FOREST WILDLIFE STEWARDSHIP PLAN

FOR

BLACK HAWK WILDLIFE AREA

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

Developed by

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District Forester

And

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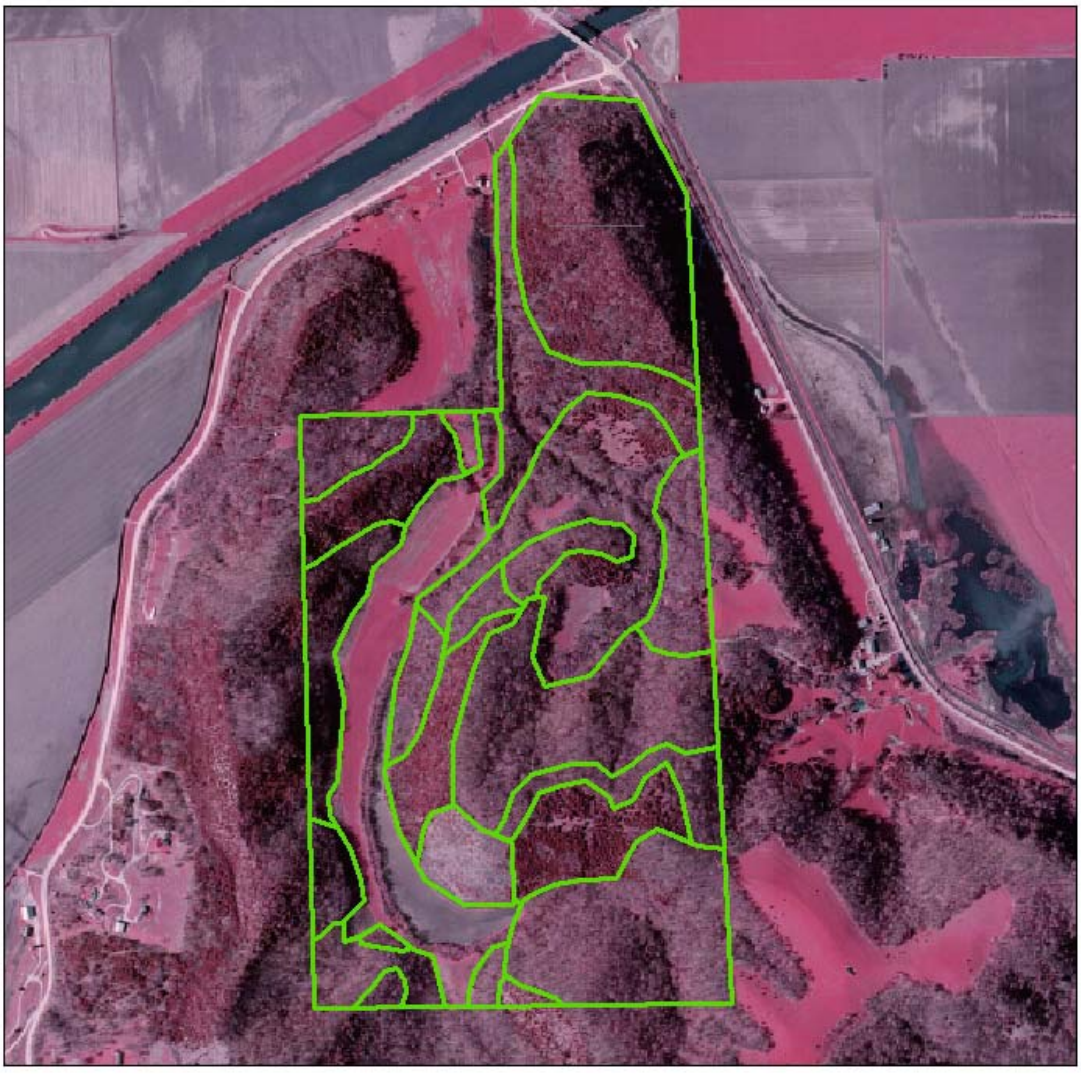
Wildlife Biologist

FOREST WILDLIFE STEWARDSHIP PLAN
BLACK HAWK WILDLIFE AREA



Sec. 22 Iowa Twsp.,
T100N-R4W, Allamakee Co.

0 400 800 1,600 2,400 3,200 Feet

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BLACK HAWK WILDLIFE AREA
AVERAGE TREE SIZES

Sec. 22 Iowa Twsp.,
T100N-R4W, Allamakee Co.

