
Wildlife Habitat & Forest Resource Management Plan:

Brett Klima Wildlife Area

Black Hawk County Conservation Board

April 2012



Plan Prepared By:

Joe Herring, District Forester
Iowa DNR Forestry Bureau
2608 S 2nd St.
Marshalltown, IA 50158
641-752-3352
joe.herring@dnr.iowa.gov

Jim Weimer, Wildlife Conservationist
Black Hawk County Conservation
1346 W. Airline Highway
Waterloo, Ia 50703
jweimer@co.black-hawk.ia.us
Ph: 319-433-7275

Introduction

The purpose of this document is to serve as a “Master Plan” for forest management activities on the Brett Klima Wildlife Area in Black Hawk County. Active woodland management can improve the quality & diversity of forest habitat for wildlife while optimizing other forest benefits such as recreation, beauty, environmental health, and forest products.

In developing this plan, the overall goals for wildlife habitat & forest resource use were established by County Conservation staff. The District Forester then performed field surveys to develop an inventory of the current species composition and habitat structure of the forested portions of the wildlife area. This information was used to recommend specific forest management practices which could be used to achieve the desired goals & objectives.

General Description of the Property

The Klima wildlife area is located just north of La Porte City in Big Creek and Cedar Townships. It consists of approximately 925 acres of land along the Cedar River floodplain. Approximately 70% of the area is forest cover, with the other 30% in open grass habitat. The grass cover is mostly reconstructed prairie and efforts to keep tree encroachment in check are ongoing.

The terrain and soils at Klima are reflective of the river’s dynamic tendencies --- a complex arrangement of alluvial soils ranging from fine clays to coarse sands & loams that lend to a highly diverse species mix of plant communities and constantly changing topography at the local scale. As implementation of various management efforts occurs, it will be important to appropriately match the targeted plant/species community with the local soil type --- this will primarily be done based on the species that are currently growing in an area.

Additional information about the Brett Klima Wildlife Area can be found at www.mycountyparks.com.

Wildlife Habitat & Forest Resource Goals

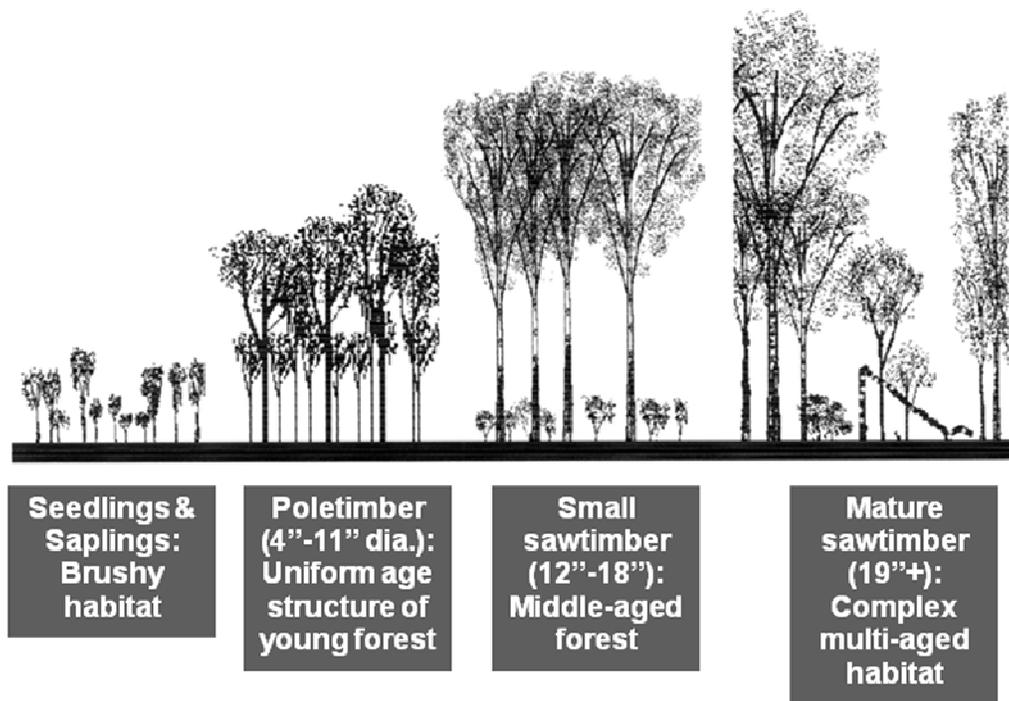
There are a variety of recreational activities and pursuits that occur at Klima, including hunting, bird watching & photography, mushrooming, hiking, winter snowshoeing & cross-country skiing, and more. Developed facilities and trails are minimal, offering a relatively primitive experience.

