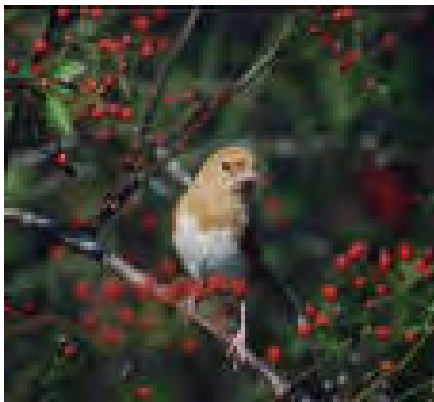


FOREST WILDLIFE STEWARDSHIP PLAN

FOR

FALCON SPRINGS WILDLIFE AREA

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



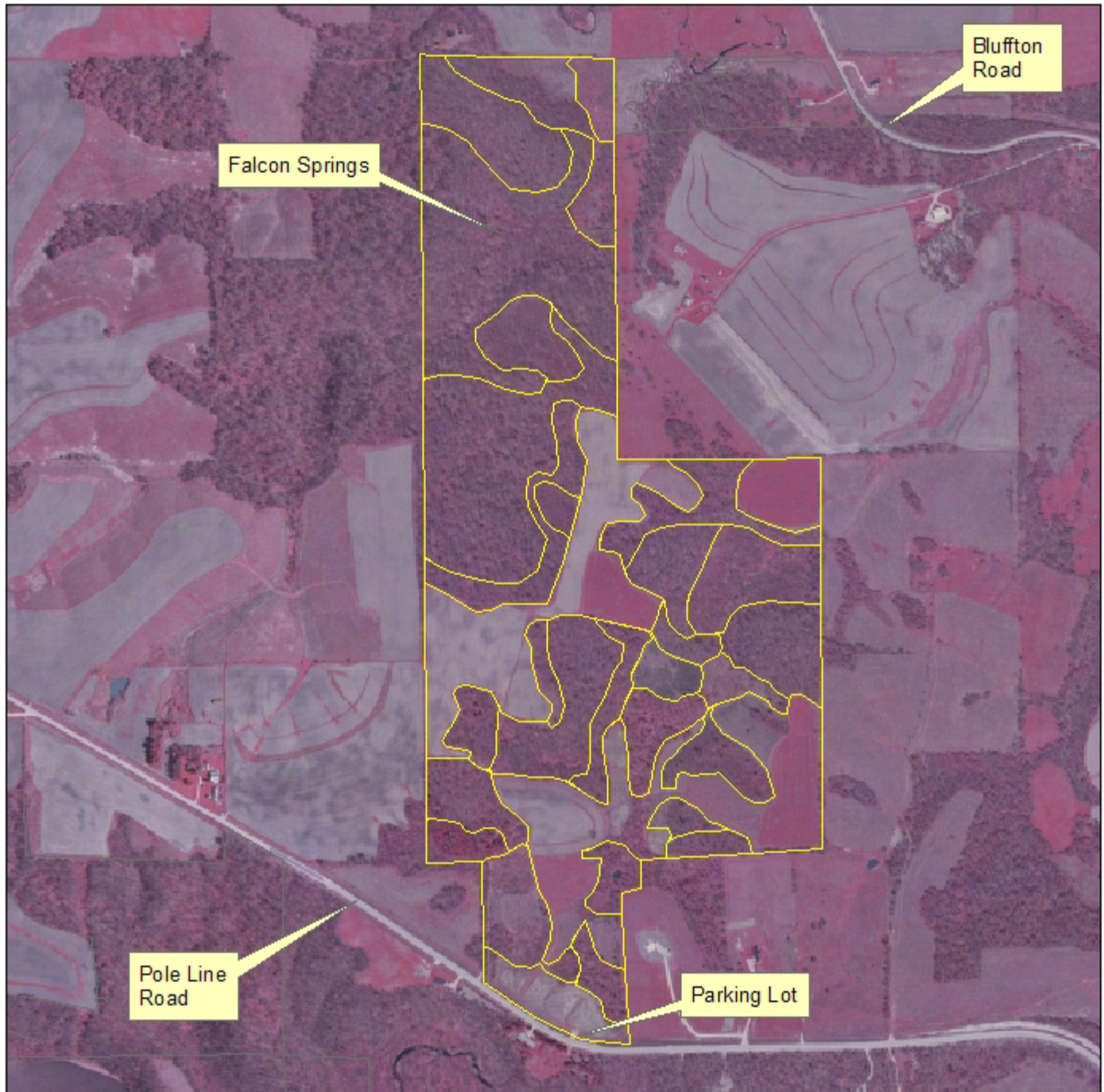
Developed by

**Gary Beyer
District Forester**

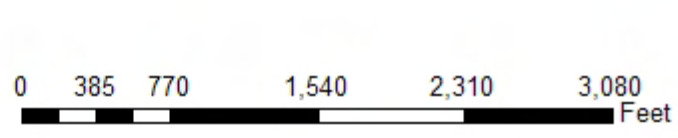
And

**Terry Haindfield
Wildlife Biologist**

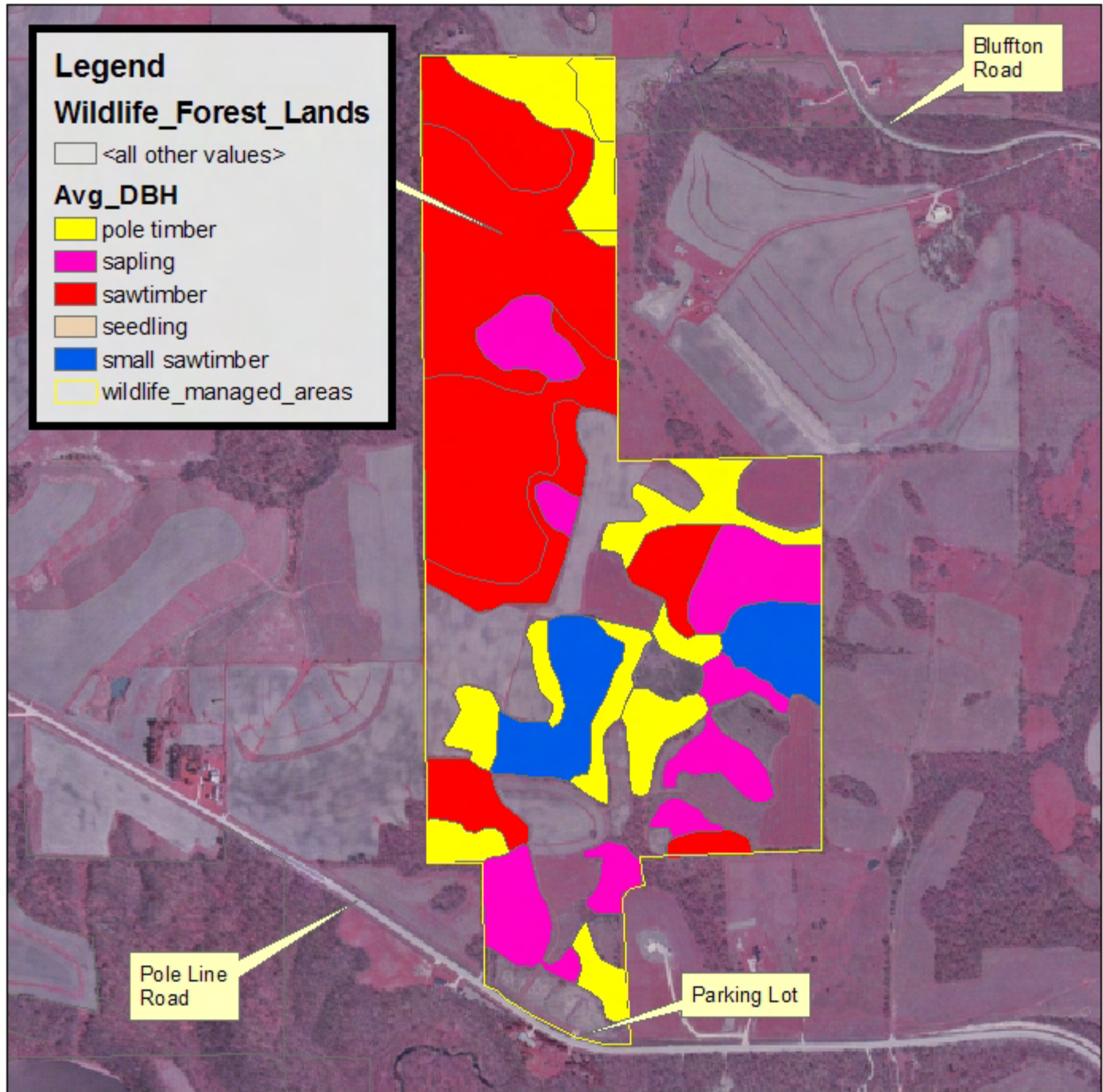
FOREST WILDLIFE STEWARDSHIP PLAN FALCON SPRINGS