0 400 800 1,600 2,400 3,200
Feet

N

DATE: 3/13/06

FOREST WILDLIFE STEWARDSHIP PLAN FOR BLACK HAWK WILDLIFE AREA

MANAGER:

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TELEPHONE: 563/382-4895

LOCATION: Sec. 22 Iowa Twsp., T100N-R4W, Allamakee County

TOTAL ACRES: 264.5

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 total area of Black Hawk Wildlife Area is 308 acres. There are 263 acres of woodland, or 85% of the area. The 264.5 acres addressed in this plan are outlined on the attached aerial photo. The area is divided into 21 different areas or stands, labeled 1-21 on the map. Each area is described in this plan and recommendations outlined for woodland management.

Black Hawk Wildlife Area lies along the Mississippi River. Most of the area was pastured before the State purchased the land 40-50 years ago. The woodland is a mixture of steep slopes, ridge tops, and stream valleys. The steep slopes are mainly red cedar.

Objectives -

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

Oak acorns are an important food source for many species of wildlife. Maintaining large oak trees and regenerating young stands of oak to replace the older trees are a major focus of the recommendations. Oak is by far the most important tree for a variety of wildlife species. Ruffed grouse, woodcock, and Eastern Towhee populations in northeast Iowa are declining due to a lack of early successional growth. Neotropical migratory birds dependent on early successional growth are also declining.

Clearcutting or Shelterwood cutting are even age management techniques to regenerate oak and provide early successional growth. Areas suitable for even age management will be managed to create stands with an oak component. Although clearcutting is planned for even age stands, the next harvest would not occur for 125 years. Some current even age stands may not be harvested for 60 to 80 years. Even age management is the only forest management system that will regenerate stands with an oak component.

Uneven age management develops of forest with all tree sizes, from seedlings to large trees, present. Uneven age management will gradually convert areas to hard maple and basswood, because these species are able to grow in shade. As older trees are selectively harvested or die, species that are able to survive in the shade will fill in the openings.

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

Income from Timber Harvests -

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

Current Distribution of Tree Size on the Area -

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

Tree Size	Acres	% of Total Area
Sapling (<4" dbh)	7	3
Pole size (5-12" dbh.)	181	69
Medium Size (14-18" dbh.)	6	2
Large (>20" dbh)	69	26
Totals	263	100

Proposed Management Systems for the Area -

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

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

Management System	Acres	% of Total Area
Early Successional	73.5	28
Even Age	125	47
Uneven Age	0	0
Viewshed	66	25
Total	264.5	100