The following broad goals were identified for the Brett Klima Wildlife Area as they pertain to the forest resource:

- Manage the forest to enhance and optimize the wildlife habitat for a variety of both game and non-game species
- Enhance biodiversity of plant communities
- Maintain high quality recreational opportunities
- Maintain basic environmental services of floodwater attenuation during high flow periods, storing carbon and cleaning the air, and holding soils in place
- Sustainably utilize commercial timber products as a way to offset management costs while accomplishing these habitat & ecological goals
- Retain oak as a long term component of the forest, where possible, for its wildlife and aesthetic values

Managing Forest Succession for Wildlife

The basic tool or means of enhancing wildlife habitat and biodiversity in the forest is to manipulate the successional stages through vegetative management. Successional stages are the different phases a forest goes through in time as it grows from infancy to mature old-growth, as shown in the diagram below. As a forest naturally progresses through these stages, the plant communities and wildlife inhabitants will also change:



The **seedlings & saplings** stage, also known as early successional cover, contains a mixture of grasses, weeds, small shrubs, thorny brambles, and young trees. It is best described as brushy habitat. Many types of small game such as rabbits, mice, voles, & snakes use this cover. Not surprisingly, it's also preferred hunting ground for avian predators including hawks, owls, and kestrels. Pheasants, quail, woodcock, and ruffed grouse will use this cover at certain times of the year when heavier cover is desired. Deer will use it for bedding, fawning, browsing, rubbing, and staging. Female wild turkeys use it for nesting. Songbirds that prefer this cover include gold-winged warbler, blue-winged warbler, black-billed cuckoo, yellow-winged cuckoo, eastern towhee, and prairie warbler.

During the **poletimber** stage, the forest canopy closes in and very little sunlight reaches the ground. The grasses, weeds, and other ground plants are shaded out by the dense layer of trees up above, which are all about the same age and fairly uniform in height and form. Consequently, this stage of the forest offers the least amount of diversity for wildlife and it's usually desirable to

manually thin some of the trees out to enhance tree growth and speed up the transition to the next stage, which is the **small sawtimber** stage. Thinning will also increase acorn & fruit production of favored trees, and make the trees stronger, healthier, and more immune to disease & insect attacks, and get sunlight to the ground to stimulate vegetation and new cover for wildlife. As the forest goes deeper into the small sawtimber stage, the habitat becomes more complex with different layers and new shrubs & saplings emerging.

When the forest reaches the **mature sawtimber** stage, some trees have begun to die from natural causes like lightning strikes, wind, snow & ice, competition, or old age. Selective tree harvesting can also have this effect. Trees that have died but are still standing are called snags and are very important to cavity-nesting critters and woodpeckers. Fallen logs & tree tops house or hide animals on the ground such as whitetail deer, and then rot back into the soil. Wild turkeys roost in the tops of mature trees and eat the sweet acorns of oak trees. Mosses and wildflowers become more abundant and insects find refuge in small microhabitats. Many birds prefer this more diverse habitat structure with its complex layers, such as the acadian flycatcher, cerulean warbler, veery, and the black & white warblers among others. Near large rivers, bald eagles and various species of herons may make their nests in mature trees. Various reptiles and amphibians also like mature bottomland forests and the mixture of seasonal ponds, emergent logs for sunning, and hiding places.

As this process of succession evolves, certain trees that require full sunlight such as oak & walnut are gradually replaced by tree species that can tolerate shade (such as basswood & hackberry, among others). Vegetative management practices such as tree cutting, burning, or planting are needed to restore certain species like oak and walnut and to reset the process back to the beginning.

