



Forest Wildlife Habitat Stewardship Management Plan

Three Mile Lake Wildlife Management Area
Union County

Developed by
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2019



Introduction

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The Three Mile Lake WMA is located in Sections 13, 19, 29, & 30 of Dodge Township and Sections 24 and 25 of Lincoln Township, in Union County, Iowa.

According to 2012 land and canopy cover data, the Three Mile Lake WMA comprises 2,675.3 total acres with 697.29 acres of it being forested (26%). The management acreages addressed in this plan are for 509.4 acres of successional woody forest cover and 49.3 acres of tree plantings.

The Three Mile Lake WMA Forest Wildlife Habitat Stewardship Management Plan (FWHSP) is the result of forest inventory data collection, forest stand mapping, and data analysis. This is a cooperative effort between the Iowa DNR Forester and Wildlife Biologist within the Iowa DNR Wildlife Bureau.

The Three Mile Lake FWHSP is an ecologically based forest management plan. As such, management objectives are geared toward maintaining the forest ecosystem structure and function, with all other forest uses being considered, but not being the primary management goal.

The effectiveness of a FWHSP ultimately depends on what gets done on the ground, not on fancy wording or philosophy. Consequently, the Three Mile Lake FWHSP contains purposely broad-based objectives and recommended management practices to explain what management is needed to meet management objectives.

The Iowa DNR's *Iowa Wildlife Action Plan (IWAP)* identifies certain rare or declining wildlife species of "greatest conservation need" (SCGN). SCGN for the Three Mile Lake WMA are listed on pages 11 and 12 of this plan. Generally, the DNR Wildlife Bureau manages state-owned forest lands for wildlife habitat diversity, recreation, and aesthetics. The Three Mile Lake FWHSP recognizes and prioritizes the identified wildlife (SCGN) and their habitat needs and incorporates those needs into forest management decisions.

Other stewardship considerations that are incorporated into forest management decisions are the protection of identified threatened and endangered plant and wildlife species, best management practices (BMP's) to protect soil and water quality, forest health considerations, and the protection of any identified "special sites". These considerations are detailed in the "General Forest Management Considerations" section of this plan on pages 4-6.

The Three Mile Lake FWHSP is a generalized guideline for recommended management work. Detailed silvicultural prescriptions will be developed immediately prior to doing scheduled or recommended management practices in order to take into account unique stand conditions and more specific targeted wildlife habitat needs. These prescriptions will be in the form of detailed practice project plans, developed with collaboration between the DNR District Forester and DNR Wildlife Biologist. A record of completed management activities will be kept on file at the area manager's office so that practice evaluations can be made and compared to determine if management objectives are being met and proper practice follow-up is done to determine if and when more management is needed.

The Three Mile Lake FWHSP will begin with a general forest resource and soil type description of the Three Mile WMA. Next, forest management objectives will be stated followed by general descriptions of recommended management activities designed to meet those objectives. Following this, "General Forest Management Considerations" are outlined. Finally, specific stand level forest management activities are recommended for each forested stand and tree planting

area, according to management priorities. A recommended timeline for completing the management work is found on page 16 of this plan.

Forest Resource Description

The following FWHP details forest management recommendations for 509.4 forested acres and 49.3 acres of riparian forest buffer tree plantings. The Three Mile Lake forest management area has been divided into 25 upland oak-hickory forested stands (management units) and 25 riparian forest buffer tree planting areas for management purposes. The remainder of the Three Mile Lake WMA consists of wildlife food plots, crop fields, native grasses, early successional brushy areas, ditches, and streams. See "Three Mile Lake Wildlife Management Plan 2017-27". These plans are available at the unit headquarters in Kellerton.

Upland Forest Stands (Stand location photos are on pages 15-19 of this plan)

All of the upland forest management stands have a past livestock grazing history which ended around 1993 when the lake project was in its finishing stages. This grazing pressure was detrimental to natural oak reproduction and the general health of the forest management areas.

The 25 upland oak-hickory forested stands range in size from 5.9 acres to 85.8 acres. These stands are dominated by different mixtures of oaks and shagbark hickory. Most stands are either dominated by black oak, red oak, bur oak, and shagbark hickories as dominant canopy level crop (management) trees. Only three stands have a white oak component. Other, associated tree species include black walnut, bitternut hickory, green ash, hackberry, elm, buckeye, black cherry, eastern red cedar, osage orange, and honey locust.