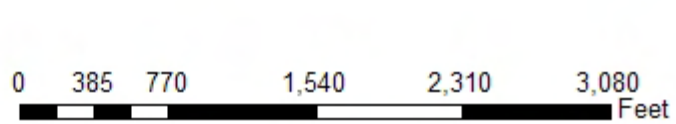
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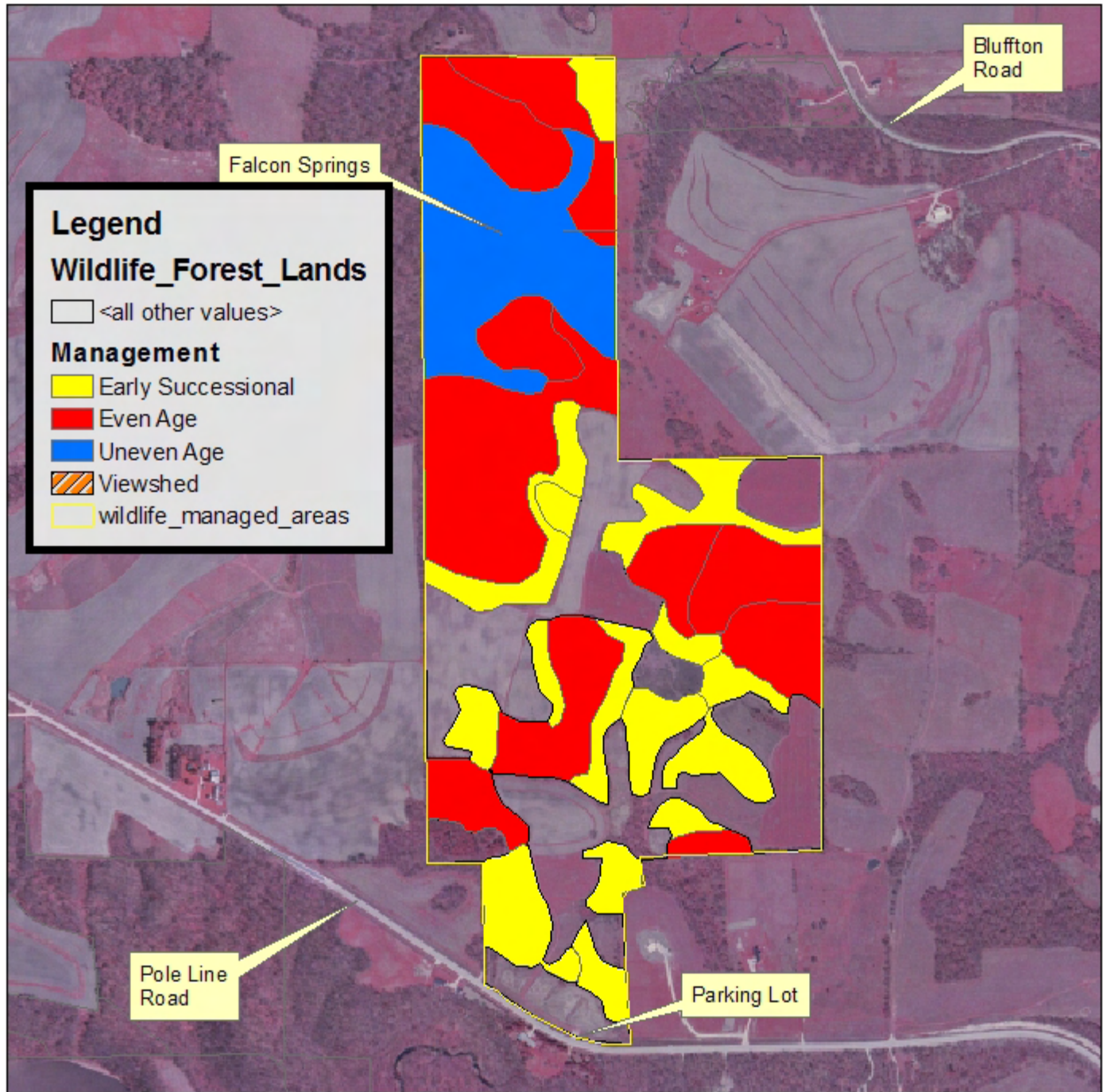
FALCON SPRINGS AVERAGE TREE SIZE



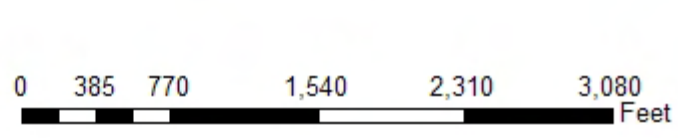
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FALCON SPRINGS MANAGEMENT SYSTEMS



Sec. 35 & 36 Bluffton Twsp.,
T99N-R9W, Winneshiek Co.



HOW THE FOREST WILDLIFE STEWARDSHIP PLAN WAS DEVELOPED

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

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

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

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

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

Early Successional -

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

Even Age -

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

Uneven Age -

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

Viewshed -

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

DATE: 1/25/08

**FOREST WILDLIFE STEWARDSHIP PLAN
FOR
FALCON SPRINGS WILDLIFE AREA**

MANAGER:

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

TELEPHONE: 563/382-4895

LOCATION: Sec. 35 & 36 Bluffton Twsp., Winneshiek County

TOTAL ACRES: 182.5

INTRODUCTION

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

There are 3 primary factors emphasizing the need for FWSP's for WMA's:

- 1) The continued succession of many forest stands past the oak-hickory stage to the shade tolerant stands of maple and basswood.
- 2) The loss of early successional forest stands and associated wildlife species.
- 3) The lack of proper management to secure mature forest stands with proper overstory and understory tree species for associated forest-interior wildlife species.

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

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

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

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

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

DESCRIPTION OF AREA

The 182.5 acres addressed in this plan are outlined on the attached aerial photo. The area is divided into 27 different areas or stands, labeled 1-27 on the map. Each area is described in this plan and recommendations outlined for woodland management.

Falcon Springs is located approximately 3 miles northwest of Decorah. The area is upland with a mixture of woods, cropland, and grassland. This area does not have a large block of timber, but rather smaller patches of woods with lots of edge. Falcon Springs is 241 acres in size with 182.5 acres of woodland, or 76% wooded.



There is a magnificent spring on the northern part of the property. This area is not readily accessible by the public, being almost a mile from the road. The major use of the area is for hunting deer and turkey.

Objectives -

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

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



Falcon Springs has excellent components of edge, aspen, and shrubs to maximize habitat for ruffed grouse and woodcock.

