
Forest Resource & Wildlife Habitat Management Plan for:

Turkey Ridge Wildlife Area

**Black Hawk County Conservation Board
April, 2015**



Plan Reviewed By:

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

Plan Prepared By:

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 at the *Turkey Ridge 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, soil and water quality, and forest products.

In developing this plan, the overall goals for wildlife habitat & forest resource use were established by County Conservation staff. The Wildlife Conservationist performed field surveys to develop an inventory of the current species composition and habitat structure of the forested portions of the wildlife area. The DNR District Forester then reviewed this plan and added his input. The stand map/survey provides the basis for recommended forest management practices which could be used to achieve the desired goals & objectives.

General Description of the Property

The Turkey Ridge Wildlife Area is located north of Cedar Falls and east of the small community of Finchford in Union Township. It consists of approximately 97 total acres of land along the banks of the West Fork of Cedar River. Turkey Ridge was previously a rock and gravel quarry site for many decades. The Black Hawk County Conservation Board has been diligently reclaiming this site, creating a premier wildlife area while providing outdoor recreational opportunities.

Due to Turkey Ridge’s historical use as a quarry, there is a mix of early successional woody vegetation filling in the old mining pits along with a diversity of mature upland and lowland tree species in the relatively less disturbed areas. The site has also been recently planted with native prairie with additional restoration work currently in progress. Since the conservation board owns very little upland timber resources and grassland habitat, the reclamation and habitat enhancement of Turkey Ridge should be a high priority.

The terrain and soils at Turkey Ridge are diverse. Poorly drained alluvium soils ranging from silty clay to sandy loam (Spillville-Coland, Channeled-Aquolls) and are found in the floodplain forest. Upland soils contain primarily a variety of well drained, loamy sediment over clay and limestone or dolomite bedrock. Soils labeled “Pits-Sand and Gravel” comprise over half of the wildlife areas soils.

As evident from historical records from the 1800’s, Turkey Ridge was probably once completely forested. Just like much of Iowa’s forests during early settlement, most forests were cleared for fuel, construction materials, livestock grazing, and farming. As implementation of various management efforts occurs, it will be important to appropriately match the targeted plant/species community with historical vegetation and local soil type. Existing and neighboring habitat communities will also be used as a guideline when determining species composition.

Additional information about the Turkey Ridge Wildlife Area can be found at www.mycountyparks.com.

Wildlife Habitat & Forest Resource Goals

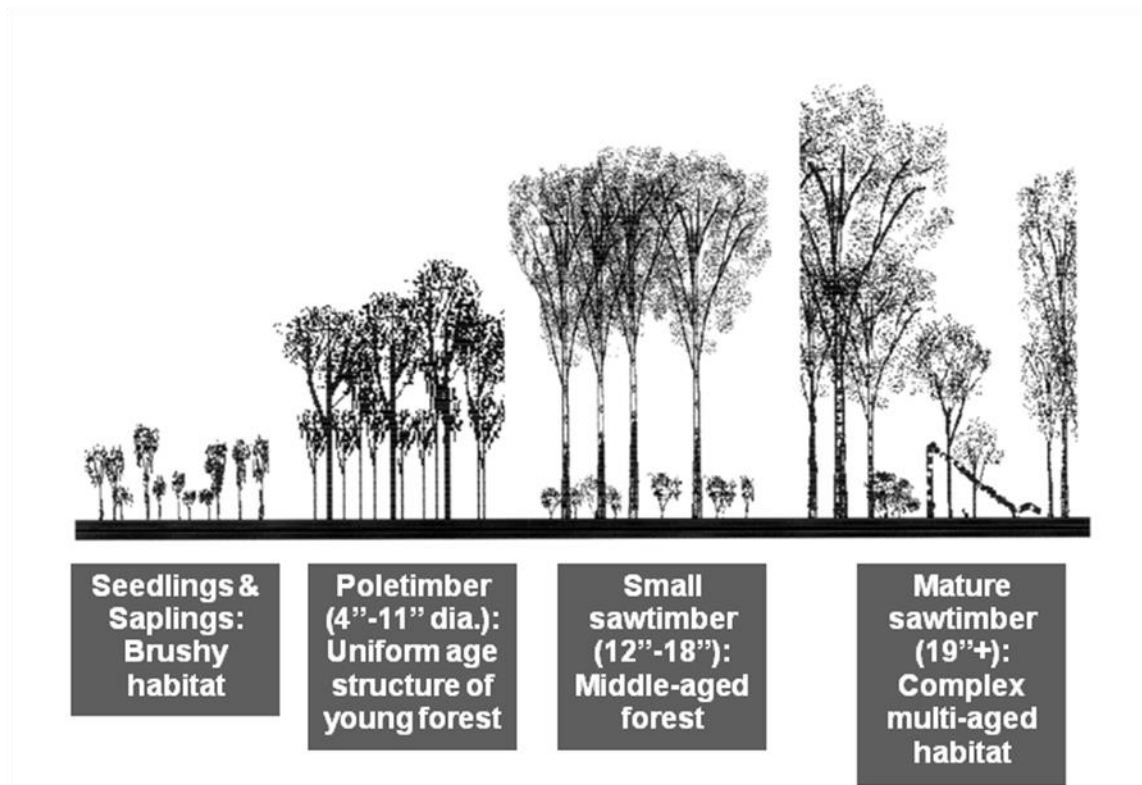
Turkey Ridge provides walk-in access for recreational users of all kinds including hikers, anglers, hunters, photographers and wildlife viewers. There are no developed and maintained trails except for the old mining road located north of the parking lot off of Winslow Rd.

