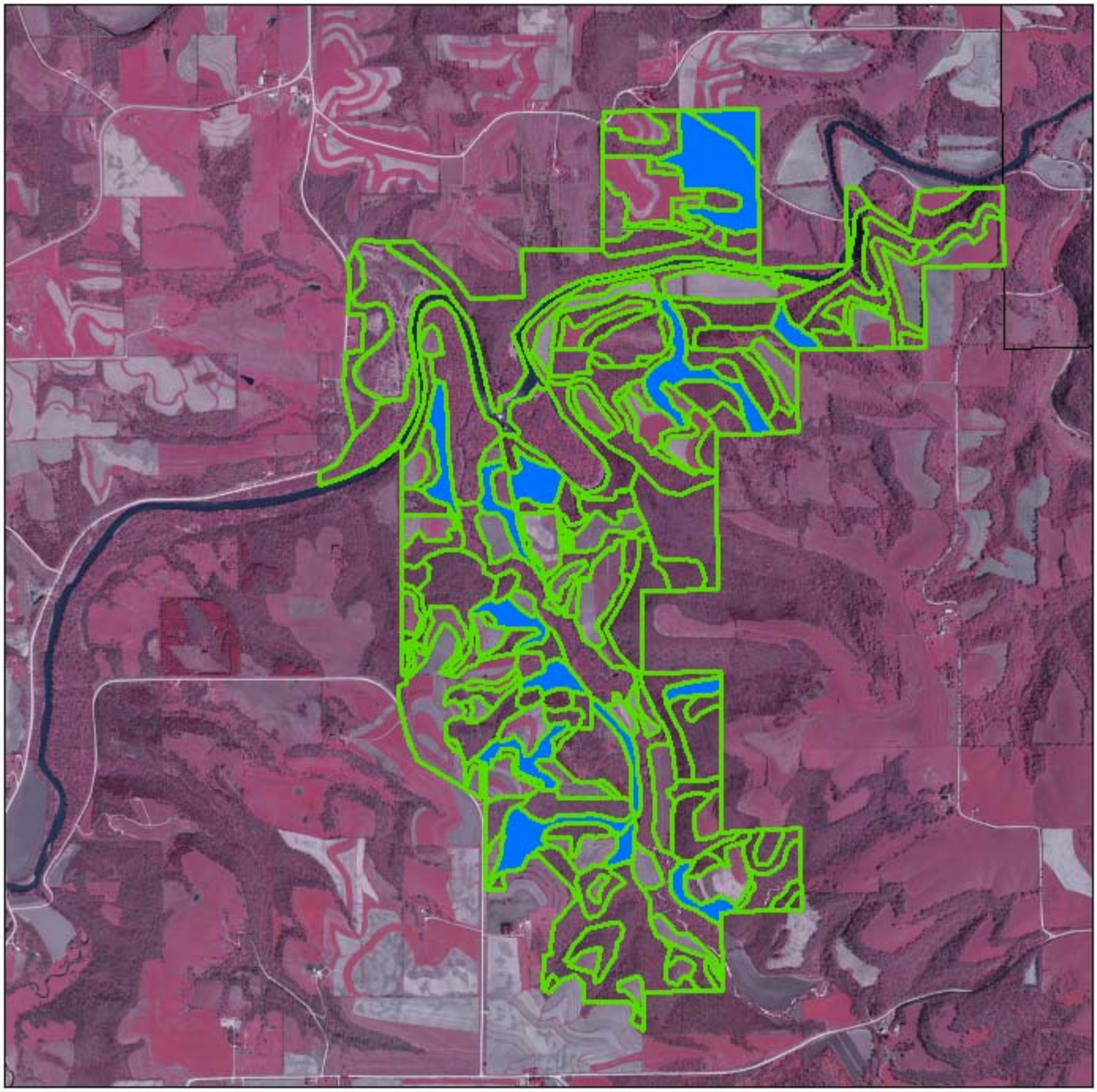
Uneven Age Management -

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.

COON CREEK WILDLIFE AREA
UNEVEN AGE MANAGEMENT AREAS - 245 AC.



Sec. 35 & 36 Pleasant Twsp., T99N-R7W,
Sec. 2, 3, 10, & 11 Glenwood Twsp., T98N-R7W,
Winneshiek County

N

0 1,000 2,000 4,000 6,000 8,000 Feet

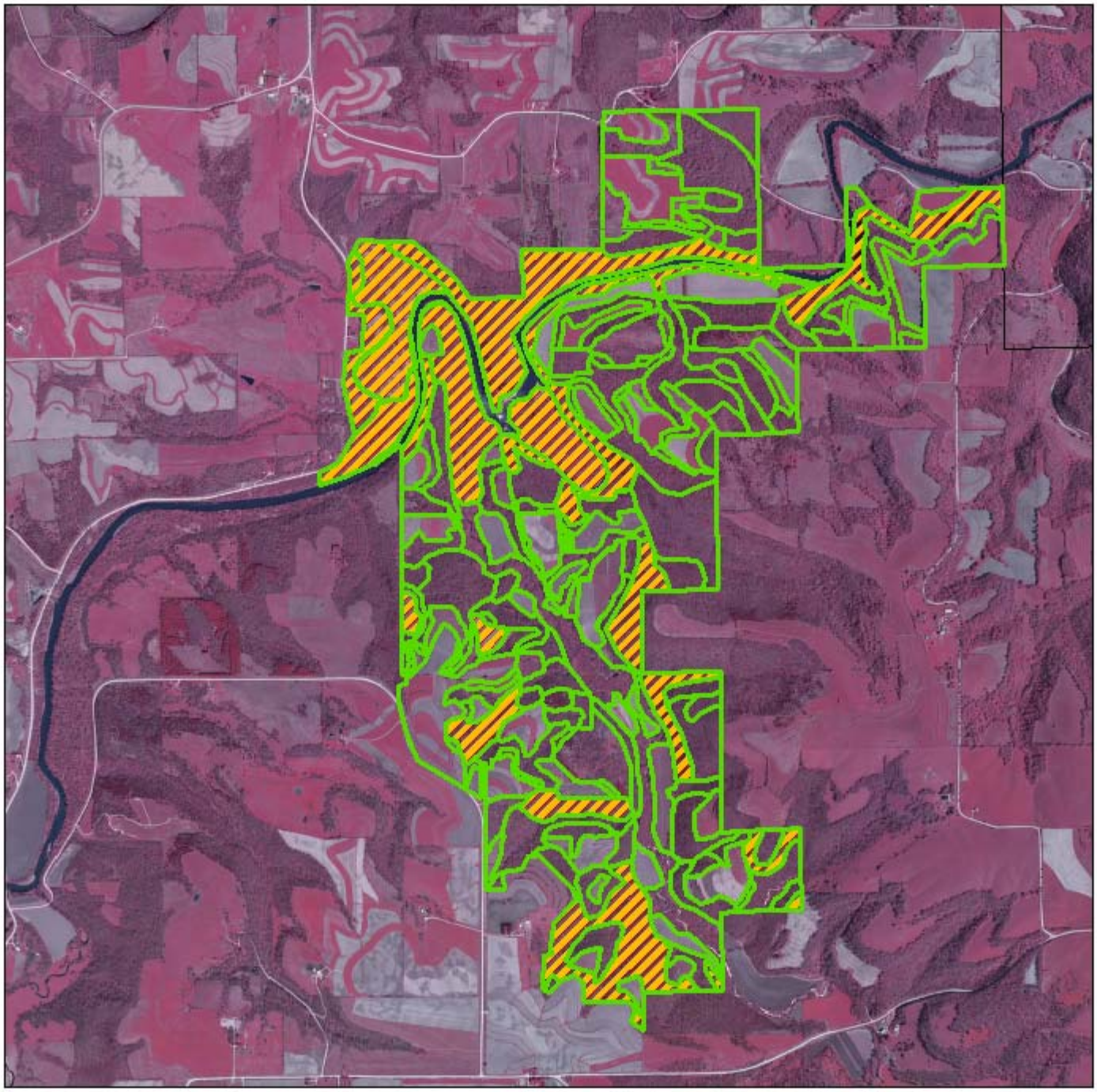
Viewshed Management -

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 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 358.5 acres on the area, or 28% of the forest resource.

COON CREEK WILDLIFE AREA
VIEWSHED MANAGEMENT AREAS - 358.5 AC.



Sec. 35 & 36 Pleasant Twsp., T99N-R7W,
Sec. 2, 3, 10, & 11 Glenwood Twsp., T98N-R7W,
Winneshiek County

N

0 1,000 2,000 4,000 6,000 8,000
Feet

SOILS

The bottomland has many Dorchester silt loam soils. These soils are somewhat poorly drained and subject to periodic flooding.

The ridge tops and gentle slopes have Fayette, Dubuque, Orwood, and Palsgrove silt loam soils. These 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.

Much of Coon Creek is soil mapped as steep, rock land. These are steep slopes with shallow soils over limestone. Viewshed is recommended for much of this area.

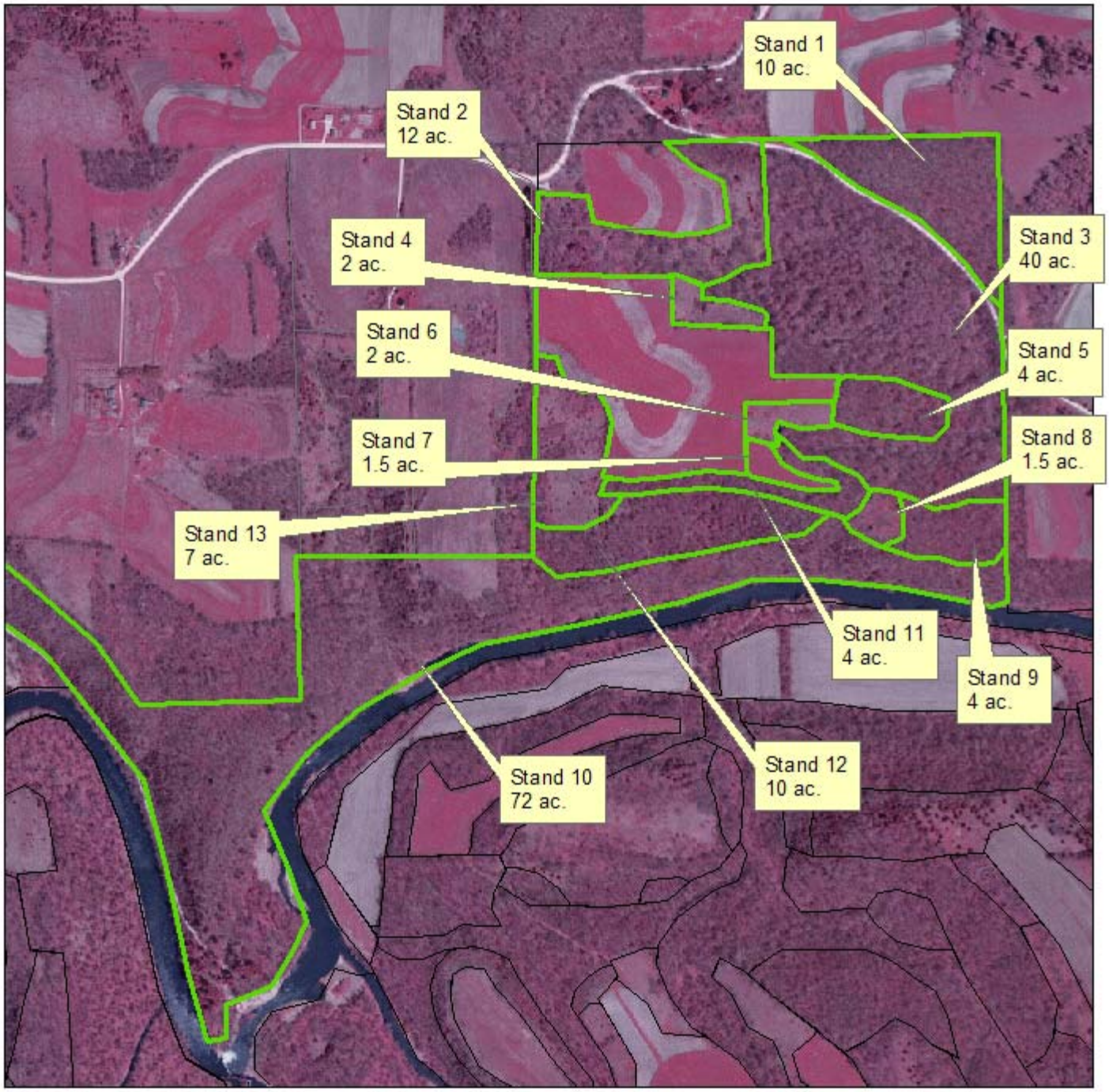
WORK PLAN

FOR

COON CREEK WILDLIFE AREA

This is the "working plan" for Coon Creek 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.

COON CREEK WILDLIFE AREA
Stands 1-13

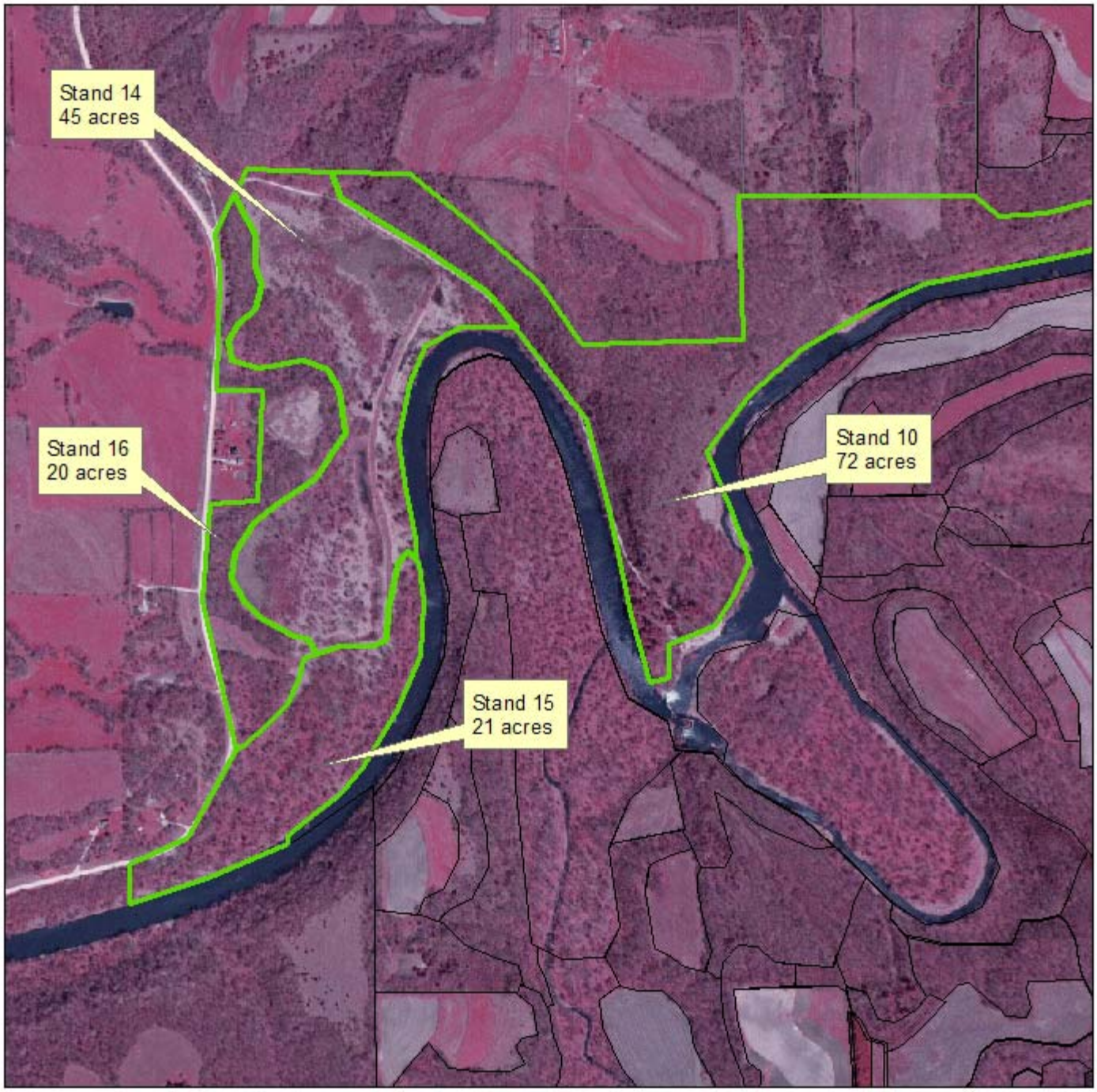


Sec. 35 & 36 Pleasant Twsp., T99N-R7W,
Sec. 2, 3, 10, & 11 Glenwood Twsp., T98N-R7W,
Winneshiek County