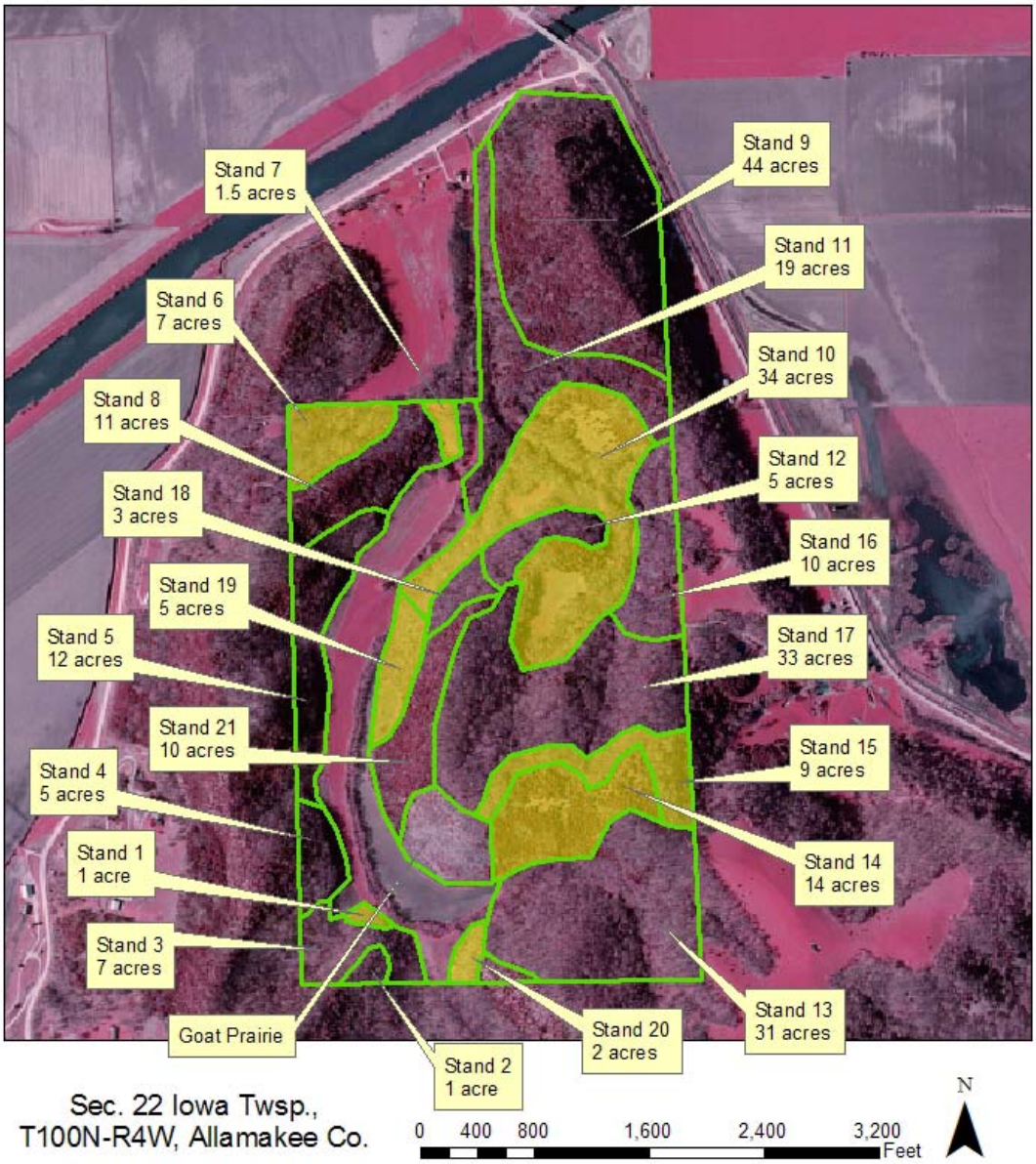
Early Successional Management -

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 spout 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.

BLACK HAWK WILDLIFE AREA
EARLY SUCCESSIONAL MANAGEMENT - 73.5 ACRES



Even Age Management -

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

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

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