The following goals were identified for Turkey Ridge 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 through management recommendations
- Maintain high quality recreational opportunities
- Reforest and reclaim old mining sites where possible
- Retain oak as a long term component of the forest for its wildlife and aesthetic values
- Control non-native invasive species

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.

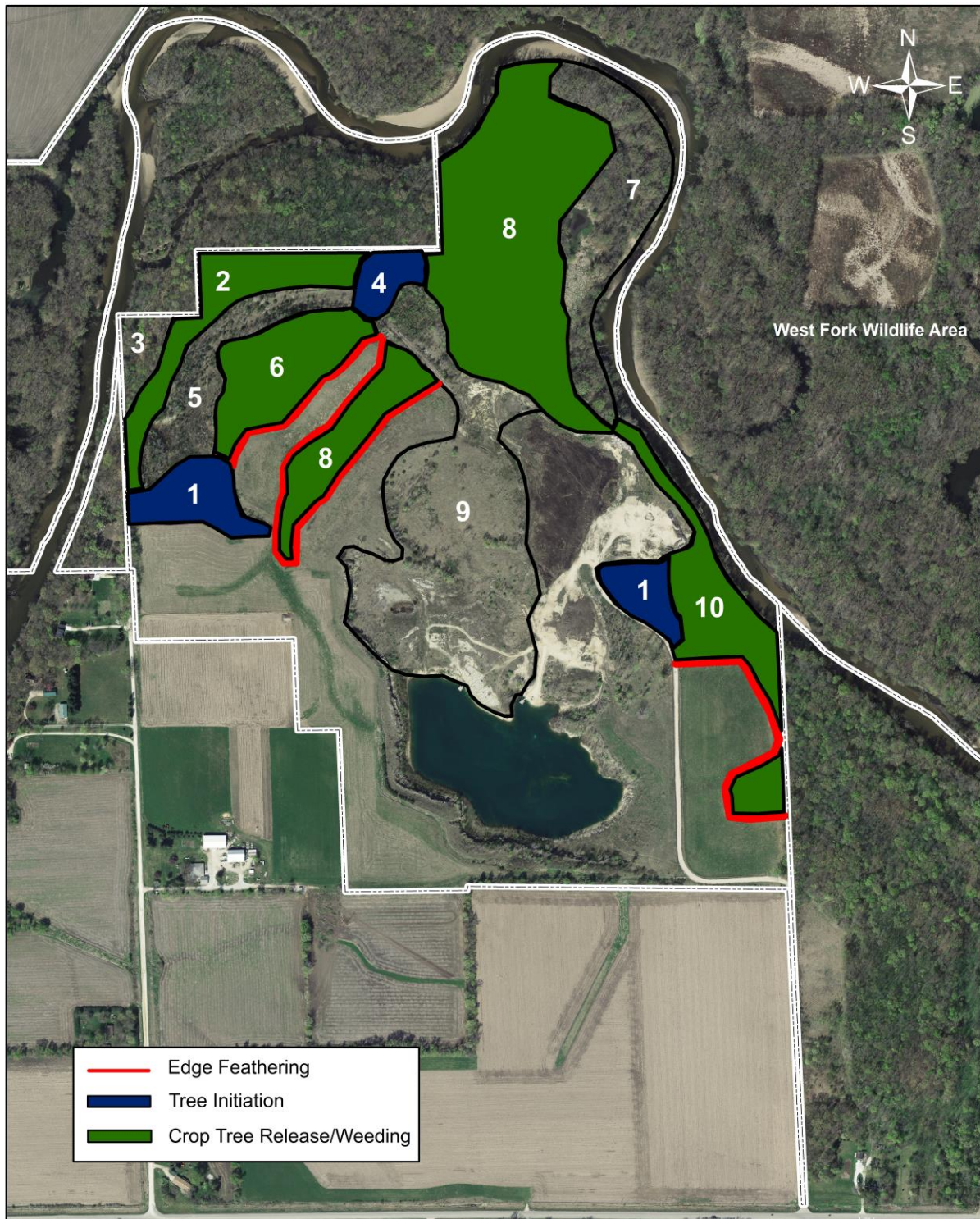
When the forest reaches the **mature sawtimber** stage, some trees have begun to die from natural causes like lightning strikes, wind, snow & ice, competition, or old age. Selective tree harvesting can also have this effect. Trees that have died but are still standing are called snags and are very important 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.