Most of the upland oak-hickory stands are fully to slightly overstocked with mixed pole-sized and sawtimber-sized trees. Overall, the average crop tree diameter is 11.26 inches dbh (diameter breast height), which is in the "ingrowth" size class; pole-sized becoming small sawtimber-sized.

Most stands are characterized as being mixed with scattered larger diameter trees (14-24" dbh), usually black oak, bur oak, and shagbark hickory, with smaller diameter trees (6-10" dbh) existing between them. This is typical of non-managed stands with past grazing history. Selective tree harvesting, probably as far back as the 1930's or early 1940's accounts for the scattered remaining larger diameter oak and hickory. The openings between them, now occupied by pole-sized, more shade tolerant tree species, were caused by timber harvesting, tree clearing, and tree decline due to past grazing pressure.

With an average overall forest basal area (a measure of tree stocking in sq. ft. per acre) of 93 sq. ft. per acre and average dbh of 11.26 inches, most of the forested stands are fully stocked at just under the 80% level according to the Upland Central Harwood Stocking Guide. Observed current growth rates for upland oaks (not yet under management) are about 13 growth rings per inch, equating to a 2 inch dbh tree diameter increase every 13 years on the best upland growing sites.

Currently, the upland oak-hickory forest stand understory is comprised of buckbrush, scattered multiflora rose, honeysuckle (some stands), gooseberry, and prickly ash. Many of the stands have populations of buckeye, both as understory and midstory components that are shading out less shade-tolerant understory vegetation (wildlife cover) and desirable natural tree reproduction such as oak, hickory, and black walnut.

Upland forest soil types are mostly Lindley Clay Loam and Gara Clay Loam on 9-25% slopes. Other, less dominant soil types are Keswick and Ladoga soils on 5-9% slopes (Stands C-4, H-1, and H-2). All of the soil types are well suited to growing oaks with site indexes ranging from 55-65 especially on north and east facing slopes and along drainage benches. The soils are characterized as being well to moderately well-drained, neutral to slightly acidic, and have an 18 - 35% internal clay content.

These soil types are well suited to quality tree growth for both wildlife mast (nut, acorn) and sawtimber production. The role of management is to capitalize on the maximum growth potential of the soil types by keeping the forested sites

properly stocked with desirable tree species. Additionally, management helps to maintain the ecological health and function of the area by controlling the spread of invasive species, maintaining the shade-intolerant character of the forest all of which contribute value to wildlife.

Tree Planting Areas (Tree planting area photos are on pages 24-30 of this plan)

There are 25 riparian buffer tree planting areas located adjacent to Three Mile Lake in the WMA. The original purpose for the plantings was to protect water quality by absorbing sedimentation before it reached the lake and to provide wildlife cover.

The tree plantings total 43.9 acres and contain approximately 24,000 planted trees and shrubs. The plantings were done in 1994 and 1995 and the bulk of the trees are now pole-sized and beginning to be overcrowded (canopy crowding). Planted tree and shrub species consist of mixed oak, green ash, eastern red cedar, ninebark, American plum, and redosier dogwood.

Forest Management Objectives

The primary management objectives for the Three Mile Lake WMA are to improve wildlife habitat quality and diversity for a variety of wildlife species, to provide recreational opportunities, to provide clean water, to protect threatened and endangered wildlife species, to protect “special sites”, that contain cultural or historical resources, and to benefit wildlife which includes SCGN and common species. Keeping and improving the health and vigor of a diverse forest ecosystem is the key to optimizing benefits for the widest variety of wildlife species.

Due to the diverse oak resource and primary recreational needs of the 3 Mile Lake WMA, white-tailed deer, squirrels, turkeys, northern bobwhite quail, and American woodcock are targeted as primary game management species. Non-game birds such as the eastern kingbird, brown thrasher, eastern meadowlark, bald eagle, red-headed woodpecker, American kestrel, and Baltimore oriole are also primary management species.