N

0 337.5 675 1,350 2,025 2,700
Feet

COON CREEK WILDLIFE AREA
Stands 10, 14-16

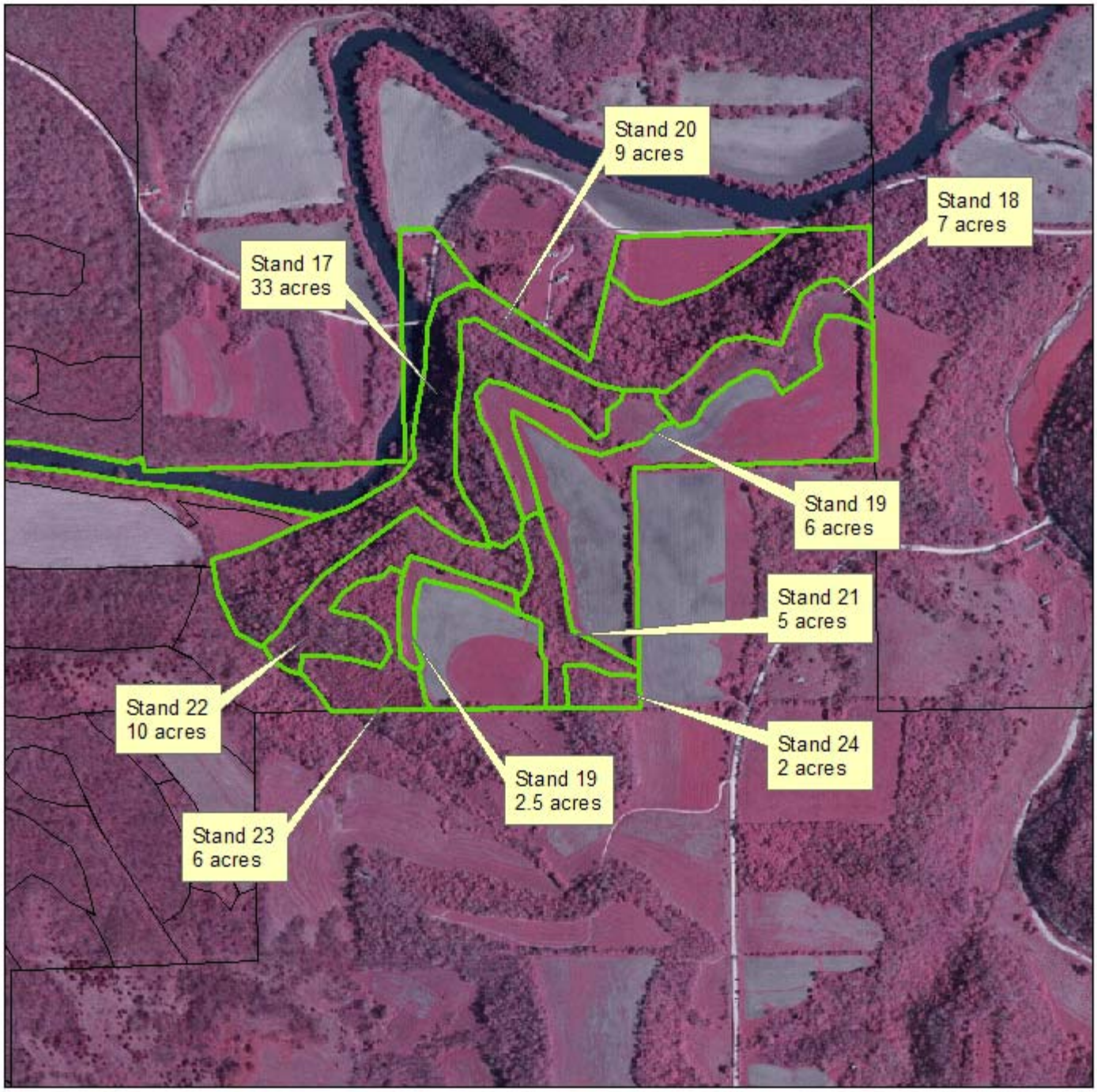


Sec. 35 & 36 Pleasant Twsp., T99N-R7W,
Sec. 2, 3, 10, & 11 Glenwood Twsp., T98N-R7W,
Winneshiek County

N

0 337.5 675 1,350 2,025 2,700
Feet

COON CREEK WILDLIFE AREA
Stands 17-24

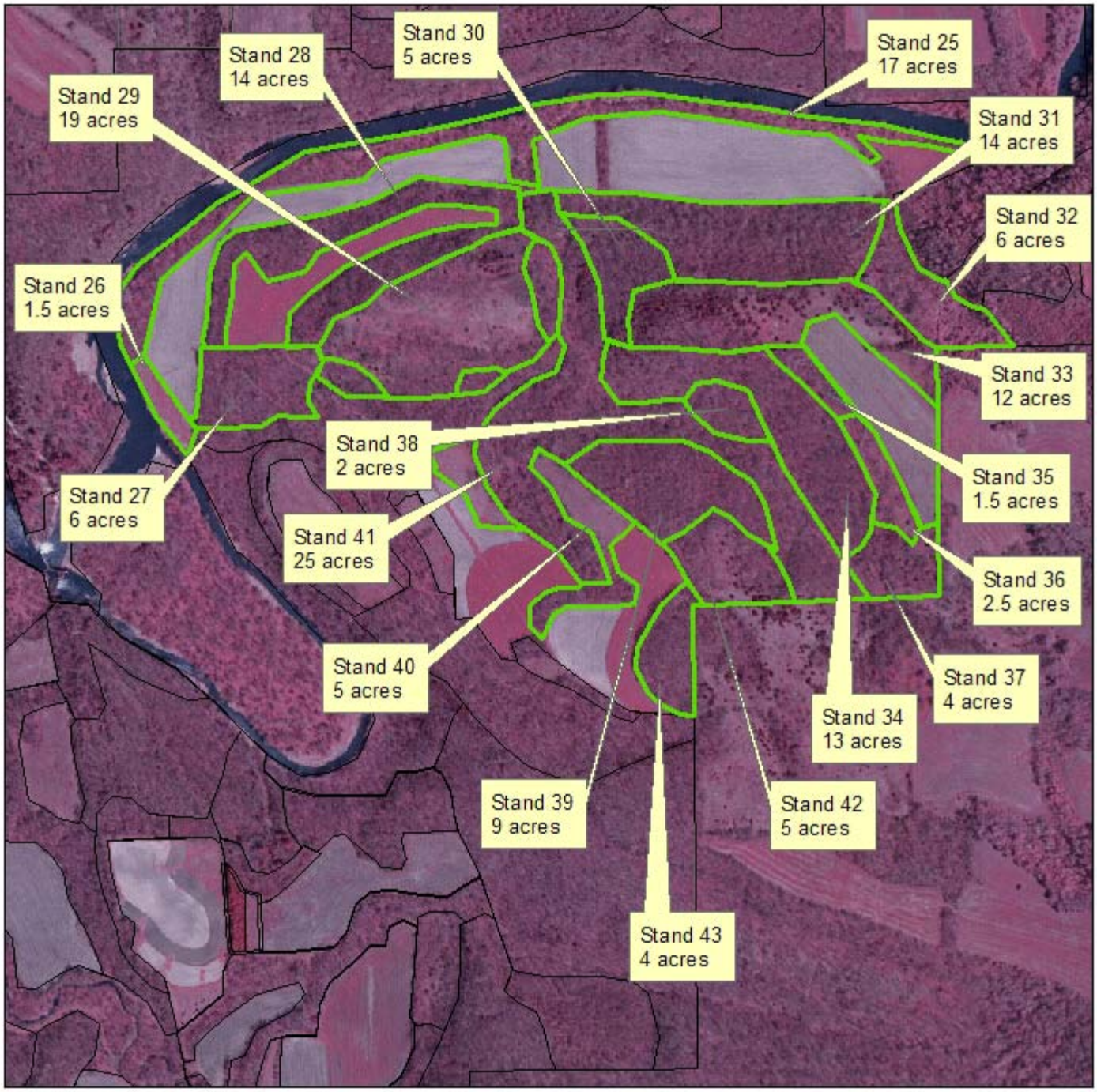


Sec. 35 & 36 Pleasant Twsp., T99N-R7W,
Sec. 2, 3, 10, & 11 Glenwood Twsp., T98N-R7W,
Winneshiek County

N

0 337.5 675 1,350 2,025 2,700
Feet

COON CREEK WILDLIFE AREA
Stands 25-43

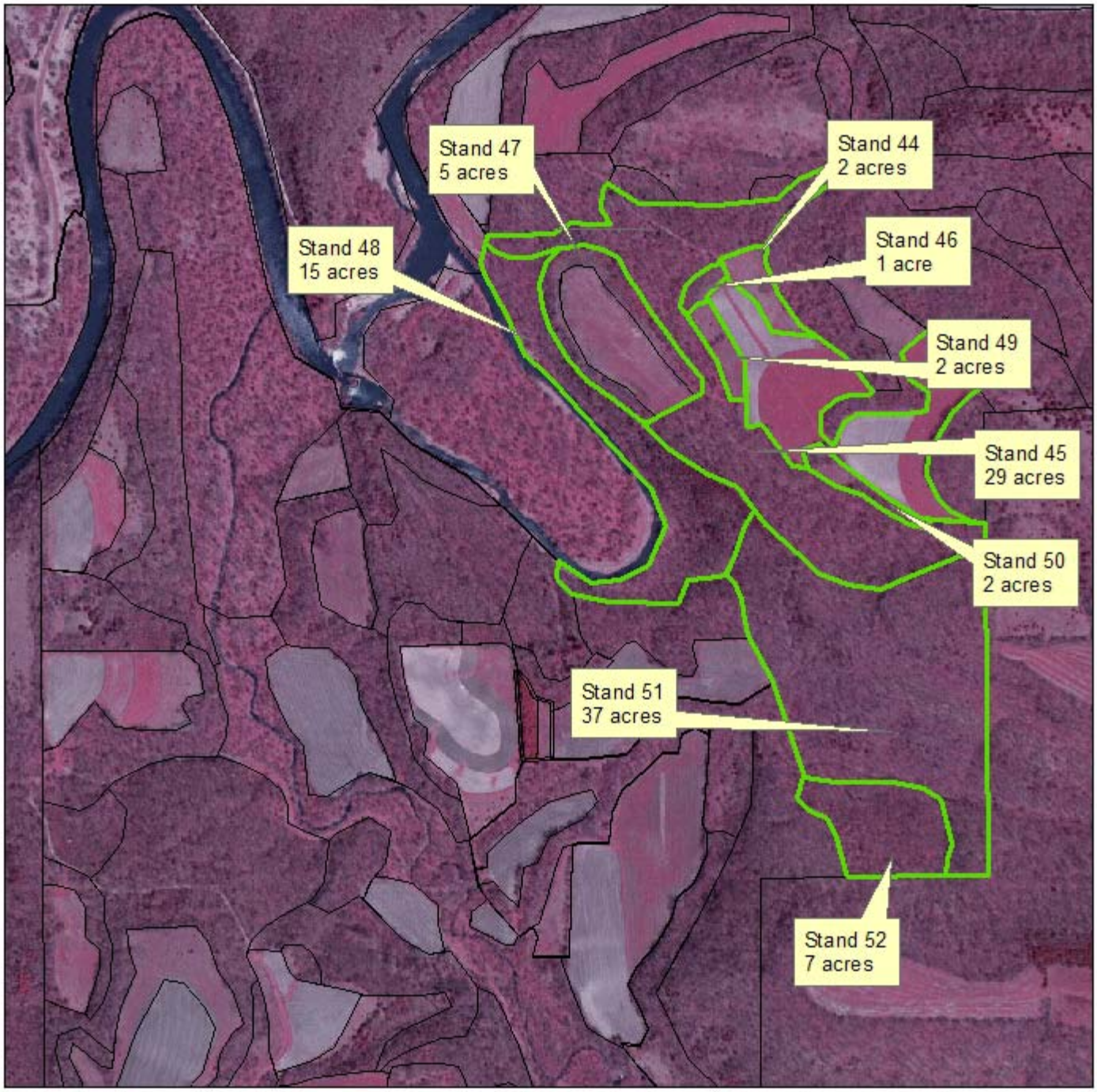


Sec. 35 & 36 Pleasant Twsp., T99N-R7W,
Sec. 2, 3, 10, & 11 Glenwood Twsp., T98N-R7W,
Winneshiek County

N

0 337.5 675 1,350 2,025 2,700
Feet

COON CREEK WILDLIFE AREA
Stands 44-52

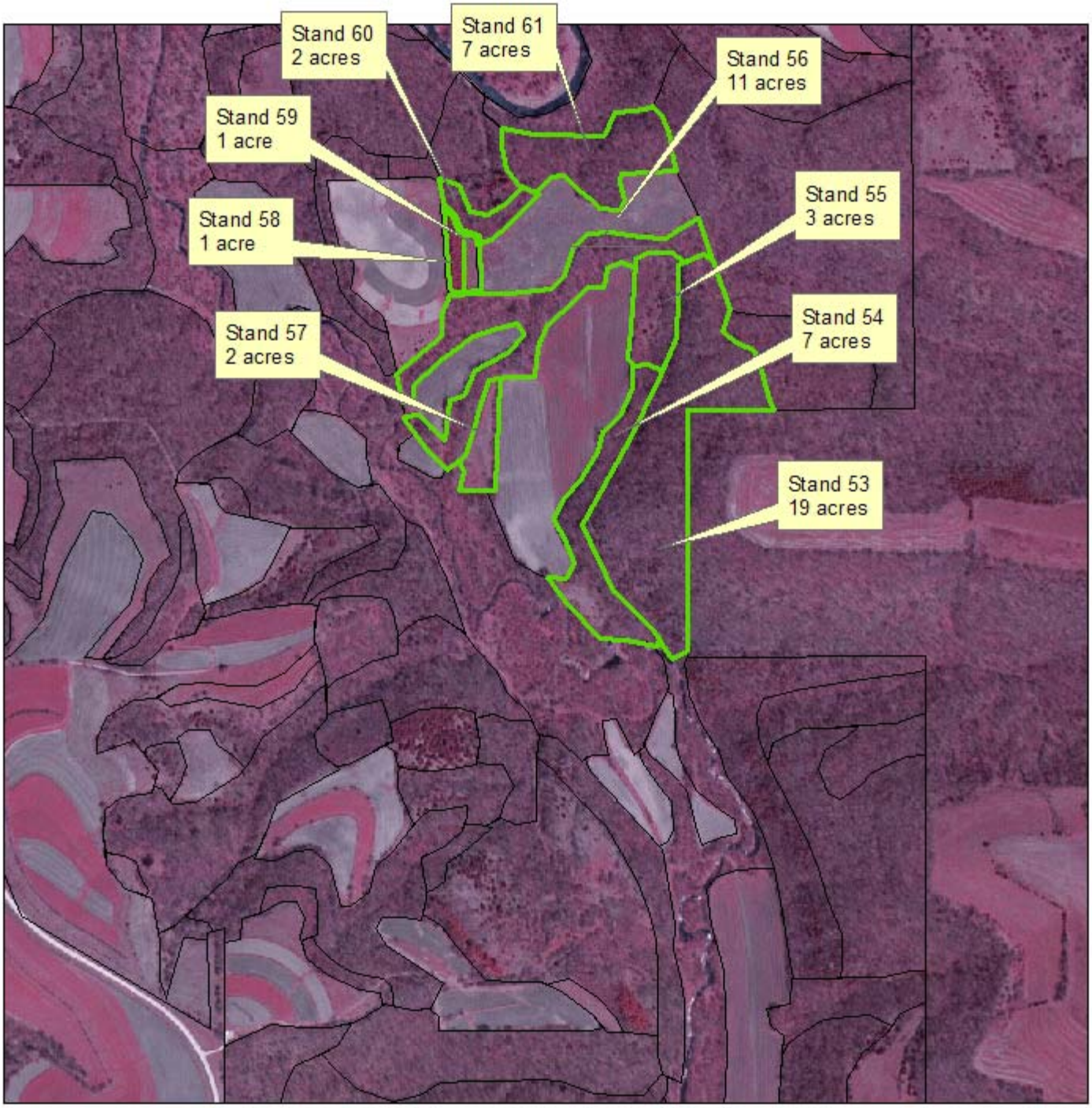


Sec. 35 & 36 Pleasant Twsp., T99N-R7W,
Sec. 2, 3, 10, & 11 Glenwood Twsp., T98N-R7W,
Winneshiek County