Income from Timber Harvests -

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

Current Distribution of Tree Size on the Area -

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

<u>Tree Size</u>	<u>Acres</u>	<u>% of Total Area</u>
Sapling (<4" dbh)	35.5	19
Pole size (5-12" dbh.)	41	22
Medium Size (14-18" dbh.)	19	10
Large (>20" dbh)	87	49
Totals	182.5	100

Proposed Management Systems for the Area -

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

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

<u>Management System</u>	<u>Acres</u>	<u>% of Total Area</u>
Early Successional	56.5	31
Even Age	94	52
Uneven Age	32	17
Viewshed	0	0
Total	182.5	100

Early Successional Management -

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



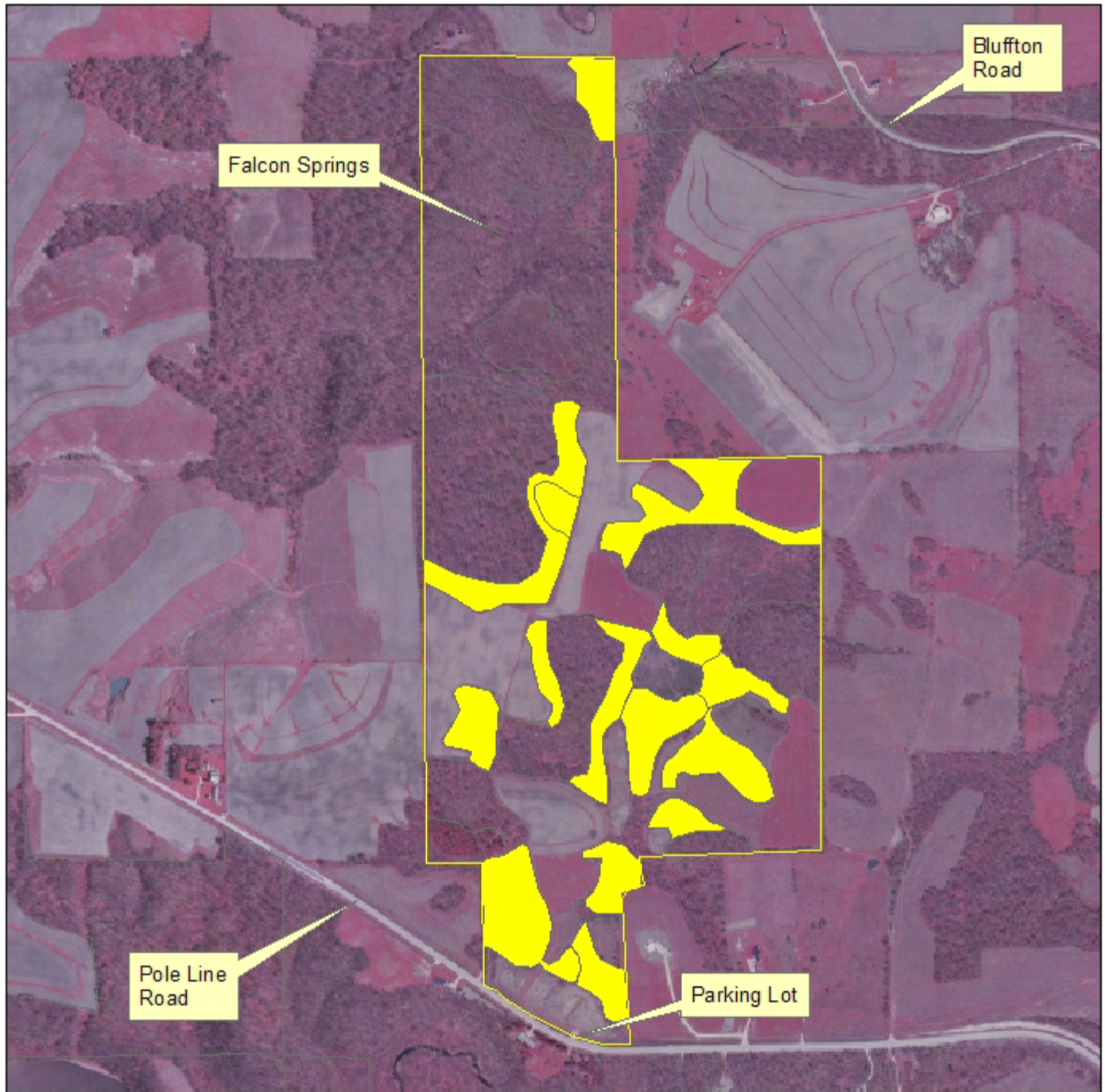
The majority of early successional management is on the woodland edges and aspen stands. This work will “feather” the edges and make a gradual transition from the field edges to the larger trees. Feathering or softening the edges results in less nest parasitism of interior forest bird species by brown-headed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

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

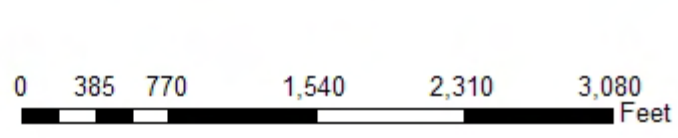
The early successional management areas will be managed on a 15 year rotation. In other words, every 15 years the area will be cut to rejuvenate the aspen and create areas with high stem density.

Falcon Springs has 56.5 acres scheduled for early successional management. Applying sustainable forestry guidelines, 19 acres could be cut every 5 years to maximize the diversity of tree sizes.

FALCON SPRINGS
Early Successional Management
56.5 Acres



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Even Age Management -

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

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

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

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



essential for regeneration of oak which require full sunlight. The only way that oak can be maintained as a component of the forest is by practicing some form of even age management.

