FOREST WILDLIFE STEWARDSHIP PLAN

FOR

COLDWATER CREEK WILDLIFE MANAGEMENT AREA AND UPPER IOWA RIVER AREAS

Chimney Rock, Bohr, Nicola, Bronner, McCabe, and Plymouth Rock Tracts

A plan that will increase the diversity of forest wildlife and prioritize species of greatest conservation need.

Developed by

Gary Beyer
District Forester

And

Terry Haindfield
Wildlife Biologist

TABLE OF CONTENTS

HOW THE FOREST WILDLIFE STEWARDSHIP PLAN WAS DEVELOPED

The Wildlife Biologist is the manager of the area and determines the objectives for each wildlife area. Objectives address the habitat needs of Species of Greatest Conservation Need determined by the wildlife action plan and the woodland condition of each area. Seventy five per cent of the total area managed by the Wildlife Bureau in northeast Iowa is woodland. Managing woodland is essential to improve the areas for wildlife and recreation.

Management of wildlife areas is a cooperative effort by the wildlife and forestry bureaus to enhance state owned areas for a diversity of wildlife species. The property is walked by the biologist and forester. Stands are identified by tree species, tree size, topography, and management system. The biologist and forester discuss the options for each stand and how management of that stand will fit into the overall management for the area. Forester recommendations are designed to manage the stand to reach the goals and objectives of the biologist.

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

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

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

Early Successional **-**

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

Even Age **-**

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

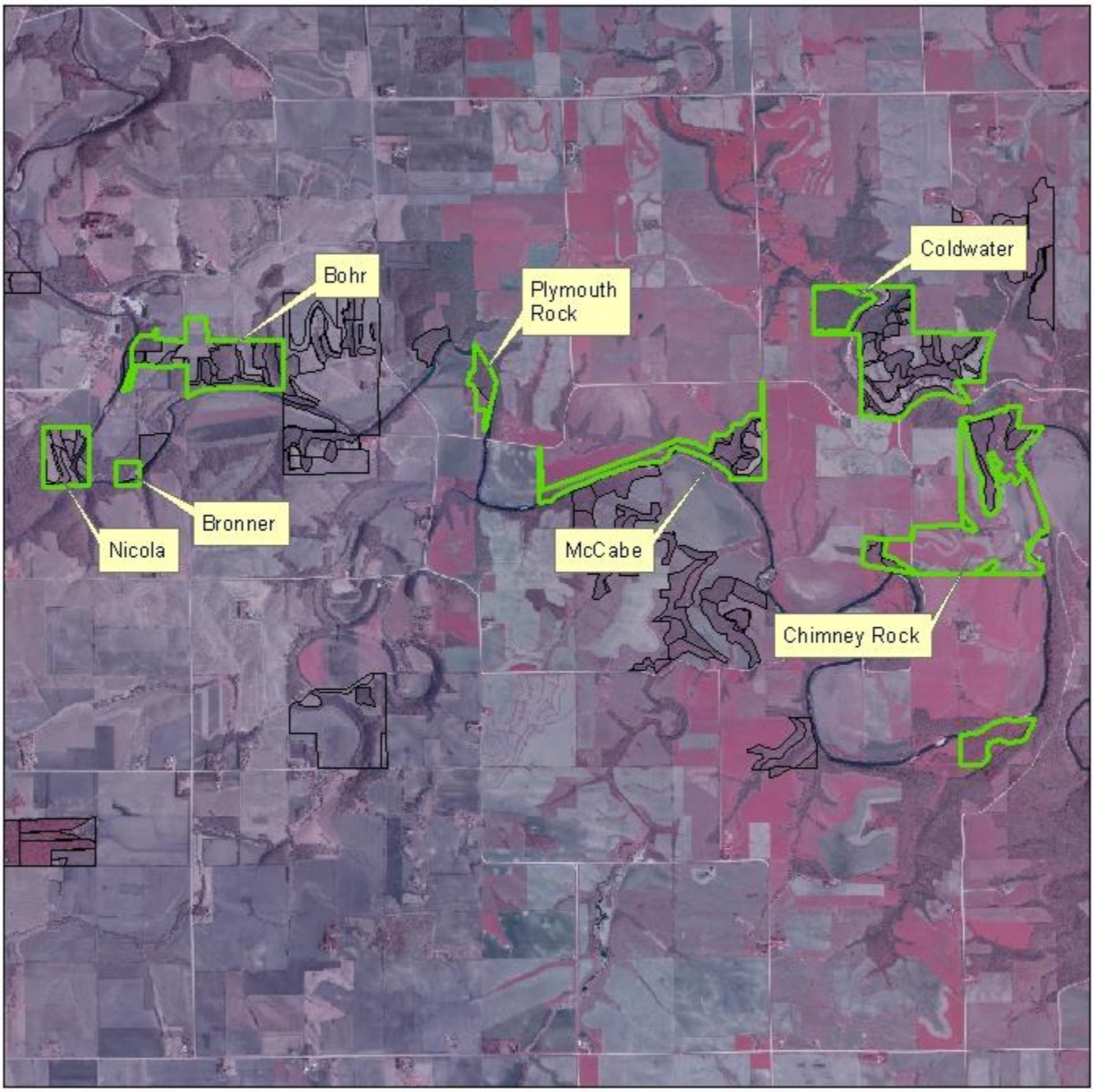
Uneven Age **-**

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

Viewshed **-**

These are steep slopes, high recreational use areas, and buffers along the streams and rivers where management will be minimal.

FOREST WILDLIFE STEWARDSHIP PLAN
FOR COLDWATER & UPPER IOWA RIVER AREAS

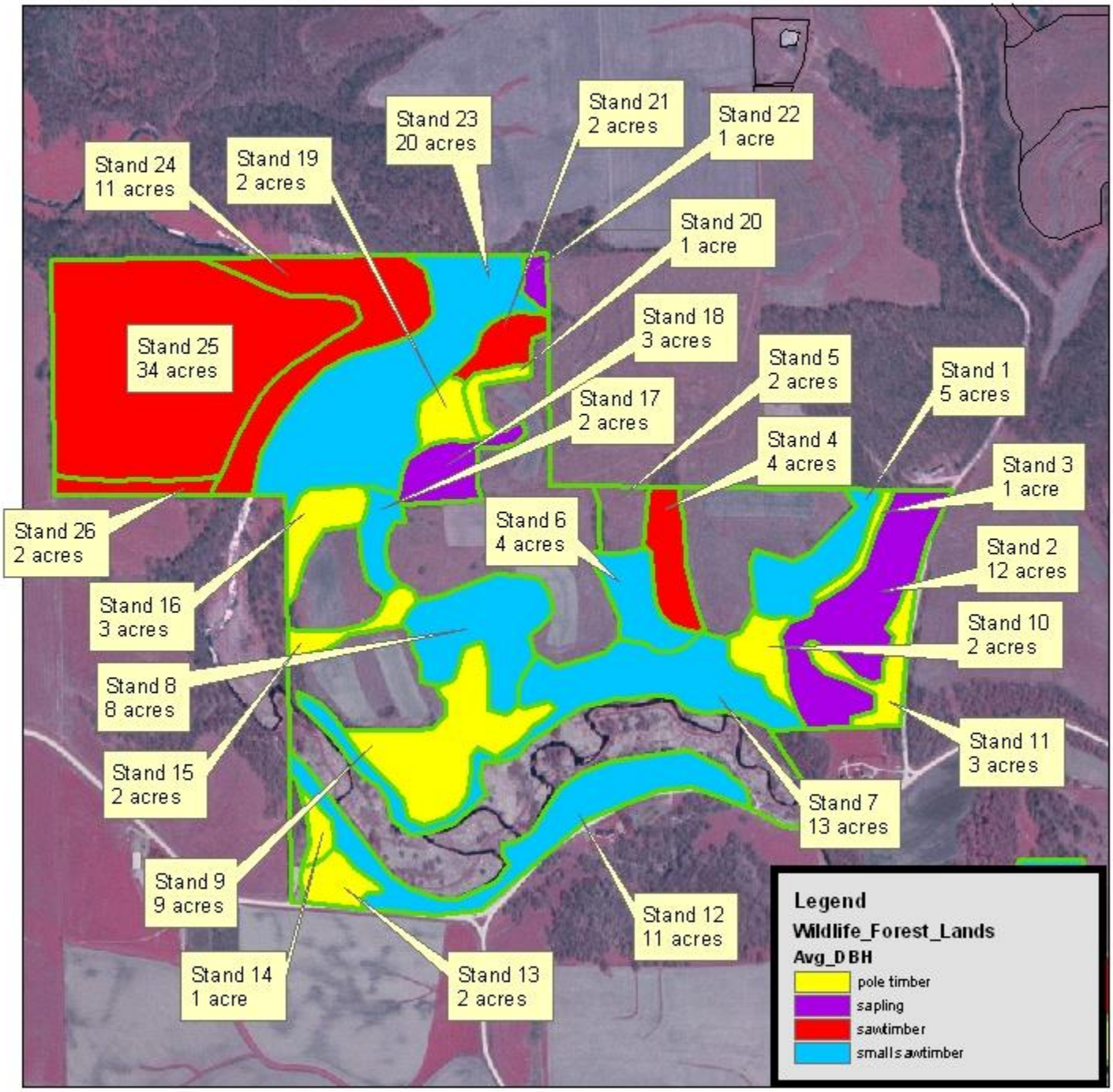


Burr Oak, Fremont, Bluffton,
and Orleans Twsp., Winneshiek Co.

N

0 1,700 3,400 6,800 10,200 13,6 Feet

AVERAGE TREE SIZE
COLDWATER WILDLIFE AREA

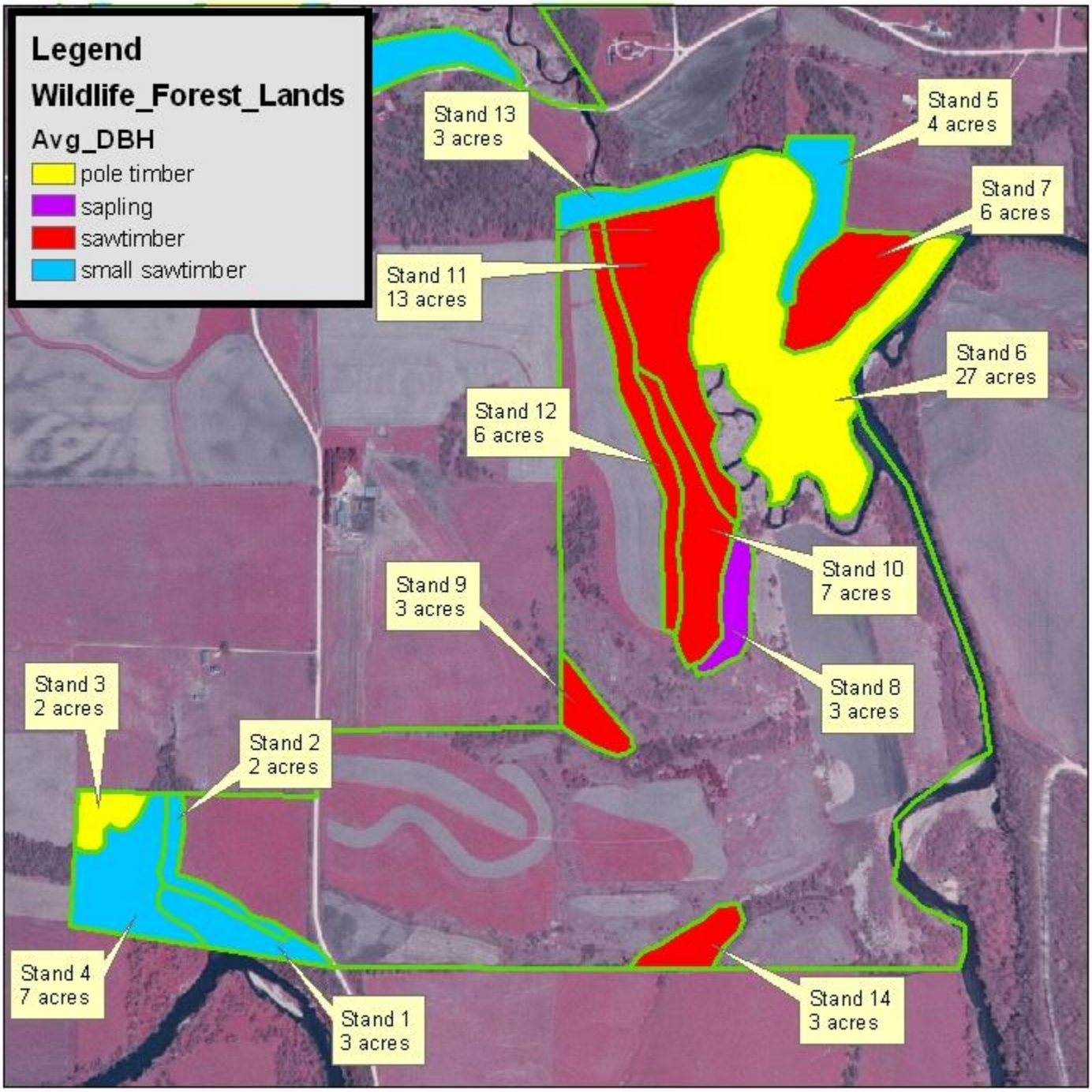


Sec. 31 and 32 Burr Oak Twsp.,
T100N-R9W, Winneshiek County

0 340 680 1,360 2,040 2,720 Feet

N

CHIMNEY ROCK WILDLIFE AREA
Average Tree Size



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T100N-R9W, Fayette Co.

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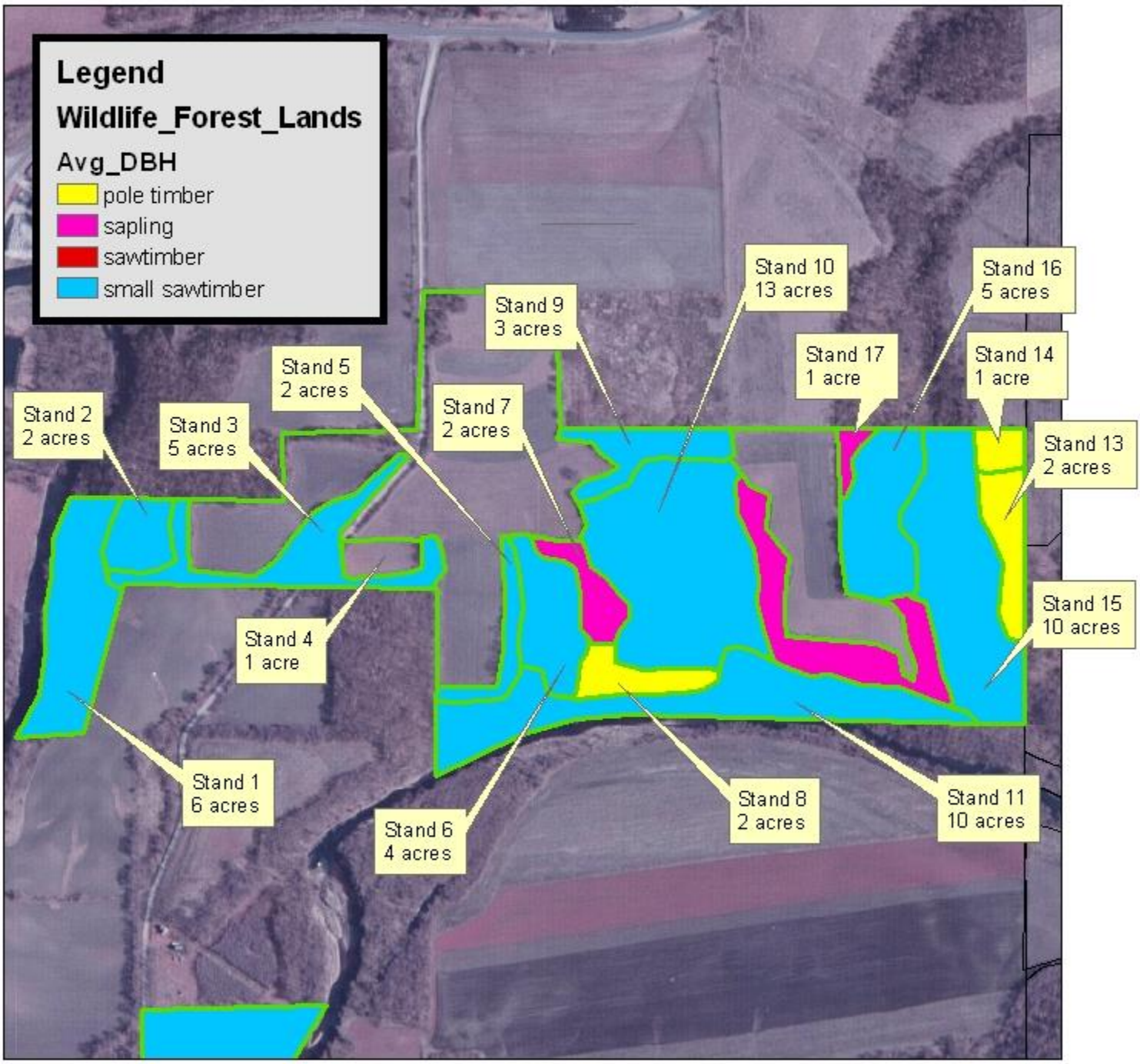
BOHR TRACT
Average Tree Size



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T100N-R10W, Winneshiek Co.