Recommended Even-Aged Management Practices

Maintaining healthy, diverse oak- dominated stands with good reproductive potential is essential to the successful management of the Three Mile WMA. Even-aged forest management techniques are recommended to promote a desirable forest composition of sub-climax, mast-producing shade-intolerant tree species (oaks, hickories, walnuts) and wildlife cover to benefit the greatest number of wildlife species on a sustainable, long-term basis. Keeping forested stands at proper desirable tree species stocking levels will improve and maintain forest health, wildlife cover, and sustained, long-term wildlife mast (nuts, acorns) production.

Even-aged stands are characterized as having an overstory canopy of trees that are all nearly the same age, even though diameter classes may be different due to stand tree stocking levels and individual tree species growth rates.

Even-aged management, when applied at the appropriate scale, can have positive effects on improving habitat for many wildlife species. Larger stands can be divided into smaller stands or blocks to provide for age class diversity when needed. Periodic even-aged management techniques provide for “stages” of excellent habitat for deer, turkeys, and other wildlife species and are essential for the regeneration of oak, hickory, and black walnuts, which require almost full sunlight.

Recommended Forest Management Practices

- Extend oak rotation age to 125 to 150 years – Grow larger diameter trees
- Periodic forest overstory thinning to improve wildlife mast (acorn, nut) production
- Periodic forest midstory & understory weeding and cleaning
- Periodic forest understory burning
- Provide for snags, den trees, roost trees, and nest trees
- Protect rare and fragile habitats
- Use only even-aged timber harvesting systems
- Consider savanna establishment & management when applicable

- Use early successional management techniques such as small patch clearcutting & edge feathering

Periodic forest overstory thinning and weed tree removal will improve forest health and vigor and can improve wildlife mast production by as much as seven-fold in one thinning cycle. Oak crop tree diameter growth rates can also be doubled in one thinning cycle, also improving tree health, vigor, and mast production.

Management treatments such as periodic suppressed tree canopy level thinning and periodic controlled forest understory burning will help control undesirable and invasive plant species and increase forest understory light levels to improve wildlife understory cover and make conditions more favorable for the natural reproduction of desirable tree species such as oak, hickory, and black walnut.

Periodic early successional (ES) habitat management techniques benefit species of birds such as American woodcock, gold-winged warbler, blue-winged warbler, black-billed cuckoo, yellow-billed cuckoo, and eastern towhee which are dependent on the young, dense woody growth. High stem densities of trees and shrubs provide suitable nesting habitat and protection from predators. These stands are usually associated with aspen stands, but in the absence of aspen can be any hardwood stand of mixed or pure species that will be managed for 15-20 year rotations by clearcutting and allowed to re-sprout.

Edge feathering is a type of (ES) management along forest and field edges where tree cover is periodically cut (felled) to promote a transition of weedy, brushy cover between forest and field cover. This typically benefits bobwhite quail, eastern kingbird, brown thrasher, and sometimes American woodcock, all of which are also SCGN listed as primary management species.

Finally, when timber harvesting is recommended as a forest regeneration system, even –aged harvest systems such as “shelterwood”, “group selection”, and “patch clearcutting” are the best methods to use for regenerating the majority of the crop tree species found on the Three Mile Lake WMA, and for maintaining a healthy, diverse, and quality forest ecosystem. All commercial timber sales will be planned and conducted according to the current Iowa DNR policy, “Conducting Timber Sales on State Lands”, found on pages 18-20 of this plan.

General Forest Management Considerations

Regardless of specific management objectives, active management is needed to keep Iowa forests healthy, sustainable, and renewable. Keeping state-owned forest properly stocked with desirable tree species and protected from external damaging influences is key to the sustainability of Iowa’s forest resources. General practices to follow include:

1. Continue to protect Three Mile Lake woodlands from cattle. Cattle grazing especially in a closed-canopy forest ecosystem, causes long term soil compaction that slows tree growth and over time, impairs overall forest health and tree vigor. Grazing destroys diverse wildlife ground cover and hinders the natural production of desirable tree species such as oak, hickory, and black walnut trees. Grazing also greatly limits the effectiveness of woodland improvement practices such as thinning and weed tree removal.
2. Monitor the forest for obvious damaging disease and insect problems. Take special note of trees dying in pockets or groups. Currently, Dutch elm disease (DED) and oak wilt are the two major tree diseases observed on the Three Mile Lake WMA. While not much can be done about controlling DED and oak wilt, these two diseases are somewhat normal occurrences in forests in southern Iowa. Steps can be taken to lessen the spread of the oak wilt pathogen. Limiting the cutting or wounding of oaks to the time period of October 1 to March 31 each season is the prescription to follow for both TSI (timber stand improvement) and timber harvesting work. Black oak, one of the most susceptible species to oak wilt, is a component of almost all of the forest stands on this WMA.