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

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

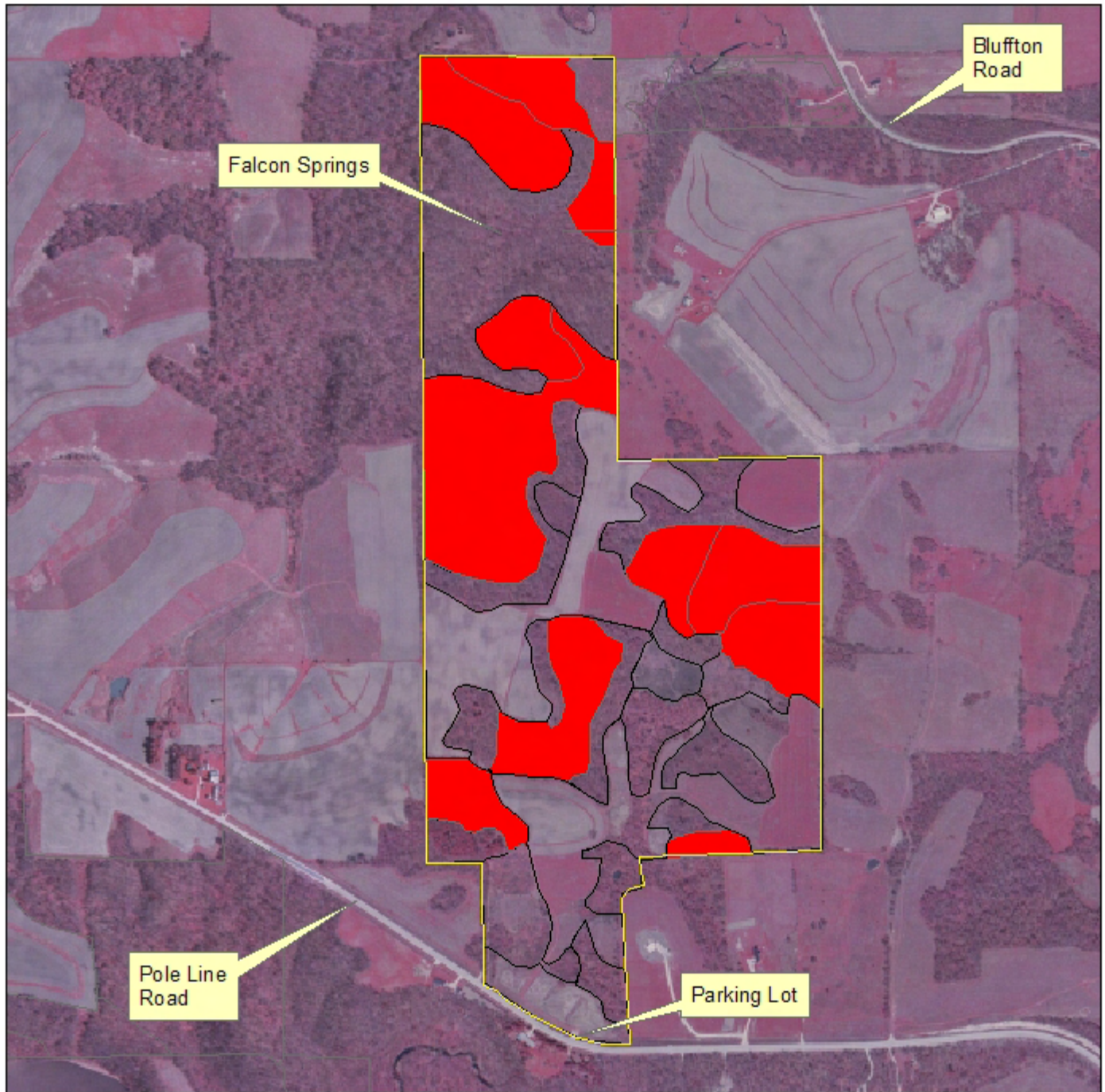


Clearcutting to create full sunlight is essential at some point in the stands life to successfully regenerate oak. If stands are not clearcut, the oak component of the forest will be lost to shade tolerant species. Clearcuts also provide additional early successional habitat in the early stages. The area is in the brushy stage for a very short period, normally 10-15 years. After that time, the trees will totally shade the ground, and the area becomes a pole sized (5-10" dia.) stand of trees.

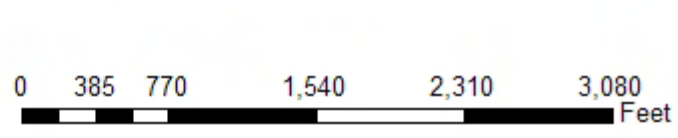
Fire is a tool in managing oak stands that is currently being studied. Frequent burning of the leaf layer in the woods will kill thin barked species such as hard maple, cherry, elm, bitternut hickory, and ironwood. Fire will expose mineral soil and open up the ground to sunlight. These conditions favor the natural regeneration of oak. Oak seedlings will tolerate light fires. The top will be killed by the fire, but the deep root systems survive and sprout. Fire will be utilized on a limited scale to encourage oak regeneration in oak stands. Once a good number of oak seedlings are present, these stands will have to be clearcut or the young oak will die from lack of sunlight.

There are 94 acres of even aged management planned for Falcon Springs, or 52% of the wooded area.

FALCON SPRINGS WILDLIFE AREA
Even Age Management
94 Acres



Sec. 35 & 36 Bluffton Twsp.,
T99N-R9W, Winneshiek Co.



Uneven Age Management -

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

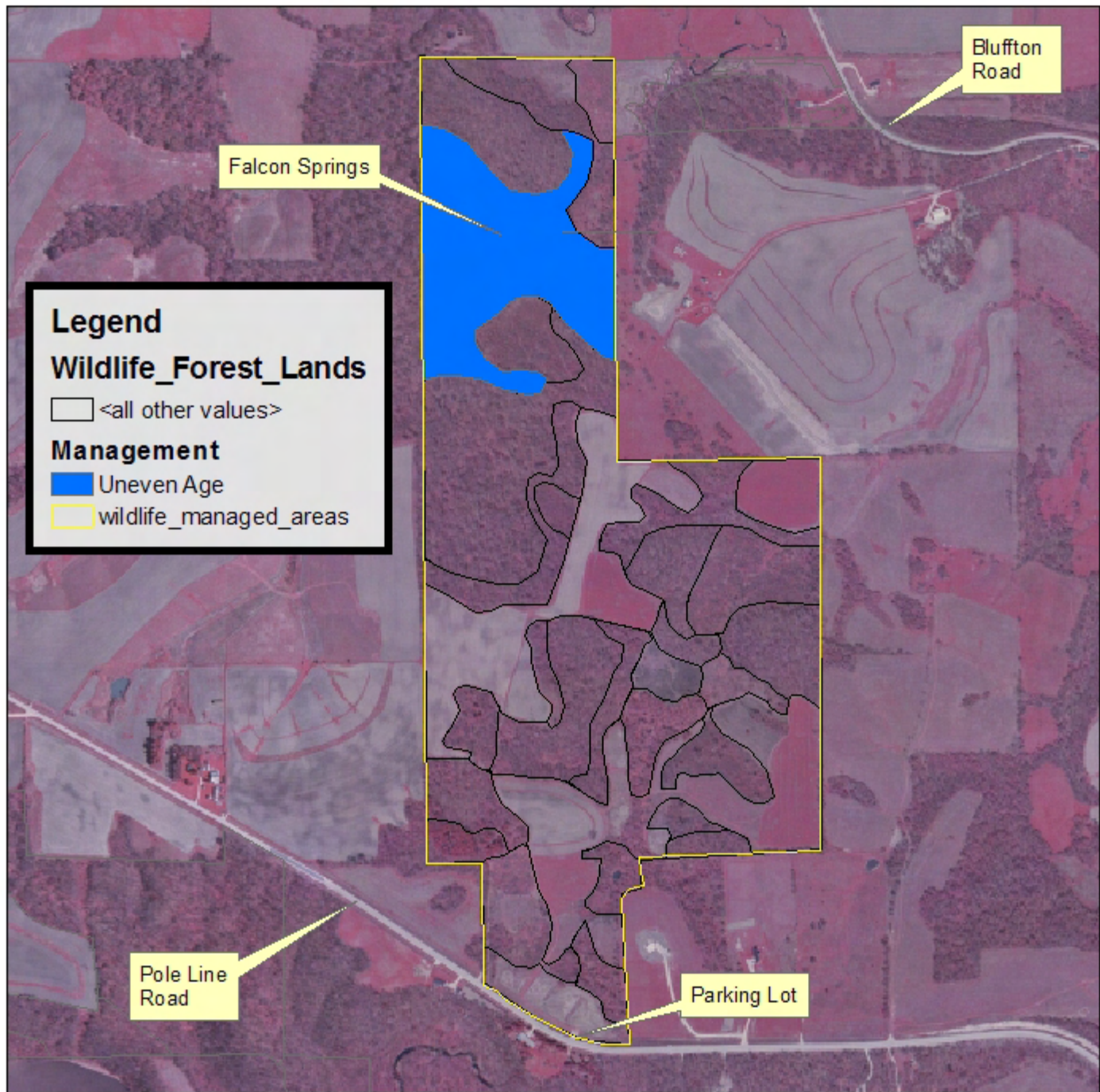
Uneven age management will maintain blocks of woodland that will always have larger trees. Uneven age management is desirable where the understory is mainly hard maple, on steep slopes, and on areas where always having large trees is important.

Uneven age management areas will provide continuous tracts of woodland with minimal disturbance. Large tracts of uneven age management will provide necessary habitat for neotropical migratory bird species such as cerulean, hooded, Canada, and Kentucky warblers. Selective harvesting will create small openings in the canopy, which will increase ground cover, and enhance stand structure. Den trees will be left to provide cavities for wildlife such as woodpeckers, bats, and squirrels, including the Northern myotis and red squirrel, species of greatest conservation need. Timber stand improvement and selective harvesting will create woody debris on the forest floor for reptiles and amphibians.

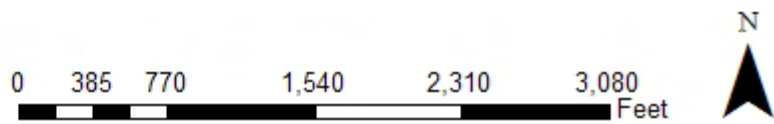


There are 32 acres scheduled for uneven age management in the valley where the spring is located.

FALCON SPRINGS UNEVEN AGE MANAGEMENT - 32 ACRES



Sec. 35 & 36 Bluffton Twsp.,
T99N-R9W, Winneshiek Co.



Viewshed Management -

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

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



No viewshed has been recommended for Falcon Springs. Steep, fragile slopes or trout streams are not present on the area.

SOILS

The majority of the area has gentle slopes and ridge tops with Fayette silt loam soils. Fayette 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 steeper slopes around the spring have shallow soils over limestone. This area has been scheduled for uneven age management.