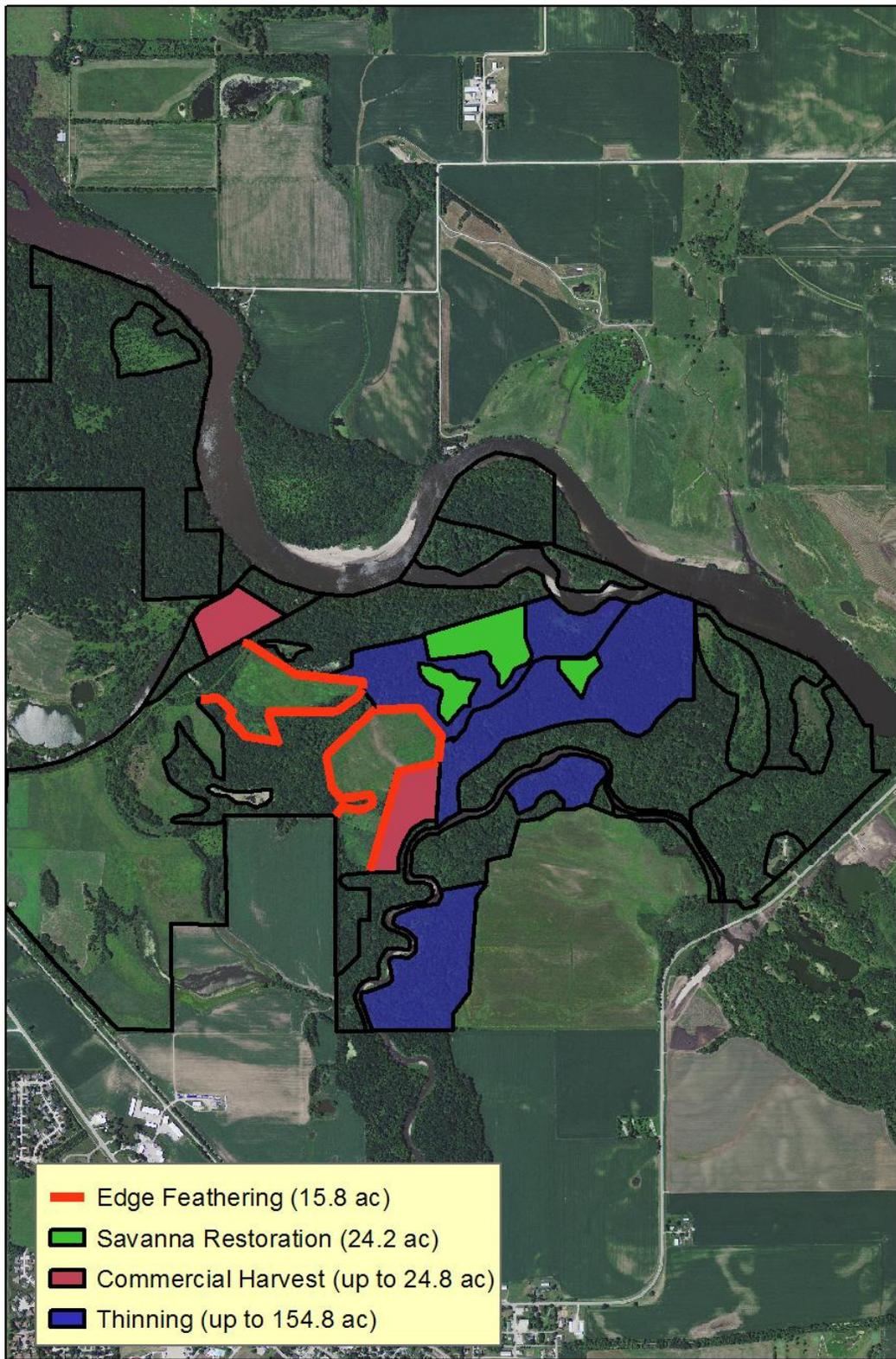
Another important woodland habitat type in Iowa is the **oak savanna** or open oak woodland, which is generally defined as a combination or transition between grassland and forest cover. Oak savannas have a few large mature oak trees at wide spacing and the rest of the habitat in native prairie/wildflowers. It has a pleasing “park-like” appearance and is used by many types of wildlife including red-shouldered hawks, redheaded woodpecker, deer, turkeys, and many more. Savannas need routine fire to keep tree encroachment in check while allowing the fire-tolerant oaks to gradually replace themselves. Without burning, savannas fill in with trees and become forests. In many parts of Iowa, conservationists are restoring savannas that have grown up to forest over the past century by manually cutting and removing the in-growth, and reintroducing fire.

Recommended Management Actions

The following recommended management practices are based on working towards and achieving the goals laid out in this plan. They are seen as high priority projects in that they are feasible and practical to carry out, and will have lasting, positive impacts to the habitat. Not all of them must be initiated nor completed at the same time. The map on the next page depicts where they would occur. Definitions and technical descriptions of each practice are found in the Appendix.