High Priorities for Management Activities

The following recommended 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 or 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.

1. **Edge feathering --- up to 3 acres.** This treatment would apply to the interface where the timber meets the native grasses. Edge feathering entails cutting trees in a 30-50+ foot wide strip back into the forest to soften the hard edge and create brushy, early-successional cover for edge-loving species. “Hinge cutting” the trees will allow the trunk to resprout and will provide overhead wildlife cover from the trees crown. Feathering results in a more natural transition from the grassland to forest habitat by inserting a shrub layer in between. Prevalent game animals on site such as the pheasant, wild turkey, rabbit, and white-tailed deer will benefit from this practice along with small mammals and a host of local and migrant song birds.
2. **Tree initiation --- up to 3.4 acres.** This practice may include planting nursery stock seedlings, direct seeding, or promoting natural seeding by surrounding trees. The soil depth will dictate where on these stands it will be feasible. If planting trees, seedlings and saplings will be planted at approx. 50 trees/acre and protected with tubes to promote growth and protect from browsing. Trees must be monitored and weeds controlled for several years for best results. Bur oak, white oak, red oak, and hard maple are species recommended on these upland stands.
3. **Crop tree release & Weeding --- up to 30.3 acres.** These stands contain upland and floodplain species varying from pole size mixed hardwoods to the mature saw stage. There are ash, locust, elm, coffee tree, hackberry, cottonwood, hard maple, walnut, red oak, bur oak, and white oak. First, I recommend weeding of hackberry, ironwood, and cottonwood where appropriate to reduce competition with preferred hardwoods and to slowly transition the stands species composition. Crop tree release of targeted hardwoods such as oaks, walnuts, coffee tree and hard maple will work towards accomplishing multiple benefits for wildlife such as: 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.