With the advent of discovering the Emerald Ash Borer in Iowa, the extent of this threat to the ash trees on our state-owned lands is not yet known. Consequently, we will be vigilant in monitoring any ash decline on the WMA. Currently, most forested stands have an ash (mostly green ash) component of between 1-3%.

3. Three Mile Lake WMA is within the range of the Federally Endangered Indiana Bat and the Federally Threatened Northern Long-eared Bat. Tree removal projects within suitable habitat in the Indiana Bat range are restricted to the period between September 30 and April 1. APPENDIX A (PHASE 1 SUMMER HABITAT ASSESSMENTS) of the current RANGE-WIDE INDIANA BAT SUMMER SURVEY GUIDELINES will be used to determine if suitable habitat is present. Timing of woodland burns will be outside the Indiana Bat maternity season (May 15 – August 15). (See NLEB for CRD Projects in unit files)
4. Every effort will be made to identify and protect “special sites” before and during forest management work. These historical and cultural resources include such things as buildings and structures of historical significance, human burial sites, special land features, and artifacts. If such things are ever observed or discovered, those sites will be located, preserved, and avoided when implementing forest management activities.

Human remains that are discovered or accidentally uncovered must be reported to local law enforcement officials. This reporting is required by Iowa Code 558.69. Discovered artifacts or structures of suspected historical significance will be reported to the State Archaeologist and the discovery will be protected.

The following are practices that will help minimize the chances of accidentally destroying items of cultural or historical significance when doing forest management work:

- Thoroughly inspect a project area before working. Look for unusual looking areas such as obvious mounds or groups of mounds, or square and rectangular shaped depressions or extrusions.
 - Minimize ground disturbance when tree planting, logging, and doing forest stand improvement work. Cut trees and use heavy equipment only when the ground is frozen, dry, or firm.
 - Be especially careful of disturbing soil around streams and riparian (stream bank) areas.
 - Locate trails and management access roads along natural land contours.
5. Periodically control the encroachment of undesirable tree species or invasive unwanted plant and shrub species in the forest stands if they are competing with desirable tree species and/or impeding the natural reproduction of desirable tree species. Periodic controlled burning is one of the best practices to control multiflora rose, prickly ash, ironwood, and honeysuckle to manageable levels. Timing of woodland burns will be outside the Indiana Bat maternity season (May 15 - August 15).
 6. All timber harvesting will be done to promote the sustainability of future forest benefits according to Three Mile Lake WMA management objectives. All commercial timber harvesting planning and work will be done according to state-owned land guidelines, policies, and rules, under the supervision of the Iowa DNR Forestry Bureau and the Three Mile Lake WMA Biologist. The current policy for conducting timber sales on state land is listed on pages 18-20 of this plan.
 7. Selecting and leaving adequate numbers of wildlife den trees, snags, roost, and nest trees will be done whenever possible during the implementation of forest management practices to facilitate improving habitat for insects, birds, and mammals.
 8. All pesticides will be stored, handled, and applied according to product labeling to maximize effectiveness and to minimize damage to the environment and danger to applicators. It is a violation of Federal Law to store, handle, and apply pesticides inconsistent with product labeling. For all pesticide treatments, always try to minimize chemical contact with non-target plant, animal, and bird species
 9. Best Management Practices (BMP’s) will be implemented when doing woodland management work. The following are examples of practices called BMP’s. Below, are some general considerations to be aware of to minimize soil erosion originating from a forest:
 - Eliminate livestock grazing from woodland management areas.
 - Limit road access for management purposes to ridge tops if possible. If not, route them along or following natural land contours.
 - Minimize the use of heavy, rubber-tired equipment in management areas.