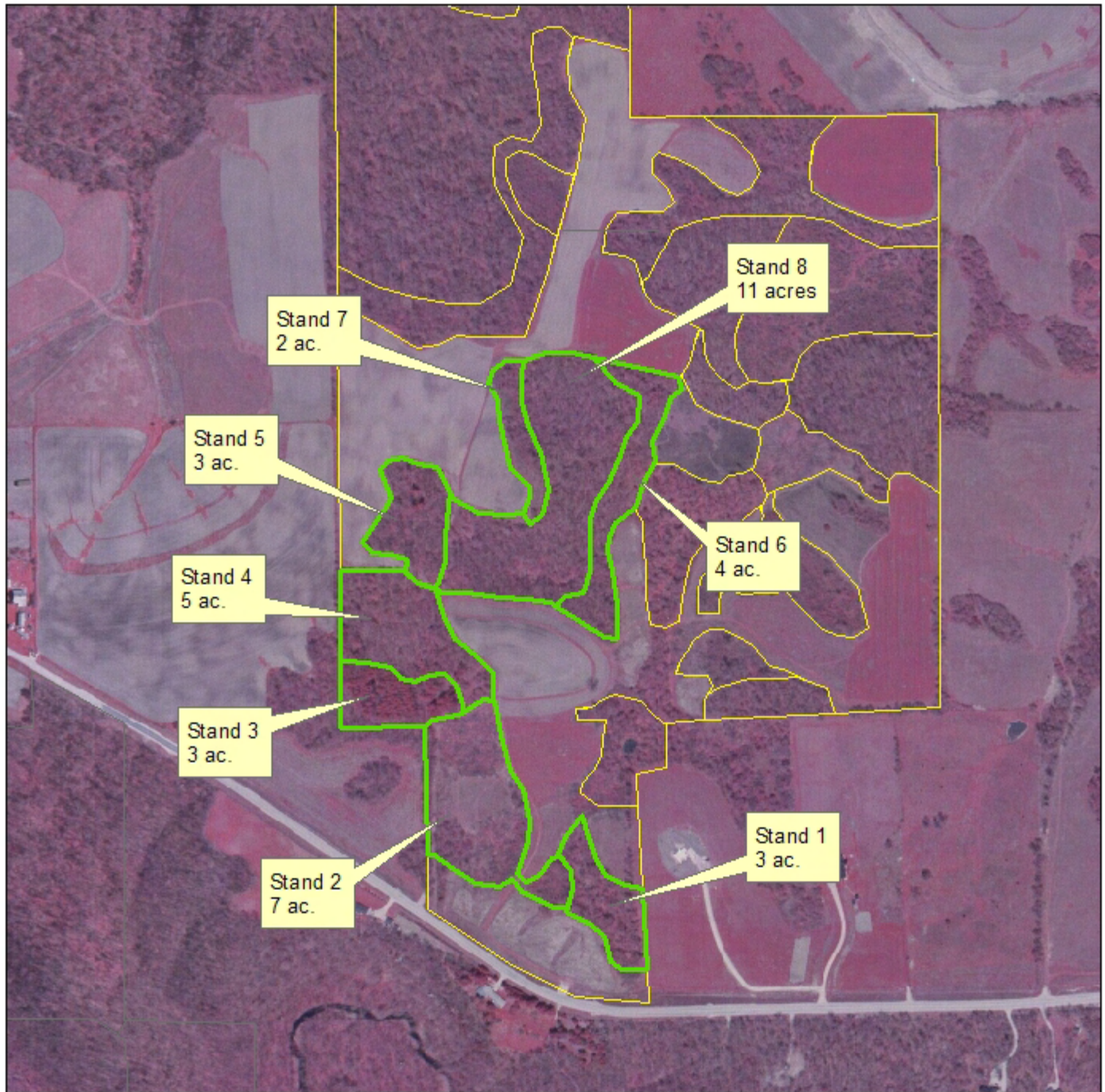
The narrow drainages have Bertrand, Caneek, Dorchester, and Chaseburg clay loams. These soils are somewhat poorly drained.

WORK PLAN FOR FALCON SPRINGS WILDLIFE AREA

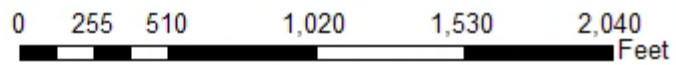
This is the “working plan” for Falcon Springs is designed to aid professional biologists and foresters in the implementation of forest management practices. It is written with the understanding that these professionals have a basic understanding of forest management principles and techniques. Every detail 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.

FALCON SPRINGS WILDLIFE AREA

Stands 1-8

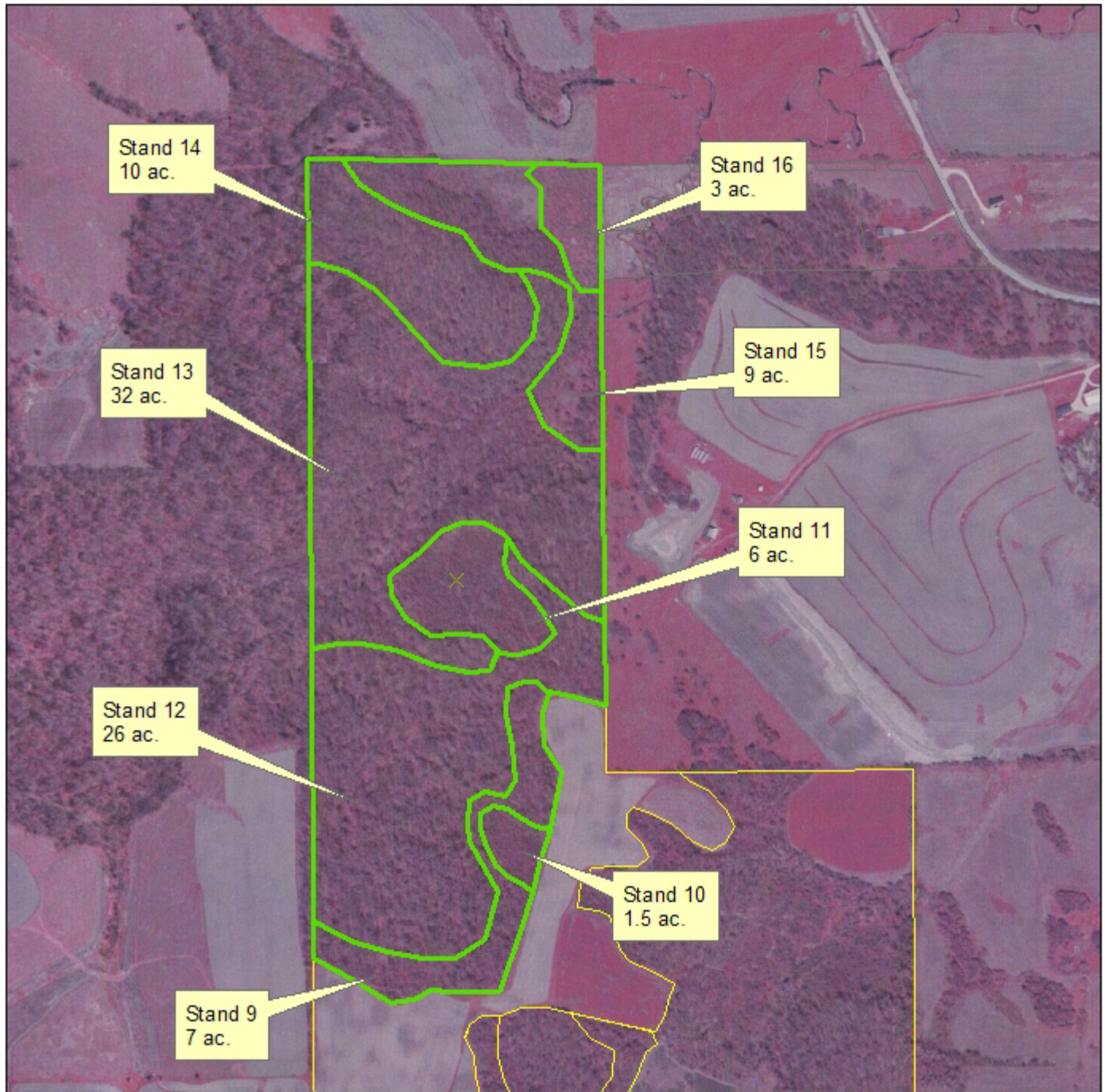


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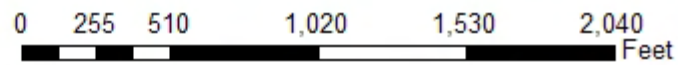