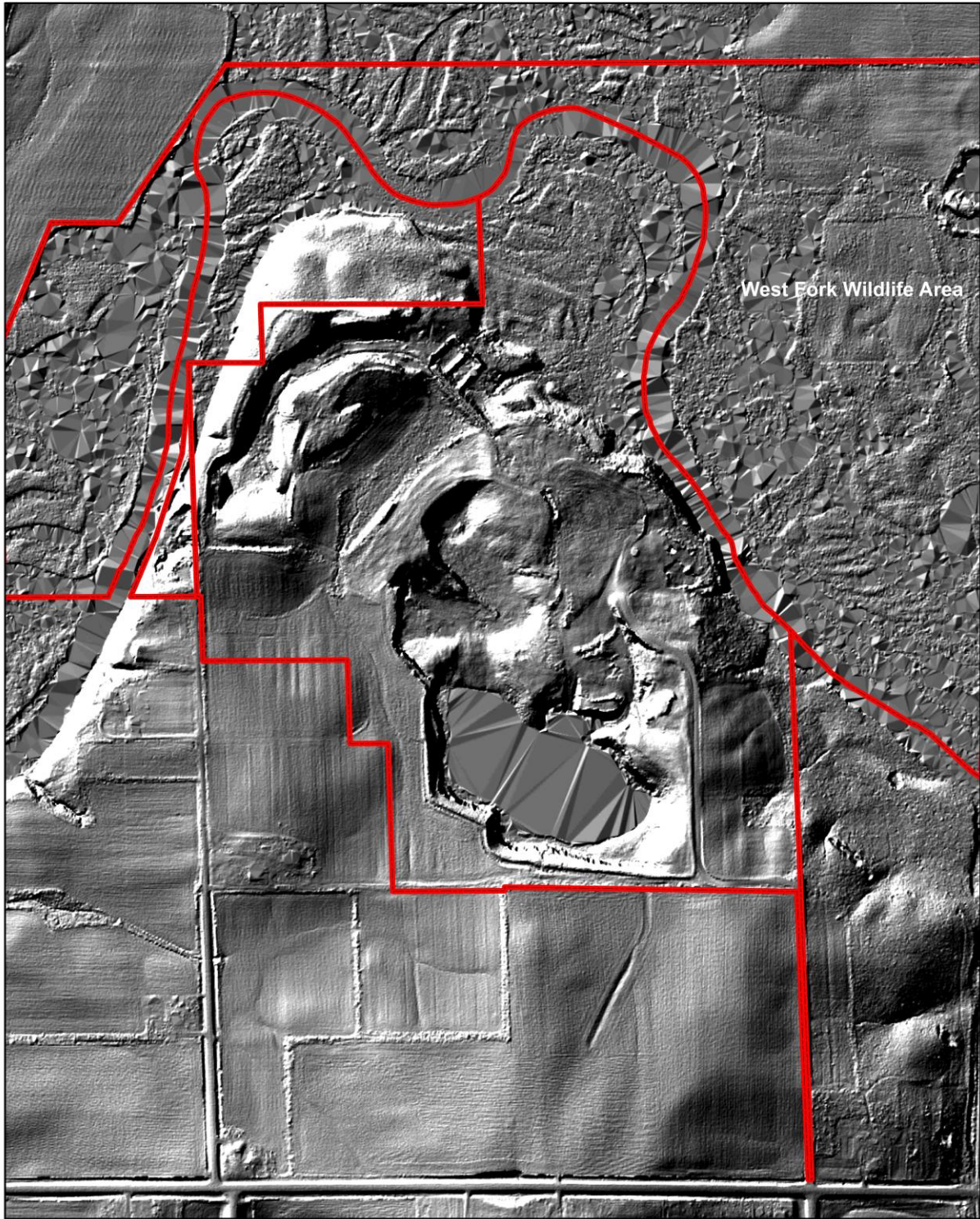
Turkey Ridge Wildlife Area Management Priorities

Disclaimer: Ownership boundaries do not represent legally surveyed lines. Map for forestry purposes only.
1/2015



Turkey Ridge Wildlife Area Forest Stands

Disclaimer: Ownership boundaries do not represent legally surveyed lines. Map for forestry purposes only.
1/2015



Turkey Ridge Wildlife Area LIDAR Terrain

Disclaimer: Ownership boundaries do not represent legally surveyed lines. Map for forestry purposes only. 1/2015

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 sections, but it's entirely possible that they could exist. The Black Hawk County Conservation Board recognizes that the Northern Long-eared bat is currently being considered for the Federal Endangered Species Act. This bats habitat consists of mature forest and tree species (dead and alive) that provide roosting cavities. Staff will continue to monitor this issue during the writing and implementation of forestry plans. The staff will also take into consideration recommended best management practices when dealing with the Northern Long-eared bat.

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 Turkey Ridge are bush honeysuckle and siberian elm. 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 will 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.

Acquisitions, Conservation Easements, and Natural Buffers. If the opportunity presents itself to add additional land or protection of land to this wildlife area through a variety programs or partnerships, the BHCCB should deem this a high priority. Additional protection of land in or around Turkey Ridge will provide additional wildlife habitat and recreational opportunities, create a natural buffer to the forest and prairie and assist with water quality and watershed protection.

Appendix 1. Turkey Ridge Stand Descriptions

Stand 1

Size: 2.4 acres

Currently: Old brome fields slowly filling in with early successional seedlings and brush with a few young red cedars. There is an occasional sapling and small pole size (4-11") cottonwood.