N

0 337.5 675 1,350 2,025 2,700
Feet

COON CREEK WILDLIFE AREA
Stands 53-61

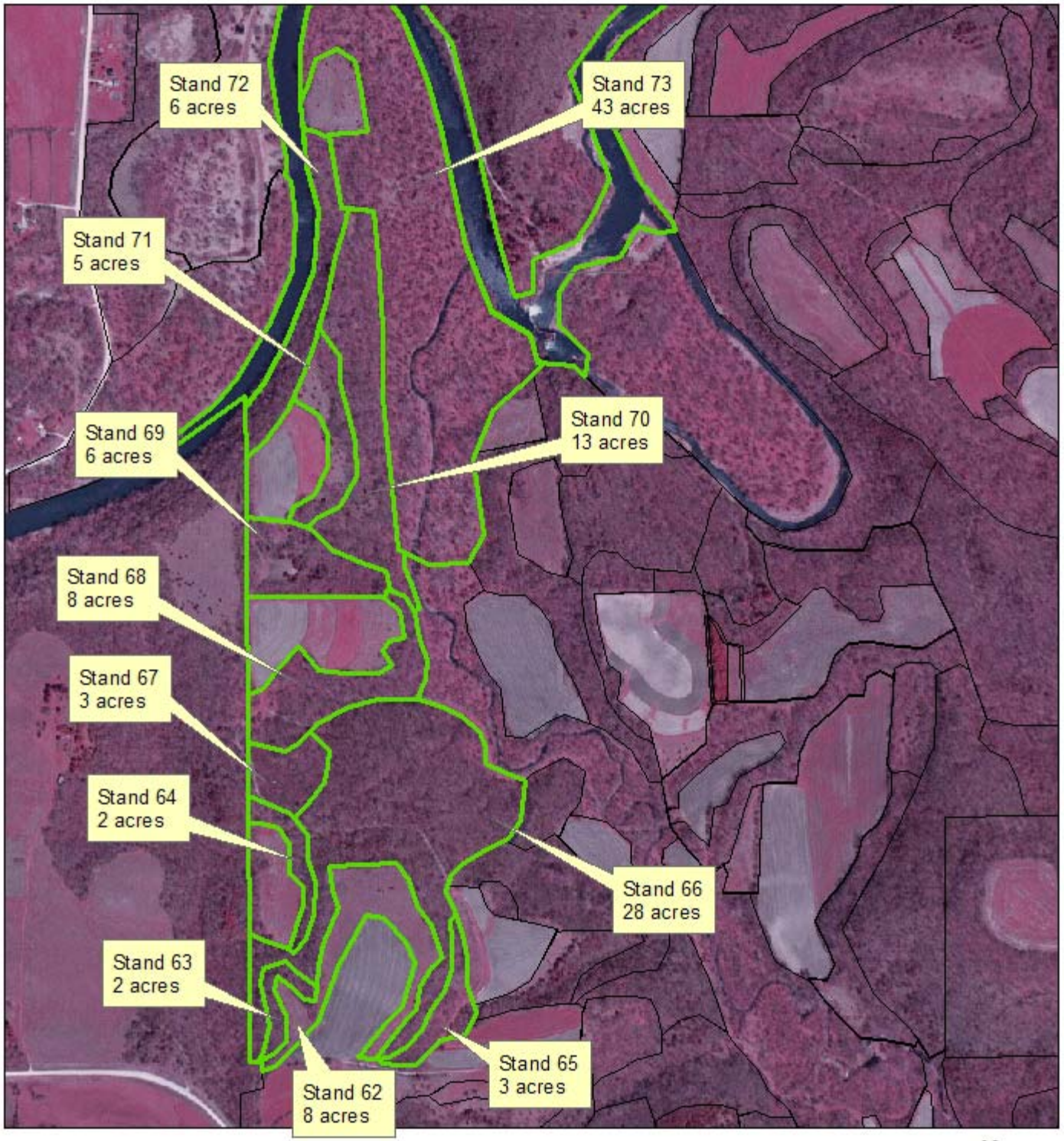


Sec. 35 & 36 Pleasant Twsp., T99N-R7W,
Sec. 2, 3, 10, & 11 Glenwood Twsp., T98N-R7W,
Winneshiek County

N

0 337.5 675 1,350 2,025 2,700
Feet

COON CREEK WILDLIFE AREA
Stands 62-73

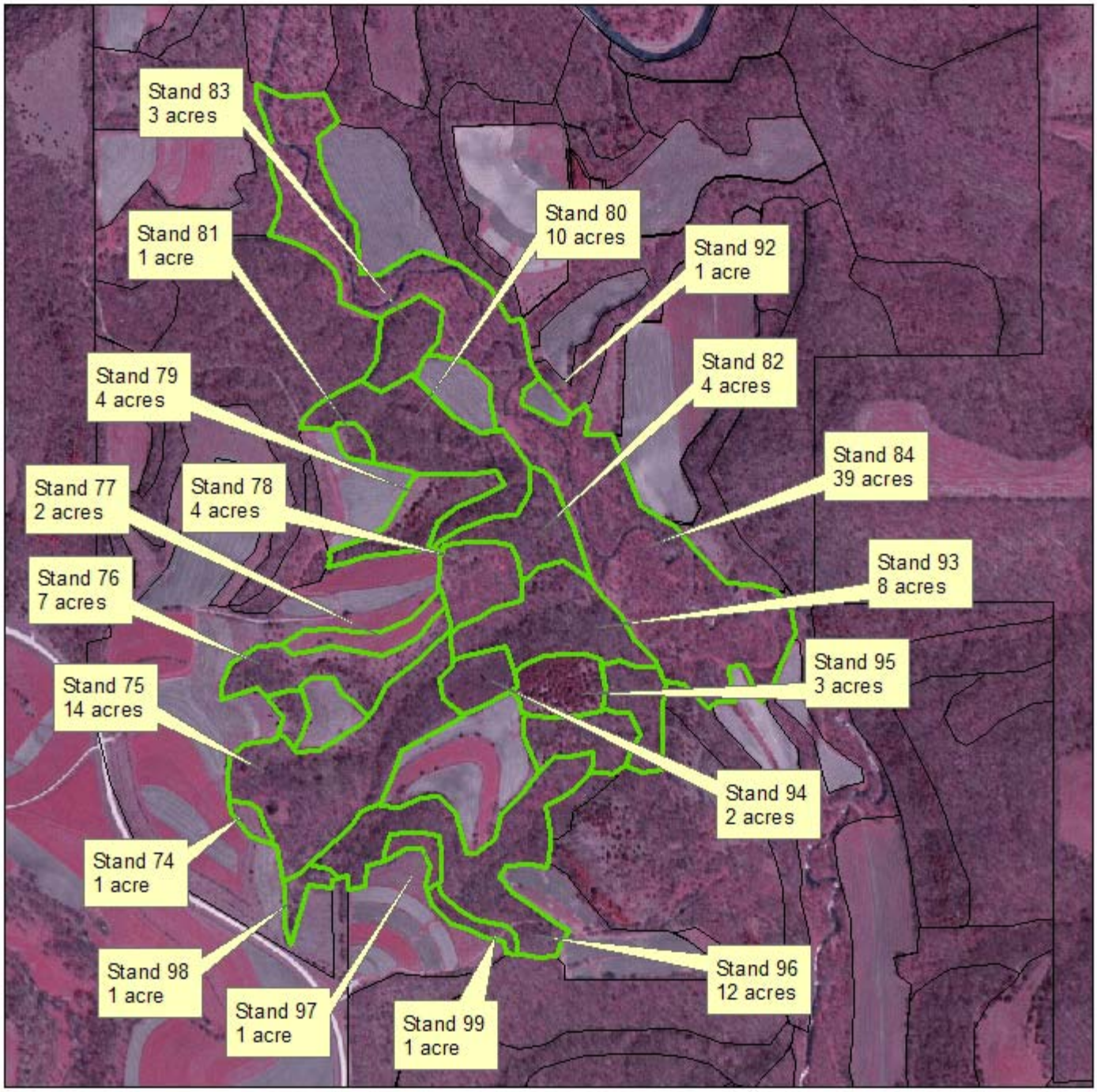


Sec. 35 & 36 Pleasant Twsp., T99N-R7W,
Sec. 2, 3, 10, & 11 Glenwood Twsp., T98N-R7W,
Winneshiek County

N

0 337.5 675 1,350 2,025 2,700
Feet

COON CREEK WILDLIFE AREA
Stands 74-84, 92-99

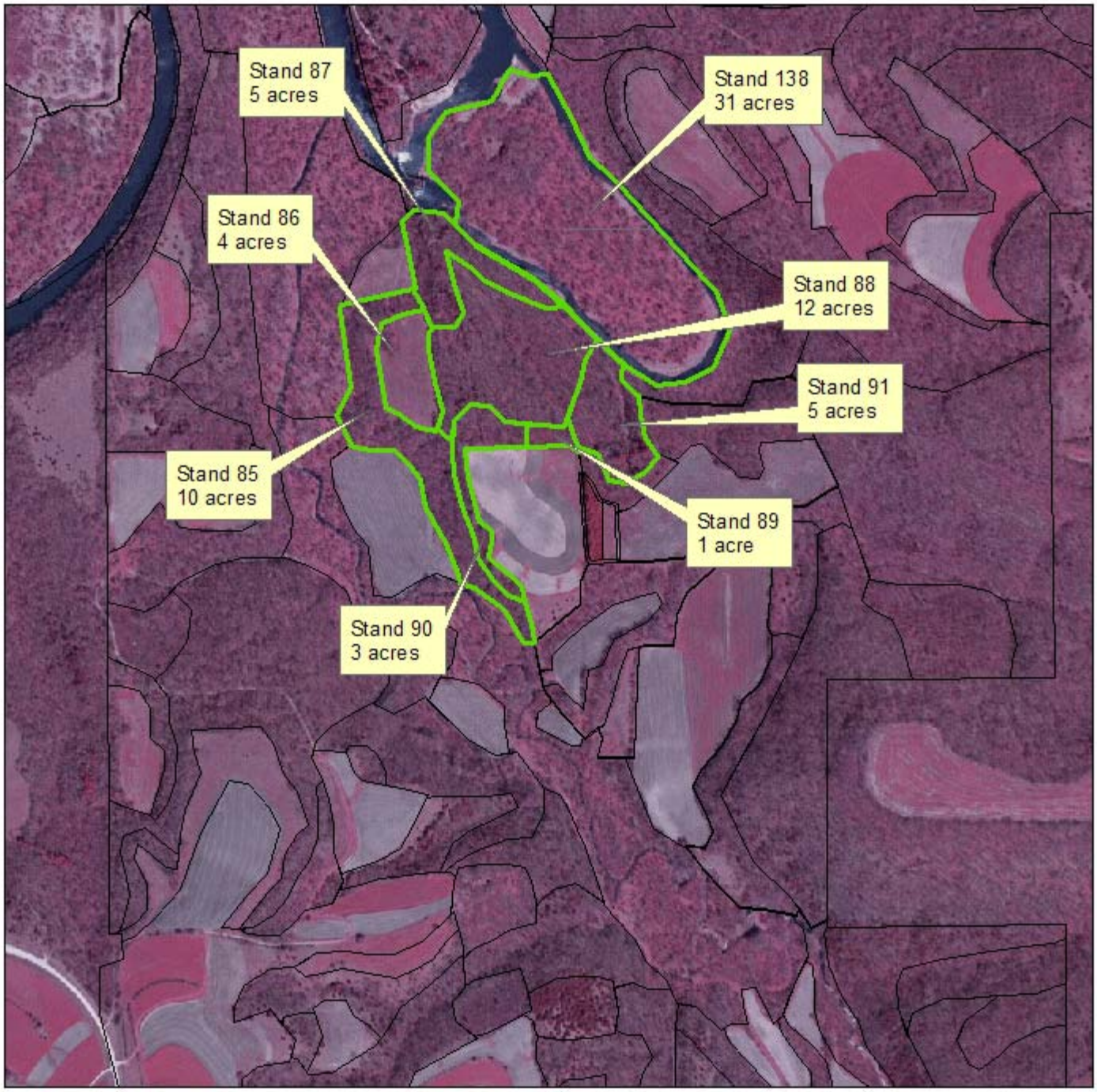


Sec. 35 & 36 Pleasant Twsp., T99N-R7W,
Sec. 2, 3, 10, & 11 Glenwood Twsp., T98N-R7W,
Winneshiek County

N

0 337.5 675 1,350 2,025 2,700
Feet

COON CREEK WILDLIFE AREA
Stands 85-91, 138

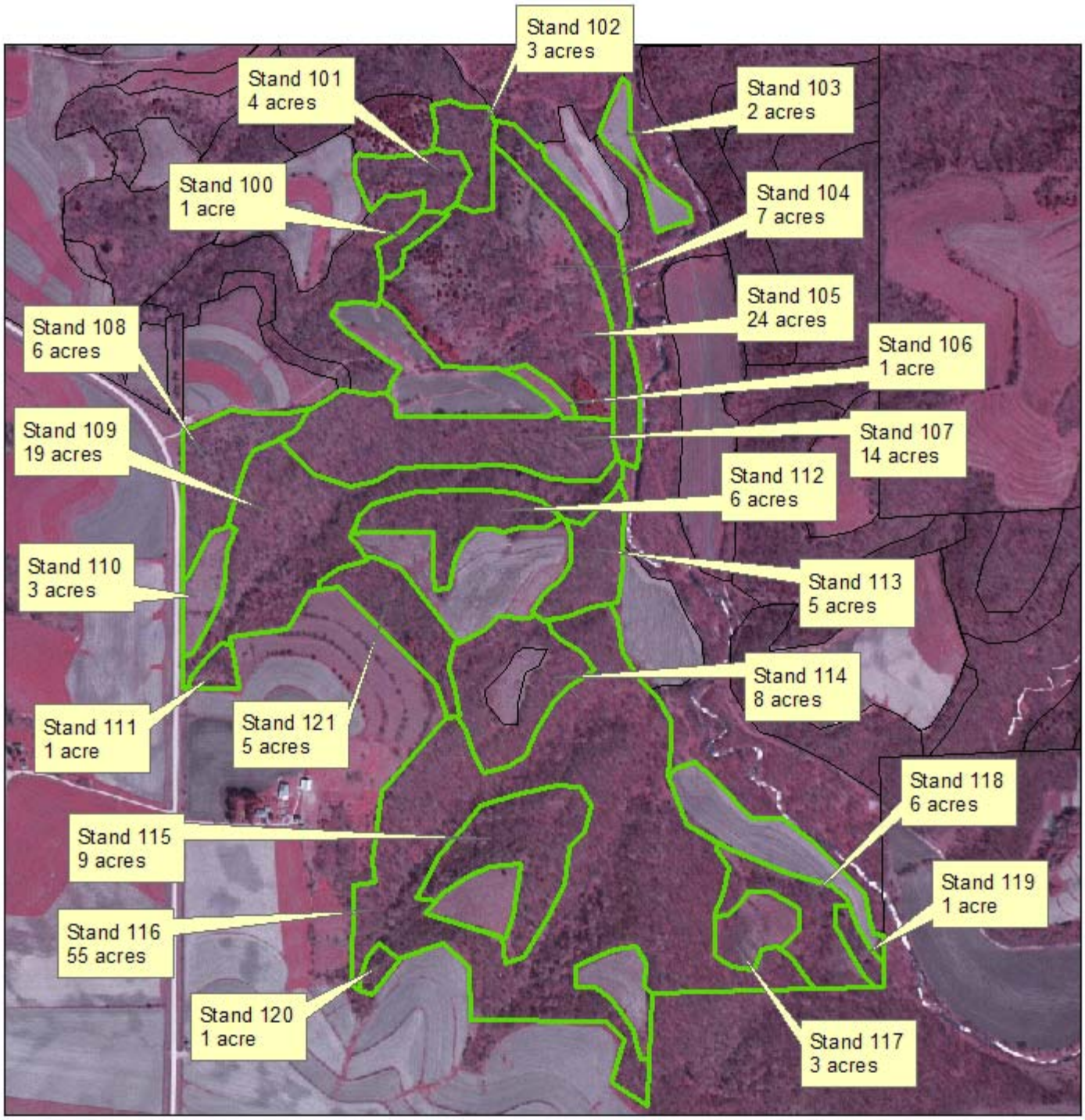


Sec. 35 & 36 Pleasant Twsp., T99N-R7W,
Sec. 2, 3, 10, & 11 Glenwood Twsp., T98N-R7W,
Winneshiek County