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Feet

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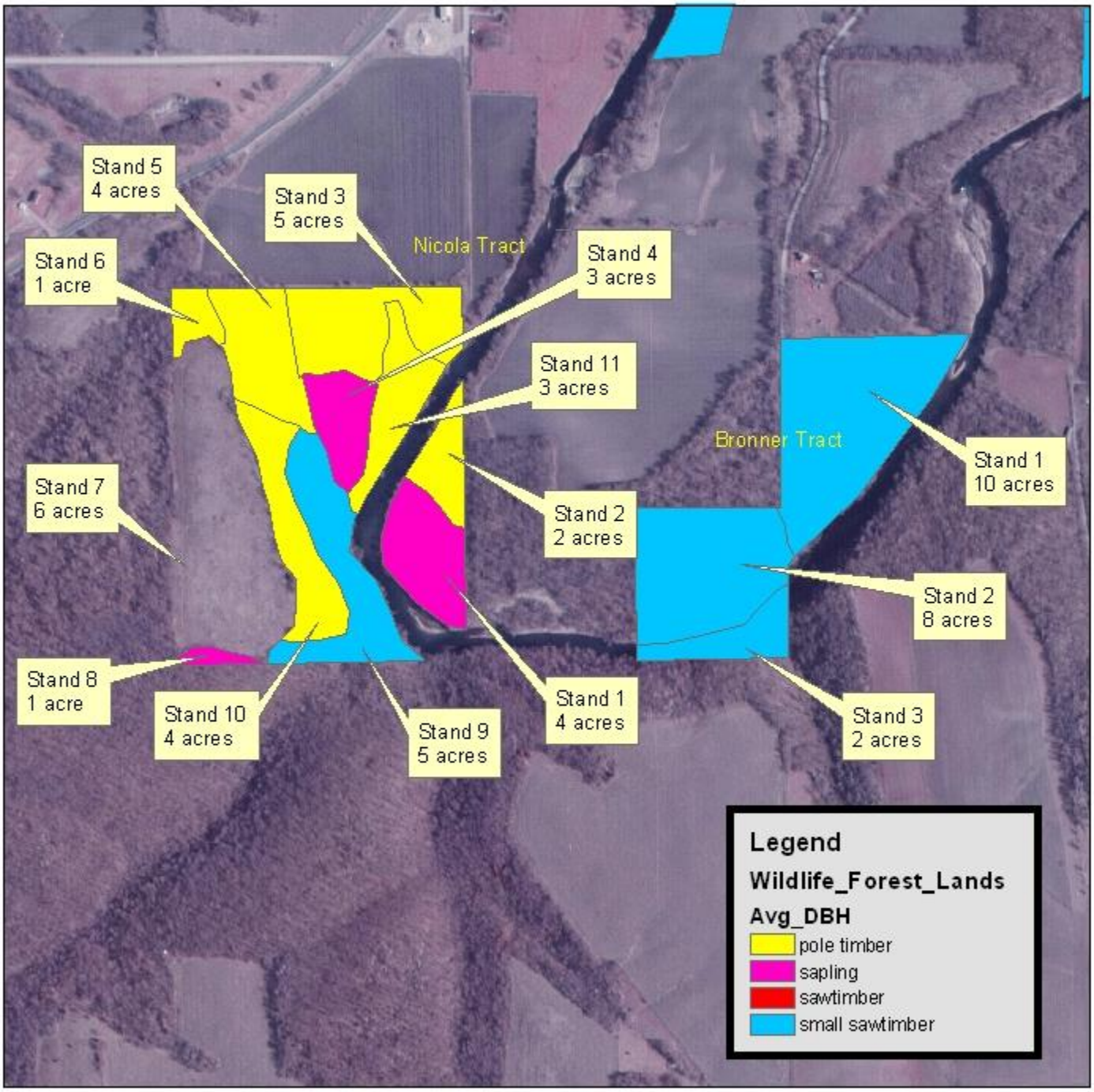
BRONNER & NICOLA TRACTS
Average Tree Size



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T100N-R10W, Winneshiek Co.

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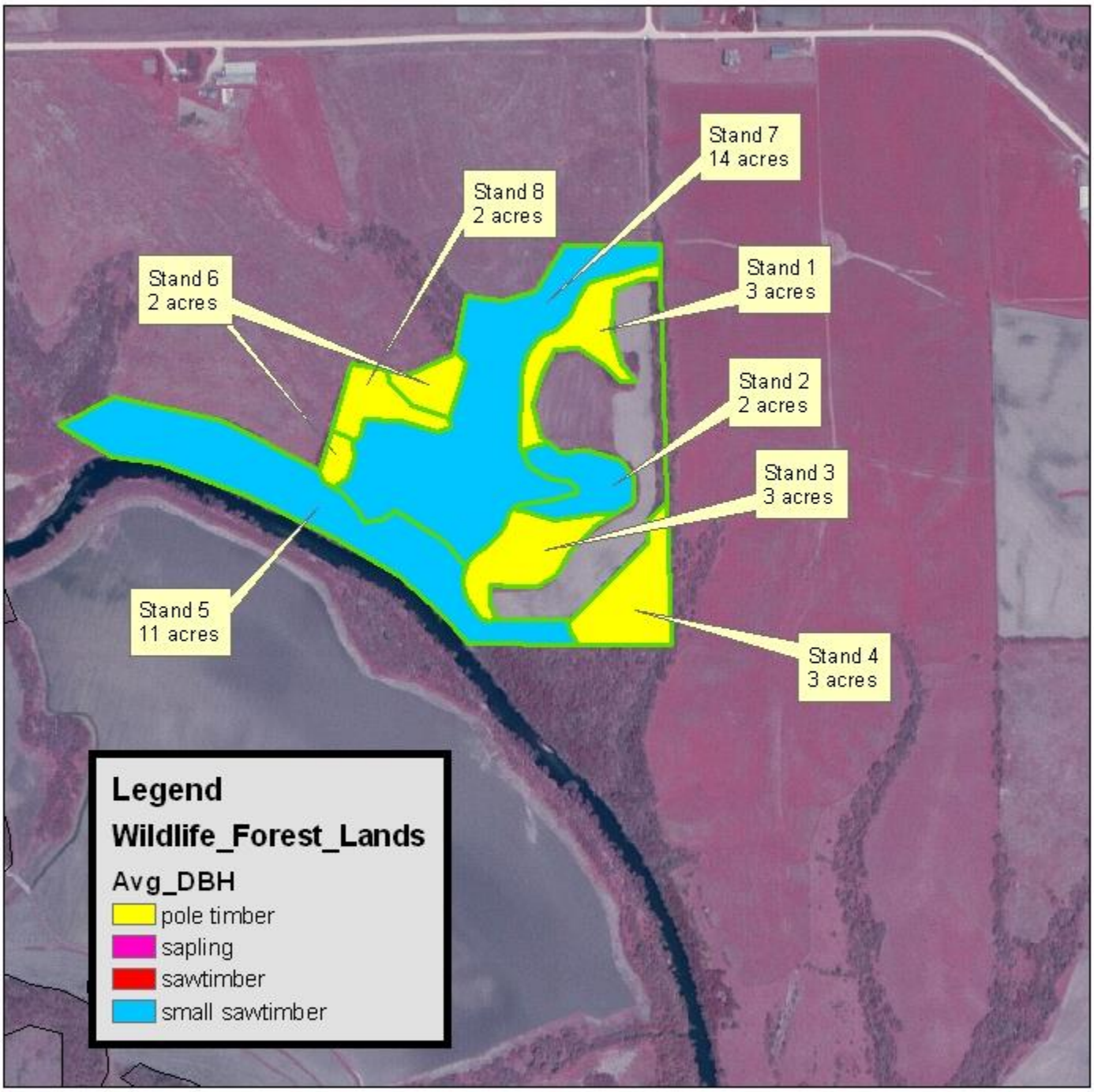
McCABE TRACT
Average Tree Size



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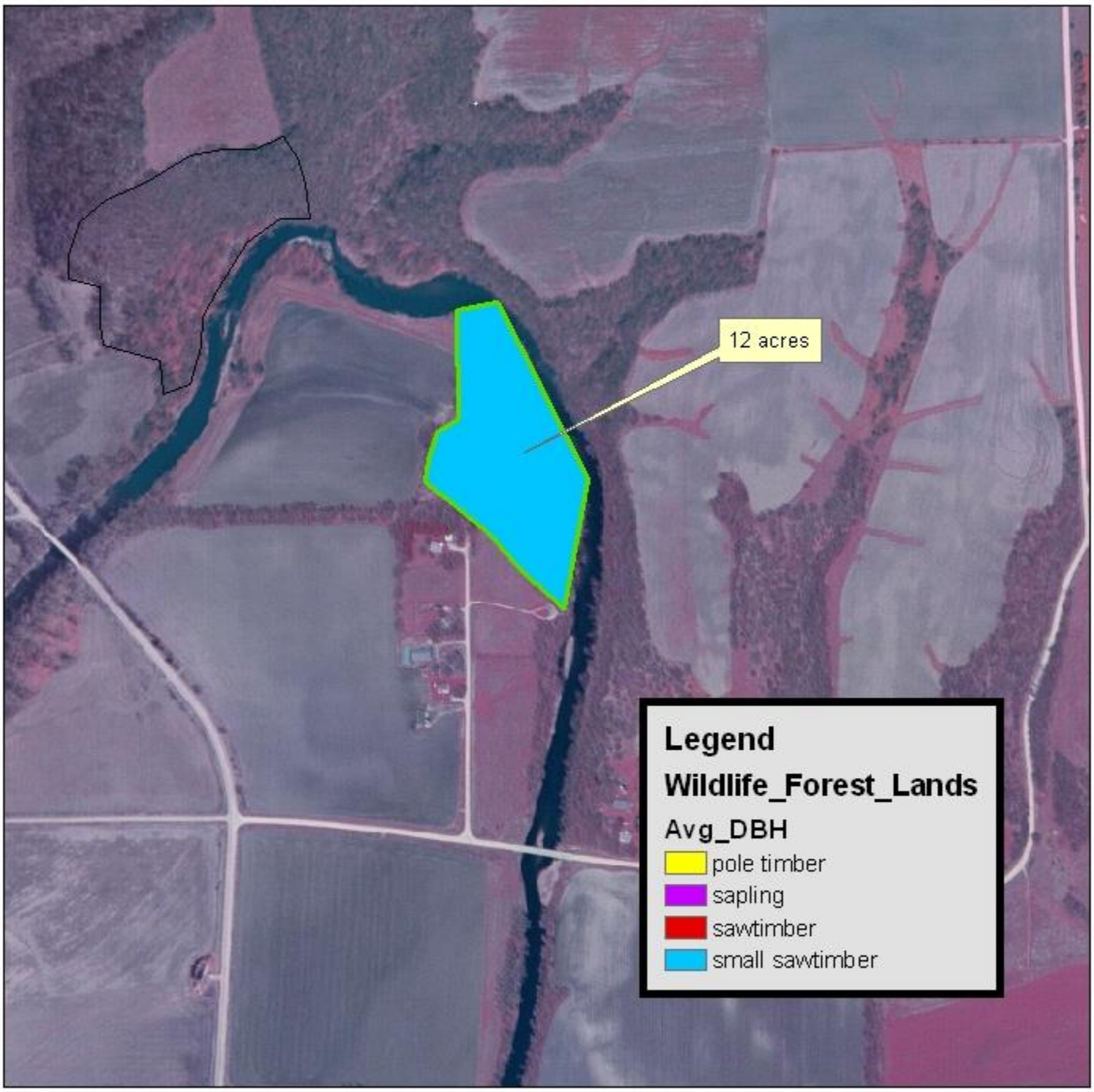
T100-R10W, Winneshiek Co.

0 270 540 1,080 1,620 2,160
Feet

N

PLYMOUTH ROCK
Average Tree Size



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T100N-R10W, Winneshiek Co.

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Feet

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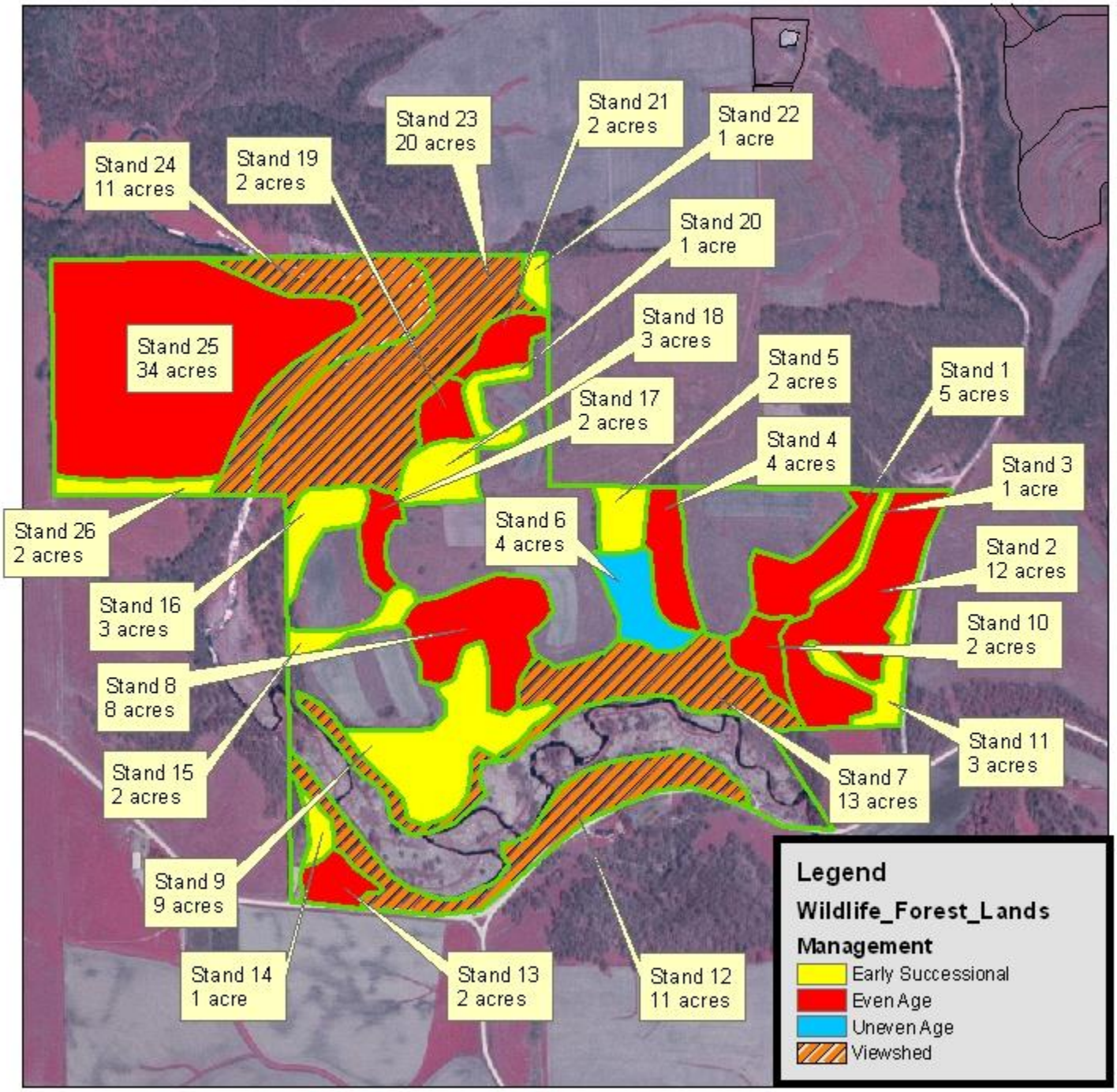
COLDWATER WILDLIFE AREA
MANAGEMENT SYSTEMS



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0 340 680 1,360 2,040 2,720
Feet