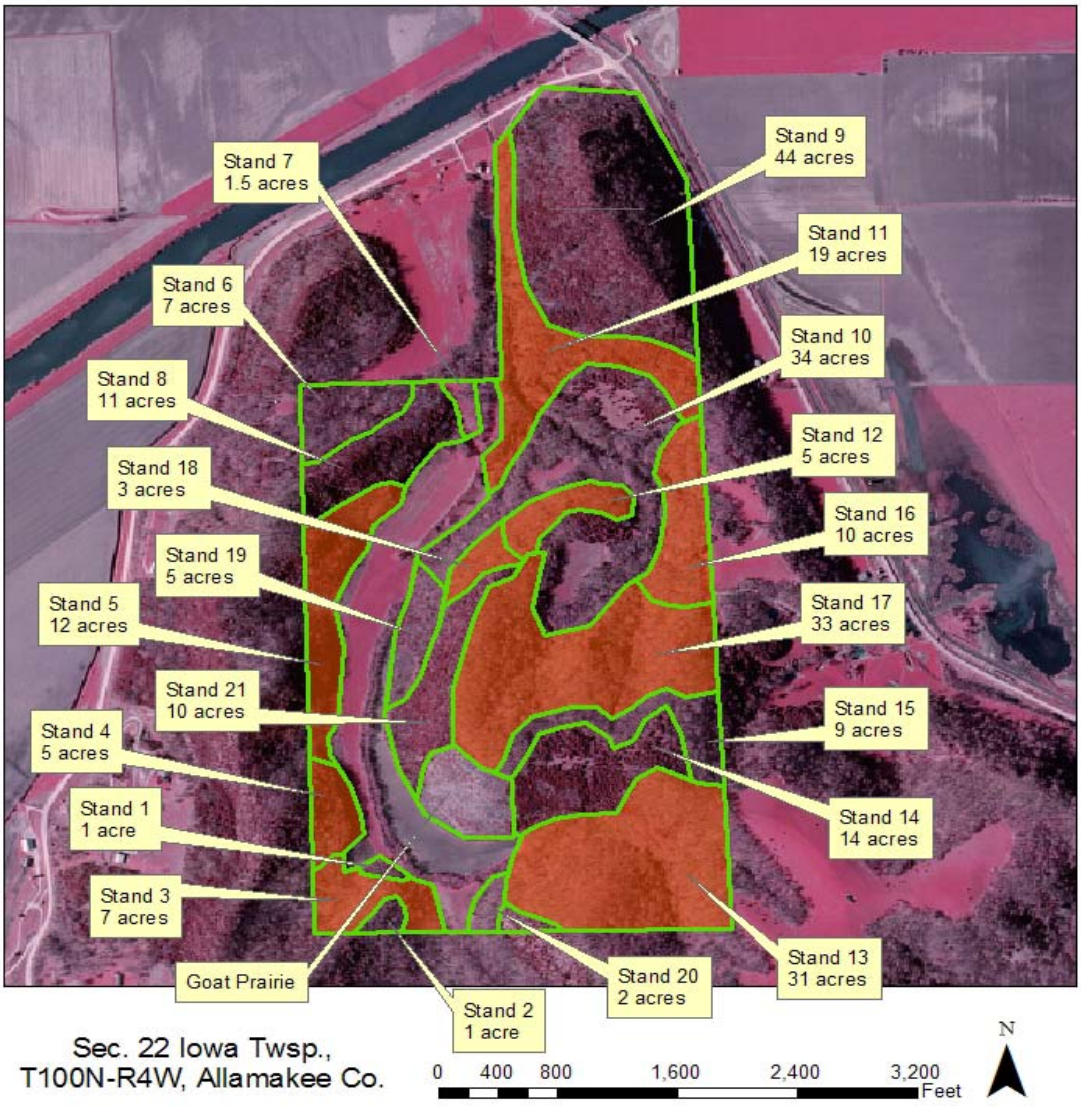
Even age management involves growing a stand of trees which are close to the same age. At some point in the stands life, the area is clearcut which creates the even age structure. Even age management creates excellent habitat for deer, turkey, and grouse and is essential for regeneration of oak which require full sunlight. The only way that oak can be maintained as a component of the forest is by practicing some form of even age management.