N

0 337.5 675 1,350 2,025 2,700
Feet

COON CREEK WILDLIFE AREA
Stands 100 - 121

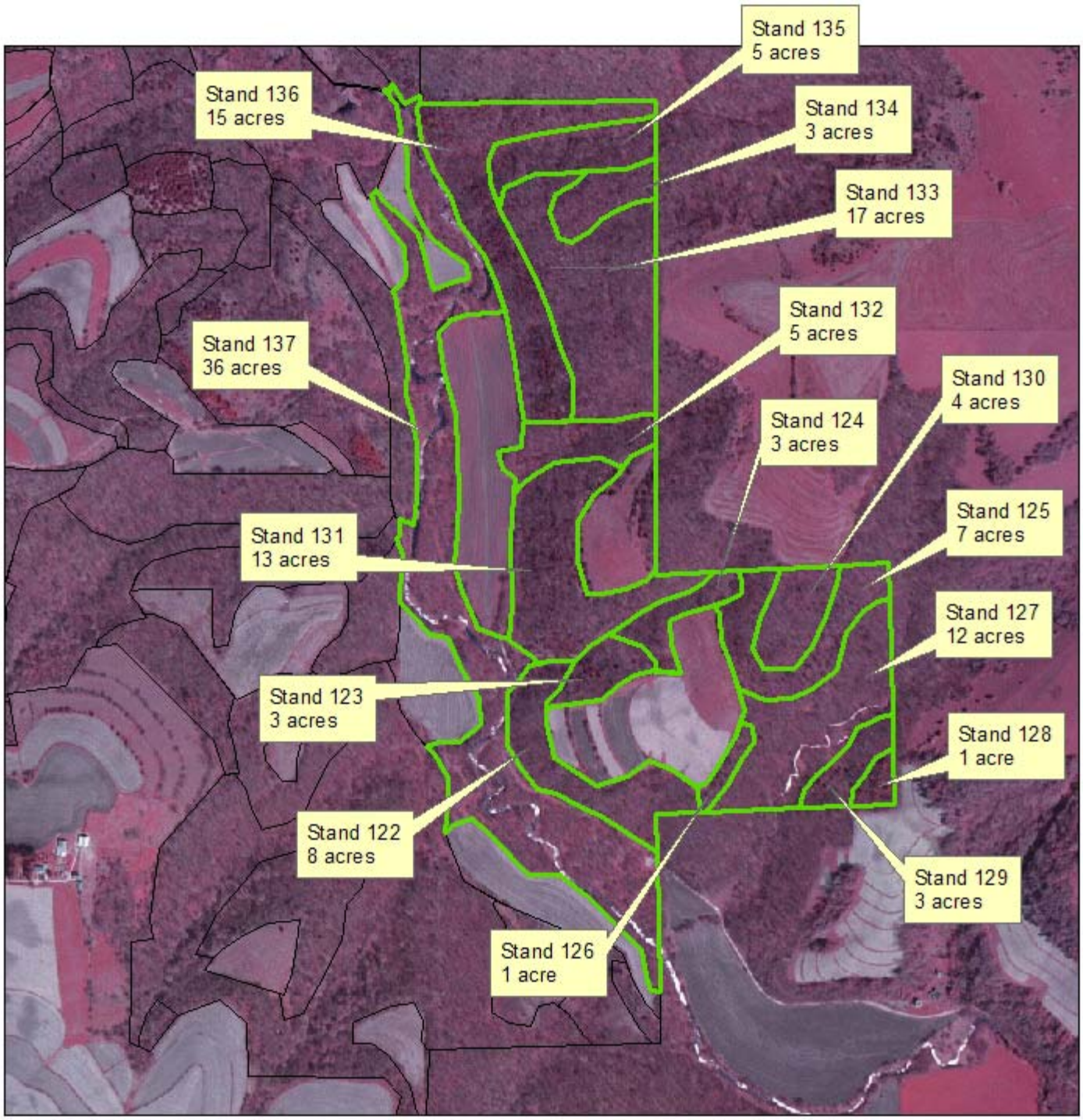


Sec. 35 & 36 Pleasant Twsp., T99N-R7W,
Sec. 2, 3, 10, & 11 Glenwood Twsp., T98N-R7W,
Winneshiek County

N

0 337.5 675 1,350 2,025 2,700
Feet

COON CREEK WILDLIFE AREA
Stands 122 - 137



Sec. 35 & 36 Pleasant Twsp., T99N-R7W,
Sec. 2, 3, 10, & 11 Glenwood Twsp., T98N-R7W,
Winneshiek County

N

0 337.5 675 1,350 2,025 2,700
Feet

DESCRIPTION AND RECOMMENDATIONS FOR INDIVIDUAL STANDS

Stand 1: 10 acres

Site Description -

Southwest facing slope bordering gravel road.

Woodland Description-

The area is medium sized (12-18" dia.) hard maple, basswood, red oak, black oak, white oak, white ash, and shagbark hickory. The understory consists of ironwood, hard maple, bitternut hickory, and cherry.

Management Recommendations – Uneven Age

Kill the undesirable species in the understory to encourage the natural development of hard maple and basswood. The area could be selectively harvested in 10-15 years.

Stand 2: 12 acres

Site Description -

Area starts at parking lot and wraps around the top of the ridge and slope.

Woodland Descripton -

Sapling to small pole sized (3-6" dia.) elm, boxelder, walnut, bitternut hickory, black cherry, red oak, hard maple, bur oak, and white oak. There are a few large red oak, white oak, and hard maple scattered through the area. There is a good stocking of young oak.

Management Recommendations – Even Age

In 5-10 years the stand could be thinned to provide more growing space for the best trees. Emphasis should be on releasing the oak and nice quality walnut.

Stand 3: 40 acres

Site Description –

East facing slope that faces the gravel road running through the area. Site was logging approximately 30 years ago.

Woodland Description -

Medium sized (12-18" dia.) hard maple, basswood, red oak, and white oak. Understory is hard maple, ironwood, musclewood, elm, bitternut hickory, and cherry.

Management Recommendations –Uneven Age

Kill the undesirable species in the understory now to encourage the natural regeneration of hard maple and basswood. 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.

In 10-15 years, the stand could be selectively harvested.

Stand 4: 2 acres

Site Description –

Semi open grass area with scattered saplings.

Woodland Description -

Semi open area with scattered, sapling (1-4" dia.) aspen, black oak, bitternut hickory, boxelder, and a few red cedar.

Management Recommendations – Early Successional

In approximately 10-15 years, this area could be clearcut to create dense, young growth.

Stand 5: 4 acres

Site Description -

Ridge top and slight east facing slope.

Woodland Description -

Pole sized (5-10" dia.) black cherry, black ash, elm, bitternut hickory, and a few red and black oak.

Management Recommendations – Even Age

In 5-10 years, Stand 5 could be thinned to release the crop trees.

Stand 6: 2 acres

Site Description -

Open grass field that was planted to red cedar 7-10 years ago.

Woodland Description –

Sapling sized red cedar with invading boxelder.

Management Recommendations – Early Successional

The boxelder are overtopping some of the cedars. All of the boxelder on the area should be removed. Cut the trees and treat the stumps with Pathfinder II to prevent sprouting. In roughly 10 years, the cedars should be thinned.

Stand 7: 1.5 acres

Site Description -

Ridge top with good loam soils.

Woodland Description –

Narrow finger with woods on three sides that is currently hay ground.

Management Recommendations – Early Successional

Plant the area with aspen to create early successional habitat. Kill the hay by cutting in August and broadcast spraying with Roundup in early September. Apply 2 quarts of Roundup per acre.

Plant aspen on a 6 X 10 ft. spacing, or 700 trees per acre. Control the competition by broadcast spraying the area with Pendulum herbicide. Apply 2 quarts of Pendulum per acre. Pendulum must be applied in the spring before any vegetation begins to grow. For the first 3 years, apply Pendulum in the spring and mow between the rows to control the competition.

Stand 8: 1.5 acres

Site Description -

Ridge top and gentle east facing slope.

Woodland Description –

Aspen stand that was clearcut in 2001. This is a very dense, sapling stand of aspen.

Management Recommendations – Early Successional

Clearcut this area again in 10 years to maintain early successional habitat and regenerate aspen.

Stand 9: 4 acres

Site Description –

Gentle east facing slope with good, loam soils.

Woodland Description -

Pole sized red oak, cherry, bitternut hickory, black oak, black ash, and basswood.

Management Recommendations – Even Age

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.

Locate your good quality trees. Do not waste your time and money on poor quality trees. If there are no high quality trees present on an area, go on to an area with good trees. You can not create high quality trees. Either they are present or not. Be selective and work with only your best trees.

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

Stand 10: 72 acres

Site Description –

Steep slopes along the Upper Iowa River with limestone bluffs.

Woodland Description -

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

Management Recommendations – Viewshed

This area is very scenic and borders the Upper Iowa River. Leave this area as is for erosion control and scenic beauty.

Stand 11: 4 acres

Site Description –

Narrow strip of woods on ridge top, bordering crop field.

Woodland Description -

Pole sized (5-10" dia.) bitternut hickory, elm, boxelder, and basswood. Scattered, large white oak, bur oak, and shagbark hickory.

Management Recommendations – Early Successional

Clearcut this area to feather the edge of the woods and create young, dense habitat. There are scattered trees that are large enough to sell.

Stand 12: 10 acres

Site Description -

South facing slope above the steep bluff along the river.

Woodland Description –

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

Management Recommendations – Even Age

Shelterwood – Kill the undesirable species and coppice the poor formed trees now. This will maintain the oak and hickory in the understory. In 7-10 years, the stand could be clearcut harvested and regenerated with oak and hickory.

Stand 13: 7 acres

Site Description -

Semi open grass area on south slope.

Woodland Description -

Mixture of brome grass, clumps of boxelder, and scattered red cedar.

Management Recommendations – Early Successional

The center of the field could be left as is. The area is a mixture of weeds, grasses, and scattered red cedar. The patches of boxelder could be converted to aspen. Cut the boxelder and treat the stumps of boxelder with Pathfinder II to prevent sprouting. Hand plant the area with aspen. Plant the aspen 10 ft. apart, or 430 trees per acre.

Stand 14: 45 acres

Site Description -

Bottomland along the Upper Iowa River. Much of the area is marsh.

Woodland Description -

Sapling to pole sized willow, cottonwood, silver maple, and boxelder. There are scattered, large cottonwood along the river.

Management Description – Viewshed

The site is very visible from the entrance road and campground. I recommend leaving this area as it is.

Stand 15: 21 acres

Site Description –

Bottomland along the Upper Iowa River. This area is on the floodplain and part of the stand borders the gravel road.

Woodland Description –

Large cottonwood and silver maple. The understory is elm, boxelder, and elderberry.

Management Recommendations – Viewshed

This area provides an effective riparian buffer along the river. Managing this area as viewshed will maintain large trees along the river and adjacent to the gravel road.

Stand 16: 20 acres

Site Description -

East facing slope and ridge adjacent to the gravel road. This area has upland hardwoods above the bottomland.

Woodland Description -

Medium sized (12-18" dbh) black oak, basswood, red elm, and bur oak. There are scattered walnut, cherry, and aspen. The understory consists of ironwood, hackberry, cherry, elm, basswood, bitternut hickory, and hazel.

Management Recommendations – Viewshed

Stand 16 borders the gravel road and is adjacent to several residences. I recommend managing this area as viewshed. There are 5-6 large walnut that could be sold, but nothing more is recommended.

Stand 17: 33 acres

Site Description –

Steep north facing slope on soils shallow to limestone.

Woodland Description -

Medium sized red oak, white oak, hard maple, and basswood. There are scattered red cedar. The understory is hard maple, ironwood, and elm.

Management Recommendations – Viewshed

Leave this area as is for erosion control and scenic beauty.

Stand 18: 7 acres

Site Description -

Ridgetop bordering the crop field.

Woodland Description -

The area was clearcut in 2000 to provide early successional habitat. The area is sapling aspen, ironwood, and a few red oak.

Management Recommendations – Early Successional

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

Stand 19: 8.5 acres

Site Description -

Ridge top bordering crop land.

Woodland Description –

The site was planted with aspen 8 years ago. The heavy brome grass cover has stunted the aspen.

Management Recommendations – Early Successional

The brome grass must be controlled so that the aspen seedlings that are present can grow. Mow the area is early September. After the grass has grown 4-6 inches, broadcast spray the site with Roundup herbicide. Apply Roundup Original at the rate of 2 quarts per acre.

Stand 20: 9 acres

Site Description -

North and west facing slope with shallow soils.

Woodland Description -

Pole sized (5-10" dbh) aspen, red cedar, birch, and elm. The understory is ironwood.

Management Recommendations – Early Successional

Clearcut the area to develop young, high density growth along the field edges. This will add more area to Stand 19 that was planted with aspen. Clumps of cedar can be left to provide good winter cover.

Stand 21: 5 acres

Site Description -

Gentle west facing slope.

Woodland Description –

Pole sized walnut, elm, and black oak.

Management Recommendations – Even Age

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 to favor are black walnut and oak.

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

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.

Stand 22: 10 acres

Site Description -

North and northwest facing slopes.

Woodland Description -

Large sized black oak, white oak, shagbark hickory, and a few walnut. The understory is ironwood, hard maple, and hackberry

Management Recommendations – Even Age

Stand 22 can be managed to regenerate oak. The stand can be managed on a "Shelterwood" system with controlled burning to open up the understory and encourage natural oak regeneration. Burn the area every year for 3-5 years. After the second burn, kill the trees in the understory that the fire has not killed. Once there are a sufficient number of young oaks, cease burning until the oaks are 4-5 ft. tall, then clearcut the stand to provide full sunlight for the young oaks.

Stand 23: 6 acres

Site Description -

Ridgetop next to crop field.

Woodland Description –

Due to tornado damage in 1995, this area was clearcut harvested. The area is sapling (1-4" dia.) bitternut hickory, elm, ironwood, cherry, hard maple, shagbark hickory, and black oak. The oak are from stump sprouts.