1. **Edge feathering --- 15.8 acres.** This treatment would apply to the interface where the timber butts up to the native grasses. Edge feathering entails cutting trees in a 50-75-foot wide strip back into the forest to soften the hard edge and create brushy, early-successional cover for edge-loving species. It results in a more natural transition from the grassland to forest habitat by inserting a shrub layer in between.
2. **Savanna restoration --- 24.2 acres.** The two areas mapped for this treatment contain large, mature old bur & swamp white oaks with spreading horizontal branches. In the 1930's aerial photo they appear to have still been fairly open and savanna-like, but in the decades since have gradually filled in with miscellaneous trees & shrubs, closing off the canopy. This trend could be reversed through a combination of prescribed burning and manual tree cutting & removal. Firebreaks need to first be established around the perimeter of the units and then annual burning should commence for 3-5 years before the tree & brush cutting begins.
3. **Commercial tree harvest --- up to 24.8 acres.** These stands are mature bottomland forest of silver maple, ash, elm, and cottonwood. They would be good candidates to "reset" succession back to the young seedling/sapling stage for wildlife diversity. A timber harvest may be done as a phased project with the first cut taking the oversized trees that are mature now, and a follow-up cutting in another 15 years or so to get the trees that are still a little small at this time. In the interim, the harvest will allow more sunlight into the stand which will boost herbaceous growth and cover. After the second cutting, there will likely be no or very few viable commercial species left and the stand should be fully regenerated by eliminating all remaining trees and scarifying the site to let natural regeneration reseed the area. Use a professionally-trained forester to select, mark, scale, and sell trees.
4. **Thinning (Crop tree release) --- up to 154.8 acres.** These areas contain middle-aged mixed hardwoods in the small sawtimber stage. There are ash, locust, elm, coffee tree, hackberry, and walnut, which average 12-16" diameter. The walnut are immature at this time but offer a revenue source to help fund the other work in this plan. I recommend doing some thinning in this stand which will work towards accomplishing multiple benefits for wildlife as well as the timber resource: 1) increase the complexity of habitat and structure by letting in more sunlight for herbaceous growth, creating dead standing snags, and adding tree tops on the ground for bedding cover; 2) increase the seed production of selected trees; 3) increase the growth rate and size of selected trees, thereby accelerating the transition to the mature/complex stage; 4) reduce the years until the trees are commercially viable.

Update this plan as soon as all practices are completed or in 15 years, whichever comes first.



Klima Wildlife Area - Recommended Practices 1 inch = 2,000 feet

DISCLAIMER: Ownership boundaries and acreages do not represent legally surveyed lines. Map to be used for IDNR Forestry purposes only.



Implementation of This Plan

This plan should be presented to the County Conservation Board and public stakeholder groups prior to implementation. Upon broad approval of the recommendations made in this plan, the DNR District Forester and Black Hawk County Conservation staff will work together to implement the recommended practices. Private contractors may also be used to carry out certain activities.

Environmental Considerations

Threatened and Endangered Species. A review of the state's Threatened and Endangered (T&E) GIS database does not indicate the presence of any T&E species in these land sections, but it's entirely possible that they could exist. An environmental review of the site and activities recommended in this plan may be requested at <http://www.iowadnr.gov/Environment/ThreatenedEndangered/EnvironmentalReviews.aspx>. Management activities should be adjusted accordingly following the environmental review.

Forest Health, Invasive Species, and Integrated Pest Management. Limit machinery and heavy equipment as much as possible to reduce the incidence of physical damage and scarring to trees. Limit heavy work to winter months to prevent compaction. In oak stands, avoid cutting or pruning during the growing season. The primary invasive species at Klima are bush honeysuckle and reed canary grass. In designated management areas, work aggressively to reduce and control these species; elsewhere, work to contain them as best as resources allow.

Water Quality & Soil Protection. Intensive management activities that require heavy machinery such as log skidders, tractors, or skid steers should be limited to winter months when the ground is frozen or during periods when the soil is firm and dry. Concentrate travel to established trails and roads as much as possible to minimize compaction over large areas. Follow all guidelines in the Iowa DNR Forestry Best Management Practices booklet, available online from the Iowa DNR website.

Archeological, Cultural, and Special Sites. If there are any unique archeological, cultural, or historic sites of significance present, they should be carefully considered in concert with any proposed management activities. Such sites might include original cabins, human burial sites, special land features, or artifact caches.