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

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

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

BLACK HAWK WILDLIFE AREA
EVEN AGE MANAGEMENT - 125 ACRES



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 is no uneven age management planned for Black Hawk Wildlife Area. The site have very little hard maple and basswood, so the site has excellent potential for regenerating oak.

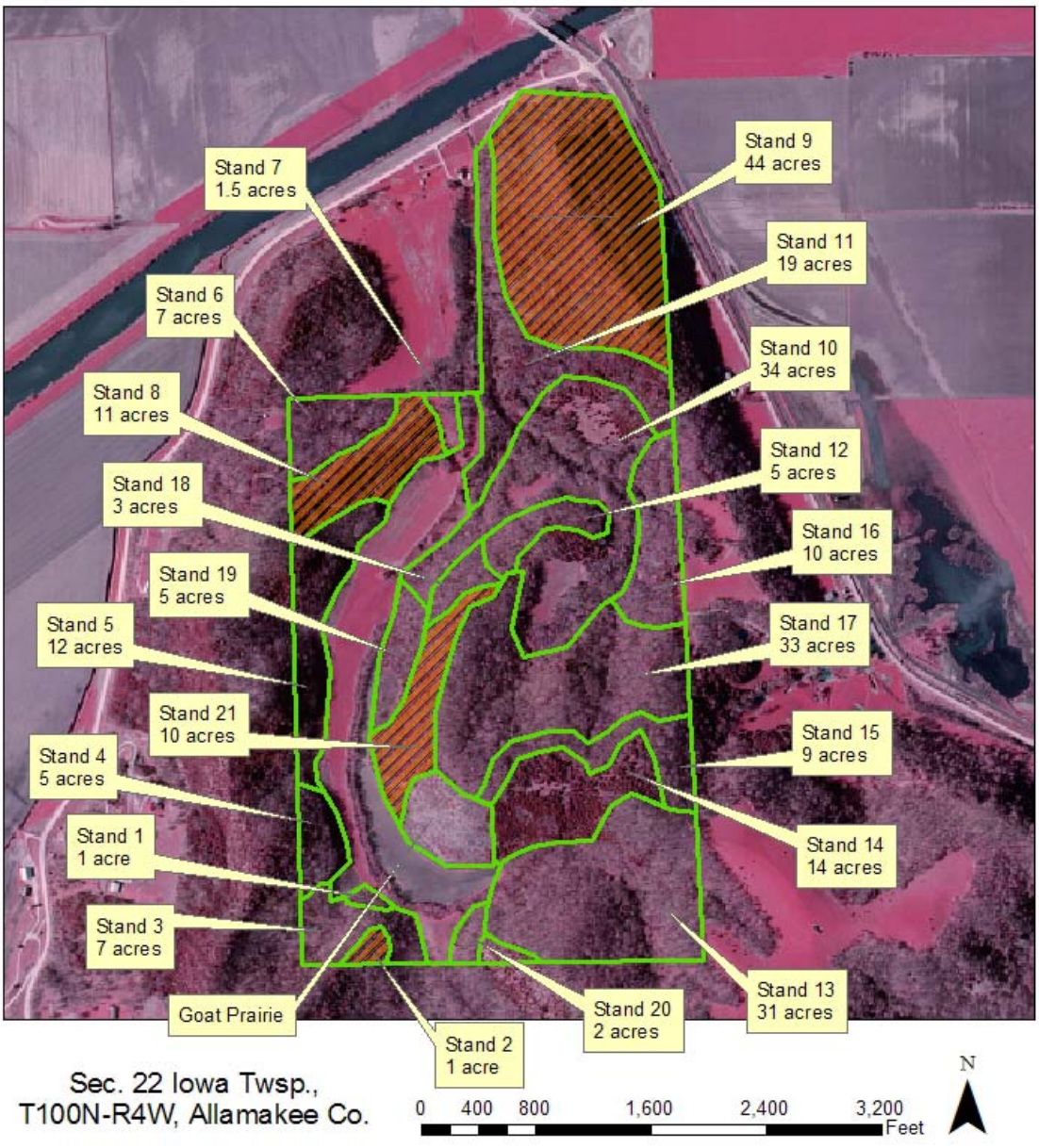
Viewshed Management -

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

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

Viewshed management is designated for 66 acres on the area, or 25% of the forest resource.

BLACK HAWK WILDLIFE AREA
VIEWSHED MANAGEMENT - 66 ACRES



SOILS

The steep slopes have LaCrescent soils. These soils are somewhat droughty and shallow to sand and gravel. North and east facing slopes are cool and moist, while the south and west facing slopes are hot and dry.

The ridge tops have Chelsea sandy loams and Fayette silt loams. Chelsea soils have a very high sand content and are droughty. Fayette soils are fertile, well drained loams, and are very suitable for the growth of upland, hardwood species.

The creek bottoms have Festina silt loams soils. Festina soils have good drainage and are very fertile for growing trees.