Management Recommendations – Even Age

In approximately 5 years, the stand can be thinned to release the oak and hickory.

Stand 24: 2 acres

Site Description -

Knoll with shallow soils.

Woodland Description -

Pole sized (5-10" dia.) elm, cherry, birch, bitternut hickory, and a few cedars.

Management Recommendations – Early Successional

Clearcut the area to develop dense, young growth. Leave the scattered cedar trees.

Stand 25: 17 acres

Site Description -

Narrow strip of bottomland timber along the Upper Iowa River.

Woodland Description -

Pole sized (5-10" dia.) elm, hackberry, walnut, and boxelder. There are scattered, larger hackberry, walnut, and cottonwood. There is a good stocking of walnut that are 16" in diameter and larger.

Management Recommendations – Viewshed

This area can be left as is to provide a nice buffer along the river. The walnut could be harvested as they mature. There three trees that could be harvested now.

Stand 26: 1.5 acres

Site Description -

Open grass field on the bottom along the river.

Woodland Description -

Open brome grass field.

Management Recommendations – Viewshed

This area could be planted with seedlings to create a wooded buffer along the river. Leave a 30 ft. wide strip of grass along the river bank. Prepare the site by spraying the tree planting area with Roundup in September. The following spring, plant 5 rows of cottonwood along the river. The first row should be 30 ft. from the river bank. Then plant 5 rows of mixed bur oak, hackberry, and walnut. The trees should be planted on a 6 X 10 ft. spacing.

Competing vegetation must be controlled for a minimum of 3 years. Each spring before any vegetation begins to grow spray a 4 ft. wide band down each row with Pendulum herbicide. Apply 4 quarts of Pendulum per acre treated. The area between the rows should be mowed 2-3 times per year.

Stand 27: 6 acres

Site Description -

Bench with sandy loam soils.

Woodland Description -

Pole sized black oak, walnut, elm, and aspen

Management Recommendations – Even Age

Thin the stand to release the oak and walnut. The walnut trees that are selected as crop trees should be pruned.

Stand 28: 14 acres

Site Description -

Narrow ridge with steep slopes surrounding the crop field.

Woodland Description -

Medium sized (12-18" dia.) black oak, bur oak, walnut, and basswood. There are good quality walnut that are 16-18" in diameter. The understory is elm, hackberry, basswood, and ironwood.

Management Recommendations – Even Age

Stand 28 can be managed on a "Shelterwood" system to encourage the natural regeneration of oak and walnut. The undesirable species in the understory should be killed. Cut the trees and treat the stumps with Pathfinder II to prevent sprouting. Every 10 years, the undesirable species should be removed until an adequate stocking of young oak and walnut are present. Once the oak and walnut saplings are present, the stand should be clearcut harvested.

Stand 29: 19 acres

Site Description -

Ridge with Fayette silt loam soils.

Woodland Description -

This area is an old field site. The center of the area is mainly brome grass with scattered walnut saplings and shrubs. The edges are pole sized aspen, black oak, walnut, and elm. Small clumps of aspen have been recently clearcut.

Management Recommendations – Early Successional

Manage the area to maintain a mixture of shrubs and high density, young growth. Continue to clearcut the aspen clumps to expand the clones. Approximately 1/3 of the area, or 6-7 acres, could be clearcut every 5 years

Stand 30: 5 acres

Site Description -

West facing slope bordering the cedar ridge.

Woodland Description -

Medium sized (12-18" dia.) aspen and bur oak. Many of the aspen are of merchantable size. The understory is ironwood, elm, and bitternut hickory.

Management Recommendations – Early Successional

Clearcut this area to create early successional habitat. This would be a commercial harvest of aspen and bur oak.

Stand 31: 14 acres

Site Description -

North facing slope that had severe tornado damage in 1995.

Woodland Description -

Sapling (1-4" dia.) bitternut hickory, aspen, elm, ironwood, hard maple, and basswood. There are scattered oak and walnut.

Management Recommendations – Even Age

This area had severe tornado damage in 1995. At that time, all merchantable trees were salvaged with a timber sale. The follow up work is needed to make this an even aged stand. The scattered trees that are 6" or larger in diameter are remnants of the original stand. These trees should be felled or double girdled to kill them standing. In addition, the young oak and walnut that are present should be released. Locate the young oak and walnut trees and fell or girdle trees that have crowns that are overtopping the walnut and oak crowns. This will prevent the oak and walnut trees from dying due to lack of sunlight. In 10 years, the stand can be thinned to release the potential crop trees.

Stand 32: 6 acres

Site Description -

Steep, east facing slope that is shallow to limestone. Much of the area had moderate to severe tornado damage in 1995.

Woodland Description -

Pole to small sawtimber (5-18" dia.) hard maple, ironwood, bitternut hickory, basswood, elm, cherry, red oak, and white oak.

Management Recommendations – Uneven age

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 33: 12 acres

Site Description -

Ridge top.

Woodland Description -

Pole sized red cedar with scattered clumps of aspen. The east end of the area is a mixture of grass, weeds, and red cedar. Clumps of aspen were cut on the east end in 2002.

Management Recommendations – Early Successional

Cut the aspen on the west end of the area in the next couple of years to provide dense, young growth.

Stand 34: 13 acres

Site Description -

West facing slope with shallow soils.

Woodland Description -

Medium sized white oak, bur oak, shagbark hickory, black cherry, and a few walnut. The understory is ironwood, hackberry, cherry, bitternut hickory, and prickly ash.

Management Recommendations - Even Age

Stand 34 can be managed on a shelterwood system. The undesirable species in the understory can be killed now to encourage natural regeneration of oak. In 10-15 years, if there are a sufficient number of oak saplings present, the stand could be clearcut to provide full sunlight for the young oak.

Stand 35: 1.5 acres

Site Description -

Ridge top adjacent to crop field.

Woodland Description -

Pole sized (5-10" dbh) elm, aspen, cherry, and scattered red cedar. There is a good component of aspen.

Management Recommendations – Early Successional

Clearcut the area in approximately 5 years to provide dense, young growth. Leave the cedars for winter habitat.

Stand 36: 2.5 acres

Site Description -

Ridge top along crop field.

Woodland Description -

The area was clearcut in 2000 to provide early successional habitat. There is a good stocking of sapling aspen and wild plum.

Management Recommendations – Early Successional

Clearcut the area again in 2015 to 2020.

Stand 37: 4 acres

Site Description -

West facing slope with shallow soils.

Woodland Description -

Pole sized (5-10" dia.) walnut, black oak, bur oak, and black cherry.

Management Recommendations – Even Age

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 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. In Coon Creek, species to favor are oak and walnut. Some black cherry can be released to add diversity.

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

Stand 38: 2 acres

Site Description –

West facing slope and bench.

Woodland Description -

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

Management Recommendations – Even Age

Timber Stand Improvement (Crop Tree Release) – Select oak, walnut, and cherry that are 30-35 ft. apart. Remove trees with crowns that are touching or overtopping the crowns of the selected trees.

Stand 39: 9 acres

Site Description –

North facing slope with Fayette silt loam soils.

Woodland Description –

Pole sized (5-10" dia.) cherry, elm, ash, red oak, black oak, basswood, aspen, hard maple, hackberry, and walnut. There is a fair stocking of oak and walnut. The stand was clearcut in 1989.

Management Recommendations – Even Age

Timber Stand Improvement (Crop Tree Release) – Identify a maximum of 50 crop trees per acre, or a tree every 30-35 ft. apart. Fell or double girdle trees with crowns that are touching or overtopping the crowns of the crop trees. Oak and walnut should be selected as crop trees where present.

Stand 40: 5 acres

Site Description -

Semi open grass field on the ridge top.

Woodland Description -

Brome grass naturally reseeding with aspen, black oak, and sumac.

Management Recommendations – Early Successional

This is good wildlife cover in its present condition. The mixture of grass, sumac and young aspen provides good early successional habitat. In 10 years, clearcut the aspen along the edges to expand the aspen.

Stand 41: 25 acres

Site Description –

Predominantly steep, east and north facing slopes along a drainage.

Woodland Description -

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

Management Recommendations – Uneven Age

Timber Stand Improvement (Weed Tree Removal) – kill the undesirable species in the understory to encourage the natural development of young maple and basswood. In addition, desirable species that are poor formed or damaged should be coppiced.

Stand 42: 5 acres

Site Description -

Ridge top with Fayette silt loam soils.

Woodland Description -

Pole sized (5-10" dbh) red cedar, aspen, and walnut.

Management Recommendations – Early Successional

Clearcut this area now to create dense, young growth, and increase the aspen component.

Stand 43: 4 acres

Site Description –

West facing slope and ridge top with Dubuque, Nordness, and Fayette silt loam soils.

Woodland Description -

Medium sized red oak, white oak, shagbark hickory, walnut, bur oak, and basswood. The understory is bitternut hickory, hackberry, basswood, and elm.

Management Recommendations – Even Age

Stand 43 can be managed on a shelterwood system. Kill the undesirable species in the understory now to encourage the natural regeneration of oak and walnut. The stand could be clearcut harvested in 15-20 years. The undesirable species may have to be removed again in 10 years.

Stand 44: 2 acres

Site Description –

Open brome grass field along the crop field.

Management Recommendations – Early Successional

This area could be planted with aspen. Mow the field in August. During mid September, broadcast spray the field with Roundup to kill the grass. Plant aspen on a 6 X 10 ft. spacing. 1,000 aspen could be planted on the area. Control competing vegetation by spraying a 4 ft. wide band down each row with Pendulum herbicide. Apply Pendulum before any vegetation begins to grow in the spring at a rate of 4 quarts per acre treated. The area between the rows should be mowed 2-3 times per year. Apply Pendulum each spring and mow between the rows for the first 3 years.

Stand 45: 29 acres

Site Description -

East and north facing slopes with Backbone sandy loam soils.

Woodland Description -

Medium sized (12-18" dia.) red oak, white oak, bur oak, cherry, black oak, and walnut. There are several nice quality walnut and cherry. The understory is elm, ironwood, hackberry, and basswood.

Management Recommendations – Even Age

Manage stand on a shelterwood system. Kill the undesirable species and coppice the poor formed trees in the understory to encourage oak and walnut regeneration.

Stand 46: 1 acre

Site Description -

Ridge top adjacent to crop field.

Woodland Description -

Sapling (1-4" dbh) aspen, elm, ironwood, bitternut hickory, and black oak.

Management Recommendations – Early Successional

Clearcut in 5-7 years to maintain early successional habitat and rejuvenate the aspen component.

Stand 47: 5 acres

Site Description -

Ridge top and border along the woodland.

Woodland Description -

Pole sized black oak, elm, basswood, ash, and walnut. There are scattered, medium sized black oak, elm, and basswood.

Management Recommendations – Early Successional

Clearcut the area now to create dense, young growth. The large oak can be left for mast production.

Stand 48: 15 acres

Site Description -

Steep, west facing slope along the back waters of the Upper Iowa River.

Woodland Description -

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

Management Recommendations – Viewshed

Leave this area as it is for erosion control and water quality.

Stand 49: 2 acres

Site Description –

Edge along the woods with Fayette silt loam soils. The area is currently brome grass.

Management Recommendations – Early Successional

Plant this area with red cedar to provide winter habitat. Mow the field in August, then broadcast spray the field with Roundup in September to kill the grass. Plant red cedar on a 12 X 12 ft. spacing. Plant 2-1 or 2-2 transplant stock. Control the competing vegetation by spraying a 4 ft. wide band down each row with 3 quarts of Princep plus 3 quarts of Pendulum per acre treated in the spring before any vegetation begins to grow. Spray the rows for the first 3 years. The area between the rows should be mowed 2-3 times per year. 500 red cedar can be planted on the area.

Stand 50: 2 acres

Site Description -

Edge along the woods with Fayette silt loam soils.

Woodland Description -

Pole sized (5-10" dia.) ash, elm, walnut, and hackberry. There are scattered, large walnut.

Management Recommendations – Early Successional

The commercial walnut should be sold from this area first. There are several large walnut. Following the walnut sale, the area should be clearcut to create early successional habitat along the edge.

Stand 51: 37 acres

Site Description -

Steep south and west facing slopes with shallow soils.

Woodland Description -

Medium size (12-18" dbh) black oak, walnut, bur oak, and white oak. There is a very good stocking of walnut 10-24" in diameter. The understory is elm, bitternut hickory, ironwood, and hackberry.

Management Recommendations – Even Age

The mature walnut could be harvested in the near future. Then areas 5-10 acres in size could be clearcut and regenerated with oak and walnut. The first cuts would be in 15-20 years.

Stand 52: 7 acres

Site Description -

Gentle north and east facing slopes.

Woodland Description -

This area was clearcut in 1989. The stand is pole sized (5-10" dia.) elm, bitternut hickory, basswood, cherry, red oak, and walnut. The oak and walnut are scattered, and most of the oak is from stump sprouts.

Management Recommendations – Even Age

Timber Stand Improvement (Crop Tree Release) – Select a maximum of 50 crop trees per acre and remove competing trees. Competing trees can be felled or double girdled. No chemical is needed.

Stand 53: 19 acres

Site Description -

Steep west facing slope with limestone outcrops.

Woodland Description -

Large (20" dbh+) white oak, black oak, red oak, and bur oak. The understory is red cedar, elm, ironwood, hackberry, and hard maple.

Management Recommendations – Viewshed

Due to the steep slopes and shallow soils this area should be left as it is and managed as viewshed.

Stand 54: 7 acres

Site Description -

Bottom of slope bordering crop field.

Woodland Description -

Medium sized (12-18" dbh) black oak, basswood, aspen, cottonwood, and walnut. The understory is elm, ironwood, hard maple, hackberry, with young aspen along the edge.

Management Recommendations – Early Successional

This area could be clearcut to provide a dense edge along the crop field. There are several merchantable trees including walnut that could be sold on a commercial sale.

Stand 55: 3 acres

Site Description –

Bench with sandy loam soils.

Woodland Description -

Pole sized walnut, black oak, elm, and bur oak.

Management Recommendations – Even Age

Timber Stand Improvement (Crop Tree Release) – Release a maximum of 50 oak and walnut per acre. Prune the walnut that are selected as crop trees.

Stand 56: 11 acres

Site Description -

Narrow drainage surrounded by crop fields.

Woodland Description -

Pole sized (5-10" dbh) walnut, elm, hackberry, and boxelder. There are scattered, large cottonwood and a few walnut.

Management Recommendations – Even Age

Harvest the scattered, large cottonwood and walnut to create a pole sized stand. Following the harvest, locate the nice quality walnut and hackberry and remove trees with crowns that are touching or overtopping the crowns of the walnut and hackberry.

Stand 57: 2 acres

Site Description -

Brome grass field with Huntsville soils.

Management Recommendations – Early Successional

This area could be planted with red cedar to provide winter cover. Mow the area in August. When the brome greens up in September, broadcast spray the field with Roundup herbicide to kill the brome grass. Plant red cedar on a 12 X 12 ft. spacing. 500 red cedar could be planted on the area.

Competing vegetation should be controlled for a minimum of 3 years. After the trees are planted and before any vegetation emerges, spray a 4 ft. wide band down each row with Princep 4L and Pendulum herbicides. Apply 3 quarts of Princep 4L and 3 quarts of Pendulum per acre treated.

Each spring before any vegetation emerges, apply Princep and Pendulum again for the next season's weed control. The area between the rows should be mowed 2-3 times per year.

Stand 58: 1 acre

Site Description -

East facing slope.

Woodland Description -

Pole sized (5-10" dbh) white pine. The trees were planted on a 6 X 8 ft. spacing.

Management Recommendations - Viewshed

The white pine plantation provides good winter cover and is esthetically pleasing. The trees should be left until they die of old age. However, they are too dense and need thinning to provide sufficient growing space so that they develop into nice, large trees. At this time, every other row should be removed. The trees can be felled and left in place.

Stand 59: 1 acre

Site Description -

East facing slope with sandy soils.