FALCON SPRINGS WILDLIFE AREA

Stands 9-16

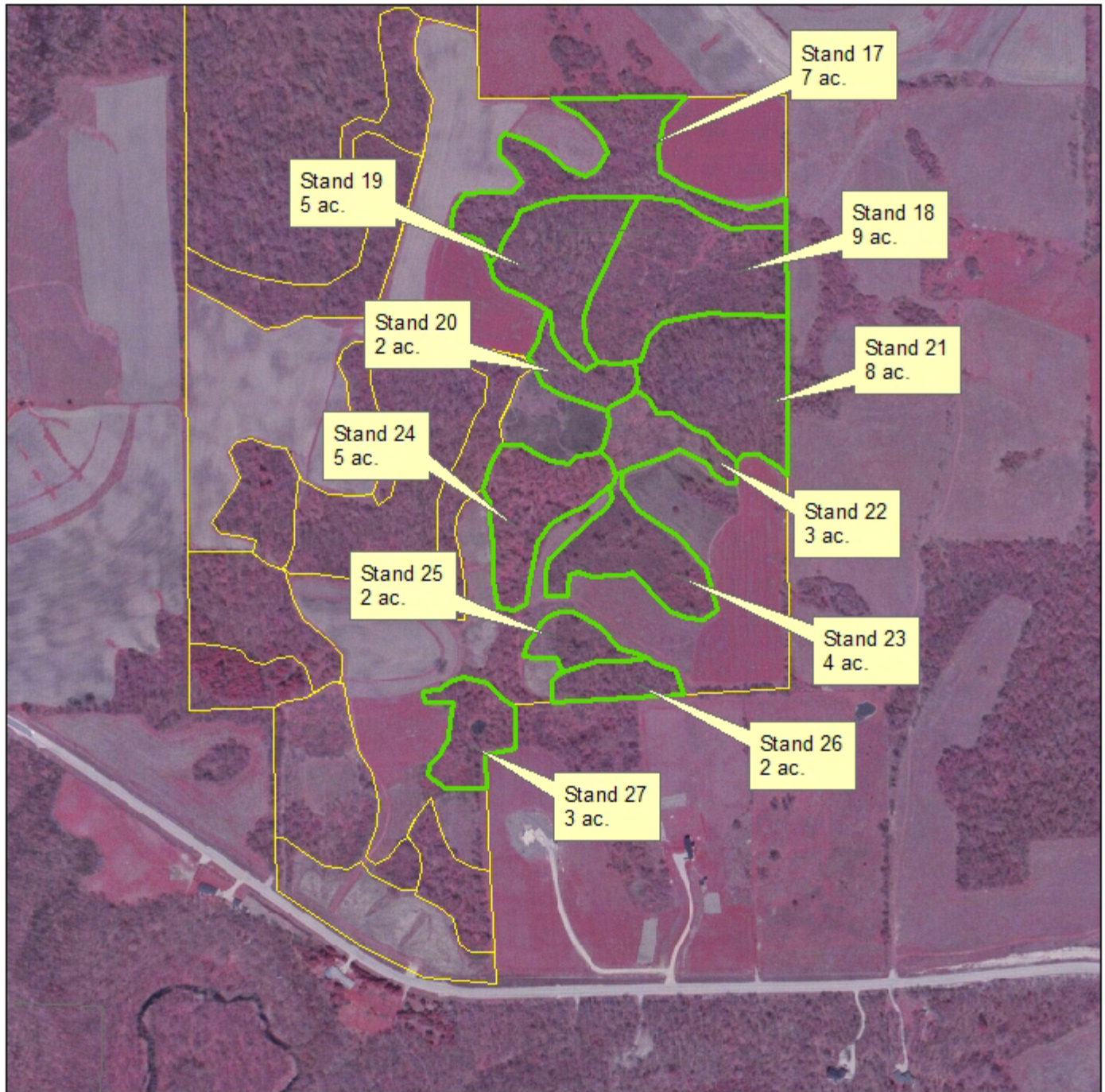


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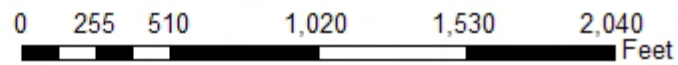


FALCON SPRINGS

Stands 17-27



Sec. 35 & 36 Bluffton Twp.,
T99N-R9W, Winneshiek Co.



DESCRIPTION AND RECOMMENDATIONS FOR INDIVIDUAL STANDS

Stand 1: 3 acres

Site Description -

Shallow drainage and side slopes.

Woodland Description-

The area is pole sized (5-10" dia.) boxelder, elm, and a few aspen. The predominant species is boxelder.

Management Recommendations – Early Successional

This area could be clearcut to create dense, young growth. This would be a noncommercial cut.

Stand 2: 7 acres

Site Description –

East facing slope with Fayette silt loam soils.

Woodland Descripton -

Sapling (1-4" dia.) boxelder, elm, aspen, cherry, and black oak. The area was clearcut for early successional habitat 6-7 years ago.

Management Recommendations – Early Successional

Stand 2 has a good aspen component that will expand through root suckering as it is cut. This area could be clearcut again in 10 years to create desirable habitat for ruffed grouse, wood cock, eastern towhee, and other species that need dense, young growth.



Stand 3: 3 acres

Site Description –

Ridge top with Fayette silt loam soils.

Woodland Description -

The area was planted with white pine and red pine 35-40 years ago. Where the pine died, walnut and elm have naturally seeded in. The trees are pole sized, 5-10” in diameter.

Management Recommendations – Even Age

The pine stand could be thinned to improve the health and vigor of the trees. The trees should be thinned to an average spacing of 14-16 ft. between trees. White pine is a longer living tree than red pine and should be favored over the red pine. The few walnut present could be released by removing trees with crowns that are touching the walnut crowns. All elm should be removed in the area. Treat the stumps of the elm with Pathfinder II to prevent stump sprouting.

Stand 4: 5 acres

Site Description –

Ridge top with Fayette silt loam soils.

Woodland Description -

Large (20” and larger in diameter) white oak, black oak, walnut, and elm. The understory is boxelder, elm, bitternut hickory, and black cherry. There are a few pole sized walnut scattered throughout the stand.

Management Recommendations – Even Age

In approximately 10 years, the stand could be clearcut and planted to regenerate oak and walnut. All trees 14 inches and larger in diameter would be harvested. Following the harvest, all remaining trees 1 inch and larger in diameter should be felled. The stumps of undesirable species should be treated with Pathfinder II to prevent sprouting. Plant the area with red oak and white oak. Plant a tree every 30 ft. apart, or 50 trees per acre. Planting large stock is essential for the trees to compete with the competition and grow above deer browsing height. The trees should be a minimum of 18-24” in height and 3/8” in caliper.

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

Control competing vegetation by spot spraying a combination of Roundup and Princep 4L herbicides. Protect the seedling from the spray and spray an area 4 ft in



diameter around each tree. Apply 2 quarts of Roundup and 4 quarts of Princep 4L per acre treated. The herbicides must be applied when the vegetation is actively growing.

Stand 5: 3 acres

Site Description -

Narrow drainage and side slopes bordering crop field.

Woodland Description -

Pole sized aspen, shagbark hickory, elm, and black oak. There is a good stocking of aspen along the edge of the woods. There are scattered, merchantable black oak and white oak.

Management Recommendations – Early Successional

In 10 years, the area could be clearcut along with Stand 4 to create dense, sapling growth. There are scattered, merchantable trees that could be harvested. The stumps of elm, boxelder, ironwood, and bitternut hickory should be treated with Pathfinder II to prevent sprouting. This will allow the aspen to expand throughout the stand.