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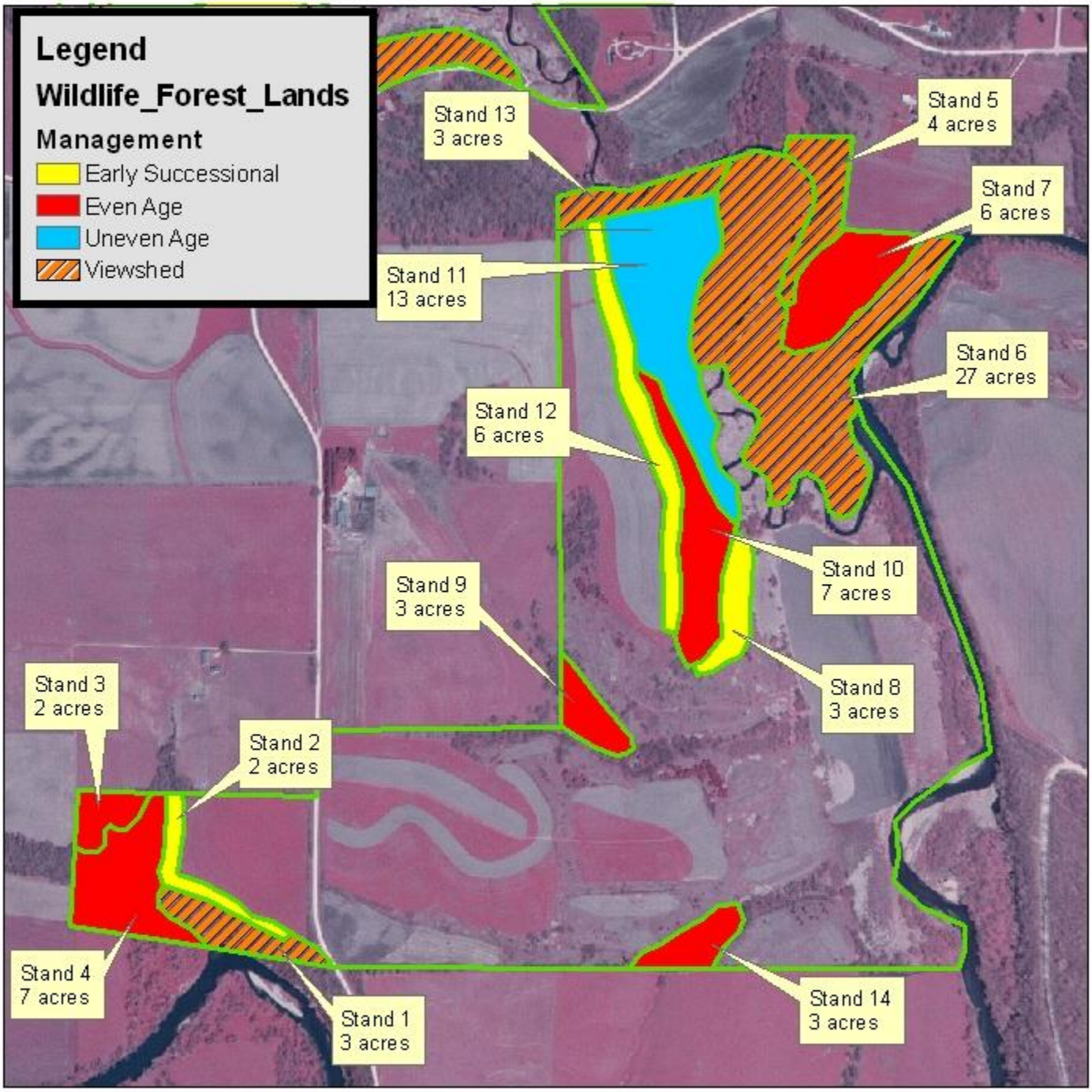
CHIMNEY ROCK WILDLIFE AREA
MANAGEMENT SYSTEMS



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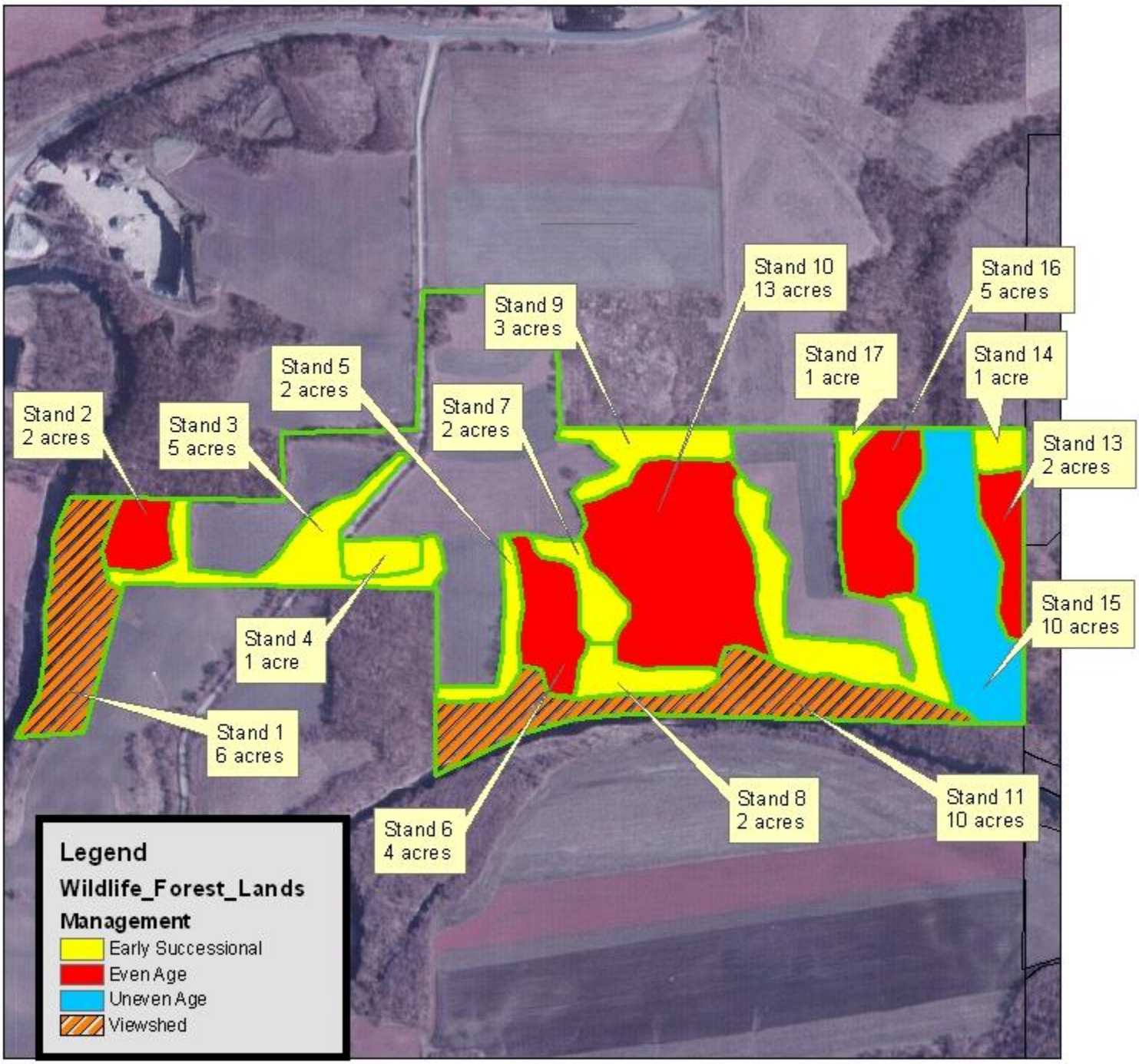
0 350 700 1,400 2,100 2,8[illegible] Feet

BOHR TRACT
MANAGEMENT SYSTEMS



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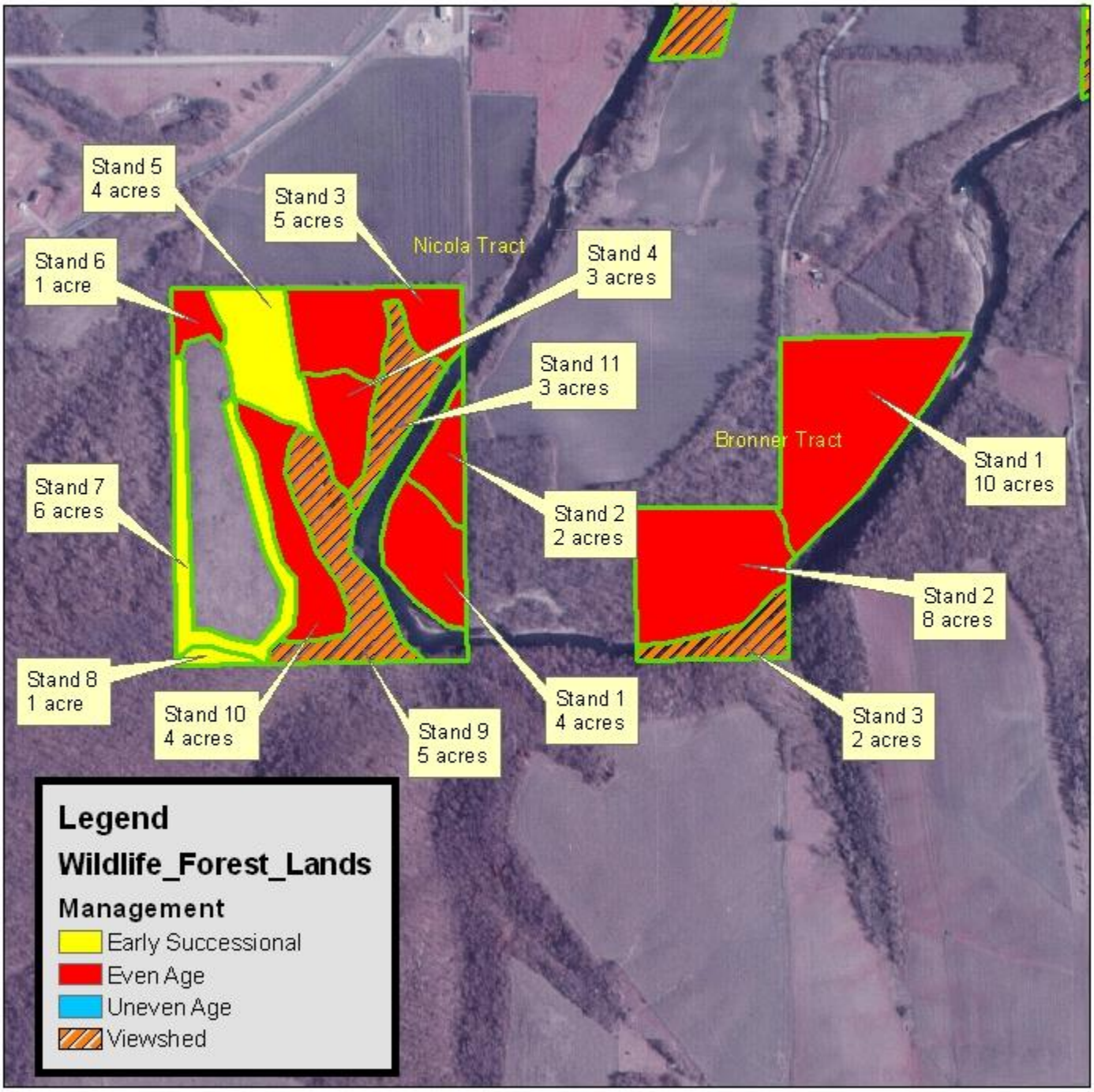
BRONNER & NICOLA TRACTS
MANAGEMENT SYSTEMS



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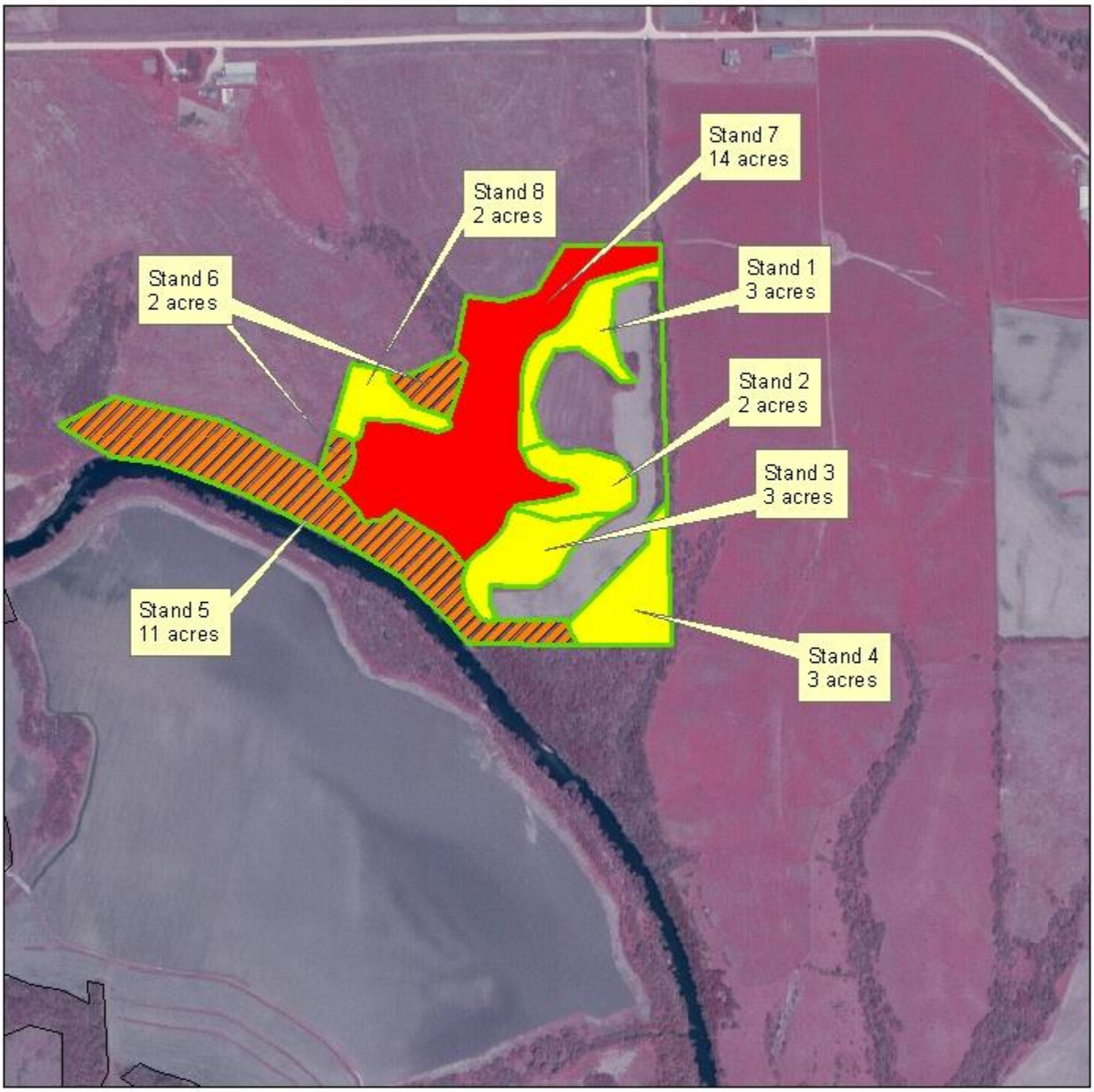
0 275 550 1,100 1,650 2,200
Feet

N

McCABE TRACT
MANAGEMENT SYSTEMS

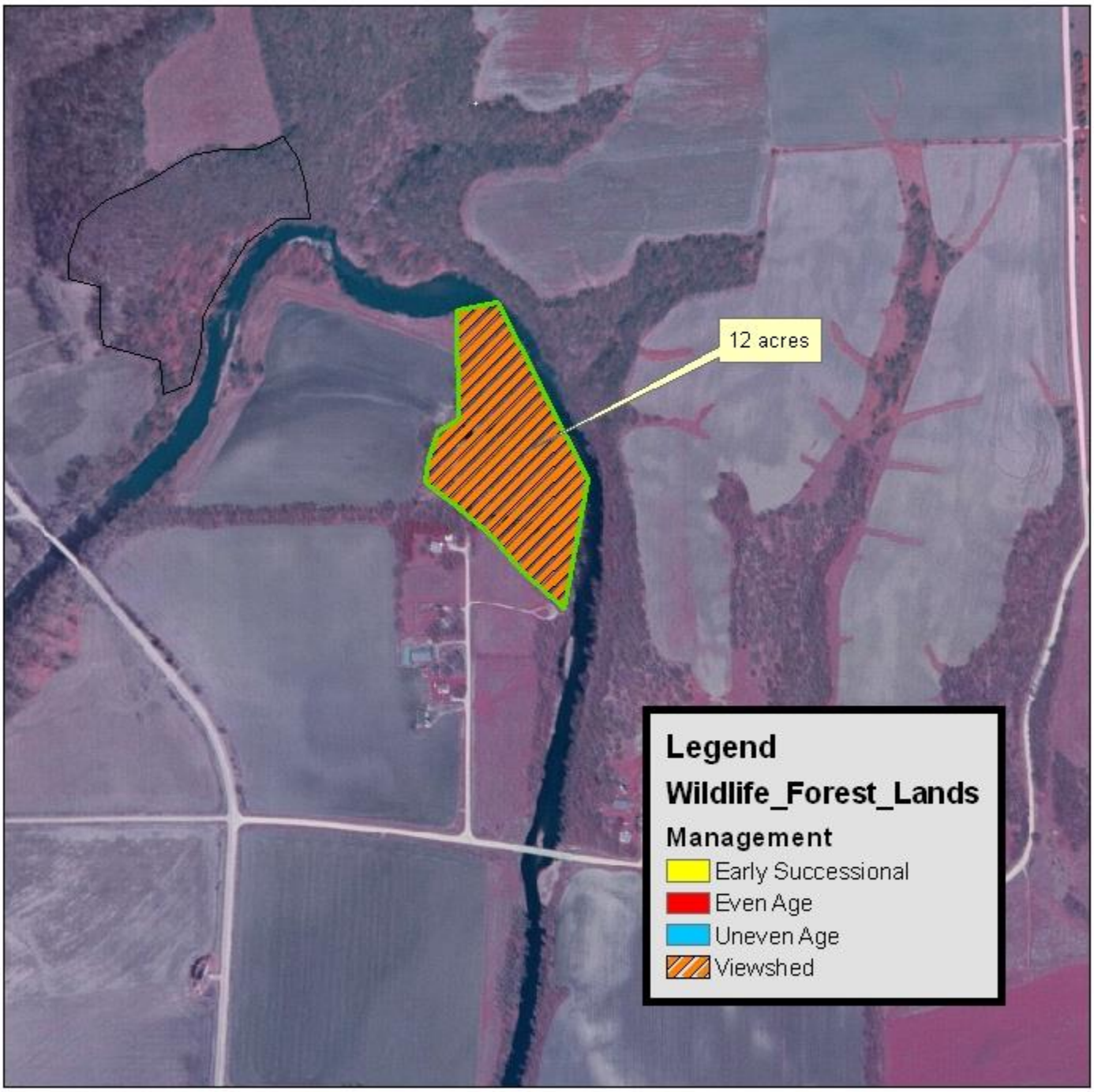


Sec. 36 Fremont Twsp.,
T100-R10W, Winneshiek Co.