Recommendations: These two sites offer an opportunity to plant nursery stock of white, bur, and red oak if there is enough of a soil profile. Protect with tree tubes and maintain approx. 50 trees/acre. Monitor trees for mortality and control weed/grass competition around trees for at least three years.

Stand 2

Size: 4.2 acres

Currently: Stand 2 is comprised of a narrow ridge and a west/northwest facing slope. The ridge's canopy is a mix of excellent numbers of pole (4-11") and small saw (12-18") red oak along with basswood and an occasional hard maple. The understory is well stocked of sapling size hard maple, red cedar, ironwood, cottonwood, and basswood. North end of the ridge has a thick stand of young cedars under an open canopy of pole size cottonwoods.

West/Northwest slope - Overlooking the West Fork of Cedar, the slopes canopy contains mature saw timber (19"+) hard maple, basswood, white oak, red oak, and bur oak. Example of a mature upland forest. An occasional pole size walnut, red and bur oak along with lightly stocked sapling-pole size hackberry, hard maple, and ironwood make up the understory.

Recommendations:

Ridge - Understory weeding of any non-native invasive species along with ironwood and cottonwood. Crop tree release best oaks for acorn production and wildlife benefits. Multiple thinnings will be needed in the future to progress oaks into maturity. Leave young cedars at north end to provide wildlife cover and habitat. Girdle cottonwoods over cedars to provide full sunlight.

Slope - Weeding of young hackberry, ironwood, and basswood to provide more sunlight to forest floor and thinning of young hard maple. Only area with white oaks present on site. Crop tree release pole size hardwoods of walnut, oak, and maple. Manage as example of upland hardwood forest.

Stand 3

Size: 1 acres

Currently: Mature river bottom with an occasional mature saw cottonwood, silver maple, red oak, and elm. Understory consists of lightly stocked pole and small saw hackberry, elm, ash, silver maple with several coffee tree.

Recommendations: Leave alone as an example of mature river bottom forest.

Stand 4

Size: 1 acres

Currently: A grass opening surrounded by a small stand of mixed species of sapling and pole (4-11") bur and red oak on the north side along with a few maple and elm saplings. The opening has an occasional 4-8" cottonwood along with several young red cedars scattered.

Recommendations: Crop tree release of best oaks on north side along with weeding of elm and other less desirable species. The site could be left alone allowing it to naturally seed in with woody vegetation **or** planted with nursery stock of white, red and bur oak to speed up the process. Seedlings would need to be protected with tubes and monitored for several years. Soil depth will dictate the feasibility of planting.

Stand 5

Size: 4.4 acres

Currently: A lightly stocked overstory of pole - small saw cottonwood with an understory of early successional red cedar and shrubby habitat. Site was previously mined and is slowly filling in. There is little to no soil profile but is very dense and provides good winter habitat for songbirds and small mammals. Site is a deep "canyon", long and linear.

Recommendations: Do nothing at this time. An example of early successional habitat for wildlife.

Stand 6

Size: 5 acres

Currently: Higher elevation with drier soils, the canopy consists of primarily mature saw (18"+) ash, basswood, hard maple, with several mature walnut and oak. Understory consists of densely stocked sapling and pole size hard maple along with scattered species of hackberry, locust, ash, walnut, and cottonwood. There are a few young bur oak along the fringes where there is more sunlight. Southwest end contains young red cedar and small saw cottonwood. Has been undisturbed for quite some time compared to rest of the wildlife area.

Recommendations: Crop tree release of young oak, walnut and maple at this time. Weeding of hackberry, locust, and cottonwood to change species stand composition. Edge feathering will also provide an early successional transition to the prairie.

Stand 7

Size: 7.4 acres

Currently: Lowest elevation on the site, this stand contains decent numbers of mature, 19"+ cottonwoods with an occasional mature silver maple making up the main canopy. Pole-small saw silver maple along with saplings of elm, silver maple, hackberry, and ash make up the sub-canopy and understory. South end of site transitions into an open canopy of scattered small saw silver maple over reed canary grass.

Recommendations: Do nothing at this time

Stand 8

Size: 15.3

Currently: Making up the largest part of the floodplain, this site contains a main canopy of an occasional mature (19"+) walnut along with scattered mature saw locust, ash, and a few bur oak on the slopes. There are also good #'s of pole-small saw walnut along with small pockets of 4-11" pole bur oak near parent trees. Pole size elm, locust, kentucky coffee and hackberry make up the rest of the understory.