Stand 6: 4 acres

Site Description -

Gentle, east facing slope along grass field.

Woodland Description –

Pole sized (5-10” dia.) aspen, elm, black oak, cherry, and shagbark hickory. There are scattered, merchantable black and bur oak. The understory is gray dogwood and elm.

Management Recommendations – Early Successional

Stand 6 could be clearcut to feather the edge of the woods and create dense, sapling growth. The merchantable trees could be sold prior to felling the remaining trees.

Stand 7: 2 acres

Site Description -

Level area along crop field.

Woodland Description -

Pole sized (5-10" dia.) aspen, elm, shagbark hickory, walnut, and black cherry. There are scattered black oak, walnut, red oak, and white oak which are 16-22" dia. The understory is elm, gooseberry, and hazel. A narrow band along the edge was cut 7-8 years ago to create early successional habitat.

Management Recommendations - Early Successional

Stand 7 could be clearcut again to enlarge the area and remove the commercial trees. Stand 7 could be harvested along with Stand 6.

Stand 8: 11 acres

Site Description -

East facing slope with a drainage running through the center of the area.

Woodland Description -

Medium sized (12-18" dia.) shagbark hickory, white oak, black oak, and aspen. The understory is elm, shagbark hickory, bitternut hickory, hackberry, and basswood.

Management Recommendations - Even Age

In approximately 20 years, the area can be clearcut and regenerated with oak.

Stand 9: 7 acres

Site Description -

Upland bordering the crop fields.

Woodland Description -

Large (20"+ dia.) black oak, white oak, shagbark hickory, elm, and scattered walnut. There are clumps of pole sized aspen along the edge. The understory is elm, bitternut hickory, and boxelder.

Management Recommendations - Early Successional

The edge could be clearcut to feather the edge, increase species diversity, and create dense, sapling growth along the edge. This would be a commercial timber sale, and could be harvested along with Stands 6 and 7.

Stand 10: 1.5 acres

Site Description –

Gentle west facing slope.

Woodland Description -

Sapling (1-4" dia.) aspen, elm, black cherry, walnut, and bitternut hickory. The area was clearcut 10-12 years ago.

Management Recommendations – Early Successional

Stand 10 has a good component of aspen. The area should be clearcut again in 5 years to maintain dense, sapling habitat.

Stand 11: 6 acres

Site Description –

Ridge top and southwest facing slopes.

Woodland Description -

The area was clearcut and planted with red oak and walnut in 1996. The stand is now sapling (1-4" dia.) bitternut hickory, black cherry, walnut, basswood, hard maple, aspen, and elm. There are scattered black oak, red oak, and white oak. The majority of oak is from stump sprouts. This stand has a good diversity of species with a component of oak and walnut.

Management Recommendations – Even Age

Timber Stand Improvement (Early Release) - The stand needs an early thinning to remove trees that are overtopping the oak and walnut. Fell trees with crowns that are overtopping or crowding the crowns of the oak and walnut. No herbicide is needed.

In 10 years, 50 crop trees per acre can be identified and the competing trees removed.

Stand 12: 26 acres

Site Description -

Gentle slopes with Fayette silt loam soils.

Woodland Description -

Large (20" in diameter and larger) black oak, white oak, red oak, shagbark hickory, cherry, and elm. The understory is elm, bitternut hickory, shagbark hickory, cherry, hard maple, hackberry, and hazel. The hard maple is on the north end.

There are pockets of oak wilt in the stand and the large black oak are beginning to deteriorate.

Management Recommendations - Even Age

Clearcut and replant with large oak seedlings to regenerate oak. Divide the area into 4-5 separate harvests of 5-7 acres in size. Plant 50 seedlings per acre and protect each tree with a vented tree shelter.

Stand 13: 32 acres

Site Description -

This area is a ravine with side slopes. Stand 13 contains the steepest slopes on the area and also is where the large spring is located.

Woodland Description -

Large (20"+ dia.) bur oak, red oak, white oak, basswood, hard maple, and elm. There are scattered, large walnut. The understory is elm, hard maple, and ironwood.

Management Recommendations - Uneven Age

In 5-10 years, selective harvest the area to remove the commercial elm, and the mature and defective trees. Following the harvest, kill the undesirable species and damaged trees to encourage the development of young hard maple and basswood.

Leave a 100-200 ft. buffer around the spring.

Stand 14: 10 acres

Site Description -

Ridge with Fayette silt loam soils.

Woodland Description -

Large (20"+ dia.) black oak, white oak, walnut, elm, and basswood. There are nice quality walnut which are 20-28" in diameter. The understory consists of elm, bitternut hickory, basswood, and ironwood. The tops are beginning to break out of the black oak.

Management Description – Even Age

Clearcut ½ of the stand in 5-10 years. Plant the area with 50 large oak seedlings per acre. Protect each tree with a 4 ft. tall, vented tree shelter. The remaining ½ of the area can be clearcut 15-20 years later.

Stand 15: 9 acres

Site Description –

Northeast facing slope and bottomland.

Woodland Description –

Pole sized walnut, bitternut hickory, basswood, cherry, and a few black oak.

Management Recommendations – Even Age

Timber Stand Improvement (Crop Tree Release)

- In pole-sized stands (4-10" dia.), potential crop trees can be selected and released. Select a crop tree every 30-35 ft. apart, or 50 crop trees per acre. Remove trees with crowns that are touching or overtopping the crowns of the crop trees. Species to favor as crop trees are black walnut, cherry, and oak.

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



Stand 16: 3 acres

Site Description -

Bottomland with poorly drained soils.

Woodland Description -

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

Management Recommendations – Early Successional

This area is sterile for wildlife with pole sized boxelder and a bare understory. The boxelder could be removed and the area planted with a mixture of shrubs and hardwoods that will add to the species diversity on the area.

Cut the boxelder at ground level. Treat the stumps with Pathfinder II to prevent sprouting.

Plant wild plum, hazelnut, gray dogwood, and silky dogwood on the east half of the area. Plant the west half with bur oak and swamp white oak. The seedlings will have to be hand planted.

Stand 17: 7 acres

Site Description –

Upland with Fayette silt loam soils.

Woodland Description -

Pole sized (5-10" dia.) aspen, elm, walnut, black oak, boxelder, and cherry. There is a good component of aspen. There are scattered, merchantable aspen, elm, cherry, and black oak.

Management Recommendations – Early Successional

Clearcut the area. Treat the stumps of elm, boxelder, ironwood, and bitternut hickory so that the aspen can expand through root sprouts. This would be a commercial sale that could be sold along with Stands 5, 6, and 7.

Stand 18: 9 acres

Site Description -

East facing slope and bench with Fayette soils.

Woodland Description -

Sapling (1-4" dia.) elm, boxelder, basswood, cherry, black oak, shagbark hickory, red oak, and walnut. The area was clearcut in 1996 and planted with red oak and walnut.

Management Recommendations - Even Age

Timber Stand Improvement (Crop Tree Release) - In 5 years, select a crop tree every 30 ft. apart, or 50 trees per acre. Favor the oak, walnut, and cherry as crop trees. Remove trees with crowns that are touching or overtopping the crowns of the crop trees.

Stand 19: 5 acres

Site Description -

Ridge and east facing slope. The ridge top has Fayette silt loam soils. The east facing slope has shallow soils.

Woodland Description -

Large (20"+ dia.) white oak, black oak, and elm. The understory is elm, shagbark hickory, and ironwood.

Management Recommendations - Even Age

In 5-10 years, clearcut the area and replant large oak seedlings. Plant 50 trees per acre and protect each tree with a 4 ft. tall, vented tree shelter.

Stand 20: 2 acres

Site Description -

Southeast facing slope with Fayette and Nordness soils.

Woodland Description -

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

Management Recommendations - Early Successional

In 5 years, 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.

Stand 21: 8 acres

Site Description -

Ridgetops with north and west facing slopes. The soils are Fayette and Nordness silt loams.

Woodland Description -

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

Management Recommendations – Even Age

Stand 21 could be clearcut in 20 years and regenerated to oak and hickory. The stand is in good condition now.