0 270 540 1,080 1,620 2,160
Feet

N

PYMOUTH ROCK
MANAGEMENT SYSTEMS



Sec. 35 Fremont Twsp.,
T100N-R10W, Winneshiek Co.

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Feet

N

DATE: 12/15/08

FOREST WILDLIFE STEWARDSHIP PLAN FOR COLDWATER CREEK WILDLIFE MANAGEMENT AREA AND UPPER IOWA RIVER AREAS

Chimney Rocks, Bohr, Nicola, Bronner, McCabe, and Plymouth Rock Tracts

MANAGER:

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

TELEPHONE: 563/380-3422

LOCATION: Burr Oak, Fremont, Bluffton, and Orleans Twsps., Winneshiek County

TOTAL ACRES: 434

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.

The forest can be managed to improve the forest ecosystem for wildlife species. The method in which the forest is managed effects what wildlife species will use a particular area at any point in time as the forest changes. Forests on state land are also a renewable resource that are owned by the public. Properly managed, these forests can

provide multiple benefits such as wildlife habitat, water quality, air quality, recreation, and are a good investment for the people of Iowa.

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 diverse 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 ruffed grouse and 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 Wildlife Action 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. 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 now and in the future. The Forest Wildlife Stewardship Plan is dynamic and will change and be updated as new information and techniques become available. The primary goal will be to maintain or increase populations of wildlife species of greatest conservation needs.

DESCRIPTION OF AREA

This plan addresses seven tracts in the Upper Iowa River Area in close proximity to the Coldwater Creek Wildlife Area. The areas in this plan along with the acres addressed in this plan are –

Coldwater Creek – 160 acres
Chimney Rock – 89 acres
Bohr Tract – 75 acres
Nicola Tract – 38 acres
Bronner Tract – 20 acres
McCabe Tract – 40 acres
Plymouth Rock – 12 acres

Total = 434 acres

The areas are all along the Upper Iowa River in the northwest portion of Winneshiek county. The properties have steep slopes along the river and gentle sloping uplands with a mixture of woodland, grassland, and cropland. Due to the close proximity of the areas, they will be managed as a complex. It will be critical for management on private land to complement the management of the state wildlife properties.

The areas are readily accessible from gravel roads and used extensively by hunters, hikers, and folks simply enjoying the outdoors.

Objectives -

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

Ruffed grouse and woodcock 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. The Coldwater, Chimney Rock, McCabe, Bohr, and Nicola tracts have many field edges and ridge tops conducive to intensive management that will be managed for early successional habitat, and even aged management to regenerate oak.

There are not large blocks of woodland present that would provide suitable habitat for interior migratory bird species. Therefore, the major emphasis on the area is for early successional species and to maintain a good oak component on the landscape.

The Plymouth Rock area is small in size and used primarily by fishermen and canoeist. This area will be managed as viewshed. Coldwater has a unique spring and cave. The area surrounding the cave and spring will managed as viewshed.

The tracts in this plan are small areas. It will be essential to expand the efforts on state land to the surrounding private land to impact wildlife populations.

Income from Timber Harvests -

Harvesting is conducted to regenerate stands to desirable species for wildlife 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, convert areas to more desirable species, and create early successional habitat. Harvesting is a very minimal portion of this plan. The majority of work recommended is to thin young stands so that the oak is not shaded out by other trees, remove undesirable species to encourage natural regeneration of desirable trees, complete the early successional work, and tree planting.

Current Distribution of Tree Size on the Area -

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

Tree Size	**Acres**	**% of Total Area**
Sapling (<4" dbh)	36	8
Pole size (5-12" dbh.)	100	24
Medium Size (14-18" dbh.)	198	47
Large (>20" dbh)	91	21
Totals	425	100

Proposed Management Systems for the Area -

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

Based on my recommendations for the areas, the acres under each management system are as follows -

Management System	**Acres**	**% of Total Area**
Early Successional	86	20
Even Age	178	41
Uneven Age	27	6
Viewshed	143	33
Total	434	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 forest 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.

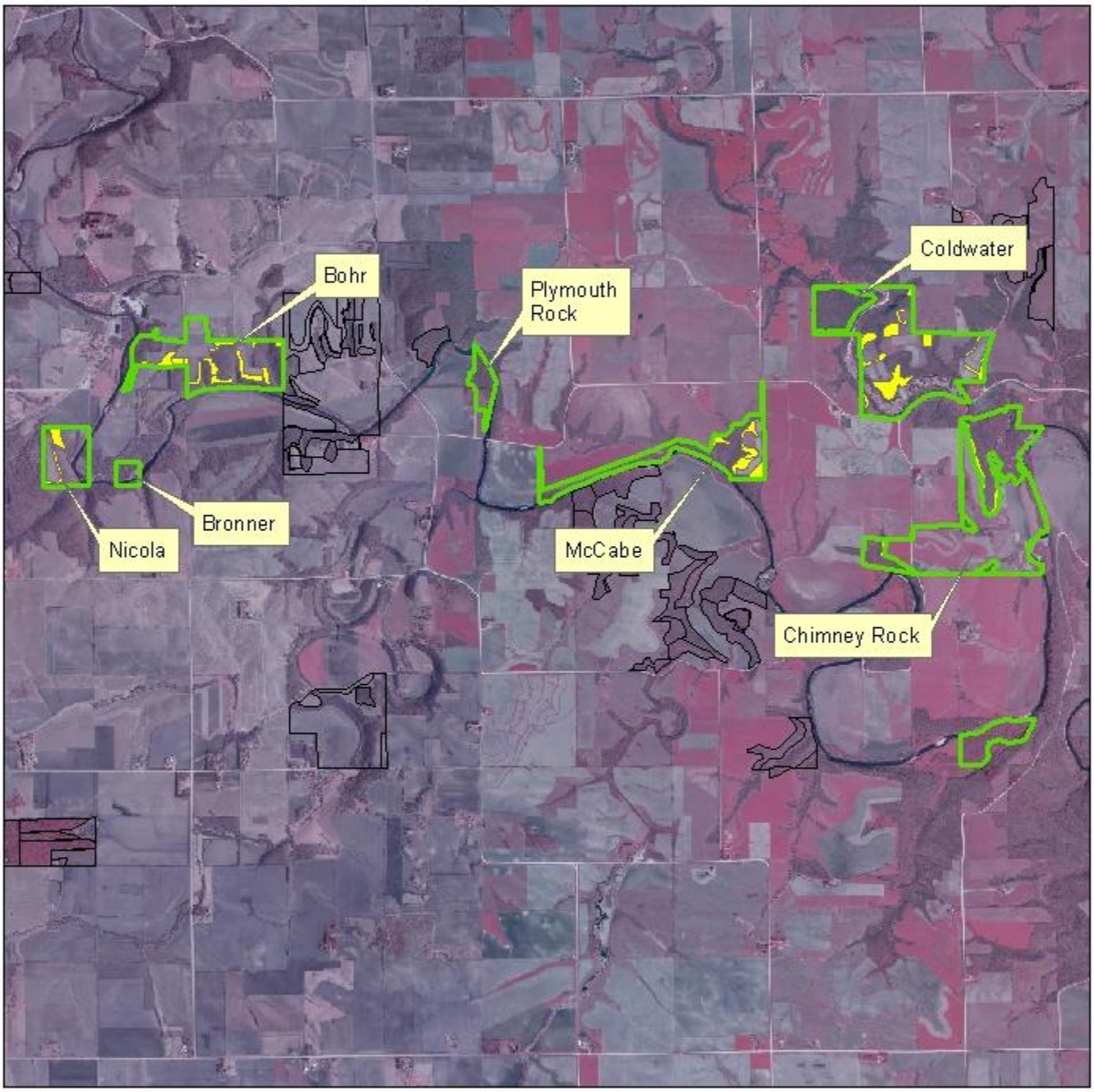
The majority of early successional management is on the woodland edges and aspen stands. This work will "feather" the edges and make a gradual transition from the field edges to the larger trees. Feathering or softening the edges results in less nest parasitism of interior forest bird species by brown-headed 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. Big tooth aspen will grow to 16-20" in diameter, but small tooth aspen generally begins to die at 14-16" in diameter. Ideally, 1/3 of the aspen would be 1-2 inches in diameter, 1/3 of the trees 3-4 inches in diameter and 1/3 of the aspen 5-8 inches in diameter.

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

The ColdwaterWildlife area and associated tracts have 86 acres scheduled for early successional management, or 20% of the wooded acres. Applying sustainable forestry guidelines, 28-29 acres could be cut every 5 years to maximize the diversity of tree sizes.

COLDWATER & UPPER IOWA RIVER AREAS
Early Successional Management



Burr Oak, Fremont, Bluffton,
and Orleans Twsp., Winneshiek Co.

N

0 1,700 3,400 6,800 10,200 13,6 Feet

Even Age Management -

Even age management is essential for wildlife species depending on oak/hickory forests. Oak acorns (mast) are at the top of the food list for many species of wildlife. In the absence of even age management techniques, the oak forests in Iowa will eventually be lost. 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 (1-15 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 woody debris on the forest floor provides habitat for amphibians and reptiles. Clearcutting 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.

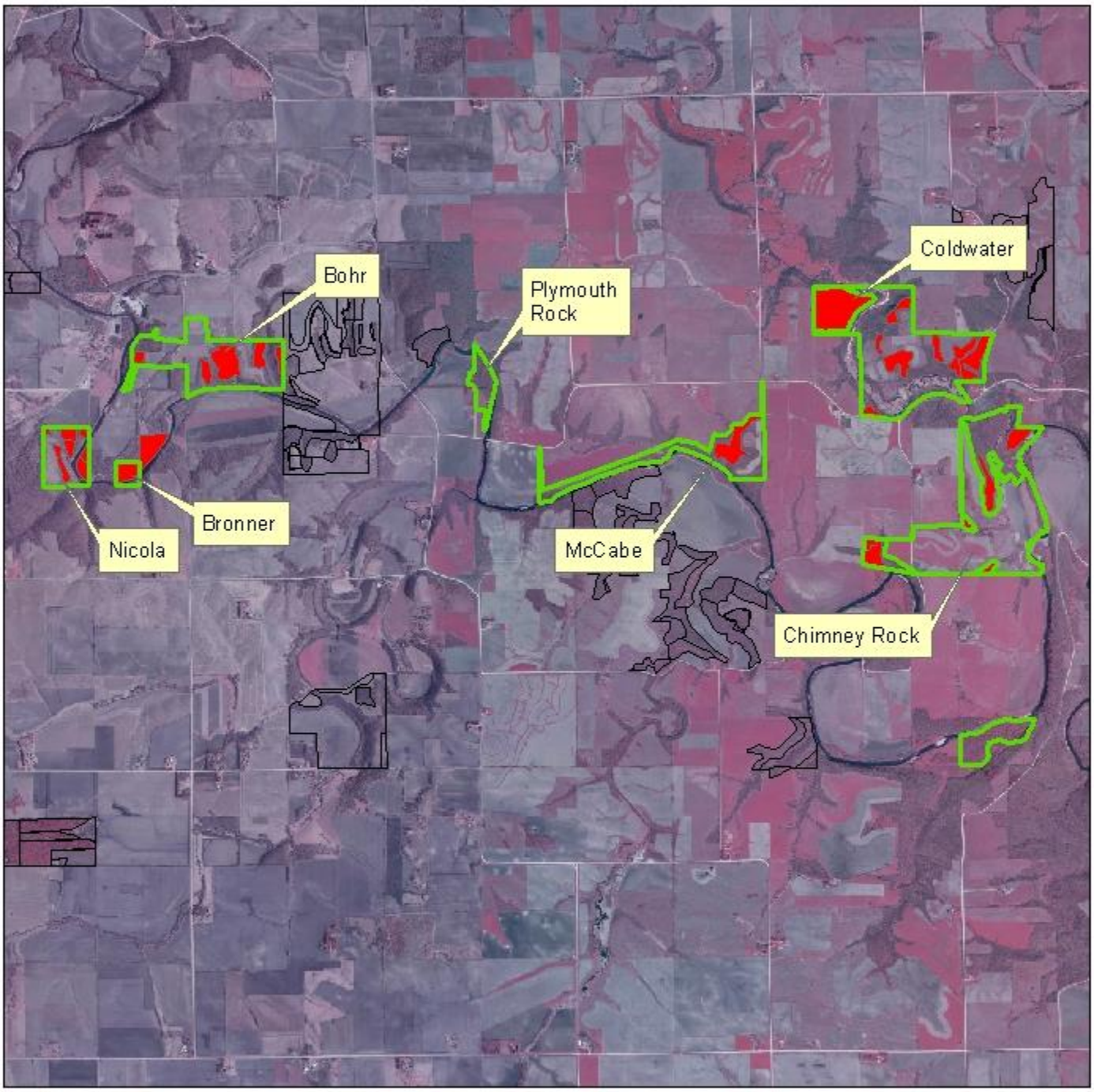
Shelterwood is a form of even-age management. The final cut is a clearcut, but several thinnings are done prior to the final cut. The large, healthy trees are left to provide seed for naturally reseeding the stand, and to create partial shade to inhibit the growth of weeds and brush until the desirable 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.

There are 178 acres of even aged management planned for the complex, or 41% of the wooded area. 7 acres can be clearcut every 5 years under sustainable forestry guidelines.

COLDWATER & UPPER IOWA RIVER AREAS
EVE N AGE MANAGEMENT



Burr Oak, Fremont, Bluffton,
and Orleans Twsp., Winneshiek Co.

N

0 1,700 3,400 6,800 10,200 13,6 Feet

Uneven Age Management -

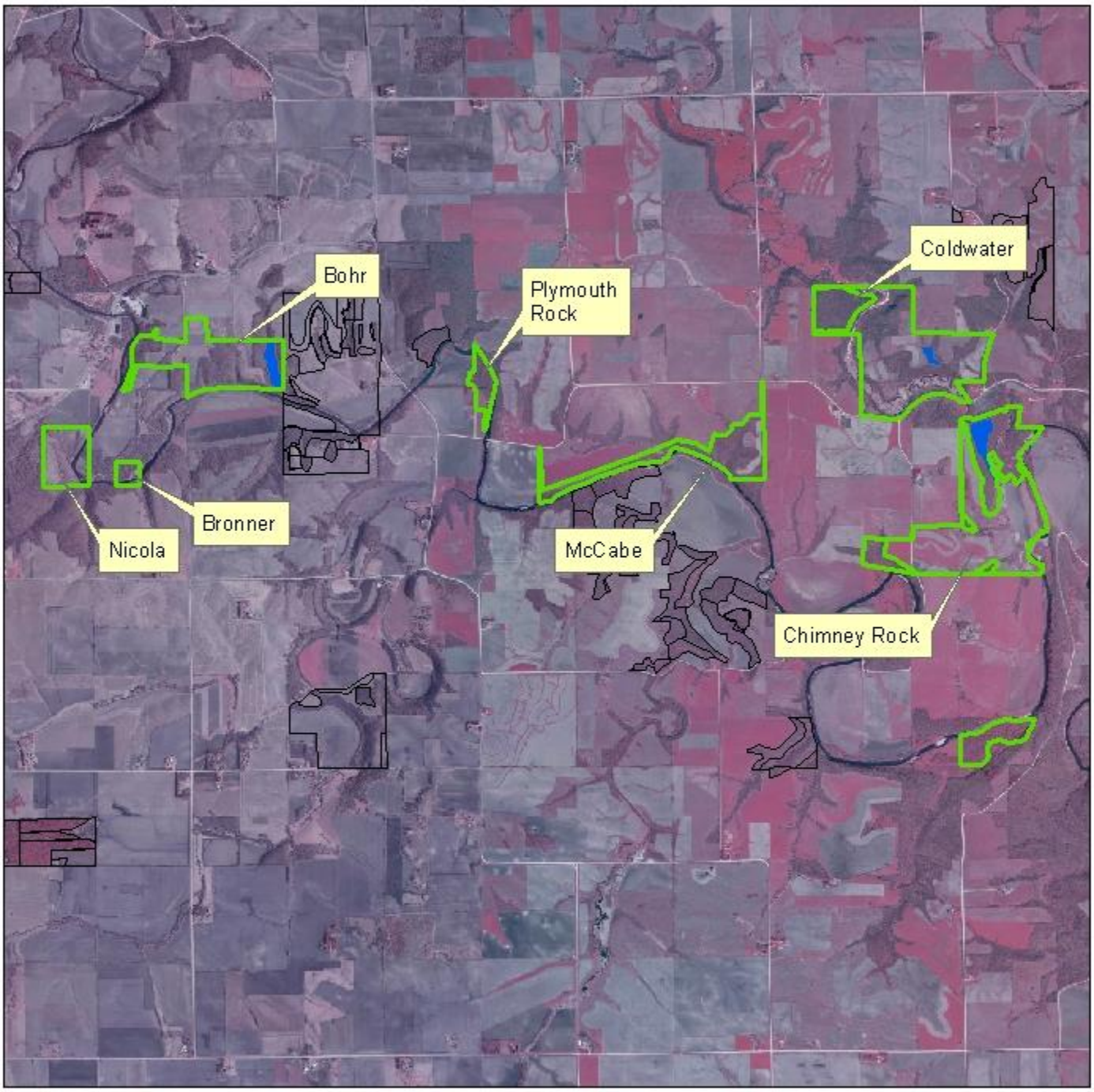
Uneven age management develops a stand of trees with all tree sizes represented. The stand structure is developed by selectively harvesting mature and defective trees, and removing unwanted small trees that are damaged or defective. Because uneven age stands always have large trees present, this system 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 infrequent disturbance. Large tracts of uneven age management will provide necessary habitat for neotropical migratory bird species such as cerulean, hooded, Canada, and Kentucky warblers. Selective harvesting will create small openings in the canopy, which will increase ground cover, and enhance stand structure. Den trees will be left to provide cavities for wildlife such as woodpeckers, bats, and squirrels. Large oaks that are healthy will be left to provide acorns for many wildlife species. Timber stand improvement and selective harvesting will create woody debris on the forest floor for reptiles and amphibians.