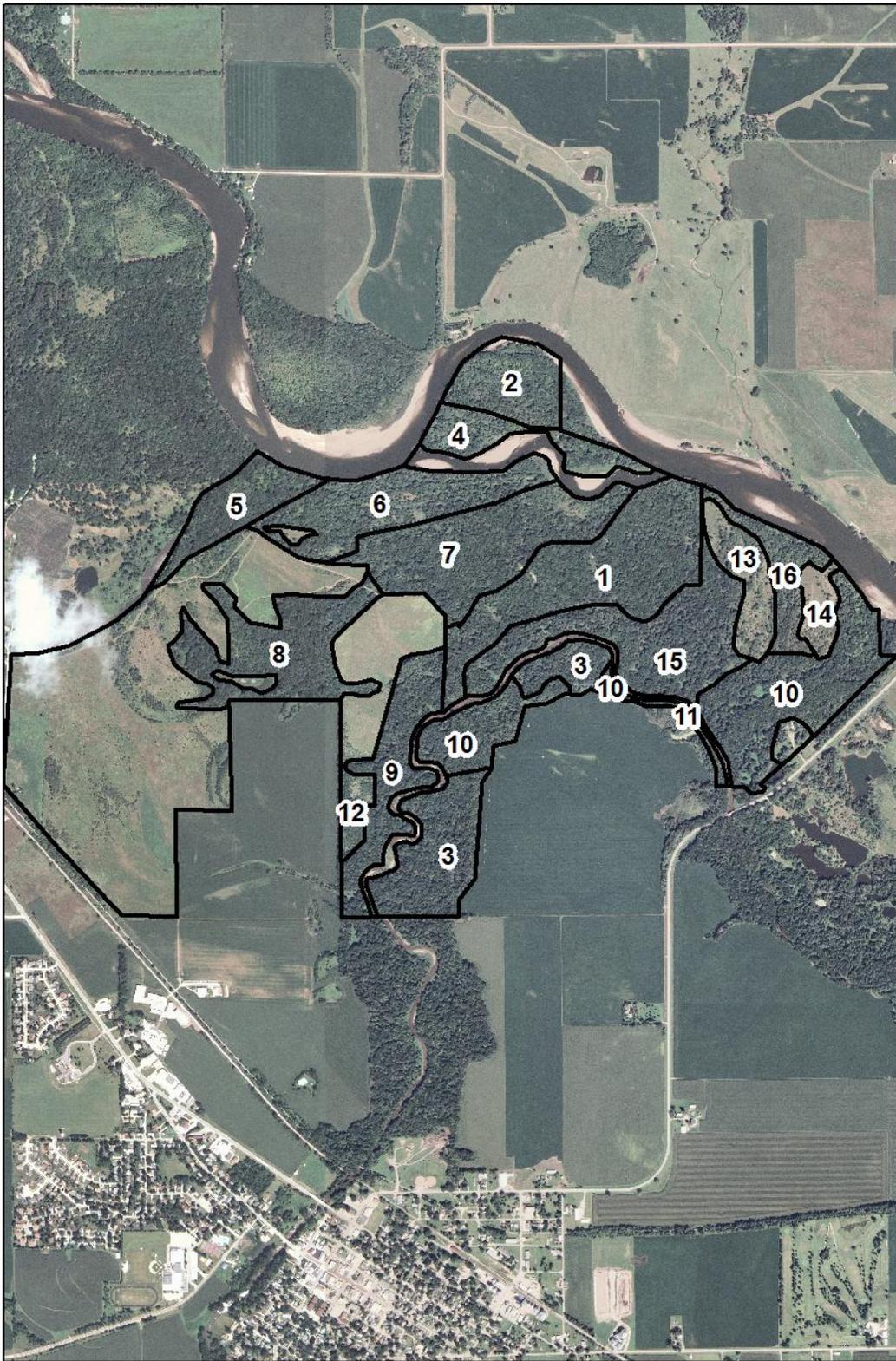
42

Lidar Terrain Image

1 inch = 2,000 feet

DISCLAIMER: Ownership boundaries and acreages do not represent legally surveyed lines. Map to be used for IDNR Forestry purposes only.





Klima Wildlife Area - Forest Units

1 inch = 2,000 feet

DISCLAIMER: Ownership boundaries and acreages do not represent legally surveyed lines. Map to be used for IDNR Forestry purposes only.