Stand 22: 3 acres

Site Description -

Drainage and west facing slope.

Woodland Description -

Sapling (1-4" dia.) aspen, cherry, elm, boxelder, bitternut hickory, and black oak. The stand was clearcut 5 years ago to create early successional habitat.

Management Recommendations – Early Successional

Cut the area again in 10 years to maintain high density, sapling growth.

Stand 23: 4 acres

Site Description -

West facing slope with a drainage running through the area.

Woodland Description -

Sapling (1-4" dia.) aspen, elm, basswood, cherry, and black oak. The area was cut 7-8 years ago to create early successional habitat. Stand 23 has an excellent stocking of aspen.

Management Recommendations – Early Successional

Maintain dense, sapling growth by cutting the area again in 5 years.

Stand 24: 5 acres

Site Description -

Drainage

Woodland Description -

Pole sized (5-10" dia.) boxelder and elm. There are scattered walnut and hackberry. The understory is honeysuckle, gooseberry, and hazelnut.

Management Recommendations – Early Successional

Fell all trees 1 inch and larger in diameter. Treat the stumps of elm and boxelder with Pathfinder II to prevent sprouting.

Stand 25: 2 acres

Site Description -

Drainage and west facing slope.

Woodland Description -

Sapling aspen, elm, boxelder, black oak, and cherry. The area was clearcut 7 years ago to create early successional habitat.

Management Recommendations – Early Successional

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

Stand 26: 2 acres

Site Description -

Northwest facing slope with Fayette silt loam soils.

Woodland Description -

Large (20"+ dia.) black oak, white oak, and elm. The understory is elm, hackberry, cherry, and boxelder. The black oak are beginning to die in the area.

Management Recommendations – Even Age

This area could be clearcut and planted with white oak, red oak, and walnut. Plant 50 trees per acre. Protect the oak with a 4 ft., vented tree shelter.

Stand 27: 3 acres

Site Description -

Narrow valley and side slopes.

Woodland Description -

Sapling aspen and boxelder. The area was clearcut 10 years ago to create early successional habitat.

Management Recommendations -

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

SUSTAINABLE FORESTRY GUIDELINES

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

Early Successional Management -

The early successional areas will be managed on a 15 year rotation. There are 56.5 acres designated for early successional management. The allowable cut is 3.8 acres per year (56.5 acres divided by 15 yrs.). With a working cycle of 5 years, approximately **19 acres could be cut every 5 years.**

Even Age Management Area –

There are 94 acres under even age management. Dividing 94 acres by 125 years, yields an allowable cut of 0.75 acres per year, or **3-4 acres every 5 years.** This small acreage would not be economical to harvest. I suggest harvesting 7-8 acres every 10 years.

Uneven Age Management Area –

Stands can be selectively harvested every 20 years to remove mature and defective trees. There are 32 acres under uneven age management. The allowable harvest is **8 acres of selective harvest every 5 years, or 16 acres every 10 years.**

HIGH PRIORITY PROJECTS
First 5 year work cycle

Timber Stand Improvement –

<u>Stand #</u>	<u>Acres</u>	<u>Comments</u>
3	3	Thin pines & release walnut
11	6	Early release of walnut & oak
15	9	Crop tree release
Total	18	

Early Successional Clearcuts – 15 yr. rotation

<u>Stand #</u>	<u>Acres</u>	<u>Comments</u>
1	3	
6	4	Commercial sale
7	2	Commercial sale
9	7	Commercial sale
Total	16	

Even Age Clearcuts – 125 yr. rotation

<u>Stand #</u>	<u>Acres</u>	<u>Prescription</u>
12	6	Clearcut and plant
Total	6	

APPENDIX

FALCON SPRINGS WILDLIFE AREA

SUMMARY OF WOODLAND STANDS

No.	Acres	Timber Type	TreeSize	Mngt. System	Prescription	Priority	Year Complete	Comments
1	3	Boxelder Elm Aspen	Pole	Early Successi onal	Clearcut	High	2009	
2	7	Boxelder Elm Aspen	Sapling	Early Successi onal	Clearcut	High	2019	
3	3	W. Pine R. Pine Walnut	Pole	Even Age	TSI – Thin pines and release walnut	Medium	2009	
4	5	White Oak Black Oak Walnut	Large	Even Age	Clearcut and plant	High	2019	
5	3	Aspen Elm Black Oak	Pole	Early Successi onal	Clearcut	High	2019	Commercial Sale
6	4	Aspen Elm Black Oak	Pole	Early Successi onal	Clearcut	High	2009	Commercial Sale
7	2	Aspen Elm S. Hickory	Pole	Early Successi onal	Clearcut	High	2009	Commercial Sale
8	11	White Oak Black Oak S. Hickory	Medium	Even Age	Clearcut	High	2029	
9	7	Black Oak White Oak Walnut	Large	Early Successi onal	Clearcut	High	2009	Commercial Sale
10	1.5	Aspen Elm Cherry	Sapling	Early Successi onal	Clearcut	High	2014	
11	6	B. Hickory Cherry Walnut	Sapling	Even Age	TSI – Early release of oak and walnut	High	2009	
12	26	Black Oak W. Oak R. Oak	Large	Even Age	Clearcut & Plant	High	2009	5-6 acres per harvest

No.	Acres	Timber Type	TreeSize	Mngt. System	Prescription	Priority	Year Complete	Comments
13	32	Oak Basswood Hard Maple	Large	Uneven Age	Selective harvest & kill weed trees	Medium	2019	
14	10	Oak Walnut Basswood	Large	Even Age	Clearcut and plant	High	2014	5-6 acres per project
15	9	Walnut B. Hickory Basswood	Pole	Even Age	TSI – Crop Tree Release	Medium	2009	
16	3	Boxelder	Pole	Early Successi onal	Stand Conversion Kill boxelder and plant oaks	Medium	2009	
17	7	Aspen Elm Boxelder	Pole	Early Successi onal	Clearcut	High	2014	Commercial Sale
18	9	Elm Cherry Walnut	Sapling	Even Age	TSI – Crop Tree Release	Medium	2014	
19	5	W. Oak Bl. Oak Elm	Large	Even Age	Clearcut and Plant	High	2014	
20	2	Aspen Elm Bl. Oak	Pole	Early Successi onal	Clearcut	High	2014	
21	8	Bur Oak Bl. Oak S. Hickory	Medium	Even Age	Clearcut	Medium	2029	
22	3	Aspen Cherry Elm	Sapling	Early Successi onal	Clearcut	High	2019	
23	4	Aspen Elm Cherry	Sapling	Early Successi onal	Clearcut	High	2014	
24	5	Boxelder Elm Walnut	Pole	Early Successi onal	Clearcut	High	2014	
25	2	Aspen Elm Boxelder	Sapling	Early Successi onal	Clearcut	High	2019	
26	2	Bl. Oak W. Oak Elm	Large	Even Age	Clearcut and Plant	High	2014	
27	3	Aspen Boxelder	Sapling	Early Successi onal	Clearcut	High	2014	

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

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

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

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

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

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

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

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

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

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

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

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

FWSP DEFINITIONS AND GUIDING FACTORS

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

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

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

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

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

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

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

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

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

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

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

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

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

EXPLANATION OF TIMBER MANAGEMENT PRACTICES:

Timber Stand Improvement:

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

Weed Tree Removal-

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

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

Crop-Tree Release-

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

Walnut Pruning-

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

Harvest:

Uneven-Age Management:

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

Even-Age Management:

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

Shelterwood:

Shelterwood is a form of even-age management. The final cut is a clearcut, but several thinnings are done prior to the final cut. The large, healthy trees are left to provide seed for naturally reseeding the stand, and to create partial shade to inhibit the growth of weeds and brush until the desirable seedlings are well established. The final cut or clearcut is normally done when there are a sufficient number of desirable trees that are 3-5 ft. tall.

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

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

The shelterwood system can take many years to develop a good stocking of desirable young trees. You may have to kill the undesirable species several times to favor the species you want. The final clearcut should not be made until you are satisfied with the stocking of desirable young trees.