- Protect sensitive areas like stream banks (riparian areas) by leaving forested buffer strips from 50 to 150 feet wide (depending on stream width and topography) next to streams. Management in these SMA's (stream bank management areas) should be limited to woodland understory and midstory tree manipulation and selective overstory harvesting. Always try to maintain a minimum of 70% overstory canopy cover in SMA areas.
- Route trails along natural land contours.
- Minimize soil disturbance during logging or when implementing woodland improvement practices by cutting and dragging trees when the ground is dry, firm, or frozen. Felled tree tops can be left randomly scattered for short term wildlife habitat. Felled tree stems should be broken down into chunks that make complete ground contact for rapid decomposition to occur. If some are utilized for fuel wood, limit access to the area by tractors and vehicles to times when the ground is dry or frozen.
- Avoid piling trees and branches in stream channels.
- If bare soil areas are created or existing trails are not properly constructed, use soil stabilization practices to minimize the existing erosion hazard. These may include mulching, seeding, and building sediment control structures.

Forest Stand Management Recommendations

(Please refer to the attached photos for stand locations on plan pages 14-26).

The 25 forested stands have been grouped into three different categories of management priority, depending upon current stand structure, oak tree diversity, and location within the overall ecosystem. Stand boundaries are based primarily upon easily identifiable land features such as roads, trails, ditches, and fences to help expedite management. Periodic forest understory burning can be used to promote oak reproduction and improve wildlife ground cover in all stands, but needs to be limited once adequate oak reproduction becomes established or is supplemented with tree planting.

Management of all upland oak-hickory stands includes retaining as many oaks 12 inches dbh and larger for wildlife mast and seed production. Also recommended is leaving as many active or potentially active den trees, roost trees, nest trees, and snags as possible to improve habitat for birds and mammals.

High Priority Upland Oak-Hickory Stand Management: Stands C-4 (10.1 ac), E (6.5 ac) and H-10 (36.0 ac).

Stand Descriptions:

Stand C-4 is a fully-stocked to slightly overstocked pole-sized (4-10 inches dbh) stand of bur oak, black oak, black cherry, black walnut, and shagbark hickory needing Crop Tree Release (CTR) thinning to improve long term mast (acorn, nut) production and crop tree diameter growth rates. This stand has an average crop tree diameter of 8.6 inches dbh and an average stand basal area 94 sq. ft. per acre. Sixty percent of the stand overstory is comprised of the oaks and shagbark hickory. The Ladoga soil type dominating this ridgetop stand is rated as having a higher oak and walnut site index of 66 to 75.

Stand E is a smaller upland oak-hickory stand, actually a two-aged stand comprised of scattered larger diameter bur oaks intermixed with a dense stand of 4-6 inch dbh shagbark hickories. This is an excellent candidate for stand conversion to savanna to improve both bird and other wildlife habitat.

Stand H-10 is a fully stocked to slightly overstocked upland oak-hickory stand comprised of 55% white oaks, 4 % red oaks, and 38% shagbark hickories. With an average crop tree diameter of 9.2 inches dbh and an average stand basal area of 94 sq. ft. per acre, this stand is ready for basal area thinning to reduce the overall stocking level to B-level stocking. This will greatly improve long term mast production, crop tree diameter growth rates, and overall stand health and vigor. This predominantly white oak stand is primary habitat for deer and turkeys, as well as for other wildlife species.

Stand Management Recommendations/Options:

Stand C-4 (10.1 ac):

Oak-Hickory-Cherry-Walnut Crop Tree Release thinning. Release the tops of 20 – 30 crop trees per acre of the listed dominant canopy level crop tree species that are crowded by other tree top competition. Use a 3 to 4-sided crown touching release. Re-evaluate the need for further CTR in 10 years following the initial crop tree release. Periodic controlled understory burning may be used at 5-year intervals throughout the management cycle of this stand to improve forest understory wildlife habitat cover.

Stand E (6.5 ac):

Convert this two-aged stand to upland oak-hickory savanna. Retain all scattered bur oaks, black oaks, and shagbark hickories 12 inches dbh and larger that currently exist in the stand and cut/kill all interspersed smaller diameter trees. The smaller diameter trees are mostly shagbark hickory. This will create an overstory canopy of less than 50% crown cover to stimulate understory ground cover by increased sunlight. To help control the existing scattered multiflora rose and buckbrush and to slowly diversify the understory plant composition, it is recommended to use periodic controlled understory burning at 3-5 year intervals following the overstory reduction treatment.