Appendix 1. Complete Stand Descriptions

Stand 1

Size: 70.1 acres

Currently: Stand 1 is generally small sawtimber-sized (12-18") mixed hardwoods with a grazing history. The dominant canopy trees are densely stocked walnut, hackberry, locust, swamp white oak, black oak, and Kentucky coffee tree. The sizes are highly variable due to the pasture history --- the walnut alone range from 6" to 16" diameter. There is an occasional large scattered bur oak, ash, or silver maple here and there. The understory is dense hackberry, hawthorn, and elm.

Recommendation: Thinning to release the best young & middle-aged trees for faster growth, better health, increased seed, and larger size. Focus on releasing walnut, oak, and coffee tree. Use a crop tree release technique.

Stand 2

Size: 25.8 acres

Currently: This stand was not reviewed due to its location on the island. Since access is very difficult it should just be left as a preserve.

Stand 3

Size: 47.5 acres

Currently: Stand 3 is generally similar to Stand 1; it has moderately dense medium- to large-sized locust, walnut, elm, soft maple, ash, hackberry, and coffee tree that are between 12" and 18" diameter for the most part. The understory is fairly lightly stocked with sapling and polesized hackberry, hawthorn, and boxelder. Reed canary grass exists along the margins and in sunny openings on the interior. There are good numbers of 12-18" walnut throughout the area.

Recommendations: Thinning to release the best trees for faster growth, better health, increased seed, and larger size. Focus on releasing walnut, oak, and coffee tree. Use a crop tree release technique.

Stand 4

Size: 20.3 acres

Currently: This stand was not reviewed due to its location on the island. Since access is very difficult it should just be left as a preserve.

Stand 5

Size: 23.7 acres

Currently: Stand 5 is fully stocked with first bottom hardwoods (soft maple, ash, and scattered elm, cottonwood) that range from 14-22" diameter and average about 18". The trees are of fair to good quality. The understory is void of regeneration which is typical for stands like this. It is an even-aged stand.

Recommendations: This stand could be commercially harvested anytime now to initiate regeneration and renewal. A phased (two-part) clearcut is recommended over a period of 15 years or so to fully regenerate the site to first bottom pioneer species adapted to the floodplain. Use a consulting forester to selectively take the mature trees in the first cutting via lump sum, sealed bid sale, and then in another 15 years the trees that are slightly immature now will be ready for the final cut. Then all non-commercial trees would be felled and site preparation for natural tree regeneration should occur to let the site reseed.

The harvest could be done as a series of small patches through the area (2-5 acres in size) to promote more edge habitat & diversity, if desired.

Stand 6

Size: 46.6 acres

Currently: Stand 6 is younger with a more recent grazing history. There are scattered large trees 12-18" diameter that are walnut, ash, and elm, but the bulk of the trees are smaller saplings and polesize trees that are densely stocked. They are hawthorn, locust, elm, mulberry, coffee tree, walnut, dogwood, hackberry, prickly ash, and vines & briars.

Recommendations: This isn't a high priority for improvement work at this time. The walnuts will come to maturity in the next 20 years or so and could be harvested then, and at that point the younger generation could be selectively thinned to release the best trees in the stand. Right now the area is providing good bedding and sanctuary cover for game animals.

Stand 7

Size: 61.6 acres

Currently: This stand is similar to Stands 1 and 3 with a fair stocking of medium- to sawtimber-sized (10-16" diameter) walnut, coffee tree, hackberry, ash, elm, and locust trees that will have good potential for a commercial harvest in another 20-40 years. There are also scattered large swamp white and bur oaks here, along with basswood, locust, and ash that are leftovers from a previous generation. Many of the old oaks have an open-grown savanna growth appearance. There are sapling hackberry, hawthorn, and bitternut hickory set to move up in the canopy gradually if they aren't removed.

Recommendations: This would be a good part of the property to restore some oak savanna habitat. Choose some select areas where the old oaks are abundant and establish perimeter firebreak boundaries, and then begin burning annually and mechanically remove the under and midstory trees.

Stand 8

Size: 49.6 acres

Currently: Stand 8 contains moderately stocked mixed bottomland trees that are 12-18" diameter. Soft maple, ash, locust, and cottonwood are the dominant species. There is a fairly large plum/hawthorn/prickly ash shrub thicket that has grown up from old open pasture.

Recommendations: Do nothing at this time.