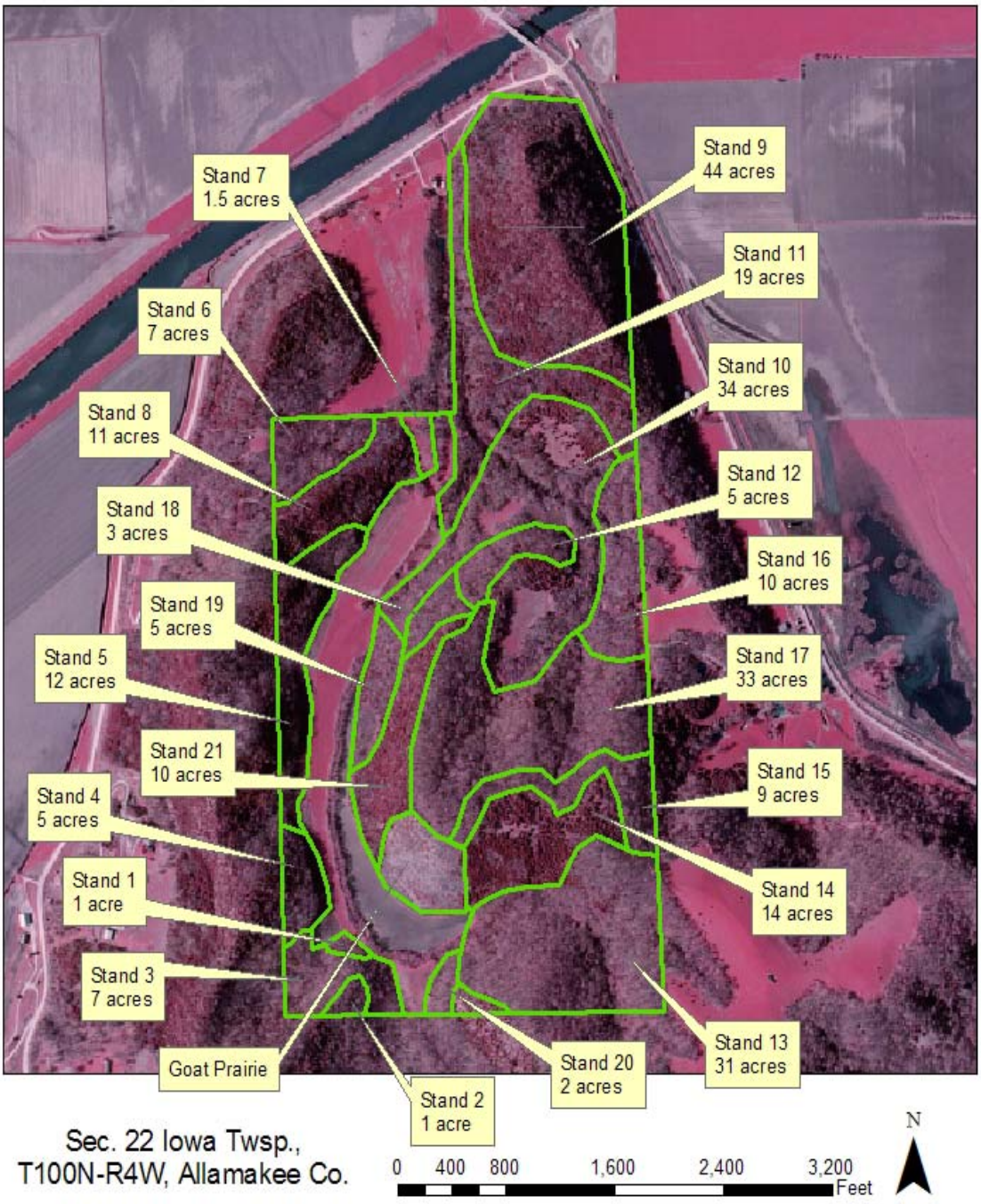
WORK PLAN

FOR

BLACK HAWK WILDLIFE AREA

This is the "working plan" for Black Hawk Wildlife Area 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
BLACK HAWK WILDLIFE AREA



DESCRIPTION AND RECOMMENDATIONS FOR INDIVIDUAL STANDS

Stand 1: 1 acre

Site Description -

Edge of woodland along crop field.

Woodland Description-

Pole sized (5-10" dia.) walnut, aspen, elm, red oak, and white oak. Stand 1 has a good component of aspen.

Management Recommendations – Early Successional

This area can be managed to maintain young, high stem densities along the edge of the woods. The stand could be clearcut to create high density, young growth.

Stand 2: 1 acre

Site Description -

Steep, rocky point. Shallow soils over limestone.

Woodland Descripton -

The area is red oak and red cedar. The understory is prickly ash and ironwood.

Management Recommendations – Viewshed

This area could be left as is. The large oak will provide acorns for the area.

Stand 3: 7 acres

Site Description –

Gentle north and east facing slopes.

Woodland Description -

Pole sized (5-10" dbh) aspen, walnut, red oak, and 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. At maturity, there is room for 35-50 trees per acre. Now you can select the trees you want to comprise your future stand of mature trees and thin around them to give them more growing space. Select a crop tree every 30-35 ft. apart. Remove trees with crowns that are touching or overtopping the crowns of your crop trees. Crop trees can be selected based on criteria that meets your objectives. Normally, the crop trees will be a desirable species, show good form without large side limbs, and be free of major defects. Species normally favored are black walnut, red oak, white oak, white ash, basswood, cherry, and hard maple.

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

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

Stand 4: 5 acres

Site Description –

Gentle, east facing slope with LaCrescent and Chelsea soils.

Woodland Description -

Medium sized black and red oak. The understory is elm, hackberry, and prickly ash.

Management Recommendations – Even Age

Stand 4 could be clearcut and planted. All merchantable trees can be sold. Following the harvest, fell all remaining trees 1 inch and larger in diameter. Treat the stumps of undesirable species with Pathfinder II herbicide to prevent sprouting. Plant the area with red oak, white oak, and walnut. Plant the trees 30 ft. apart, or 50 trees per acre. Place a 4 ft. vented tree shelter over each tree to protect them from deer and rabbits.

Stand 5: 12 acres

Site Description -

East facing slope with LaCrescent soils.

Woodland Description -

Pole sized walnut, black oak, red oak, red cedar, and hackberry. There is a good stocking of oak and walnut. The understory is prickly ash, hackberry, elm.

Management Recommendations – Even Age

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

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

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

Stand 6: 7 acres

Site Description -

North facing slope and bench with LaCrescent soils.

Woodland Description –

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

Management Recommendations – Early Successional

This area borders a red cedar ridge. With the aspen component, this is an ideal area to clearcut to create high density, young growth. The aspen will root sucker and gradually increase in density.

Stand 7: 1.5 acres

Site Description -

Open brome grass field with Chelsea soils.

Management Recommendations – Early Successional

Stand 7 could be planted with bigtooth aspen. Broadcast spray the field with Roundup in early September to kill the brome grass. Plant aspen on a 6 X 10 ft. spacing, or 700 trees per acre. 1,000 aspen could be planted on the area.

Spray a 4 ft. band down each row with Pendulum herbicide to control the competition. Apply 4 quarts of Pendulum per acre treated in the spring before any vegetation begins to grow. Repeat the spraying for 3 growing seasons. Mow the area between the rows 2-3 times per year.

Stand 8: 11 acres

Site Description -

Ridge and steep, east facing slope.

Woodland Description –

Pole sized red cedar.

Management Recommendations – Viewshed

Red cedar provides excellent winter cover for wildlife. This area can be left as is.