Woodland Description -

The area was planted with red cedar 10 years ago.

Management Recommendations – Early Successional

The cedars will need thinning in approximately 10 years.

Stand 60: 2 acres

Site Description -

Bench with sandy loam soils.

Woodland Description -

This area was clearcut 7-8 years ago. The stand is sapling (1-4" dbh) aspen.

Management Recommendations – Early Successional

Clearcut this area in 7-8 years to maintain dense, young aspen.

Stand 61: 7 acres

Site Description -

Sandy ridge bordering crop field.

Woodland Description -

Large (20" dbh+) black oak, walnut, bur oak, and basswood. The understory is hackberry, ironwood, elm, and black cherry.

Management Recommendations – Even Age

Clearcut and plant this area with red oak and white oak. All trees 14 inches and larger in diameter could be sold. Following the harvest, fell all remaining trees over 1 inch in diameter. Treat the stumps of undesirable species with Pathfinder II to prevent sprouting. Plant the area with 50 oak seedlings per acre. Protect each seedling with a 4 ft. tall vented tree shelter.

Stand 62: 8 acres

Site Description -

Brome field with Dubuque silt loam soils.

Management Recommendations – Early Successional

This area could be planted with a mixture of shrubs and aspen to provide a transition zone between the crop field and the woodland.

Prepare the site for planting by mowing the area in August. In mid September, broadcast spray the field with Roundup to kill the brome grass.

Plant 3 rows of wild plum along the crop field edge. Plant the shrubs on a 4 X 10 ft. spacing. Plant the remainder of the area with aspen on a 6 X 10 ft. spacing. 1,500 wild plum and 2,500 aspen would be needed to plant the area.

Competing vegetation should be controlled for a minimum of 3 years. After the trees are planted and before any vegetation emerges, spray a 4 ft. wide band down each row with Pendulum herbicide. Apply 4 quarts of Pendulum per acre treated.

Each spring before any vegetation emerges, apply Pendulum again for the next season's weed control. The area between the rows should be mowed 2-3 times per year.

Stand 63: 2 acres

Site Description -

Ridge along the field edge.

Woodland Description -

Pole sized elm and boxelder with scattered, large bur oak, elm, and black oak.

Management Recommendations – Early Successional

Clearcut the area to create a dense edge with shrubs and young trees. The large bur oak, elm, and black oak could be sold.

Stand 64: 2 acres

Site Description -

Narrow edge along crop field.

Woodland Description –

Pole sized (5-10" dia.) elm, aspen, and boxelder.

Management Recommendations – Early Successional

Clearcut this edge to create early successional habitat and feather the edge of the woods.

Stand 65: 3 acres

Site Description –

East facing slope.

Woodland Description –

Pole sized elm, boxelder, and bitternut hickory.

Management Recommendations – Early Successional

Clearcut Stand 65 to provide dense, young growth along the edge of the woods.

Stand 66: 28 acres

Site Description –

North facing slope with Orwood silt loam soils.

Woodland Description –

Large (20"dbh+) black oak, bur oak, and white oak. The understory is elm, bitternut hickory, and ironwood.

Management Recommendations – Even Age

Shelterwood with Burning – Steps could be taken to establish young oak in the understory prior to harvesting. The site could be burned twice, spring or fall, to kill the young elm, bitternut hickory, and ironwood in the understory. Following the second burn, kill the undesirable species in the understory that the fire has not controlled. Burn the site every 1 to 2 years for 5-7 years, or until the understory is controlled. Once oak seedlings are present, cease burning. When the young oak are 3-4 ft. tall, clearcut areas 5-7 acres in size.

It may be necessary to conduct an intermediate harvest in the overstory prior to the final clearcut to provide enough sunlight for young oak to become established.

Stand 67: 3 acres

Site Description -

Ridgetop on western border of the wildlife area.

Woodland Description -

The area was clearcut in 1996. The stand consists of sapling (1-4" dia.) aspen. There are clumps of hazelnut, prickly ash, and gray dogwood.

Management Recommendaions – Early Successional

Clearcut this area again in 7-10 years.

Stand 68: 8 acres

Site Description –

South and east facing slopes with Chelsea and Orwood soils.

Woodland Description -

Pole sized aspen, bitternut hickory, black cherry, and elm. There are scattered, large black oak, cherry, and cottonwood.

Management Recommendations – Early Successional

Clearcut this area to provide dense, young growth along the field edge. This area will have black oak, cherry, and cottonwood that can be sold for logs.

Stand 69: 6 acres

Site Description –

Ridge top and north facing slope along field edge.

Woodland Description -

Portions of the area have been clearcut in the past 1-5 years. The area is predominantly sapling (1-4" dia.) aspen, bitternut hickory, and elm.

Management Recommendations – Early Successional

Clearcut the area in approximately 10 years.

Stand 70: 13 acres

Site Description -

East facing slope with shallow soils.

Woodland Description –

Medium sized (12-18" dbh) black oak, walnut, red oak, bur oak, and basswood. The understory consists of ironwood, elm, bitternut hickory, basswood, and scattered hard maple.

Management Recommendations – Uneven Age

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.

The thinning will encourage the natural reseeding of desirable species and improve the ground cover in the stand. There are several mature walnut that could be harvested in the near future on the north end of the stand. It will be 10-15 years before a selective harvest of the mixed hardwood species would be beneficial.

Stand 71: 5 acres

Site Description –

Ridge top along field edge.

Woodland Description -

The area was clearcut in 2000. The stand is sapling aspen.

Management Recommendations -

Clearcut the area again in 10 years to maintain dense, young growth.

Stand 72: 6 acres

Site Description -

Steep, west facing slope above the Upper Iowa River.

Woodland Description -

Medium sized bur oak, basswood, and walnut. The understory is bitternut hickory, basswood, and ironwood.

Management Recommendations - Viewshed

This area is a steep slope adjacent to the Upper Iowa River and should be left as is.

Stand 73: 43 acres

Site Description -

Bottomland that is subject to periodic flooding.

Woodland Description -

There are large cottonwood scattered throughout the bottom. The understory is pole sized hackberry, elm, boxelder, and a few walnut.

Management Recommendations - Viewshed

This area is very visible from the camping area at the dam. The large cottonwoods also provide good nesting sites for bald eagles. I recommend leaving this area as it is.

Stand 74: 1 acre

Site Description -

Brome grass field with Fayette silt loam soils.

Management Recommendations – Early Successional

This area could be planted with aspen to provide habitat for early successional species such as grouse, woodcock, eastern towhee, and warblers.

Prepare the site for planting by mowing the area in August. In mid September, broadcast spray the field with Roundup to kill the brome grass.

Plant the area with aspen on a 6 X 10 ft. spacing. 500 aspen could be planted on the site.

Competing vegetation should be controlled for a minimum of 3 years. After the trees are planted and before any vegetation emerges, spray a 4 ft. wide band down each row with Pendulum herbicide. Apply 4 quarts of Pendulum per acre treated.

Each spring before any vegetation emerges, apply Pendulum again for the next season's weed control. The area between the rows should be mowed 2-3 times per year.

Stand 75: 14 acres

Site Description -

East facing slope with Fayette silt loam soils.

Woodland Description -

Pole sized (5-10" dia.) walnut, bitternut hickory, red oak, and cherry.

Management Recommendations – Even Age

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 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 in this area are oak, walnut, and black cherry.

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

Stand 76: 7 acres

Site Description -

South facing slope.

Woodland Description -

Pole sized (5-10" dbh) red cedar, black oak, elm, and a few walnut.

Management Recommendations – Early Successional

Clearcut this area to provide dense, young growth. The scattered red cedar can be left for winter cover.

Stand 77: 2 acres

Site Description -

Brome grass field with Fayette silt loam soils.

Management Recommendations – Early Successional

This area could be planted with aspen to provide habitat for early successional species.

Prepare the site for planting by mowing the area in August. In mid September, broadcast spray the field with Roundup to kill the brome grass.

Plant the area with aspen on a 6 X 10 ft. spacing. 1,000 aspen could be planted on the site.

Competing vegetation should be controlled for a minimum of 3 years. After the trees are planted and before any vegetation emerges, spray a 4 ft. wide band down each row with Pendulum herbicide. Apply 4 quarts of Pendulum per acre treated.

Each spring before any vegetation emerges, apply Pendulum again for the next season's weed control. The area between the rows should be mowed 2-3 times per year.

Stand 78: 4 acres

Site Description -

Old farmstead with almost a pure stand of boxelder.

Woodland Description -

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

Management Recommendations – Even Age

This area could be converted to more desirable species for wildlife. All of the existing boxelder should be cut. Treat the stumps with Pathfinder II to prevent sprouting. Plant the area with red oak and white oak seedlings. Plant the trees 30 ft. apart, or 50 trees per acre. Place a 4 ft. vented tree shelter over each tree to protect the tree from deer and rabbits.

Control the competing vegetation for 2 years by spot spraying a 6 ft. diameter circle around each tree with a combination of Roundup and Princep 4L herbicides. Apply 2 quarts of Roundup and 4 quarts of Princep 4L per acre treated.

Stand 79: 4 acres

Site Description -

Drainage and south facing slope.

Woodland Description -

Pole sized (5-10" dia.) red cedar and elm. The understory is prickly ash.

Management Recommendations – Early Successional

This area is providing excellent winter cover as it is. No improvements are needed for this area.

Stand 80: 10 acres

Site Description -

North and east facing slopes with Orwood silt loam soils.

Woodland Description -

Mature red oak and hard maple. The understory is ironwood and hard maple. Many of the red oak are beginning to deteriorate due to old age.

Management Recommendations – Uneven Age

The stand could be selectively harvested within the next 5 year. Following the harvest, the undesirable species should be killed and the damaged, desirable trees should be coppiced. The stand will naturally progress to hard maple.

Stand 81: 1 acre

Site Description -

Ridgetop adjacent to crop field.

Woodland Description -

The stand was clearcut in 2006. The area is sapling aspen.

Management Recommendations – Early Successional

Clearcut the area again in 2021.

Stand 82: 4 acres

Site Description -

East facing slope.

Woodland Description -

Pole sized (5-10" dia.) black oak, red oak, bitternut hickory, cherry, elm, hard maple, ironwood, and silver maple. There are scattered, large oak.

Management Recommendations – Even Age

Timber Stand Improvement (Crop Tree Release) – Locate nice quality oak, cherry, and hard maple spaced 30-35 ft. apart. Remove trees with crowns that are touching or overtopping the crowns of the selected trees. Leave the large oak for mast production.

Stand 83: 3 acres

Site Description -

Sandy bench and east facing slope.

Woodland Description -

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

Management Recommendations – Early Successional

Clearcut this area to create dense, young growth. This will be a commercial sale of aspen and oak.

Stand 84: 39 acres

Site Description -

Bottomland along the trout stream with Dorchester silt loam soils.

Woodland Description -

Pole sized elm, boxelder, hackberry, and walnut. The ground cover is nettles.

Management Recommendations – Even Age

Locate the scattered walnut and hackberry. Remove trees with crowns that are touching or overtopping the crowns of the hackberry and walnut. The walnut selected can be pruned to improve tree quality.

Stand 85: 10 acres

Site Description -

Steep, west facing slopes with sandy soils.

Woodland Description -

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

Management Recommendations – Uneven Age

The undesirable species in the understory can be killed now to increase ground cover and encourage the natural regeneration of desirable species. The mature trees could be selectively harvested in 5-10 years.

Stand 86: 4 acres

Site Description -

Old field site that was planted to aspen in 1996.

Woodland Description -

The area was planted with aspen in 1996. In 2006, the aspen were cut to cause stump sprouting.

Management Recommendations -

Clearcut the area in 2021 to regenerate the aspen.

Stand 87: 5 acres

Site Description -

Steep, north facing slope with shallow soils to limestone. This area is across from the camping area at the dam on the Upper Iowa River.

Woodland Description -

Pole sized red cedar, black oak, and bitternut hickory. The understory is prickly ash.

Management Recommendations – Viewshed

Leave this area as it is for a buffer along the river.

Stand 88: 12 acres

Site Description -

East facing slope with shallow soils and sandy soils.

Woodland Description -

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

Management Recommendations – Uneven Age

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.

The stand could be selectively harvested in 20 years.

Stand 89: 1 acre

Site Description -

Ridge adjacent to crop field.

Woodland Description -

The area is an aspen stand that was clearcut in 1996.

Management Recommendations – Early Successional

Clearcut again in 2012 to maintain the aspen stand.

Stand 90: 3 acres

Site Description -

Narrow ridge along crop field.

Woodland Description -

Medium sized (12-18" dia.) black oak, aspen, and walnut. The understory is elm, gooseberry, and hackberry.

Management Recommendations – Early Successional

Clearcut the area to create a dense edge along the woods. This would be a commercial sale with several walnut.

Stand 91: 5 acres

Site Description -

North facing slope along the Upper Iowa River with very sandy soils. There are several ravines cut by water through the sandy soils.

Woodland Description -

Medium sized aspen, black oak, white pine, black cherry, and cottonwood. The understory is mainly ironwood.

Management Recommendations - Viewshed

Due to the very sandy soils and that this area borders the Upper Iowa River, I suggest leaving this area as is. The large white pine mixed in this area are also unique.

Stand 92: 1 acre

Site Description -

Open grass field with Dorchester-Chaseburg-Volney soils. These are bottom land soils subject to flooding.

Management Recommendations – Even Age

The area could be planted with bur oak and swamp white oak to add mast production and diversity to the bottom land. I suggest planting the oak on a 30 X 30 ft. spacing , or 50 trees per acre. A vented tree shelter should be placed over each tree to protect them from deer and rabbits.

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 93: 8 acres

Site Description -

North facing slope with soils shallow to limestone.

Woodland Description -

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

Management Recommendations – Uneven Age

Kill the undesirable species and poor formed trees in the understory now to increase the density of the understory and encourage the development of young hard maple and basswood.

In approximately 20 years, the stand could be selectively harvested to remove the declining and defective trees.

Stand 94: 2 acres

Site Description -

North facing slope along the edge.

Woodland Description -

Sapling size (1-4" dia.) aspen. The stand was clearcut in 2000.

Management Recommendations – Early Successional

Clearcut the stand in 2016 to maintain dense, young growth.

Stand 95: 3 acres

Site Description -

Ridge top and east facing slope.

Woodland Description -

Pole sized red cedar.

Management Recommendations – Early Successional

This area is providing great winter cover and no improvement work is needed.

Stand 96: 12 acres

Site Description -

North and east facing slopes with shallow soils to limestone.

Woodland Description -

Medium sized (12-18" dia.) black oak, red oak, walnut, basswood, and aspen. There is a good stocking of walnut. The understory consists of bitternut hickory, elm, ironwood, basswood, hackberry, and hard maple.

Management Recommendations – Uneven Age

The undesirable species in the understory could be killed now. In approximately 10 years, the stand could be selectively harvested.

Stand 97: 1 acre

Site Description -

North facing slope and ridge adjacent to crop field.

Woodland Description -

Sapling aspen that was clearcut in 2000.

Management Recommendations – Early Successional

Clearcut the area again in 2015 to maintain early successional habitat.

Stand 98: 1 acre

Site Description -

North facing slope and small drainage.

Woodland Description -

Aspen, elm, and ash that was clearcut in 2006.

Management Recommendations – Early Successional

This area provides a nice travel lane and edge along the open ground. Clearcut the area again in 2021 to maintain the dense, young growth.

Stand 99: 1 acre

Site Description -

Narrow ridge along the border of the woodland.

Woodland Description -

Pole sized (5-10" dbh) walnut, red oak, and aspen. There is a good stocking of walnut and oak.

Management Recommendations – Even Age

Timber Stand Improvement (Crop Tree Release) – Select 50 crop trees per acre and remove the competing trees.

Stand 100: 1 acre

Site Description -

North facing slope.

Woodland Description -

Sapling (1-4" dbh) aspen and black oak. The stand was clearcut to create early successional habitat in 2000.