Stand 9

Size: 34.3 acres

Currently: Stand 9 is essentially the same as Stand 8, but with more trees extending up to 22" diameter. There are scattered 12-18" walnut and hackberry.

Recommendations: This is an area too, along with Stand 5, that a commercial timber harvest could occur to restart succession for young habitat needs. Any commercial species could be sold and the non-commercial trees felled or girdled. The entire area need not be treated this way, but patches 2-5 acres in size or one larger piece.

Stand 10

Size: 77.5 acres

Currently: Stand 10 has the same timber composition as Stand 5: large diameter soft maple and trace amounts of cottonwood, elm, and ash. There is a wide old oxbow that runs down through the center and no doubt fills with water seasonally.

Recommendations: I would recommend leaving this stand as it is for now as mature bottomland timber with ephemeral water for amphibian habitat.

Stand 11

Size: 3.6 acres

Currently: This stand is the same composition as Stand 10; it is only separated due to its location on the opposite side of the creek channel.

Recommendations: Do nothing.

Stand 12

Size: 7.5 acres

Currently: Stand 12 is an old CRP field that has grown up to dense ash and cottonwood trees that are 5-11" diameter.

Recommendation: Do nothing at this time.

Stand 13 & 14

Size: 19.6 acres and 9.9 acres respectively

Currently: These two areas are former openings that are currently filling in with trees. Species including cottonwood, hawthorn, locust, brome grass, reed canary, and some sedges. There are a few old bur oaks scattered about.

Recommendation: Letting the areas continue to fill in with trees will be the easiest and cheapest treatment and will increase the unfragmented block of solid woodland for birds and other conservative wildlife species.

Stand 15

Size: 58.0

Currently: Stand 15 is a more evolved stage of Stands 5 and 10. It contains large, old soft maple at wide distances that are still standing, but many trees have fallen to wind, lightning, and old age and given way to sunny openings of reed canary, weeds, mulberry, elm, and boxelder saplings. This is essentially the climax stage of a bottomland forest.

Recommendations: This stand has decent diversity in structure and habitat for wildlife, so may be left as it is.

Appendix 2. Technical Description of Practices

Edge feathering is a management practice applied where a woodland edge meets up with bare ground, crops, or grassland habitat. A stark contrast between the two habitats is not natural and does not provide the gradual, brushy transition that many species of wildlife prefer for travel and movement; thus, the purpose of edge feathering is to soften the edge between the two cover types. This is accomplished by cutting or killing all the tall trees in a 50-75-foot wide strip along the edge of the mature timber. This results in a flood of sunlight which causes new growth to rapidly colonize the area. The trees that were cut generally sprout back and add to the cover and browse. Shrubs such as dogwood, plum, raspberry, and blackberry also colonize the new sunlight and offer fruit and flowers for insects & birds. This practice is often recommended as a way to reduce nest parasitism of interior forest birds by the brown-headed cowbird. After 15-20 years, the forest has grown back up and the practice can be repeated.



An example of edge feathering 5-10 years after treatment.

Savanna restoration

There are two main treatments applied to restore overgrown savanna: 1) prescribed burning and 2) manual cutting & removal of the unwanted woody ingrowth.

I recommend initiating the prescribed burning on an annual basis for at least 3-5 years prior to the manual cutting to kill as many small seedlings & saplings as possible before the brush work begins. The timing of burns is not as important as simply getting them done whenever conditions are right, be that in Fall or Spring.

Before burning, create good trails around the entire perimeter to serve as firebreaks. Make the trails wide enough for ATV access and also get rid of any standing dead trees that hang over the trail and could fall across the line when it burns. On the day of the burn, use a gas leaf blower to clean the firebreak trail down to bare dirt.

Fireproof the units by scouting for and dispersing any piles of branches or dead wood next to the base of desired “keeper” trees --- these piles can catch fire during the burn and kill even mature oak trees. The dead wood only needs to be thrown a few feet away from the base to be safe.

After 3-5 years of burning, initiate the manual brush cutting of the understory and midstory trees. Poison the stumps with an appropriate herbicide to prevent resprouting. Then continue burning and adjust the fire frequency as needed according to the response you are seeing in the vegetation.

For more information on savanna restoration, visit www.siosa.org.

Commercial timber harvesting

Timber harvests are done to rejuvenate old woodlands (restart succession) and to capture value from hardwood products before they are lost. Rejuvenating old woodlands and replacing them with a vigorous, fast-growing, youthful stands promotes carbon sequestration, stand health, and benefits certain wildlife.