Stand 9: 44 acres

Site Description –

Very steep, west facing slope, shallow to limestone.

Woodland Description -

Pole sized red cedar and bur oak.

Management Recommendations – Viewshed

Stand 9 is a bluff overlooking the Mississippi River on one side, and the entrance to the area on the other. The site once had goat prairies that have been overtaken with red cedar. Areas could be cleared to encourage the development of native grasses and forbs.

Stand 10: 34 acres

Site Description –

Gentle slopes and ridges with Fayette and Chelsea soils.

Woodland Description -

Pole sized red cedar, aspen red oak, black oak, and elm. Semi open areas with scattered red cedar.

Management Recommendations – Early Successional

Clearcut this area to create sapling growth with high stem density. Approximately 1/3 of the area could be clearcut every 5 years. Semi open areas could be left open to provide loafing areas for deer and turkey.

Stand 11: 19 acres

Site Description –

Mainly west facing slopes with Chelsea and LaCrescent soils.

Woodland Description -

Pole sized (5-10" dia.) red oak, black oak, white oak, ash, walnut, cedar, elm, and shagbark hickory. The understory is prickly ash and elm.

Management Recommendations – Even Age

Timber Stand Improvement (Crop Tree Release) -

In pole-sized stands (4-10" dia.), potential crop trees can be selected and released. At maturity, there is room for 35-50 trees per acre. Now you can select the trees you want to comprise your future stand of mature trees and thin around them to give them more growing space. Select a crop tree every 30-35 ft. apart. Remove

trees with crowns that are touching or overtopping the crowns of your crop trees. Crop trees can be selected based on criteria that meets your objectives. Normally, the crop trees will be a desirable species, show good form without large side limbs, and be free of major defects. Species normally favored are black walnut, red oak, white oak, white ash, basswood, cherry, and hard maple.

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

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

Stand 12: 5 acres

Site Description -

North facing slope with LaCrescent soils.

Woodland Description –

Large white oak, red oak, and black oak. There are very large red oak on the west end of the area. The understory is elm, ash, and shagbark hickory. There are oak saplings and poles in the more open areas.

Management Recommendations – Even Age

Shelterwood – Kill the undesirable species and coppice the poor formed trees now. This will maintain the oak and hickory in the understory. Once there is a good stocking of desirable species, the large trees could be harvested to provide adequate sunlight for the young oak and hickory.

If an adequate number of young oak and hickory do not develop, kill the undesirable species again in the understory. Do not remove the large trees until the regeneration is well established.

Stand 13: 31 acres

Site Description -

North facing slopes and ridge tops with LaCrescent soils.

Woodland Description -

Medium to large red oak, white oak, black oak, and aspen. The understory is elm and shagbark hickory. There are red oak and white oak seedlings present.

Management Recommendations – Even Age

Stand 13 can be managed on a shelterwood system. The first step is to kill the undesirable species such as elm, bitternut hickory, and ironwood. The "weeding" allows more sunlight to reach the ground, encouraging the development of the oak seedlings. The stand can be clearcut once the oak seedlings are 3-4 ft. in height. This may take 10-15 years.

Stand 14: 14 acres

Site Description -

Ridge top and north facing slope.

Woodland Description -

Pole sized red cedar, with scattered, pole sized red and black oak. In the more open areas, there is an understory of gray dogwood.

Management Description – Early Successional

Thin the cedars to encourage the natural spreading of the gray dogwood to develop a good shrub understory on the area.

Stand 15: 9 acres

Site Description –

North facing slope bordering the ridge of red cedar.

Woodland Description –

Pole sized hickory, black oak, walnut, aspen, and birch.

Management Recommendations – Early Successional

Clearcut the area to provide dense, sapling growth. The area should be clearcut every 15 years to maintain the area in early successional growth.

Stand 16: 10 acres

Site Description -

North and west facing slopes with Chelsea soils.

Woodland Description -

Pole sized aspen, red oak, black oak, shagbark hickory, and elm. This area has a good stocking of young oak.

Management Recommendations – Even Age

Timber Stand Improvement (Crop Tree Release) - Identify the most desirable tree every 30 ft. apart, or 50 trees per acre. Remove trees with crowns touching or overtopping the crowns of the crop trees.

Stand 17: 33 acres

Site Description –

North and east facing slopes.

Woodland Description -

Large red oak, white oak, black oak, and shagbark hickory. There are pockets of red oak dying from oak wilt. The understory is elm and bitternut hickory.

Management Recommendations – Even Age

Manage Stand 17 on the shelterwood system to regenerate the area with oak. Kill the undesirable species in the understory. In addition, coppice poor formed, damaged and stunted trees. The thinning should allow at least 50% sunlight to reach the ground. Clearcut the stand once there are a sufficient number of oak seedlings that are 3-4 ft. in height.