There are 27 acres scheduled for uneven age management, 6% of the area. The majority of the areas are on the steep slopes. 14 acres could be selectively harvested every 10 years under sustainable forestry guidelines.

COLDWATER & UPPER IOWA RIVER AREAS
Uneven Age Management



Burr Oak, Fremont, Bluffton,
and Orleans Twsp., Winneshiek Co.

N

0 1,700 3,400 6,800 10,200 13,6 Feet

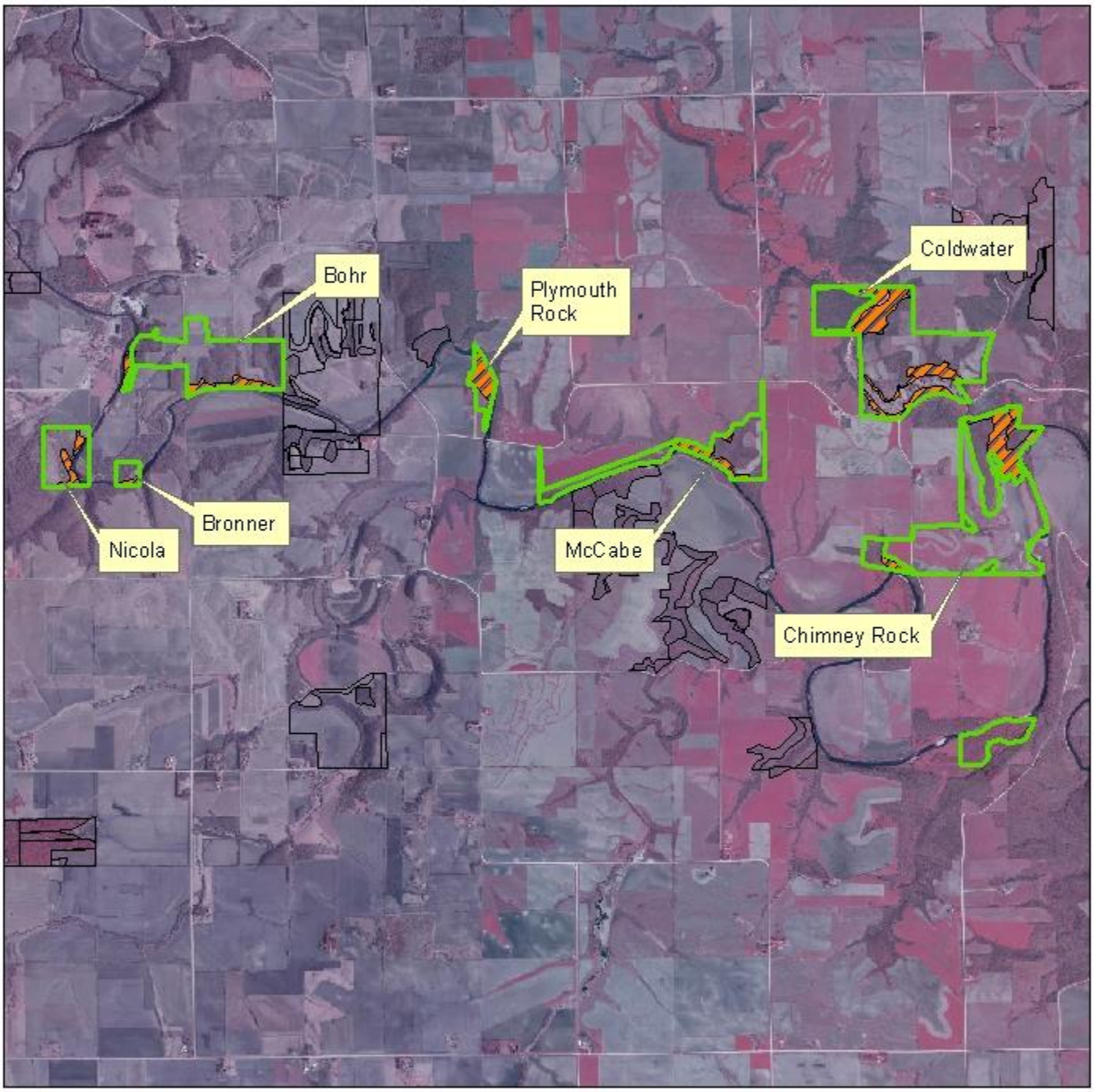
Viewshed Management -

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 to improve the health and species composition of the forest, and to enhance the area for endangered species, but the major objective is to have minor disturbance.

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.

There are 143 acres of viewshed management on the area, or 33% of the wooded areas. Viewshed management is recommended to protect the fragile slopes and floodplain along the Upper Iowa River.

COLDWATER & UPPER IOWA RIVER AREAS
Viewshed Management



Burr Oak, Fremont, Bluffton,
and Orleans Twsp., Winneshiek Co.

N

0 1,700 3,400 6,800 10,200 13,6 Feet

SOILS

The steep slopes have shallow soils over limestone. There are limestone outcrops on the steep slopes along the river.

The gentle slopes and ridge tops have Fayette, Whalen, Orwood, and Dubuque silt loams. 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.

The bottomland has Dorchester, Volney, and Chaseburg silt loams. These soils are somewhat poorly drained and subject to frequent flooding.

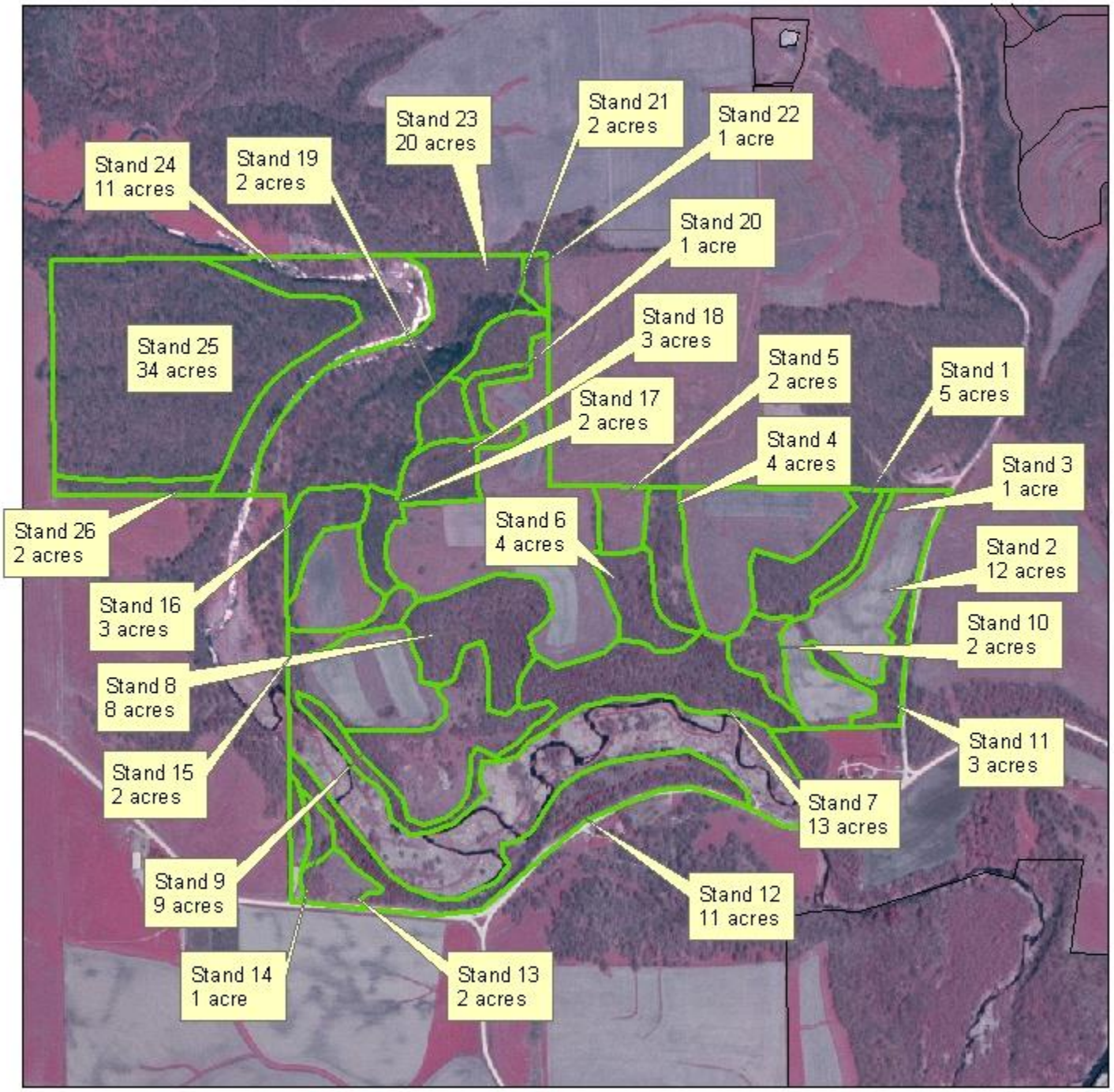
WORK PLAN

FOR

COLD WATER CREEK WILDLIE AREA & ASSOCIATED TRACTS

This is the "working plan" for the Coldwater Creek Wildlife Management Area and Upper Iowa River Areas. The plan is designed to aid professional biologists and foresters in the implementation of forest management practices. It is written with the understanding that these professionals have a basic understanding of forest management principles and techniques. Every detail has not been outlined in the plan because the plan would become too long to be of practical use. This plan is intended to get work accomplished on the ground.

FOREST WILDLIFE STEWARDSHIP PLAN
FOR COLDWATER WILDLIFE AREA



Sec. 31 and 32 Burr Oak Twsp.,
T100N-R9W, Winneshiek County

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

N

DESCRIPTION AND RECOMMENDATIONS FOR INDIVIDUAL STANDS

COLDWATER CREEK WILDLIFE AREA – 160 acres

Stand 1: 5 acres

Site Description -

Steep east facing slope with shallow soils.

Woodland Description-

The area is medium sized (12-18" dia.) red oak, white oak, bur oak, black oak, and walnut. The understory is predominantly elm.

Management Recommendations – Even Age

The stand could be clearcut and planted in 20-25 years to regenerate the site to oak and walnut.

Stand 2: 12 acres

Site Description –

Gentle east facing slope with Fayette soils.

Woodland Descripton -

The area was cropland that was direct seeded with oak, walnut, and ash in 2003.

Management Recommendations – Even Age

The area will need thinning in 10-15 years to provide sufficient growing space for the best trees. The current high density will help train the trees to grow straight and tall. Once the trees are 4-6 inches in diameter, their form is established, and thinning is needed to provide growing space for the most desirable trees.

Coldwater Creek Wildlife Area -

Stand 3: 1 acre

Site Description –

Gentle east facing slope at the base of the woods.

Woodland Description -

The area is pole sized (5-10" dia.) black oak and aspen.

Management Recommendations – Early Successional

A narrow strip could be clearcut to feather the edge and create dense, sapling growth for early successional species. The aspen will root sprout out into the field, expanding the edge. The cut would not include any trees that are merchantable.

Stand 4: 4 acres

Site Description –

West facing slope and ridge top.

Woodland Description -

Large (20" and larger in diameter) white oak and black oak. The large trees are scattered, and low quality. The understory consists of elm, black oak, walnut, and cherry.

Management Recommendations – Even Age

The scattered, large trees could be harvested to create an even age stand. This would provide the essential sunlight for the young oak and walnut to develop. Following the harvest, the stand could be thinned to release the potential crop trees.

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. 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, basswood, cherry, and hard maple.

Coldwater Creek Wildlife Area -

Stand 5: 2 acres

Site Description -

Ridge top with Fayette silt loam soils.

Area Description -

This area is an open field with a narrow band of elm and boxelder on the west side.

Management Recommendations – Early Successional

The area could be planted with a mixture of red cedar, shrubs, and aspen to provide habitat for early successional species such as ruffed grouse and woodcock. Plant shrubs and red cedar on the north end of the field. Plant the remainder of the site with aspen.

The field should be sprayed with Roundup in the fall prior to tree planting to killing the existing sod. The seedlings should be sprayed for a minimum of 3 years to control the competing vegetation.

Stand 6: 4 acres

Site Description -

Deep ravine with steep east and west facing slopes.

Woodland Description –

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

Management Recommendations – Uneven Age

The stand can be managed to develop an all age or uneven age woodland. The undesirable species could be killed now to encourage the development of young hard maple. In 20 years, the mature and defective trees could be harvested. The openings created by the harvest will fill in with young hard maple.

Coldwater Creek Wildlife Area -

Stand 7: 13 acres

Site Description -

Steep south facing slope adjacent to trout stream.

Woodland Description –

Medium sized bur oak, elm, red cedar, and walnut. The understory is elm, ironwood, red cedar, and hackberry.

Management Recommendations – Viewshed

Minimal management should be done on this area to protect the trout stream.

Stand 8: 8 acres

Site Description -

South, east, and west facing slopes with Whalan soils, and steep, rock land.

Woodland Description –

Medium sized (12-18" dia.) red oak, black oak, white oak, basswood, and bur oak. The understory is elm, boxelder, cherry, and bitternut hickory.

Management Recommendations – Even Age

In approximately 15-20 years, the area could be clearcut harvested and planted with oak seedlings.

Stand 9: 9 acres

Site Description –

Bench along the trout stream with Fayette silt loam soils.

Woodland Description -

The area is scattered, pole sized boxelder and elm. There are aspen on the northern tip of the stand.

Management Recommendations – Early Successional

Fell all the boxelder and elm. Treat the stumps with Pathfinder II to prevent sprouting. Plant the boxelder areas with aspen. Plant 50 aspen per acre. Place a shelter over each tree to protect them from deer and rabbits. Control the competition around each tree by spot spraying a combination of Roundup and Pendulum herbicides. In the spring, after the vegetation is actively growing, spray a 4 ft. diameter circle around each tree with 2

quarts of Roundup plus 4 quarts of Pendulum per acre treated. You must protect the seedling from the Roundup while spraying with a shield.

Plant the center of the area with red cedar to provide winter cover. Plant the cedars 15 ft. apart, or 200 trees per acre. 200-300 cedars could be planted. Control competing vegetation by spot spraying with Roundup and Princep herbicides. Apply 2 quarts of Roundup and 4 quarts of Princep 4L per acre treated. Shield the cedar while spraying to protect them from the Roundup.

Stand 10: 2 acres

Site Description –

East facing slope.

Woodland Description -

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

Management Recommendations – Even Age

Select the best tree every 30 ft. apart, or 50 trees per acre. Favor oak and high quality walnut as crop trees. Remove trees with crowns that are touching or overtopping the crowns of the crop tree.

The trees to remove can be felled or double girdled. There is no need to use herbicide on the stumps or girdle.

Walnut trees that are selected as crop trees 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 11: 3 acres

Site Description –

Small drainage adjacent to gravel road.

Woodland Description -

Pole sized boxelder, elm, cherry, walnut, and a few aspen. There are a few large oak along the road.

Management Recommendations – Early Successional

Clearcut the area to expand the aspen and create dense, young cover. Leave the large oak along the road for mast production.

Stand 12: 11 acres

Site Description -

Steep, north facing slope along the gravel road.

Woodland Description –

Medium sized (12-18" dia.) bur oak, red oak, and basswood. There are planted red and white pine on the east end of the area. The understory is red cedar, ironwood, and honeysuckle.

Management Recommendations – Viewshed

Leave this area as it is to provide a buffer along the road and above the trout stream.

Stand 13: 2 acres

Site Description -

North facing slope with Fayette and Dubuque soils.

Woodland Description -

The area is open grassland with scattered, pole sized boxelder.

Management Recommendations – Even Age

Fell all boxelder and 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. Protect each tree with a 4 ft. tall, vented tree shelter. Spot spray around each tree with Roundup and Princep to control the competing vegetation.

Stand 14: 1 acre

Site Description -

North facing slope.

Woodland Description -

Pole sized (5-10" dia.) red cedar and aspen.

Management Recommendations – Early SuccessionalClearcut the s

Clearcut the aspen to create early successional habitat. Leave the cedars to provide winter cover.

Stand 15: 2 acres

Site Description -

Small drainage.

Woodland Description -

Pole sized (5-10" dia.) boxelder, elm, cherry, and black oak. The understory is raspberry and gooseberry.

Management Recommendations – Early Successional

Fell all trees 1 inch and larger in diameter. Treat the stumps of the elm and boxelder to prevent sprouting. Plant the area with aspen. Plant the trees 30 ft. apart, or 50 trees per acre. Protect each tree with a 4 ft. tall, vented tree shelter. Control competing vegetation by spot spraying around each tree with Roundup and Pendulum herbicides. Apply 2 quarts of Roundup plus 3 quarts of Pendulum per acre treated.

Stand 16: 3 acres

Site Description -

Bench with Fayette silt loam soils.

Woodland Description -

Pole sized (5-10" dia.) aspen, cherry, black oak, and elm.

Management Recommendations – Early Successional

Clearcut the area to create habitat for early successional species. This area has a good component of aspen.