To be considered sustainable and renewable, timber harvests need to ensure prompt and adequate regeneration of new trees after harvesting. This is done by having a silvicultural plan and by seeing that plan through and making adjustments as needed.

A professionally trained consulting forester should be utilized to assist with all timber harvests/sales. The trees should be marked with paint and the price secured prior to cutting. A contract should be used to establish rules regarding the timing of harvest, access, and other details.

Thinning (Crop Tree Release)

Crop tree release is a simple form of thinning which concentrates growth on only a few, chosen trees. Crop trees are chosen based on the following core attributes: species, form, health, and crown:

- *Species:* Favor oaks, hickories, and other hard-mast species. Also favor unique or less common species, such as sycamore, for variety and forest diversity.
- *Form:* Choose only trees that have strong central leaders and strong crowns. Don't select trees with forked stems, narrow branch angles, or crooked trunks unless.
- *Health:* Select trees that have good health and predictably long lifespans. Avoid choosing trees with signs of disease or decline, dead limbs, epicormic branches, or long-lasting damage.

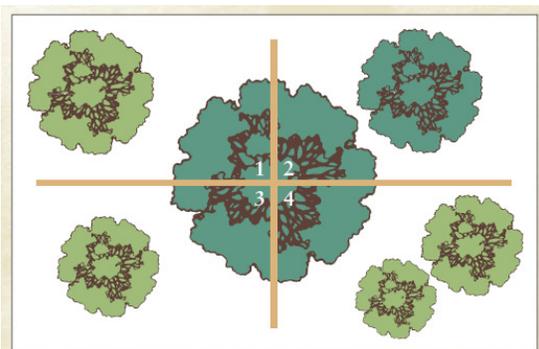
- *Crown position & size class:* Crop trees should show a genetic predisposition to fast growth and dominance over weaker trees. They should have either dominant or co-dominant crowns in the main stand canopy. Intermediate or suppressed trees won't respond to release and should be avoided.

Crop tree distribution will vary depending on the number of trees that are available which meet the above criteria. There may be as few as 5-10 crop trees per acre in some stands, or as many as 50-100 in others. Choose as many crop trees as possible, at the most uniform distribution. If diameters are 4-11", space crop trees 10-15 feet apart. In stands where the average tree size is 12" or greater, space crop trees 20-30 feet apart.

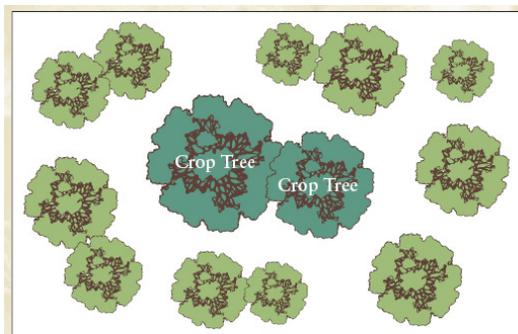
When you have selected a good balance of crop trees throughout the stand, release them on all four sides of any competition touching or overtopping their crowns (see figures below). In older stands with larger trees, sometimes a 2 or 3 sided release is all that can be done. This can be done either by felling or girdling (felling preferred as long as no damage is done to the chosen crop trees). No chemical application is warranted.

To increase wildlife value through this practice, trees that are cut can be "hinged" and directionally felled into brushpiles during the growing season. This practice leaves part of the tree attached so that it resprouts for browse and cover, while also creating dense brushpiles of tree canopies with their leaves still attached.

For more details on crop tree management, refer to the US Forest Service document "Crop Tree Management in Eastern Hardwoods" available online.



The space around a crop tree is divided into four sides or quadrants for thinning.



Two crop trees growing close to each other are treated as a single when thinning around them.

Appendix 3. Additional Woodland Management Resources

Contract Labor & Advice. Professional forestry consultants & contractors offer tree planting services, timber stand improvement, timber appraisals, and more. There are over 30 such individuals & businesses in Iowa who offer this type of work with experience and education in forestry & silviculture. A list of these private consultants/contractors can be obtained by contacting me or by visiting the ISU Forestry Extension website given below.

Online information & articles.

- Iowa State University Forestry Extension: www.forestry.iastate.edu
- Iowa DNR Forestry website: www.iowadnr.gov/forestry/index.html