Recommendations: Focus on areas where oaks and walnuts are located. Crop tree release and thinning of young oak and walnut along with scattered coffee trees throughout the site. Weeding of locust, hackberry, and elm at specific areas will help reduce competition to preferred trees. A section of this stand would be a great candidate for edge feathering also.

Stand 9

Size: 18 acres

Currently: More recently disturbed mining site with very little to no soil profile. This area is slowly filling in with cottonwood, elm and red cedar saplings over rock with some thin herbaceous cover of weeds and brome grass.

Recommendations: Let it slowly fill in with early successional woody vegetation. If possible plant oak seedlings to encourage the process. Sections of this site could also be planted with shrubs such as ninebark, dogwood and other species for wildlife cover and nesting habitat.

Stand 10

Size: 5.8 acres

Currently: North end of this site is a narrow, east facing slope overlooking the river that contains well stocked #'s of pole-small saw ash, hard maple, walnut, hackberry, locust, and elm with an occasional mature saw cottonwood and locust. As the stand transitions to the south and widens, there are several very mature saw timber bur oak and maple over an understory of sapling elm, boxelder, hackberry, hard maple, ash, locust and a very dense stand of invasive honeysuckle.

South end of the stand drops somewhat in elevation and narrows again next to the prairie with an occasional sapling-pole size cherry, bur oak and red oak with and a few small 12-18" small saw walnut.

Recommendations: Crop tree release quality hard maple, oak, and walnut throughout the stand. Stump cut and treat invasive honeysuckle and weeding of elm, boxelder, hackberry, and locust. Getting sunlight around the mature bur oaks should help encourage reseedling of young oaks in the future. This stand would be an excellent area to implement "edge feathering" next to the prairie to provide shrubby, transitional habitat.

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

Thinning (Crop Tree Release)

Crop tree release is a simple form of thinning which concentrates growth on only a few, chosen trees.

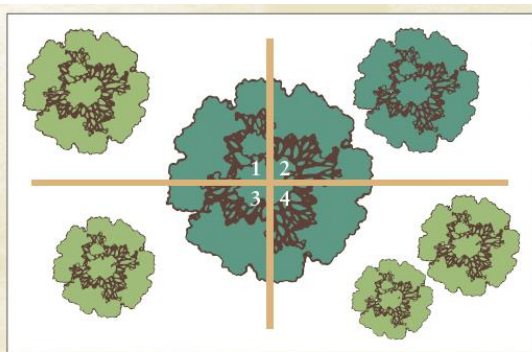
Crop trees are chosen based on the following core attributes: species, form, health, and crown:

- *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.

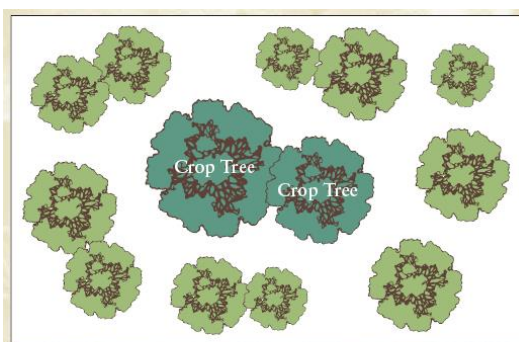
Crop tree distribution will vary depending on the number of trees that are available which meet the above criteria. There may be as few as 5-10 crop trees per acre in some stands, or as many as 50-100 in others. Choose as many crop trees as possible, at the most uniform distribution. If diameters are 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.



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.

Weeding and Culling

Weed and cull tree removal can be done anytime to improve species composition or aesthetics. A "weed tree" is any species that does not meet your management objectives. They are trees that tend to be thorny, messy, spread easily, have weak wood, short-lived, have little wildlife value and do not grow into

valuable trees for lumber. Most people accept the following species as common weed trees: boxelder, mulberry, elm, honeylocust, ironwood, honeysuckle, buckthorn, and autumn olive. To some people, hackberry, basswood, and ash are also weed trees but it depends on the situation.

Weed trees can usually be killed by felling or girdling and applying herbicide to the fresh wound. The best time to accomplish this work is late summer through early winter when sap is being moved down to the roots.

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
- Iowa's Forest Action Plan (IDNR, 2010)
- Iowa Geographic Map Server: www.ortho.gis.iastate.edu