Stand H-10 (36.0 ac):

Conduct stand basal area thinning to reduce the overall stand basal area to base B-level stocking; optimum stocking level for best overall stand health and vigor. This must be done within the next 5 years in order for maximum thinning gains to be realized. White oak crop trees should be prioritized as “leave trees” whenever possible. Periodic controlled understory burning may be used at 5-year intervals throughout the management cycle of this stand to improve forest understory wildlife habitat cover.

Medium Priority Upland Oak-Hickory Stand Management: Stands H-1 (11.3 ac), H-2 (5.3 ac), H-3 (8.5 ac), H-4 (6.3 ac), H-6 (8.7 ac), and H-11 (31.0 ac).

Stand Descriptions:

Excluding Stands H-3 and H-4 (the only stands that have a white oak component), the other stands are comprised of mixtures of pole-sized to medium sawlog-sized (12-16 inch dbh) bur oak, black oak, red oak, shagbark hickory, bitternut hickory, scattered eastern redcedar, scattered black walnut, elm, green ash, mulberry, and other associated tree species. Major soil types are Lindley and Gara soils on 18-25% slopes, generally rated as being highly favorable to growing oaks.

Past livestock grazing, lack of forest understory sunlight, and lack of management has taken its toll and there is little natural oak reproduction in these stands. Many small openings created by livestock damage, wind damage, and the infection of the oak wilt pathogen (most prevalent on the black oaks) have been naturally regenerated with more shade tolerant elm, green ash, hackberry, and other non-oak tree species.

Forest understory vegetation consists of scattered multiflora rose, buckbrush, prickly ash, buckeye, and in some cases, gooseberry.

Stand basal areas (BA) range from 80 to 103 sq. ft. per acre and average crop tree diameters range from 9.8 inches dbh to 13.5 inches dbh.

Oak tree diversity is more limiting in most of these stands, being mostly black and bur oak. Stands H-3 and H-4 are north slope stands that contain the highest oak tree diversity on the property, having 18% shagbark hickory, 38% red oak, 16% bur oak, 8% black oak, and 11 % white oak. These are the only two stands other than H-10 that contain white oak.

Stand Management Recommendations/Options:

Stands H-1 (11.3 ac) and H-2 (5.3 ac):

While retaining the larger diameter oaks in these stands for seed and mast production, do overstory tree cutting/killing of competing non-oak tree species.

Additionally, conduct a suppressed canopy tree removal of all overtopped and stunted tree species within a double crown width radius of the overstory oak seed producers.

Optional tree planting can be done in these stands to supplement natural oak reproduction and to improve oak tree diversity. In the case that tree planting is done, it should be done in the spring from April 1 through May 31. It is recommended to plant white oak bare root tree seedlings in the forest understory at the rate of 100 to 200 per acre (unprotected) or at the rate of 30 to 50 per acre when protected with commercial tree shelters. The tree planting option will work best in these stands due to the more productive Ladoga and Keswick soil types

Stands H-3 (8.5 ac) and H-4 (6.3 ac):

Both overstory CTR thinning and suppressed canopy tree removal are recommended for these stands. These stands have the best oak tree diversity and wildlife mast diversity needs to be maximized in these stands. The added suppressed canopy tree removal will improve ground cover conditions necessary for cover, nesting, and deer fawning. CTR rates should be to release the tops of 20 to 30 good oak, walnut, or shagbark hickory crop trees per acre. The CTR of crowded dominant canopy white and red oaks should be prioritized over other tree species when possible.

Stand H-6 (8.7 ac):

Overstory Oak-Hickory CTR is recommended for this stand to release crowded oak and shagbark hickory crop trees from other tree competition to improve long term wildlife mast production. This stand is currently fully stocked with an average crop tree diameter of 11 inches dbh and an average stand BA of 86 sq. ft. per acre, but can still be improved for wildlife mast production.

The stand is currently comprised of about 49% shagbark hickory and 42% oaks (bur oak, red oak, black oak). CTR rates should be to release the tops of 20 to 30 good oak, walnut, or shagbark hickory crop trees per acre.