Management Recommendations – Early Successional

Clearcut the area in 2016 to maintain early successional habitat.

Stand 101: 4 acres

Site Description -

East facing slope with Fayette silt loam soils, and steep rocky land.

Woodland Description -

Pole sized (5-10" dbh) aspen, birch, black oak, cherry, red cedar, and a few walnut. There are scattered, large black oak and white oak.

Management Recommendations – Early Successional

Clearcut this area to create dense, young growth and expand the aspen component. Leave the scattered, large oak for mast production.

Stand 102: 3 acres

Site Description -

East facing slope and bench area.

Woodland Description -

Pole sized black oak, red oak, aspen, ironwood, cherry, black ash, and a few walnut.

Management Recommendations – Even Age

Timber Stand Improvement (Crop Tree Release) – Select a maximum of 50 crop trees per acre and remove competing trees.

Stand 103: 2 acres

Site Description -

Bottomland with Dorchester silt loam soils. This area is a field that is currently in grass.

Management Recommendations – Even Age

This area could be planted with bur oak and swamp white oak to add diversity to the bottomland and mast production in the future. Kill the grass on the entire field prior to planting by broadcast spraying Roundup. Plant large oak seedlings on a 30 ft. spacing, or 50 trees per acre. Place a vented tree shelter over each tree to protect them from deer and rabbits. Control competing vegetation by spot spraying Roundup and Princep herbicides.

Stand 104: 7 acres

Site Description -

Steep, east facing slope with rock outcrops.

Woodland Description -

Large (20" dia. and larger) basswood, elm, bur oak, and black oak. The understory is elm, boxelder, hackberry, ironwood, basswood, and a few hard maple.

Management Recommendations – Uneven Age

Due to the steep slopes, Stand 104 can best be managed on an uneven age system. The undesirable species could be killed in the understory to encourage the development of hard maple and basswood. This area is low priority.

Stand 105: 24 acres

Site Description -

East facing slope with Fayette silt loam soils.

Woodland Description -

Mixture of pole sized (5-10" dia.) boxelder, elm, black oak, bur oak, aspen, red cedar and shrubs. The main shrubs are wild plum, multiflora rose, and prickly ash. This area has good early successional habitat now. There are two patches of white pine that were planted 25-30 years ago.

Management Recommendations – Early Successional

The clumps of aspen could be clearcut to maintain dense, young growth in this area. Approximately 7-8 acres could be cut every 5-7 years. The young oak could be left where possible.

Stand 106: 1 acre

Site Description -

Weedy, grassy field along edge of crop field.

Management Recommendations – Early Successional

Plant the field to aspen on a 6 X 10 ft. spacing. 500 aspen can planted on the site. Broadcast spray the field with Roundup in September, prior to the spring of planting, to kill the existing vegetation.

Stand 107: 14 acres

Site Description -

South facing slope with shallow soils.

Woodland Description -

Pole sized black cherry, red oak, black oak, hackberry, ironwood, birch, elm, aspen, walnut, basswood, bitternut hickory, shagbark hickory, and hard maple. There are scattered black oak, white oak, and walnut that are 16-20 inches in diameter.

Management Recommendations – Even Age

The scattered, merchantable trees can be harvested to create an even aged, pole sized stand. The poor quality oak along the edges should be left for mast production. In 5-7 years, the stand could be thinned to release the oak and walnut crop trees.

Stand 108: 6 acres

Site Description -

Ridge top with Nordness and Fayette soils.

Woodland Description -

Pole sized (5-10" dbh) walnut, red oak, black oak, and elm. The understory has prickly ash, gooseberry, and honeysuckle.

Management Recommendations – Even Age

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 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 as crop trees are oak and walnut.

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

Stand 109: 19 acres

Site Description -

North and south facing slopes along a drainage.

Woodland Description -

Large (20"dbh+) red oak, white oak, hard maple, basswood, and a few walnut. The understory is hard maple, ironwood, and bitternut hickory.

Management Recommendations – Uneven Age

Selective harvest the area to remove the damaged and defective trees. Following the harvest, kill the undesirable species and damaged trees.

Stand 110: 3 acres

Site Description -

Brome field with Fayette silt loam soils. There are walnut naturally reseeding along the edges.

Management Recommendations – Early Successional

Plant this area with aspen on a 6 X 10 ft. spacing. 1,500 aspen could be planted. Prepare the site by mowing in August, then broadcast spray the field with Roundup in September. After the trees are planted and before any vegetation begins to grow, spray a 4 ft. wide band down each row with Pendulum herbicide. Apply 4 quarts of Pendulum per acre treated. Control competing vegetation for 3 years.

Stand 111: 1 acre

Site Description –

Top of drainage bordering crop field.

Woodland Description -

Pole sized basswood, elm, ironwood, walnut, and few aspen.

Management Recommendations – Early Successional

Clearcut this area to create early successional habitat and expand the aspen component.

Stand 112: 6 acres

Site Description -

Ridge top with Fayette silt loam soils.

Woodland Description -

Large (20" dbh+) red oak, black oak, white oak, and walnut. The understory is elm, ironwood, and bitternut hickory.

Management Recommendations -

Stand 112 can be managed on a "shelterwood" system. The undesirable species in the understory can be killed now to encourage the natural reseeding of desirable species. The stand can be clearcut when desirable saplings are 3-5 ft. tall.

Stand 113: 5 acres

Site Description -

Very steep, east facing slope.

Woodland Description -

Mainly pole sized (5-10"dbh) hard maple, basswood, bitternut hickory, cherry, and elm. There are a few oak and walnut.

Management Recommendations – Uneven Age

The undesirable species and defective trees could be removed to transition this area into an uneven age forest. This is a low priority area.

Stand 114: 8 acres

Site Description -

Northeast facing slopes.

Woodland Description -

Pole sized aspen, birch, walnut, elm, bitternut hickory, and black locust.

Management Recommendations – Early Successional

Clearcut this area to develop dense, young growth around the field edge. Treat the stumps of undesirable species to prevent sprouting. This will expand the aspen component of the stand.

Stand 115: 9 acres

Site Description -

Gentle north and east facing slopes bordering field.

Woodland Description -

Pole sized (5-10" dbh) elm, aspen, birch, bitternut hickory, and ash.

Management Recommendations – Early Successional

Clearcut 4-5 acres of the area to create early successional habitat along the field edge.

Stand 116: 55 acres

Site Description -

Steep north and east facing slopes with shallow soils. Area was grazed and high graded prior to purchase by the state.

Woodland Description -

Medium sized (12-18" dbh) hard maple, red oak, white oak, walnut, and aspen. The understory is ironwood, blue beech, hard maple, ash, elm, and bitternut hickory. This stand has been downgraded by past grazing and high grade harvesting.

Management Recommendations – Uneven Age

Kill the undesirable species and coppice poor formed trees to improve the species composition on the area. The thinning will encourage the natural reseeding of maple and basswood. The stand could be selectively harvested in 20-25 years.

Stand 117: 3 acres

Site Description -

East facing slope.

Woodland Description -

Sapling (1-4" dia.) aspen, bitternut hickory, and ironwood. Portions of the area were clearcut in 2000.

Management Recommendations – Early Successional

Cut this area again in 2015 to maintain young growth.

Stand 118: 6 acres

Site Description –

East facing slope.

Woodland Description -

Pole sized (5-10" dia.) aspen, birch, bitternut hickory, elm, boxelder, walnut, red oak, and black oak. There are scattered, large oak and basswood.

Management Recommendations – Early Successional

Clearcut this area to create dense, young growth. Leave the scattered, large oak for mast production.

Stand 119: 1 acre

Site Description -

Steep, east facing bluff.

Woodland Description -

Medium sized (12-18" dbh) basswood and hard maple. The understory is hard maple and ironwood.

Management Recommendations - Viewshed

This area is very steep and should be left as is.

Stand 120: 1 acre

Site Description -

Gentle north facing slope.

Woodland Description -

Pole sized walnut and elm.

Management Recommendations – Even Age

Timber Stand Improvement (Crop Tree Release) – Identify good quality walnut and remove the competing trees. Prune the trees selected to enhance their quality.

Stand 121: 5 acres

Site Description -

Gentle north facing slope.

Woodland Description -

Pole sized (5-10" dbh) black locust, elm, walnut, ash, bitternut hickory, basswood, cherry, hard maple, and a few red oak. The black locust is mainly on the east end.

Management Recommendations – Even Age

Timber Stand Improvement (Crop Tree Release) – Identify a maximum of 50 crop trees per acre and remove the competing trees.

Stand 122: 8 acres

Site Description -

West facing slope with rock outcrops.

Woodland Description -

Large (20"+ dbh) bur oak, black oak, walnut, and basswood. The understory is basswood, elm, hackberry, bitternut hickory, and ironwood.

Management Recommendations – Uneven Age

Timber Stand Improvement (Weed Tree Removal) – kill the undesirable species in the understory to encourage the natural reseeding of basswood and hackberry. The mature trees could be selectively harvested in 10-15 years. This is a low priority area.

Stand 123: 3 acres

Site Description -

North facing slope.

Woodland Description -

Sapling sized (1-4" dbh) aspen with scattered red cedar. The area was clearcut in 2000.

Management Recommendations – Early Successional

Clearcut the area again in 2016 to maintain early successional habitat.

Stand 124: 3 acres

Site Description -

North facing slope along a small drainage.

Woodland Description -

Large (20"+ dbh) white oak, black oak, bur oak, and shagbark hickory. The understory is elm, ash, ironwood, and cherry.

Management Recommendations – Early Successional

Clearcut this area in 2012 to create additional early successional habitat in the area. The cut will have commercial trees.

Stand 125: 7 acres

Site Description -

West and south facing slopes with shallow soils to limestone.

Woodland Description -

Red cedar with scattered, large white oak, bur oak, and black oak. The understory is elm and ironwood.

Management Recommendations - Viewshed

This area has good wildlife habitat with the red cedar and large oaks. Nothing is suggested for this area.

Stand 126: 1 acre

Site Description -

Narrow ridge along crop field edge.

Woodland Description -

Large bur oak, black oak, elm, and white oak. The understory is elm, hackberry, boxelder, and ironwood.

Management Recommendations – Early Successional

Clearcut the area to create dense, young growth along the edge of the woods. This will be a commercial sale and should be done in 5 years along with Stand 124.

Stand 127: 12 acres

Site Description -

South east facing slope with predominantly Dubuque silt loam soils.

Woodland Description -

Pole sized (5-10" dbh) walnut, elm, black oak, cherry, bitternut hickory, and aspen. The understory is elm and bitternut hickory.

Management Recommendations – Even Age

Timber Stand Improvement (Crop Tree Release) – Select a maximum of 50 crop trees per acre and remove the competing trees.

Stand 128: 1 acre

Site Description -

Ridgetop in southeast corner of the state property.

Woodland Description -

Pole sized white pine, walnut, and elm.

Management Recommendations - Viewshed

Leave this area as is.

Stand 129: 3 acres

Site Description -

North facing slope.

Woodland Description -

Pole sized (5-10" dbh) aspen, red cedar, elm, and walnut. There is a good component of aspen.

Management Recommendations – Early Successional

Clearcut this stand to create dense cover adjacent to the white pine stand (Stand 128). The scattered cedar should be left for winter cover.

Stand 130: 4 acres

Site Description -

Ridgetop with mainly Dubuque silt loam soils.

Woodland Description -

Large (20"+ dbh) bur oak, white oak, and shagbark hickory. The understory is elm and bitternut hickory.

Management Recommendations – Even Age

Stand 130 could be managed on a shelterwood system to encourage the natural reseeding of oak and hickory. The undesirable species such as elm and bitternut hickory should be killed. In addition, stunted oak and hickory should be coppiced. This thinning in the understory will allow more sunlight to reach the ground for oak and hickory regeneration.

Stand 131: 13 acres

Site Description-

West facing slope with soils shallow over limestone.

Woodland Description -

Sapling to pole sized (1-8" dia.) elm, black oak, cherry, walnut, bitternut hickory, ironwood, and red cedar. There are scattered, large bur oak, white oak, and black oak that are low in quality, but great trees for mast production.

Management Recommendatiions – Even Age

Kill the elm, ironwood, and bitternut hickory. This will provide more growing space for the existing desirable trees, encourage additional reseeding of oak and walnut, and improve the wildlife habitat in the area.

Stand 132: 5 acres

Site Description -

North facing slope and small drainage.

Woodland Description -

Pole sized (5-10" dbh) ironwood, birch, aspen, black cherry, and elm. There are a few large bur oak, white oak, and red oak.

Management Recommendations – Early Successional

Clearcut this area to create dense, young growth. Treat the stumps of ironwood and elm with Pathfinder II to increase the percentage of aspen in the stand. The large oak are very scattered and could be left for mast production.

Stand 133: 17 acres

Site Description -

Ridge top and west facing slope.

Woodland Description -

Large (20"+ dbh) white oak, black oak, bur oak, walnut, red oak, and shagbark hickory. The understory is elm, bitternut hickory, shagbark hickory, basswood, and hackberry.

Management Recommendations – Even Age

Clearcut areas 5-6 acres in size. Following the harvest, fell all trees 1 inch and larger in diameter. Treat the stumps of elm, bitternut hickory, ironwood, and boxelder with Pathfinder II to prevent sprouting. Plant the area with 30 oak trees per acre. Protect each tree with a vented tree shelter.

Stand 134: 3 acres

Site Description -

North facing slope and bench area.

Woodland Description -

Pole sized (5-10" dia.) elm, cherry, walnut, aspen, birch, red oak, and shagbark hickory.

Management Recommendations – Even Age

Timber Stand Improvement (Crop Tree Release) – Select a maximum of 50 crop trees per acre and remove the competing trees.

Stand 135: 5 acres

Site Description -

Steep, north facing slope.

Woodland Description -

Large (20" dia. +) red oak, white oak, hard maple, and basswood. There is one fantastic walnut that is 30" in diameter. The understory is elm, ironwood, and hard maple.

Management Recommendations – Uneven Age

Selective harvest this area along with the clearcut in Stand 133. Following the harvest, kill the undesirable species and coppice the poor formed and damaged trees.

Stand 136: 15 acres

Site Description -

Steep west facing slope with shallow soils.

Woodland Description -

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

Management Recommendations - Viewshed

Due to the steep slopes, this area should be left as is.

Stand 137: 36 acres

Site Description -

Bottomland with Dorchester silt loam soils.

Woodland Description -

Pole sized (5-10" dbh) boxelder and elm. There are scattered, young walnut.

Management Recommendations – Even Age

Remove trees overtopping or crowding the crowns of the walnut. Prune the walnut to improve the log quality.

Stand 138: 31 acres

Site Description -

Island on bottomland along the Upper Iowa River.

Woodland Description -

Large cottonwood, walnut, hackberry, and elm. The understory is hackberry and elm.

Management Recommendations – Viewshed

This area is difficult to assess because it is an island surrounded by the Upper Iowa River and backwaters. No management is recommended for this area. Mature walnut could be harvested before they deteriorate.

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 264 acres designated for early successional management. The allowable cut is 18 acres per year (264 acres divided by 15 yrs.). With a working cycle of 5 years, approximately 90 acres could be cut every 5 years.

Even Age Management Area –

There are 424 acres under even age management. Dividing 424 acres by 125 years, yields an allowable cut of 3.4 acres per year, or 17 acres every 5 years.

Uneven Age Management Area –

Stands can be selectively harvested every 20 years to remove mature and defective trees. There are 245 acres under uneven age management. The allowable harvest is 60 acres of selective harvest every 5 years.