Stand 17: 2 acres

Site Description -

West facing slope with shallow soils.

Woodland Description -

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

Management Recommendations – Even Age

In 10 years, clearcut the stand and plant oak seedlings. Plant 50 large oak seedlings per acre. Protect each tree with a 4 ft. tall, vented tree shelter.

Stand 18: 3 acres

Site Description -

Ridge top with Whalen and Fayette soils.

Woodland Description -

Sapling (1-4" dia.) aspen, cherry, black oak, elm, ash, and boxelder. The stand was clearcut 8-9 years ago.

Management Recommendations – Early Successional

Clearcut the area in 5 years to maintain dense, young growth.

Stand 19: 2 acres

Site Description -

Ridge top with Whalen and Fayette silt loam soils.

Woodland Description -

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

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. 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, basswood, cherry, and hard maple.

Trees to be removed can be felled or double girdled. No herbicide is necessary on the stumps.

Stand 20: 1 acre

Site Description -

Ridge top along the field edge.

Woodland Description -

Pole sized birch, aspen, red oak, and cherry. There are scattered, merchantable red and black oak.

Management Recommendations – Early Successional

Clearcut the stand to feather the edge of the woods and create early successional habitat. The scattered, merchantable trees can be sold along with the harvest of Stand 21.

Stand 21: 2 acres

Site Description -

Ridge top with Fayette and Whalen silt loam soils.

Woodland Description -

Large (20" and larger in diameter) red oak and white oak. The understory is elm and black cherry.

Management Recommendations – Even Age

Clearcut harvest the stand. Following the harvest, fell all trees 1 inch and larger in diameter. Treat the stumps of elm, ironwood, boxelder, and bitternut hickory with Pathfinder II to prevent sprouting. Plant the area with 50 large oak seedlings per acre. Protect each seedling with a 4 ft. tall, vented tree shelter.

Stand 22: 1 acre

Site Description -

Ridge top along field edge.

Woodland Description -

Sapling (1-4" dia.) birch, ironwood, aspen, red oak, and black oak.

Management Recommendations – Early Successional

Clearcut the area in 10 years to maintain dense, young growth along the edge of the woods.

Stand 23: 20 acres

Site Description -

Steep, west facing slopes with shallow soils and limestone bluffs.

Woodland Description -

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

Management Recommendations - Viewshed

This area can be left as is to protect the trout stream and the Coldwater Cave.

Stand 24: 11 acres

Site Description -

East facing slope bordering the trout stream.

Woodland Description -

Large (20" and larger in dia.) red oak, white oak, black oak, and scattered white pine. The understory is hard maple, ash, ironwood, elm, and birch.

Management Recommendations - Viewshed

Leave buffer along the trout stream.

Stand 25: 34 acres

Site Description -

Ridges and gentle slopes with Fayette silt loam soils.

Woodland Description -

Large (20" diameter and larger) red oak, basswood, cherry, ash, black oak, aspen, bur oak, hard maple, white oak, and a few walnut. The understory is elm, ironwood, hard maple, ash, and bitternut hickory. The stand is falling apart from wind damage and oak wilt pockets.

Management Recommendations – Even Age

Clearcut areas 5-6 acres in size and replant with large oak seedlings. Plant 50 trees per acre and protect each tree with a 4 ft. tall, vented tree shelter. The first cut should be in the southwest corner of the area. Cut 5-6 acres every 10 years.

Stand 26: 2 acres

Site Description -

Ridge along the south edge of the woods.

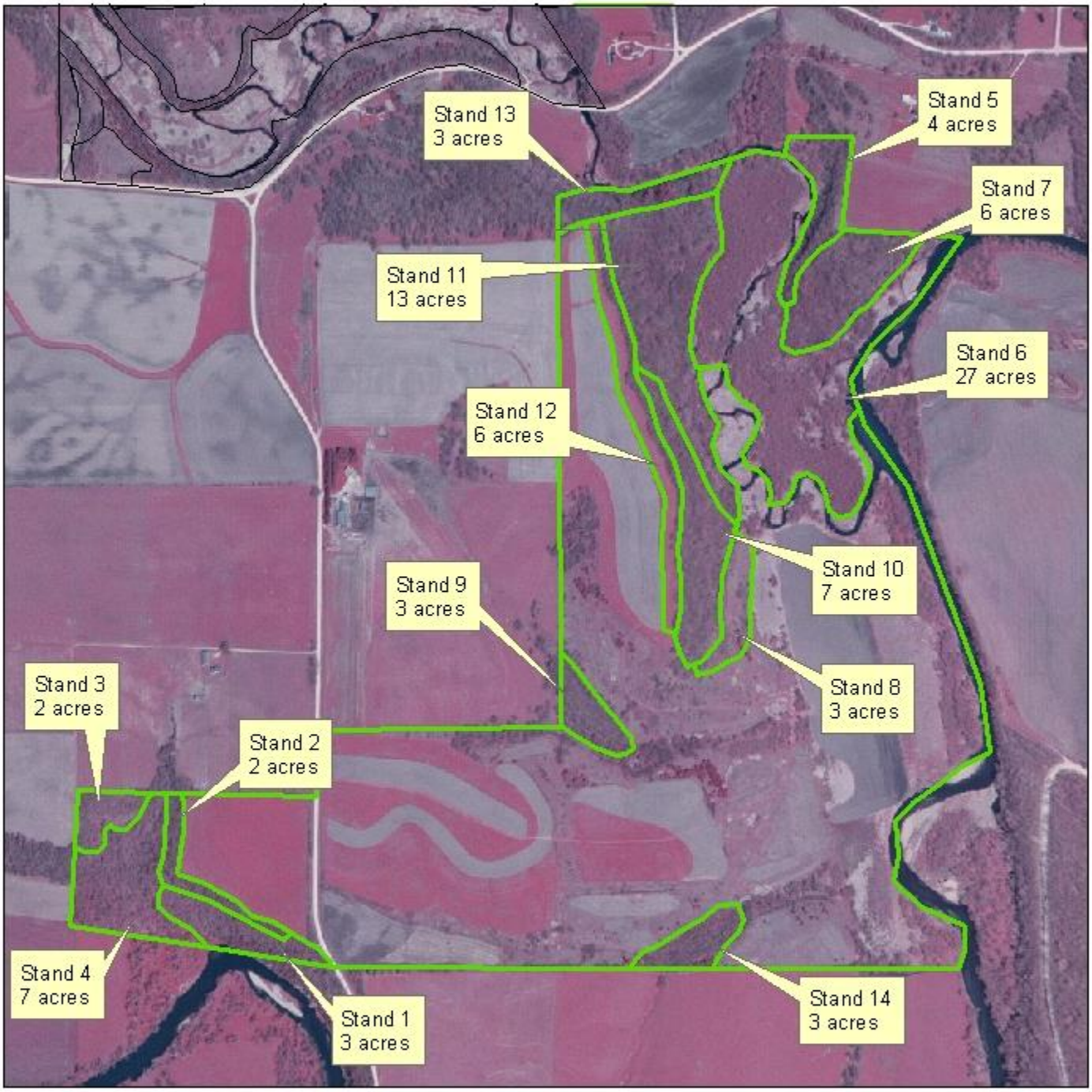
Woodland Description -

Large black oak, aspen, cherry, and white oak. The understory is hazel, elm, and bitternut hickory.

Management Recommendations – Early Successional

Clearcut the area along with the harvest in Stand 25. Following the harvest, treat the stumps of elm, ironwood, bitternut hickory, and boxelder with Pathfinder II.

FOREST WILDLIFE STEWARDSHIP PLAN
FOR CHIMNEY ROCK WILDLIFE AREA



Sec. 32 Burr Oak Twsp.,
T100N-R9W, Fayette Co.

N

0 345 690 1,380 2,070 2,7 Feet

CHIMNEY ROCK WILDLIFE AREA – 89 ACRES

Stand 1: 3 acres

Site Description –

Steep, south facing slope above the Upper Iowa River. There are limestone bluffs and rock outcrops.

Woodland Description –

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

Management Recommendations – Viewshed

The area is very steep and is best left as is to provide a good buffer along the Upper Iowa River.

Stand 2: 2 acres

Site Description -

Ridge top with Fayette silt loam soils.

Woodland Description -

Small sawtimber sized (12-18" dia.) ash, bur oak, elm, and black oak. The understory is elm, boxelder, and hackberry.

Management Recommendations – Early Successional

The stand could be clearcut to feather the edge and provide early successional habitat. There are scattered, large trees that could be sold.

Site Preparation & Planting -

Following the harvest, fell all trees 1 inch and larger in diameter. Treat the stumps of bitternut hickory, elm, boxelder, and hackberry with Pathfinder II to prevent sprouting. Plant the area with large aspen seedlings. Plant the trees 30 ft. apart or 50 trees per acre. Protect each tree with a 4 ft. tall, vented tree shelter.

Chimney Rock -

Stand 3: 2 acres

Site Description –

Ridge top with Fayette silt loam soils.

Woodland Description -

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

Management Recommendations – Even Age

Thin the area to provide optimum growing space for oak and cherry. Select a crop tree every 30 ft. apart, or 50 trees per acre. Remove trees with crowns that are overtopping or touching the crowns of the crop trees.

Stand 4: 7 acres

Site Description -

South facing slope and valley.

Woodland Description –

Medium sized (12-18" dia.) bur oak, elm, ash, and hackberry. The understory is elm, hackberry, and boxelder.

Management Recommendations – Even Age

In 20 years, the area could be clearcut and planted with oak to maintain a component of oak on the area.

Stand 5: 4 acres

Site Description –

West facing bluff along the trout stream.

Woodland Description -

The area is medium sized bur oak, basswood, and red oak. The understory is elm, ironwood, and hackberry.

Management Recommendations – Viewshed

The area is steep and not conducive to management. Leave this area as is to provide a buffer along the trout stream.

Stand 6: 27 acres

Site Description –

Bottomland along Coldwater creek and the Upper Iowa River.

Woodland Description -

Pole sized boxelder, elm, and scattered black walnut. Boxelder is the predominant species.

Management Recommendations – Viewshed

Very minimal management is suggested for this area. The area should be left as is to provide a riparian buffer along the trout stream and the Upper Iowa River. The scattered walnut could be released and pruned. This would add species diversity to the area.

Stand 7: 6 acres

Site Description -

Upland with Fayette silt loam soils.

Woodland Description -

Large (20" and larger in diameter) walnut, white ash, white oak, black oak, and elm. The understory is dense ash, ironwood, and bitternut hickory.

Management Recommendations – Even Age

In 5-10 years, clearcut the area and plant large oak seedlings. Plant 50 oak per acre and protect each tree with a 4 ft. tall tree shelter. It will be essential to release the oak from the ash saplings 3-4 years after planting.

Stand 8: 3 acre

Site Description -

East facing slope with Dubuque silt loam soils.

Woodland Description -

The area is semi open with scattered, sapling boxelder, elm, and wild plum.

Management Recommendations – Early Successional

The area could be planted with aspen to establish early successional habitat. Plant the trees on a 6 X 10 ft. spacing, or 700 trees per acre.

Prepare the site by broadcast spraying Roundup to kill the existing grass. Control the competition by spraying Pendulum at a rate of 4 quarts per acre after the trees are planted and before any vegetation begins to grow. Spray the area for a minimum of 3 years.

Chimney Rock -

Stand 9: 3 acres

Site Description -

` South facing slope.

Woodland Description -

Large (20" and larger in dia.) bur oak. The understory is elm, hackberry, and black cherry.

Management Recommendations – Even Age

Stand 9 can be managed on a "shelterwood" system of even age management. Kill the undesirable species now to allow sunlight to reach the ground and encourage the natural reseeding of oak. Once young oak seedlings are established, the stand can be clearcut harvested to provide full sunlight for the young oak. It can take 15-20 years for a sufficient number of young oak to become established.

Stand 10: 7 acres

Site Description –

Steep, east facing slope with shallow soils.

Woodland Description -

Large red oak, black oak, and bur oak. The understory is elm, hackberry, ironwood, and hard maple. The red and black oak and mature and beginning to deteriorate.

Management Recommendations – Even Age

Clearcut the area and plant seedlings. Following the harvest, fell all remaining trees 1 inch and larger in diameter. Treat the stumps of elm, boxelder, ironwood, and bitternut hickory with Pathfinder II to prevent sprouting. Plant the area with large seedlings. The seedlings should be a minimum of 24 inches in height and 3/8 inch in caliper. Plant the trees in the open areas 30 ft. apart, or 50 trees per acre. Suitable species are red oak, white oak, and walnut. The trees should be planted in mid to late April.

Protect each tree with a 4-5 ft. tall, vented tree shelter. Support the shelter with a 1 inch diameter bamboo stake.

Control the competition around each tree by spot spraying a combination of Roundup and Princep 4L herbicides. In the spring, after the vegetation is actively growing, spray a 4 ft. diameter circle around each tree with 2 quarts of Roundup plus 4 quarts of Princep 4L per acre treated. You must protect the seedling from the Roundup while spraying with a shield.

Chimney Rock -

Stand 11: 13 acres

Site Description -

Steep, east facing slope, with shallow soils.

Woodland Description -

Large (20" and larger in dia.) red oak, black oak, hard maple, white oak, and a few walnut. The understory is elm, ironwood, cherry, hard maple, basswood, and bitternut hickory. There are a few pole sized walnut and red oak.

Management Recommendations – Uneven Age

The undesirable species such as elm, ironwood, and bitternut hickory could be killed now to allow space for the young hard maple to develop. In addition, trees competing with the young oak and walnut should be removed so that these trees are not overtopped. The stand could be selectively harvested in roughly 20 years.

Stand 12: 6 acres

Site Description -

Ridge top along the crop field with Dubuque and Fayette soils.

Woodland Description -

This is a narrow area of relatively flat land with large bur oak, black oak, and red oak. The understory is elm, ironwood, hackberry, and basswood.

Management Recommendations – Early Successional

Clearcut a narrow strip along the woods to feather the edge. All trees 14 inches and larger in diameter can be sold along with Stand 10. Following the harvest, fell all remaining trees 1 inch and larger in diameter. Treat the stumps of elm, ironwood, and bitternut hickory with Pathfinder II to prevent sprouting. This will create an edge of saplings and shrubs.

Plant 4 rows of aspen along the edge of the woods. Prepare the site by broadcast spraying Roundup during late summer to early fall to kill all existing vegetation. Plant aspen on a 6 X 10 ft. spacing, or 700 trees per acre. Control competing vegetation by broadcast spraying the area with Pendulum herbicide. Apply 3 quarts of Pendulum per acre treated before any vegetation begins to grow in the spring.

Chimney Rock –

Stand 13: 3 acres

Site Description –

Steep, north facing slope above Coldwater Creek.

Woodland Description -

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

Management Recommendations - Viewshed

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

Stand 14: 3 acres

Site Description -

Small drainage and north facing slope.

Woodland Description -

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

Management Recommendations – Even Age

Leave the large bur oak for mast production and leave the large cottonwood for potential cavity nesters. Cut the elm and boxelder and treat the stumps with Pathfinder II to prevent sprouting. Plant the open areas with large red and white oak seedlings. Plant the trees 30 ft. apart and place a 4 ft. tall, vented tree shelter over each trees.

Control the competition around each tree by spot spraying a combination of Roundup and Princep 4L herbicides. In the spring, after the vegetation is actively growing, spray a 4 ft. diameter circle around each tree with 2 quarts of Roundup plus 4 quarts of Princep 4L per acre treated. You must protect the seedling from the Roundup while spraying with a shield.

FOREST WILDLIFE STEWARDSHIP PLAN
FOR COLDWATER WILDLIFE AREA
BOHR TRACT

Sec. 34 Fremont Twsp.,
T100N-R10W, Winneshiek Co.

0 270 540 1,080 1,620 2,160
Feet

N

BOHR TRACT – 75 ACRES

Stand 1: 6 acres

Site Description -

Steep, west facing slope along the Upper Iowa River.

Woodland Description -

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

Management Recommendations – Viewshed

No management is recommended for Stand 1. Leave this area as a buffer along the river.

Stand 2: 2 acres

Site Description -

Upland with Fayette silt loam.

Woodland Description -

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

Management Recommendations – Even Age

This is a nice stand of red and white oak. The trees are in good condition. The stand will mature in roughly 20 years. At that time, the stand can be clearcut and planted with oak.

Stand 3: 5 acres

Site Description -

Edge of woods and narrow strip along the gravel road.

Woodland Description -

Medium sized red oak, white oak, and ash. The understory is elm and boxelder, with pockets of aspen along the edge.

Management Recommendations – Early Successional

Clearcut the area commercially. Following the harvest, fell all trees 1 inch and larger in diameter. Treat the stumps of elm, boxelder, bitternut hickory, and ironwood with Pathfinder II. The work will expand the aspen clones along the edge of the woods.

Bohr Tract –

Stand 4: 1 acre

Site Description -

Crop land on the upland with Orwood silt loam soils.

Area Description -

The area is a small crop field surrounded on 3 sides by woodland. This area could be planted with aspen and shrubs to add additional early successional habitat.

Management Recommendations – Early Successional

Plant 3 rows of shrubs along the north border of the field. The shrubs should be planted on a 3 X 10 ft. spacing. Suggested species are hazelnut, ninebark, and wild plum. The remainder of the area can be planted with both bigtooth and trembling aspen. Plant the aspen on a 6 X 10 ft. spacing.

Control competing vegetation with Pendulum herbicide. Spray a 4 ft. wide strip down each row before any vegetation begins to grow in the spring. Apply 4 quarts of Pendulum per acre treated.