Stand 18: 3 acres

Site Description -

West facing slope with LaCrescent soils.

Woodland Description -

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

Management Recommendations – Even Age

Timber Stand Improvement (Crop Tree Release) – Select the best tree every 30 ft. apart, or 50 trees per acre. Remove trees with crowns or leaf area that is touching the crown of the crop tree.

Stand 19: 5 acres

Site Description -
West facing slope with LaCrescent soils.

Woodland Description –
Sapling aspen. The area was clearcut in 2001.

Management Recommendations – Early Successional
Clearcut the area again in 2017.

Stand 20: 2 acres

Site Description -
Bottom of the slope, next to open grass field.

Woodland Description -
Sapling aspen. The area was clearcut in 2001.

Management Recommendations – Early Successional
Clearcut this area again in 2017.

Stand 21: 10 acres

Site Description -
Steep west facing slope with shallow soils.

Woodland Description –
Pole sized red cedar.

Management Recommendations - Viewshed
This area is on steep ground not conducive to management. The cedars are providing excellent winter cover. Leave this area as it is.

SUSTAINABLE FORESTRY GUIDELINES

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

Early Successional Management -

The early successional areas will be managed on a 15 year rotation. There are 73.5 acres designated for early successional management. The allowable cut is 4.9 acres per year (73.5 acres divided by 15 yrs.). With a working cycle of 5 years, approximately 24.5 acres could be cut every 5 years.

Even Age Management Area –

There are 125 acres under even age management. Dividing 125 acres by 125 years, yields an allowable cut of 1 acre per year, or 5 acres every 5 years.

HIGH PRIORITY PROJECTS

Tree Planting -

Stand #	Acres	Prescription
7	1.5	Plant with bigtooth aspen

Timber Stand Improvement – Crop Tree Release

Stand #	Acres
3	7
5	12
11	19
16	10
18	3
Total	51

Timber Stand Improvement – Weed Tree Removal

Stand #	Acres	Prescription
12	5	Kill undesirable species in shelerwood
13	31	Kill undesirable species in shelterwood
17	10	Kill undesirable species in shelterwood.
Total	46	

Early Successional Clearcuts – 15 yr. rotation

Stand #	**Acres**
1	1
6	7
10	10
15	9
Total	27

APPENDIX

BLACK HAWK WILDLIFE AREA

SUMMARY OF WOODLAND STANDS

No.	Acres	Timber Type	TreeSize	Mngt. System	Prescription	Priority	Year Complete	Comments
1	1	Aspen Oak	Pole	Early Successional	Clearcut	High	2007	
2	1	Oak Cedar	Medium	View shed				
3	7	Aspen Walnut Oak	Pole	Even Age	Crop Tree Release	High	2007	
4	5	Black Oak Red Oak	Medium	Even Age	Clearcut & Plant	High	2017	
5	12	Walnut Oak Cedar	Pole	Even Age	Crop Tree Release	High	2007	
6	7	Aspen Hickory Oak	Pole	Early Successional	Clearcut	High	2007	
7	1.5	Brome Grass		Early Successional	Plant aspen	Medium	2008	
8	11	Red Cedar	Pole	View Shed				
9	44	Red Cedar Bur Oak	Pole	View Shed				
10	34	Cedar Aspen Oak	Pole	Early Successional	Clearcut 10 acres	High	2007	
11	19	Oak Ash Walnut	Pole	Even Age	Crop Tree Release	High	2007	
12	5	Red Oak White Oak Black Oak	Large	Even Age	Shelterwood – kill undesirable species	Medium	2007	
13	31	Mixed Oak, Aspen	Large	Even Age	Shelterwood – kill undesirable species	Medium	2007	
14	14	Red Cedar	Pole	Early Successional	Thin cedars	Medium	2012	

No.	Acres	Timber Type	Tree Size	Mngt. System	Prescription	Priority	Year Complete	Comments
15	9	Oak Walnut Aspen	Pole	Early Successional	Clearcut	High	2007	
16	10	Oak Hickory Aspen	Pole	Even Age	Crop Tree Release	High	2007	
17	33	White Oak Red Oak Hickory	Large	Even Age	Shelterwood – kill undesirable species on 10 ac.	Medium	2007	
18	3	Oak Elm Cedar	Pole	Even Age	Crop Tree Release	High	2007	
19	5	Aspen	Sapling	Early Successional	Clearcut	High	2017	
20	2	Aspen	Sapling	Early Successional	Clearcut	High	2017	
21	10	Red Cedar	Pole	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.