Stand H-11 (31.0 ac):

This stand is a mixture of pole-sized and sawlog-sized (12 inch + dbh) bur oak, black oak, red oak, shagbark hickory, and scattered associated tree species; elm, eastern cottonwood, hackberry, black walnut, and black cherry. There is also a small eastern red cedar thicket in the central part of the stand. This particular stand had the most active turkey use, evidenced by ground scratching for acorns.

Stand management recommended for this area is to retain the small centrally located eastern redcedar thicket for wildlife bedding and thermal cover, Convert the areas of the stand that are occupied by the larger bur oak to savanna cover and turkey roosting cover, and to do CTR thinning of the smaller crowded pole-sized oak and walnut crop trees that are interspersed in pockets throughout the stand.

Low Priority Upland Oak-Hickory Stand Management: Stands A (15.9 ac), B (13.2 ac), C (10.6 ac), C-1 (30.2 ac), C-2 (18.9 ac), C-3 (5.6 ac), I-3 (16.4 ac), H-7 (14.6 ac), H-8 (12.4 ac), H-9 (16.0 ac), and H-12 (5.9 ac).

Stand Descriptions:

Stands A, B, C, C-1, C-2, C-3, H-7, H-8, H-9, and H-12 are fully stocked mixed pole-sized and small sawlog-sized bur oak, black oak, and shagbark hickory stands containing more associated elm, hackberry, buckeye, ash, and bitternut hickory than the other, higher priority management stands. Shade from overstory tree cover is more intense in these stands, reducing forest understory cover with very little natural oak reproduction. Stand understories are comprised of buckbrush, some honeysuckle (Stand B), prickly ash, gooseberry, and scattered multiflora rose.

Soil types for these stands are mostly Lindley and Gara on 5-25% slopes. Average oak and hickory crop tree diameters range from 10.5 to 13.6 inches dbh and average stand basal areas range 86 to 100 sq. ft. per acre. These stands typically have 26% to 70% shagbark hickory, 15% to 60% bur oak, and 4% to 20% black oak as dominant canopy level crop trees.

Stand I-3 is an old field area that was abandoned when the lake was built and naturally seeded into a pure stand of sapling to small pole-sized eastern redcedars.

Stand Management Recommendations/Options:

Recommendations for the mixed oak-hickory stands are to do “forest cleaning” of less desirable tree species and retain the oak, shagbark hickory, and black walnut as crop trees for long-term mast production as long as possible before harvesting for forest products. Once “cleaned” the stand understories can be managed by controlled burning every 3 to 5 years to enhance forest understory cover for wildlife.

Management for Stand I-3, the old field area, is to remove the cedars while they are still relatively small and to convert to native grasses or mixes of grasses and pollinator plant species. The other option would be to leave the stand as it is for winter wildlife thermal cover

Early Successional Stand Management: Stands D (82.9 ac), F (30.1 ac), I-1 (85.8 ac), I-2 (19.3 ac), and H-5 (7.9 ac).

Stand Descriptions:

These stands are called early successional because they are almost pure stands of eastern redcedar or stands of deciduous trees mixed with substantial numbers of redcedar. Typically, they make great winter thermal cover areas for wildlife and if mixed with deciduous trees, both good cover areas with wildlife food in close proximity.

Stand Management Recommendations/Options:

Suggested management includes prescribed burning and thinning along the stand edges. This will enhance quail and other bird habitat. Natural plant succession should be allowed to take place.

Tree Planting Area Management Recommendations

(Please refer to the attached photos for tree planting locations on plan pages 14-26)

There are 25 forested riparian buffer tree plantings that may need management to reduce crop tree crowding within the next 10 years. Forest understory burning should be limited during the next 10 years as a management tool in the forest riparian buffer tree planting.