Stand 5: 2 acres

Site Description -

Narrow strip of woods along the field edge.

Woodland Description -

Medium sized (12-18" dia.) basswood, red oak, cottonwood, and elm. The understory is elm, ironwood, and hard maple. There are clumps of aspen along the edge of the woods.

Management Recommendations – Early Successional

Clearcut the area in 5 years to develop dense, young growth. There are trees large enough to sell.

Bohr Tract -

Stand 6: 4 acres

Site Description -

Ridge top and west facing slope.

Woodland Description -

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

Management Recommendations – Even Age

Stand 6 could be clearcut in 20 years and regenerated with oak.

Stand 7: 2 acres

Site Description -

Stand 7 is a ridge top with Orwood silt loam soils.

Woodland Description -

Sapling (1-4" dia.) aspen, black oak, walnut, and bitternut hickory. The area was clearcut in 2003 to create early successional habitat. There is a good component of aspen on the area.

Management Recommendations – Early Successional

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

Stand 8: 2 acres

Site Description -

Ridge top.

Woodland Description -

Pole sized aspen with scattered, larger oak.

Management Recommendations – Early Successional

Clearcut the area in 5 years to expand the aspen and create early successional habitat for grouse, woodcock, and eastern towhees.

Bohr Tract -

Stand 9: 3 acres

Site Description -

Upland with a small drainage.

Woodland Description -

Medium sized (12-18" dia.) black oak, walnut, and cottonwood. The understory is elm, ironwood, and a few aspen.

Management Recommendations – Early Successional

Clearcut the area in 5 years. There are saleable trees on the area.

Stand 10: 13 acres

Site Description -

Gentle, east facing slopes with Orwood silt loam soils.

Woodland Description -

Medium sized red oak, black oak, white oak, and scattered, good quality walnut. The understory is elm, ironwood, hard maple, and bitternut hickory.

Management Recommendations – Even Age

Clearcut 5-6 acres every 10-20 years. Following the harvest, fell all trees 1 inch and larger in diameter. Treat the stumps of unwanted species with Pathfinder II to prevent sprouting.

Plant the area with large seedlings. The seedlings should be a minimum of 24 inches in height and 3/8 inch in caliper. Plant the trees in the open areas 30 ft. apart, or 50 trees per acre. Suitable species are red oak, white oak, and walnut. The trees should be planted in mid to late April.

Protect each tree with a 4-5 ft. tall, vented tree shelter. Support the shelter with a 1 inch diameter bamboo stake.

Control the competition around each tree by spot spraying a combination of Roundup and Princep 4L herbicides. In the spring, after the vegetation is actively growing, spray a 4 ft. diameter circle around each tree with 2 quarts of Roundup plus 4 quarts of Princep 4L per acre treated. You must protect the seedling from the Roundup while spraying with a shield.

Bohr Tract -

Stand 11: 10 acres

Site Description –

Steep, south facing bluff along the Upper Iowa River.

Woodland Description -

Medium sized red oak, basswood, hard maple, bur oak, and red cedar. The understory is elm and ironwood.

Management Recommendations - Viewshed

This is area is too steep for management. Leave this area as is for a wooded buffer along the river.

Stand 12: 6 acres

Site Description –

Ridge top along crop field.

Woodland Description -

Sapling aspen, black oak, boxelder, cherry, and walnut. The area was clearcut 6-8 years ago to create dense growth along the crop fields.

Management Recommendations – Early Successional

Clearcut the area in 5-6 years.

Stand 13: 2 acres

Site Description -

West facing slope and ridge top.

Woodland Description -

Pole sized black oak, red oak, basswood, and a few walnut.

Management Recommendations – Even Age

Select the best tree every 30 ft. apart, or 50 trees per acre. Select crop trees to maximize the number of oak in the stand. In addition, intermix other species as crop trees to help minimize the impact of oak wilt on the stand. Suitable species to select as crop trees in addition to oak are walnut, black cherry, basswood, hackberry, and hard maple. Remove trees with crowns that are touching or overtopping the crowns of the crop tree.

The trees to remove can be felled or double girdled. There is no need to use herbicide on the stumps or girdle.

Bohr Tract -

Stand 14: 1 acre

Site Description -

Upland on the north end of the property.

Woodland Description -

Pole sized aspen and black oak. The understory is hazelnut.

Management Recommendations – Early Successional

Clearcut the area to create young, dense habitat. Cutting aspen results in root suckers which creates a dense stand of young aspen.

Stand 15: 10 acres

Site Description -

Valley with steep slopes and shallow soils.

Woodland Description -

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

Management Recommendations – Uneven Age

The undesirable species could be killed now to encourage the development of young hard maple and basswood in the understory. In approximately 20 years, the stand could be selectively harvested to remove the defective and low quality trees. Openings created by the harvest will fill with hard maple and basswood.

Stand 16: 5 acres

Site Description -

East facing slope.

Woodland Description -

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

Management Recommendations – Even Age

The stand could be clearcut and planted with oak in 15-20 years.

Bohr Tract -

Stand 17: 1 acre

Site Description -

Narrow, upland edge along the field.

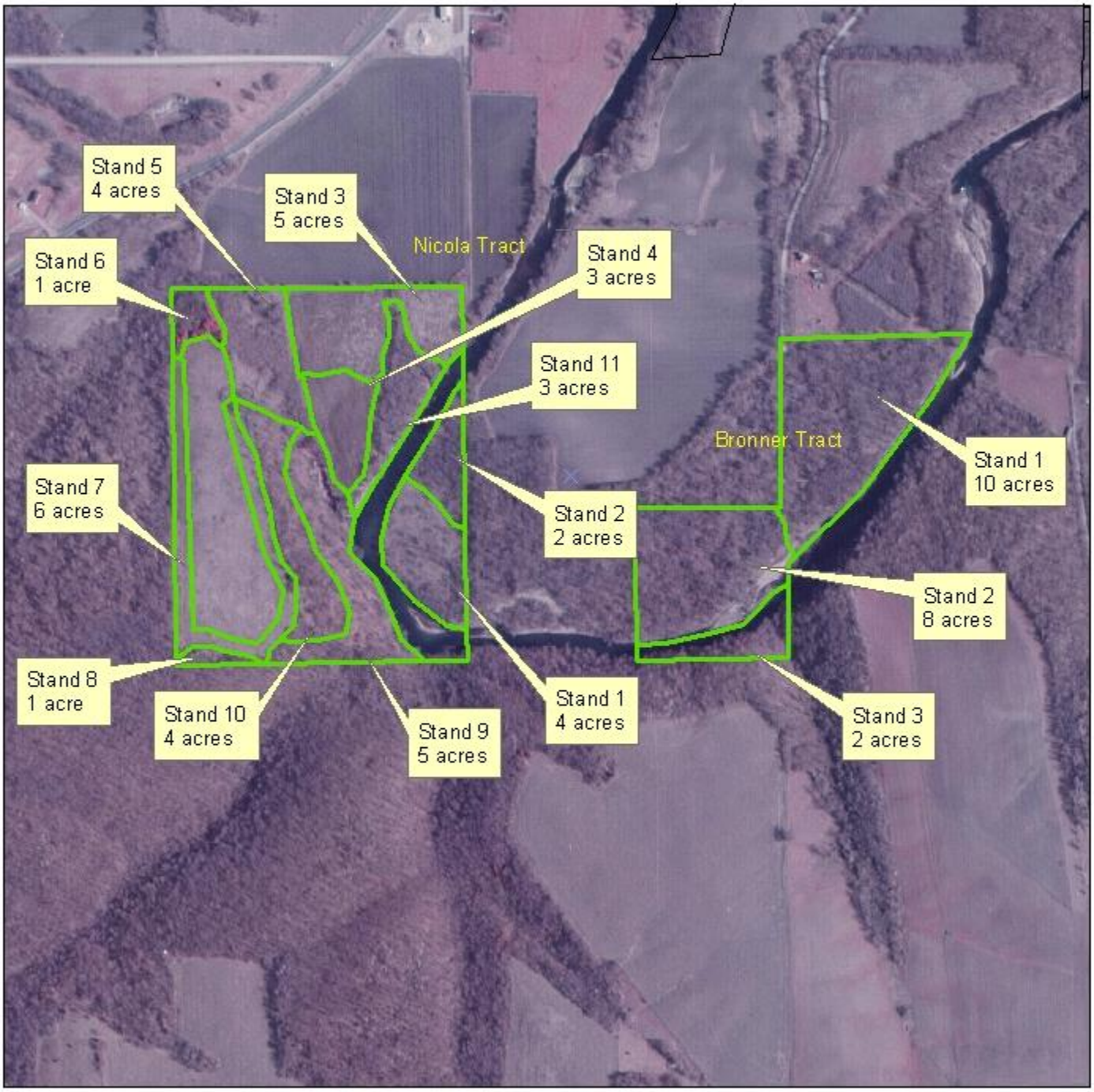
Woodland Description -

Sapling aspen, black oak, and cherry. The area was clearcut to make early successional habitat 5-6 years ago.

Management Recommendations – Early Successional

Clearcut the stand in 10 years to maintain early successional cover.

FOREST WILDLIFE STEWARDSHIP PLAN
FOR COLDWATER WILDLIFE AREA
BRONNER & NICOLA TRACTS



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T100N-R10W, Winneshiek Co.

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BRONNER TRACT – 20 ACRES

Stand 1: 10 acres

Site Description –

Bottomland along the Upper Iowa River with Dorchester silt loam soils. This site is subject to periodic flooding.

Woodland Description –

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

Management Recommendations – Even Age

The scatted, large walnut could be sold. This would provide more growing space for the younger trees. Following the harvest, the stand could be thinned to release the crop trees. Select the best tree every 30 ft. apart, or 50 trees per acre. Suitable species to select as crop trees are walnut, black cherry, basswood, and hackberry. Remove trees with crowns that are touching or overtopping the crowns of the crop tree.

The trees to remove can be felled or double girdled. There is no need to use herbicide on the stumps or girdle.

Stand 2: 8 acres

Site Description –

Bottomland along the Upper Iowa River with Dorchester and Spillville soils.

Woodland Description –

Pole sized (5-10" dia.) walnut, hackberry, elm, and hard maple. There are scattered, large walnut, bur oak, and elm.

Management Recommendations – Even Age

Harvest the scattered, large walnut and elm. Leave the large bur oak for acorn production. Following the harvest, thin the stand to provide more growing space for the most desirable, young trees. Select a crop tree every 30 ft. apart and remove the trees that have crowns touching or overtopping the crowns of the crop trees.

Bronner Tract -

Stand 3: 2 acres

Site Description –

North facing bluff along the river.

Woodland Description –

Medium sized red oak, hard maple, and basswood.

Management Recommendations – Viewshed

No management is recommended for this area. Leave as a buffer along the river.

NICOLA TRACT – 38 ACRES

Stand 1: 4 acres

Site Description –

Bottomland and bench with Spillville and Sattre soils.

Woodland Description –

The area is semi open with scattered, sapling (1-4" dia.) walnut and ash. The walnut has poor form.

Management Recommendations – Even Age

Fell all ash and walnut that are larger than 1 inch in diameter. Plant the area with bur oak and swamp white oak seedlings. Plant the trees 30 ft. apart, or 50 trees per acre. Protect each tree with a 4 ft. tall, vented tree shelter. Control competing vegetation around each tree by spot spraying a mixture of Roundup and Princep 4L.

Stand 2: 2 acres

Site Description –

Bench along the Upper Iowa River.

Woodland Description –

Pole sized (5-10" dia.) walnut and hackberry. This is a nice stand of young walnut.

Management Recommendations – Even Age

Select a crop tree every 30 ft. apart, or 50 trees per acre. Remove trees with crowns that are touching or overtopping the crowns of the crop trees.

Nicola Tract -

Stand 3: 5 acres

Site Description –

Bottomland with Dorchester silt loam soils.

Woodland Description –

Pole sized (5-10" dia.) swamp white oak, boxelder, and a few bur oak. The area was planted with swamp white oak in 1994. The boxelder were killed 5 years ago.

Management Recommendations – Even Age

The stand could be thinned in 5 years to release the crop trees.

Stand 4: 3 acres

Site Description –

Bottomland along the Upper Iowa River.

Woodland Description –

Sapling (1-4" dia.) boxelder.

Management Recommendations – Even Age

The stand could be converted from boxelder to more desirable species. The boxelder is thick and would have to be removed with a bulldozer. After the boxelder is removed, the area could be planted with bur oak and swamp white oak. Plant the trees 30 ft. apart, or 50 trees per acre. Protect each tree with a 4 ft. tall, vented tree shelter.

Nicola Tract -

Stand 5: 4 acres

Site Description –

Northeast facing slope with Fayette silt loam soil.

Woodland Description –

Pole sized boxelder, elm, and silver maple.

Management Recommendations – Early Successional

Clearcut the stand to create dense, young growth. Treat the stumps of boxelder and elm with Pathfinder II to prevent sprouting. Plant the area with large aspen seedlings. Plant the trees 30 ft. apart, or 50 trees per acre. Protect each tree with a 4 ft. tall, vented tree shelter.

Control the competition around each tree by spot spraying a combination of Roundup and Princep 4L herbicides. In the spring, after the vegetation is actively growing, spray a 4 ft. diameter circle around each tree with 2 quarts of Roundup plus 4 quarts of Pendulum per acre treated.

Stand 6: 1 acre

Site Description –

North facing slope with Fayette and Dubuque soils.

Woodland Description –

Pole sized (5-10" dia.) red oak, cherry, basswood, and white pine. The white pine are on the south side of the area. The understory is elm and ironwood.

Management Recommendations – Even Age

The area could be thinned to provide more growing space for the young oak and cherry.

Timber Stand Improvement (Crop Tree Release) -

Select the best tree every 30 ft. apart, or 50 trees per acre. The selected tree is the "crop" tree and should be selected for wildlife value and tree quality. In this stand, favor the red oak. Remove trees with crowns that are touching or overtopping the crowns of the crop trees.

The trees to remove can be felled or double girdled. There is no need to use herbicide on the stumps or girdle.

Stand 7: 6 acres

Site Description –

Upland with Fayette silt loam soils.

Area Description –

Open field with a mixture of grass and weeds.

Management Recommendations – Early Successional

The area could be planted to add early successional habitat to the edge of the woods. Mow the area in August. After the vegetation has grown 4-6 inches, broadcast the planting site with Roundup herbicide. Plant 3 rows of aspen along the woods. Plant the trees on a 6 X 10 ft. spacing. Plant 3 rows of mixed shrubs and red cedar. Plant a clump of red cedar (5-6 trees) every 75 to 100 ft. Plant the cedars 10 ft. apart and the shrubs 3 -4 ft. apart in the row. Rows can be 10 ft. apart. Suitable shrubs are ninebark, hazelnut, nannyberry, and wild plum.

Control competing vegetation by broadcast spraying the planted area with Pendulum herbicide. Apply 4 quarts of Pendulum per acre before any vegetation begins to grow in the spring.

Stand 8: 1 acre

Site Description –

Ridge with Fayette silt loam soils.

Woodland Description –

Sapling (1-4" dia.) aspen. The area was clearcut 5 years ago.

Management Recommendations – Early Successional

Clearcut the area again in 10 years.

Stand 9: 5 acres

Site Description –

Steep, east facing slope above the Upper Iowa River.

Woodland Description –

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

Management Recommendations - Viewshed

This area can be maintained as a buffer along the river.

Nicola Tract -

Stand 10: 4 acres

Site Description –

East facing slope with Dubuque soils.

Woodland Description –

Pole sized basswood, cherry, ironwood, red oak, black oak, walnut, and aspen.

Management Recommendations – Even Age

Thin the area to release the crop trees. Select the best tree every 30 ft. apart, or 50 trees per acre. Select crop trees to maximize the number of oak in the stand. In addition, intermix other species as crop trees to help minimize the impact of oak wilt on the stand. Suitable species to select as crop trees in addition to oak are walnut, black cherry, basswood, hackberry, and hard maple. Remove trees with crowns that are touching or overtopping the crowns of the crop tree.

The trees to remove can be felled or double girdled. There is no need to use herbicide on the stumps or girdle.

Stand 11: 3 acres

Site Description -

Bottomland that floods frequently.

Woodland Description -

Pole sized boxelder with scattered silver maple.

Management Recommendations - Viewshed

Leave this area as is to provide a wooded buffer on the floodplain along the Upper Iowa River.

McCABE TRACT – 40 ACRES

Stand 1: 3 acres

Site Description -

Edge of the woods with Fayette silt loam soils.

Woodland Description -

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

Management Recommendations – Early Successional

Plant 4 rows of aspen along the field edge. Plant the rows on a 6 X 10 ft. spacing. Once the trees are established in 3-5 years, clearcut the edge of the woods to add to the early successional habitat. Leave the large bur oak for mast production.

Stand 2: 2 acres

Site Description -

Small drainage with gentle, north and south facing slopes.

Woodland Description -

Medium sized (12-18" dia.) black locust and elm. The understory is elm, boxelder, and green ash.

Management Recommendations – Early Successional

Black locust is an invasive species and has little benefit to wildlife. This stand could be converted to aspen and shrubs by killing the black locust.

Black locust readily sprouts from the roots when cut and is very difficult to control. It is essential to control the black locust before planting any seedlings because the locust sprouts will readily overwhelm any seedlings that are planted. Clearcut the stand in the late summer to early fall. Treat the stumps of the black locust with Transline. The stumps of elm and boxelder should be treated with Pathfinder II. During the middle of the following summer, foliar spray the sprouts of the black locust with Transline or Crossbow. The following spring, plant the area with aspen. Plant the trees 30 ft. apart or 50 trees per acre. Protect each tree with a 4 ft. tall, vented shelter.