HIGH PRIORITY PROJECTS

Tree Planting -

Stand #	Acres	Prescription
7	1.5	Plant aspen
26	1.5	Plant riparian buffer along the river
44	2	Plant aspen
49	2	Plant red cedar
57	2	Plant red cedar
62	8	Plant shrubs and aspen
74	1	Plant aspen
77	2	Plant aspen
78	4	Kill boxelder and plant oak.
92	1	Plant oak
106	1	Plant aspen
110	3	Plant aspen
Total	29	

Timber Stand Improvement – Crop Tree Release

Stand #	**Acres**
2	12
5	4
9	4
21	5
27	6
31	14
37	4
38	2
39	9
52	7
55	3
75	14
99	1
102	3
108	6
127	12
134	3
Total	109

Timber Stand Improvement – Weed Tree Removal

Stand #	**Acres**
1	10
3	40
12	10
32	6
34	13
43	4
45	29
70	13
80	10
109	19
112	6
116	55
130	4
131	13
Total	232

Early Successional Clearcuts – 15 yr. rotation

Stand #	**Acres**	**Comments**
11	4	
20	9	
24	2	
30	5	Commercial timber sale
33	12	
42	5	
47	5	
54	7	Commercial timber sale
64	2	
65	3	
90	3	Commercial timber sale
101	4	
105	8	
111	1	
114	4	
115	5	
118	6	
129	3	
132	5	
Total	93	

Even Age Clearcuts – 125 yr. rotation

Stand #	Acres	Prescription
56	11	Sell large cottonwood to develop pole sized stand
61	7	Clearcut and plant
107	14	Sell scattered large trees to deveop pole sized stand
133	5	Clearcut and plant
Total	37	

Selective Harvest – 20 yr. cycle

Stand #	Acres
70	13
80	10
109	19
Total	42

Prescribed Burning to Encourage Oak Regeneration -

Stand	Acres
22	10
66	28
Total	38

APPENDIX

COON CREEK WILDLIFE AREA

SUMMARY OF WOODLAND STANDS

No.	Acres	Timber Type	TreeSize	Mngt. System	Prescription	Priority	Year Complete	Comments
1	10	Hard maple, basswood, oak	Medium	Uneven Age	TSI – kill undesirable species	Medium	2007	
2	12	Oak & Walnut	Pole	Even Age	TSI – Crop Tree Release	High	2012	
3	40	Maple Basswood Oak	Medium	Uneven Age	TSI – kill undesirable species	Medium	2007	
4	2	Aspen Cedar	Sapling	Early Successional	Clearcut	High	2017	
5	4	Ash Cherry Oak	Pole	Even Age	TSI – Crop Tree Release	High	2012	
6	2	Red Cedar	Sapling	Early Successional	TSI – Kill invading boxelder	Medium	2007	
7	1.5	Open Ground		Early Successional	Plant aspen	High	2007	
8	1.5	Aspen	Sapling	Early Successional	Clearcut	High	2017	
9	4	Oak Hickory Ash	Pole	Even Age	TSI – Crop tree release	High	2007	
10	72	Oak Hickory Cedar	Medium	View Shed				
11	4	Hickory Boxelder Elm	Pole	Early Successional	Clearcut	High	2007	
12	10	Oak Hickory	Medium	Even Age	Shelterwood – kill weed trees	Medium	2007	
13	7	Boxelder	Sapling	Early Successional	Kill boxelder and plant aspen	Medium	2007	

No.	Acres	Timber Type	TreeSize	Mngt. System	Prescription	Priority	Year Complete	Comments
14	45	Willow Cottonwood	Sapling	View Shed				
15	21	Cottonwood & Silver Maple	Large	View Shed				
16	20	Oak Basswood	Medium	View Shed				
17	33	Oak Maple Basswood	Medium	View Shed				
18	7	Aspen	Sapling	Early Successional	Clearcut	High	2015	
19	8.5	Aspen	Seedling	Early Successional	Control grass in aspen planting	High	2007	
20	9	Aspen	Pole	Early Successional	Clearcut	High	2007	
21	5	Walnut Oak	Pole	Even Age	TSI – Crop Tree Release	High	2007	
22	10	Oak Hickory	Large	Even Age	Shelterwood with prescribed burning	Medium	2012	Burn in 2007 and kill undesirable species in 2012.
23	6	Maple Basswood Hickory	Sapling	Even Age	TSI – Release crop trees	Medium	2012	
24	2	Elm Cherry Hickory	Pole	Early Successional	Clearcut	High	2007	
25	17	Elm Hackberry Walnut	Pole	View Shed	Harvest walnut as they mature			
26	1.5	Open Ground		View Shed	Plant Riparian Buffer along Upper IA. River	High	2007	
27	6	Oak Walnut	Pole	Even Age	TSI – Crop tree release	High	2007	
28	14	Oak Walnut Basswood	Medium	Even Age	Shelterwood – kill undesirable species	Medium	2012	
29	19	Aspen Oak Walnut	Pole	Early Successional	Clearcut 6 acres every 5 years	High	2012	

No.	Acres	Timber Type	TreeSize	Mngt. System	Prescription	Priority	Year Complete	Comments
30	5	Aspen Bur Oak	Medium	Early Successional	Clearcut	High	2007	Commercial sale of aspen and bur oak
31	14	Maple Hickory Ironwood Basswood	Sapling	Even Age	TSI – Early release of scattered oak and walnut	Medium	2007	
32	6	Maple Basswood Oak	Pole	Uneven Age	TSI – kill undesirable species	Medium	2007	
33	12	Aspen Cedar	Pole	Early Successional	Clearcut aspen clumps	High	2007	
34	13	Oak Hickory Cherry	Medium	Even Age	Shelterwood – kill undesirable species	Medium	2007	
35	1.5	Elm Aspen Cherry	Pole	Early Successional	Clearcut	High	2012	
36	2.5	Aspen	Sapling	Early Successional	Clearcut	High	2015	
37	4	Oak Walnut	Pole	Even Age	TSI – release crop trees	High	2007	
38	2	Black Oak Walnut Cherry	Pole	Even Age	TSI – release crop trees	High	2007	
39	9	Oak Maple Basswood	Pole	Even Age	TSI – release crop trees	High	2007	
40	5	Aspen	Sapling	Early Successional	Clearcut	High	2017	
41	25	Maple Basswood Oak	Medium	Uneven Age	TSI – kill undesirable species	Low	2007	
42	5	Cedar Aspen Walnut	Pole	Early Successional	Clearcut	High	2007	
43	4	Oak Walnut	Medium	Even Age	Shelterwood – kill undesirable species	Medium	2007	
44	2	Open ground		Early Successional	Plant aspen	Medium	2007	
45	29	Oak Walnut	Medium	Even Age	Shelterwood – kill undesirable species	High	2007	

No.	Acres	Timber Type	Tree Size	Mngt. System	Prescription	Priority	Year Complete	Comments
46	1	Aspen	Sapling	Early Successional	Clearcut in 5 years	High	2012	
47	5	Oak Elm Walnut	Pole	Early Successional	Clearcut	High	2007	
48	15	Oak Walnut Cedar	Medium	View Shed				
49	2	Open ground		Early Successional	Plant red cedar	Medium	2007	
50	2	Ash Elm Hackberry	Pole	Early Successional	Sell walnut, then clearcut	Medium	2012	Commercial walnut sale
51	37	Oak Walnut	Medium	Even Age	Clearcut 5-6 acres	Medium	2025	
52	7	Elm Hickory Basswood	Pole	Even Age	TSI – Release crop trees	High	2007	
53	19	Mixed Oak	Large	View Shed				
54	7	Oak Basswood Walnut	Medium	Early Successional	Clearcut	High	2007	Commercial sale
55	3	Oak Walnut	Pole	Even Age	TSI – Crop tree release	High	2007	
56	11	Walnut Elm Hackberry	Pole	Even Age	Harvest cottonwood and release crop trees	Medium	2012	Sell scattered, large cottonwood
57	2	Open ground		Early Successional	Plant red cedar	Medium	2007	
58	1	White Pine	Pole	View Shed	Basal area thinning	Medium	2012	
59	1	Red Cedar	Sapling	Early Successional				
60	2	Aspen	Sapling	Early Successional	Clearcut	Medium	2017	
61	7	Oak Basswood Walnut	Large	Even Age	Clearcut and plant	Medium	2007	
62	8	Brome Grass		Early Successional	Plant shrubs and aspen	Medium	2007	

No.	Acres	Timber Type	Tree Size	Mngt. System	Prescription	Priority	Year Complete	Comments
63	2	Bur Oak Black Oak	Medium	Early Successional	Clearcut	High	2012	Commercial timber sale
64	2	Aspen Elm	Pole	Early Successional	Clearcut	High	2007	
65	3	Elm Boxelder	Pole	Early Successional	Clearcut	High	2007	
66	28	Black Oak Bur Oak White Oak	Large	Even Age	Shelterwood with prescribed burning	High	2007	
67	3	Aspen	Sapling	Early Successional	Clearcut	High	2016	
68	8	Aspen Hickory Cherry	Pole	Early Successional	Clearcut	High	2012	Commercial Sale
69	6	Aspen Hickory Elm	Sapling	Early Successional	Clearcut	High	2017	
70	13	Oak Basswood Walnut	Medium	Uneven Age	TSI – kill undesirable species. Sell large walnut	Medium	2007	
71	5	Aspen	Sapling	Early Successional	Clearcut	High	2017	
72	6	Oak Basswood Walnut	Medium	View Shed				
73	43	Cotton wood	Large	View Shed				
74	1	Open field with brome		Early Successional	Plant aspen	Medium	2007	
75	14	Walnut Oak	Pole	Even Age	TSI – Crop tree release	High	2007	
76	7	Aspen Oak Cedar	Pole	Early Successional	Clearcut	High	2016	
77	2	Brome grass		Early Successional	Plant aspen	Medium	2007	
78	4	Boxelder	Pole	Even Age	Kill boxelder and plant oak	Medium	2007	
79	4	Cedar Elm	Pole	Early Successional	Leave as is			

No.	Acres	Timber Type	Tree Size	Mngt. System	Prescription	Priority	Year Complete	Comments
80	10	Red Oak Maple	Large	Uneven Age	Selective harvest and TSI	Medium	2007	
81	1	Aspen	Sapling	Early Successional	Clearcut	High	2021	
82	4	Oak Hickory Maple	Pole	Even Age	TSI – Crop tree release	Medium	2007	
83	3	Aspen Oak	Medium	Early Successional	Clearcut	High	2012	Commercial sale
84	39	Elm Hackberry Walnut	Pole	Even Age	TSI – Crop tree release	Medium	2007	
85	10	Oak Walnut	Medium	Uneven Age	Selective harvest and kill undesirable species	Low	2012	
86	4	Aspen	Sapling	Early Successional	Clearcut	High	2021	
87	5	Oak Cedar	Pole	View Shed				
88	12	Oak Maple Basswood	Medium	Uneven Age	Selective harvest	Medium	2026	
89	1	Aspen	Sapling	Early Successional	Clearcut	High	2012	
90	3	Oak Walnut	Medium	Early Successional	Clearcut	High	2007	Commercial sale
91	5	Aspen Oak White Pine	Medium	View Shed				
92	1	Crop Field		Even Age	Plant bur oak and swamp white oak	Medium	2007	
93	8	Oak Walnut Basswood	Medium	Uneven Age	TSI – Kill undesirable species	Low	2012	
94	2	Aspen	Sapling	Early Successional	Clearcut	High	2016	
95	3	Red Cedar	Pole	Early Successional				

No.	Acres	Timber Type	Tree Size	Mngt. System	Prescription	Priority	Year Complete	Comments
96	12	Oak Walnut	Medium	Uneven Age	Selective Harvest	Low	2016	
97	1	Aspen	Sapling	Early Successional	Clear Cut	High	2016	
98	1	Aspen	Sapling	Early Successional	Clear Cut	High	2021	
99	1	Walnut Oak Aspen	Pole	Even Age	TSI – Crop tree release	High	2007	
100	1	Aspen	Sapling	Early Successional	Clear cut	High	2016	
101	4	Aspen Black Oak	Pole	Early Successional	Clear cut	High	2007	
102	3	Oak Walnut	Pole	Even Age	TSI – Crop tree release	High	2007	
103	2	Grass Field		Even Age	Plant Oak	Low	2012	
104	7	Oak Basswood	Large	Uneven Age	TSI – kill undesirable species	Low	2012	
105	24	Aspen Oak Cedar	Pole	Early Successional	Clearcut 8 acres every 5 years	High	2007	
106	1	Grass Field		Early Successional	Plant aspen	Medium	2007	
107	14	Oak Hickory	Pole	Even Age	Harvest large trees, then TSI – Crop tree release	Medium	Harvest 2007 TSI – 2012	
108	6	Oak Walnut	Pole	Even Age	TSI – Crop tree release	High	2007	
109	19	Oak Maple Basswood	Large	Uneven Age	Selective harvest	Medium	2007	
110	3	Grass Field		Early Successional	Plant aspen	Medium	2007	
111	1	Basswood Elm Aspen	Pole	Early Successional	Clear cut	High	2007	
112	6	Oak Walnut	Large	Even Age	Shelterwood – kill undesirable species	High	2007	

No.	Acres	Timber Type	Tree Size	Mngt. System	Prescription	Priority	Year Complete	Comments
113	5	Maple Basswood	Pole	Uneven Age	TSI – kill undesirable species	Low	2016	
114	8	Aspen Birch	Pole	Early Successional	Clearcut 4 acres every 5-10 years	High	2007	
115	9	Elm Aspen Birch	Pole	Early Successional	Clearcut 4-5 acres	High	2007	
116	55	Maple Oak Walnut	Medium	Uneven Age	TSI – kill undesirable species	Medium	2007	
117	3	Aspen Bitternut Hickory	Sapling	Early Successional	Clearcut	High	2015	
118	6	Aspen Birch	Pole	Early Successional	Clearcut	High	2007	
119	1	Maple Basswood	Medium	View Shed				
120	1	Walnut Elm	Pole	Even Age	TSI – Crop tree release	Medium	2012	
121	5	Walnut Cherry Elm	Pole	Even Age	TSI – Crop tree release	Medium	2012	
122	8	Oak Walnut Basswood	Large	Uneven Age	TSI – kill undesirable species	Low	2012	
123	3	Aspen	Sapling	Early Successional	Clearcut	High	2016	
124	3	Oak Hickory	Large	Early Successional	Clearcut	Medium	2012	Commercial sale
125	7	Cedar Oak	Large	View Shed				
126	1	Oak Elm	Large	Early Successional	Clearcut	High	2012	Harvest with Stand 124
127	12	Oak Walnut Elm	Pole	Even Age	TSI – Crop tree release	High	2007	
128	1	White Pine Walnut	Pole	View Shed				
129	3	Aspen Elm Walnut	Pole	Early Successional	Clearcut	High	2007	

No.	Acres	Timber Type	Tree Size	Mngt. System	Prescription	Priority	Year Complete	Comments
130	4	Bur Oak White Oak	Large	Even Age	Shelterwood – kill undesirable species	High	2007	
131	13	Bur Oak White Oak Black Oak	Large	Even Age	Shelterwood – kill undesirable species	Medium	2007	
132	5	Aspen Birch Ironwood	Pole	Early Successional	Clearcut	High	2007	
133	17	Oak Walnut Hickory	Large	Even Age	Clearcut 5-10 acres	High	2012	
134	3	Oak Cherry Walnut	Pole	Even Age	TSI – Crop tree release	High	2007	
135	5	Oak Maple Basswood	Large	Uneven Age	Selective harvest	Low	2012	
136	15	Bur Oak Cedar	Medium	View Shed				
137	36	Boxelder Elm Walnut	Pole	Even Age	TSI – Crop tree release	Medium	2012	
138	31	Cottonwood Walnut	Large	View Shed				

COON CREEK
WALNUT TREES READY TO HARVEST

Walnut trees that are damaged, stunted, low quality, and mature were located on a map and tallied. Following is a summary of the trees that I feel should be sold within the near future. It is not that these trees will die, but they have reached their financial maturity and could be harvested. This will provide space for younger, more vigorous trees.

Diameter	# Trees	Est. Bd. Ft.
14	1	70
16	20	1,670
18	24	2,560
20	24	3,200
22	32	5,900
24	22	4,660
26	12	3,190
28	3	990
30	1	580
Totals	139	22,820

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.