Control competing vegetation around the aspen for a minimum of 2 years. Spot treat around the tree shelters with Roundup and Pendulum herbicides.

McCabe Tract -

Stand 3: 3 acres

Site Description -

Ridge top with Fayette silt loam soil.

Woodland Description -

Pole sized black locust, elm, and boxelder.

Management Recommendations – Early Successional

In 5-10 years, clearcut the area to provide dense, young trees and shrubs for turkey, deer, grouse, woodcock, and migratory birds. Treat the stumps of the black locust with Transline. Treat the stumps of elm and boxelder with Pathfinder II. Spray the sprouts of the black locust with Transline or Crossbow the second year. Once the black locust is controlled, plant aspen seedlings. Plant the seedlings 30 ft. apart or 50 trees per acre. Spot spray with Roundup and Pendulum for 2 years to control the competition around each planted tree.

Stand 4: 3 acres

Site Description -

Gentle east facing slope.

Woodland Description -

Pole sized (5-10" dia.) elm, boxelder, ash, aspen, and black locust. There is a nice clump of aspen in the southeast corner of the area.

Management Recommendations – Early Successional

This stand is similar to Stand 3 and could be treated the same. Clearcut the area and spray the sprouts of the black locust the second year. Plant aspen the 3rd year in the areas lacking aspen sprouts.

McCabe Tract -

Stand 5: 11 acres

Site Description -

Steep, south facing slope with limestone bluffs.

Woodland Description -

Medium sized (12-18" dia.) bur oak and red cedar.

Management Recommendations - Viewshed

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

Stand 6: 2 acres

Site Description -

Ridge top with Fayette silt loam soil.

Woodland Description -

Pole sized white pine, scotch pine, and red pine. The trees are 8-10" in diameter.

Management Recommendations - Viewshed

Thin the stand to an average spacing of 14-16 ft. between trees. The thinning would improve the general health of the trees. Scotch pine is a short lived species, so where possible, remove the scotch pine and leave the red and white pine.

Stand 7: 14 acres

Site Description –

Valley and side slopes with shallow soils over limestone.

Woodland Description -

Medium sized (12-18" dia.) bur oak, white elm, basswood, and hackberry. The understory is elm, boxelder, ironwood, black locust, cherry, basswood, green ash, hackberry, and a few black oak.

Management Recommendations – Even Age

The larger trees are widely spaced. The future species diversity and composition could be improved by interplanting with red oak, white oak, and bur oak. The undesirable species such as elm, boxelder, ironwood, and black locust could be killed. This will create open areas for planting. Plant the open areas with large seedlings. The seedlings should be a minimum of 24 inches in height and 3/8 inch in caliper. Plant the trees in the open areas 30 ft. apart, or 50 trees per acre. Protect each tree with a 4-5 ft. tall, vented tree shelter. Support the shelter with a 1 inch diameter bamboo stake.

McCabe Tract -

Control the competition around each tree by spot spraying a combination of Roundup and Princep 4L herbicides. In the spring, after the vegetation is actively growing, spray a 4 ft. diameter circle around each tree with 2 quarts of Roundup plus 4 quarts of Princep 4L per acre treated. You must protect the seedling from the Roundup while spraying with a shield.

Stand 8: 2 acres

Site Description -

East facing slope.

Woodland Description -

Pole sized elm and boxelder.

Management Recommendations – Early Successional

Clearcut the area. Treat the stumps of elm and boxelder with Pathfinder II to prevent sprouting. Plant the area with aspen seedlings. Plant the trees 30 ft. apart, or 50 trees per acre. Protect each tree with a 4 ft. tall, vented tree shelter.

Control the competition around each tree by spot spraying a combination of Roundup and Pendulum herbicides. In the spring, after the vegetation is actively growing, spray a 4 ft. diameter circle around each tree with 2 quarts of Roundup plus 4 quarts of Pendulum per acre treated.

PLYMOUTH ROCK – 12 ACRES

Stand 1: 12 acres

Site Description -

Bottomland along the Upper Iowa River.

Woodland Description -

Medium sized (12-18" dia.) cottonwood, silver maple, and white elm.

Management Recommendations – Viewshed

This area is used extensively by fishermen and hikers. Leave this area as it is to provide a wooded buffer in the floodplain along the river.

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 – 15 year rotation

The early successional areas will be managed on a 15 year rotation. There are 86 acres designated for early successional management. The allowable cut is 5.7 acres per year (86 acres divided by 15 yrs.). With a working cycle of 5 years, approximately **28-29 acres could be cut every 5 years**.

Even Age Management Area – 125 year rotation

There are 178 acres under even age management. Dividing 178 acres by 125 years, yields an allowable cut of 1.4 acres per year, or **7 acres every 5 years**.

Uneven Age Management Area – 20 year cutting cycle

Stands can be selectively harvested every 20 years to remove mature and defective trees. There are 27 acres under uneven age management. The allowable harvest is **7 acres of selective harvest every 5 years, or 14 acres every 10 years**.

HIGH PRIORITY PROJECTS
First 5 year work cycle

Timber Stand Improvement –

Stand #	Acres	Comments
Coldwater – 6	4	Kill weed trees under uneven age management
Coldwater – 10	2	Release crop trees
Coldwater – 19	2	Release crop trees
Chimney Rock - 3	2	Release crop trees
Chimney Rock – 6	27	Prune and release walnut
Chimney Rock – 9	3	Kill weed trees under shelterwood management
Chimney Rock – 11	13	Kill weed trees under uneven age management
Bohr – 13	2	Release crop trees
Bohr – 15	10	Kill weed trees under uneven age management
Nicola – 2	2	Release crop trees
Nicola – 6	1	Release crop trees
Nicola – 10	4	Release crop trees
Total	72	

Early Successional Clearcuts – 15 yr. rotation (Non Commercial)

Stand #	Acres	Comments
Coldwater – 3	1	
Coldwater – 11	3	
Coldwater – 14	1	
Bohr – 14	1	
McCabe – 1	3	
McCabe – 4	3	
Nicola – 5	4	
Total	16	

Early Successional Clearcuts – 15 yr. rotation (Commercial Sales)

Stand	**Acres**	**Comments**
Coldwater – 20	1	Fell all trees following harvest
Coldwater – 26	2	Same
Chimney Rock – 12	6	Same
Bohr – 3	5	Same
Totals	14	

Even Age Clearcuts – 125 yr. rotation

Stand #	**Acres**	**Prescription**
Coldwater – 4	4	Kill weed trees
Coldwater – 21	2	Clearcut and plant oak
Coldwater – 25	6	Clearcut and plant oak
Chimney Rock – 10	7	Clearcut and plant oak
Seegmiller – 4	5	Clearcut and plant oak
Total	19	

Site Preparation & Tree Planting -

Stand #	**Acres**	**Prescription**
Coldwater – 5	2	Plant cedars, shrubs, and aspen
Coldwater – 9	9	Kill weed trees and plant aspen
Coldwater – 13	2	Kill weed trees and plant oak
Coldwater – 15	2	Kill weed trees and plant aspen
Chimney Rock – 8	3	Plant aspen and shrubs
Chimney Rock – 12	6	Plant 4 rows of aspen
Chimney Rock – 14	3	Kill weed trees and plant oak
Bohr – 4	1	Plant aspen and shrubs
McCabe – 1	3	Clearcut and plant aspen
McCabe – 4	3	Clearcut and plant aspen
McCabe – 7	14	Kill weed trees and interplant oak
Nicola – 1	4	Interplant oak
Nicola – 4	3	Doze boxelder and plant oak
Nicola – 5	4	Kill undesirable species and plant aspen
Nicola – 7	6	Plant aspen, cedar, and shrubs
Total	65	

APPENDIX

UPPER IOWA RIVER WILDLIFE AREA

COLDWATER WILDLIFE AREA

SUMMARY OF WOODLAND STANDS

No.	Acres	Timber Type	TreeSize	Mngt. System	Prescription	Priority	Year Complete	Comments
1	5	Oak Walnut	Medium	Even Age	Clearcut	Medium	2030	
2	12	Oak Ash Walnut	Sapling	Even Age	TSI – Crop Tree Release	High	2020	
3	1	Aspen Black Oak	Pole	Early Successional	Clearcut	High	2010	Non Commercial
4	4	White Oak Black Oak	Large	Even Age	Clearcut	Medium	2010	Commercial Sale
5	2	Brome Grass		Early Successional	Plant red cedar, shrubs, and aspen	Medium	2010	
6	4	Red Oak White Oak Basswood	Medium	Uneven Age	TSI – kill undesirable species	Medium	2010	
7	13	Bur Oak Elm Cedar	Medium	View Shed				
8	8	Oak Basswood	Medium	Even Age	Clearcut and Plant	High	2025	
9	9	Boxelder Elm Aspen	Pole	Early Successional	Kill weed trees and plant aspen	High	2010	
10	2	Black Oak Walnut Cherry	Pole	Even Age	TSI – Crop Tree Release	High	2010	
11	3	Boxelder Elm Aspen	Pole	Early Successional	Clearcut	High	2010	Non Commercial

No.	Acres	Timber Type	Tree Size	Mngt. System	Prescription	Priority	Year Complete	Comments
12	11	Oak Basswood Cedar	Medium	View Shed				
13	2	Boxelder	Pole	Even Age	Kill boxelder and plant oak	Medium	2010	
14	1	Cedar Aspen	Pole	Early Successional	Clearcut and leave cedars	High	2010	Non Commercial
15	2	Boxelder Elm	Pole	Early Successional	Kill weed trees and plant aspen	High	2010	
16	3	Aspen Black Oak Cherry	Pole	Early Successional	Clearcut	High	2015	Non Commercial
17	2	Mixed Oak	Medium	Even Age	Clearcut and plant	Medium	2020	
18	3	Aspen Cherry Black Oak	Sapling	Early Successional	Clearcut	High	2015	Non Commercial
19	2	Red Oak Black Oak Aspen	Pole	Even Age	TSI – Crop Tree Release	High	2010	
20	1	Aspen Red Oak Cherry	Pole	Early Successional	Clearcut	High	2010	Scattered merchantable trees
21	2	Red Oak White Oak	Large	Even Age	Clearcut and Plant	High	2010	Commercial Sale
22	1	Birch Aspen Oak	Sapling	Early Successional	Clearcut	High	2020	
23	20	Red Oak Maple Basswood	Medium	View Shed				
24	11	Mixed Oak White Pine	Large	View Shed				
25	34	Red Oak White Oak Basswood	Large	Even Age	Clearcut and plant 5-6 acres	High	2010	Commercial Sale
26	2	Black Oak Aspen Cherry	Large	Early Successional	Clearcut	High	2010	Commercial Sale

CHIMNEY ROCK WILDLIFE AREA

SUMMARY OF WOODLAND STANDS

No.	Acres	Timber Type	TreeSize	Mngt. System	Prescription	Priority	Year Complete	Comments
1	3	Bur Oak Basswood	Medium	View shed				
2	2	Bur Oak Black Oak	Medium	Early Successional	Clearcut and plant aspen	High	2015	Commercial Sale
3	2	Black Oak Bur Oak Cherry	Pole	Even Age	TSI – Crop Tree Release	High	2010	
4	7	Bur Oak Elm Basswood	Medium	Even Age	Clearcut and plant	Medium	2030	
5	4	Bur Oak Red Oak Basswood	Medium	View Shed				
6	27	Boxelder Elm Walnut	Pole	View Shed	Prune and release scattered walnut	Low	2010	
7	6	Oak Walnut	Large	Even Age	Clearcut and plant	Medium	2015	
8	3	Elm Plum	Sapling	Early Success	Plant aspen and shrubs	High	2010	
9	3	Bur Oak	Large	Even Age	Shelterwood – kill weed trees	High	2010	
10	7	Red Oak Bur Oak	Large	Even Age	Clearcut and Plant	High	2010	
11	13	Oak H. Maple Walnut	Large	Uneven Age	TSI – kill weed trees	High	2010	Selective havest In 20 years
12	6	Bur Oak Black Oak Red Oak	Large	Early Successional	Clearcut edge and plant 4 rows of aspen	High	2010	Commercial Sale
13	3	Red Oak H. Maple Basswood	Medium	View Shed				
14	3	Bur Oak Cotton wood	Large	Even Age	Kill weed trees and plant oak	Low	2010	

BOHR TRACT

SUMMARY OF WOODLAND STANDS

No.	Acres	Timber Type	TreeSize	Mngt. System	Prescription	Priority	Year Complete	Comments
1	6	Red Oak Ash	Medium	View shed				
2	2	Red Oak White Oak	Medium	Even Age	Clearcut and Plant	Medium	2030	Commercial Sale
3	5	Red Oak White Oak Ash	Medium	Early Successional	Clearcut	High	2010	Commercial Sale
4	1	Field		Early Success	Plant aspen and shrubs	High	2010	
5	2	Basswood Red Oak	Medium	Early Success	Clearcut	High	2015	Commercial Sale
6	4	Red Oak Black Oak Elm	Medium	Even Age	Clearcut and Plant	High	2030	
7	2	Aspen Black Oak B. Hickory	Sapling	Early Success	Clearcut	High	2020	
8	2	Aspen	Pole	Early Success	Clearcut	High	2015	Scattered Merchantable Trees
9	3	Black Oak Walnut Cottonwood	Medium	Early Success	Clearcut	High	2015	Commercial Sale
10	13	Red Oak White Oak Walnut	Medium	Even Age	Clearcut and plant	High	2015	Commercial Sale
11	10	Red Oak Basswood H. Maple	Medium	View Shed				
12	6	Aspen Black Oak Boxelder	Sapling	Early Success	Clearcut	High	2015	Non Commercial
13	2	Black Oak Red Oak Basswood	Pole	Even Age	TSI – Crop Tree Release	High	2010	Oak Wilt Pockets
14	1	Aspen Black Oak	Pole	Early Success	Clearcut	High	2010	Non Commercial

No.	**Acres**	**Timber Type**	**TreeSize**	**Mngt. System**	**Prescription**	**Priority**	**Year Complete**	**Comments**
15	10	Red Oak Black Oak Basswood	Medium	Uneven Age	TSI – weed tree removal	Medium	2010	Selective harvest In 20 years
16	5	Oak Basswood	Medium	Even Age	Clearcut and plant	High	2025	
17	1	Aspen Black Oak Cherry	Sapling	Early Success	Clearcut	High	2020	

NICOLA TRACT

SUMMARY OF WOODLAND STANDS

No.	Acres	Timber Type	TreeSize	Mngt. System	Prescription	Priority	Year Complete	Comments
1	4	Walnut Ash	Sapling	Even Age	Interplant bur and swamp white oak	Medium	2010	
2	2	Walnut Hackberry	Pole	Even Age	TSI – Crop Tree Release	High	2010	
3	5	Swamp White Oak Boxelder	Pole	Even Age	TSI – Crop Tree Release	High	2015	
4	3	Boxelder	Sapling	Even Age	Clear and plant oak	Medium	2010	
5	4	Boxelder Elm	Pole	Early Success	Kill weed trees and plant aspen	High	2010	
6	1	Red Oak Cherry Basswood	Pole	Even Age	TSI – Crop Tree Release	High	2010	
7	6	Grass Field		Early Success	Plant aspen, shrubs, and cedar	High	2010	
8	1	Aspen	Sapling	Early Success	Clearcut	High	2020	
9	5	H. Maple White Oak Red Oak	Medium	View Shed				
10	4	Oak Basswood Cherry	Pole	Even Age	TSI – Crop tree release	High	2010	
11	3	Boxelder Silver Maple	Pole	View Shed				

BRONNER TRACT

SUMMARY OF WOODLAND STANDS

No.	Acres	Timber Type	TreeSize	Mngt. System	Prescription	Priority	Year Complete	Comments
1	10	Walnut Hackberry Elm	Medium	Even Age	Sell large walnut and thin stand to release crop trees	Medium	2015	
2	8	Walnut Hackberry Elm	Pole	Even Age	Sell large walnut, then thin to release crop trees	Medium	2015	
3	2	Red Oak H. Maple Basswood	Medium	View Shed				

McCabe Tract

SUMMARY OF WOODLAND STANDS

No.	Acres	Timber Type	TreeSize	Mngt. System	Prescription	Priority	Year Complete	Comments
1	3	Elm Boxelder Aspen	Pole	Early Success	Plant aspen along edge and clearcut edge	High	2010	Non Commercial
2	2	Black Locust	Medium	Early Success	Clearcut and plant aspen	Low	2015	Non Commercial
3	3	Bl. Locust Elm Boxelder	Pole	Early Success	Clearcut and plant aspen	Medium	2020	
4	3	Elm Bl. Locust Aspen	Pole	Early Success	Clearcut and plant aspen	High	2010	Non Commercial
5	11	Bur Oak Red Cedar	Medium	View Shed				
6	2	White Pine Red Pine Scotch Pine	Pole	View Shed				
7	14	Bur Oak Basswood Elm	Medium	Even Age	Shelterwood – kill weed trees and interplant oak	Medium	2010	
8	2	Elm Boxelder	Pole	Early Success	Kill weed trees and plant aspen	Medium	2015	

PLYMOUTH ROCK

SUMMARY OF WOODLAND STANDS

No.	Acres	Timber Type	TreeSize	Mngt. System	Prescription	Priority	Year Complete	Comments
1	12	Cotton Wood S. Maple	Medium	View Shed				

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.