Forested Riparian Tree Planting Areas: Areas: P1 (1.0 ac), P2 (2.0 ac), P3 (3.4 ac), P4 (.5 ac), P5 (2.0 ac), P6 (1.2 ac), P7 (3.5 ac), P8 (.9 ac), P9 (1.0 ac), P10 (3.3 ac), P11 (2.1 ac), P12 (2.9 ac), P13 (1.3 ac), P14 (1.9 ac), P15 (2.5 ac), P16 (.5 ac), P17 (3.7 ac), P18 (3.0 ac), P19 (.7 ac), P20 (2.3 ac), P21 (1.5 ac), P22 (2.2 ac), P23 (3.7 ac), P24 (1.7 ac), and P25 (.5 ac).

Planting Area Descriptions:

The tree planting design for each of the 25 planting areas is basically the same, with some variation. Beginning approximately 35 ft. in from the normal lake water pool line, each planting consists of 10 tree rows and 1 shrub row (the last row on the uphill side). Tree and shrub rows are located 10 ft. apart, with trees planted 8 ft. apart within the tree rows. Shrubs were planted 4-6 ft. apart within the shrub row.

The first two tree rows on the lake side of the plantings were rows of eastern redcedars. The following tree rows were rows of mixed oak, alternated with rows of green ash. The mixed oak rows contain bur oak, red oak, and white oak. The final upslope row of the plantings was a single shrub row consisting of mixtures of American plum, ninebark, and redosier dogwood.

These tree plantings total 43.9 acres and contain approximately 24,000 planted trees and shrubs. The plantings were done in 1994 and 1995 and the bulk of the trees are now large sapling to pole-sized and beginning to be overcrowded (canopy crowding).

Stand Management Recommendations/Options:

Evaluate the planting areas for thinning needs, mainly to reduce oak crop tree crowding. Thinning alternatives may range from removing the green ash rows, basal area thinning, and oak crop tree release thinning.

It is recommended that the trees that need to be “thinned out” to release the crowded oaks be felled (cut near ground level). Tree planting areas P1, P2, and P3 need to be treated first due to being the most crowded and being adjacent to

the higher use portion of the lake next to the primitive campground and fishing structures. Trees to be cut in these areas need to be removed from the planting areas and disposed of or burned to facilitate improving the lake view. Trees cut down in the remaining more northern planting areas can be left in the plantations for temporary wildlife ground cover.

Recommended Management Timeline

A timeline based upon management priorities is recommended for getting work done on the Three Mile WMA due to yearly budget constraints and seasonal weather conditions.

All recommended forest stand improvement practices which involve the cutting or wounding of oaks, shagbark hickory, and other tree species identified as potential bat roosting trees must be done from October 1 through March 31 each season to protect potential Indiana and northern long-eared bat summer habitat and to lessen the chances of spreading the oak wilt pathogen. Additionally, controlled forest understory burning must be done each spring or fall when weather conditions are most favorable on a 3 to 5-year basis for each forested stand. If controlled burns are to be conducted within suitable Indiana bat habitat, they must be conducted outside the Indiana bat maternity season of May 15 - August 15.

Generally, a FWHP that recommends forest stand improvement work is only good for about 10 years, about one thinning cycle, before completed work needs to be evaluated for re-treatment.

Recommended Work by Priority

1. Complete the crop tree release (CTR) overstory thinning work prescribed for the high priority stands C-4, E, and H-10. This is about 52.6 acres of CTR work. Additionally, consider thinning tree planting areas P1, P2, and P3. Stand E is the stand conversion to savanna.
2. Complete the stand overstory CTR thinning, cleaning and weeding of the medium priority management stands H-1, H-2, H-3, H-4, H-6, and H-11. This is about 71.1 acres of combined forest overstory thinning and suppressed canopy tree removal. Additionally, consider thinning tree planting areas P4-P12.
3. Complete the recommended "forest cleaning" of undesirable tree species in the lower priority management stands A, B, C, C-1, C-2, C-3, I-3, H-7, H-8, H-9, and H-12. This is about 159.7 acres of forest stand improvement work. Additionally, consider thinning tree planting areas P13, P14, P16, P17, P18, P19, P20, P21, P22, P23, P24, and P25.

Species of Greatest Conservation Need Documented at Three-Mile Lake
by the MSIM Program, NAI, and Iowa Breeding Bird Atlas II

Common Name	Scientific Name	Habitat Preference
Amphibians and Reptiles		
Blanchard's Cricket Frog	<i>Acris blanchardii</i>	Rivers, streams, lakes & wetlands
Northern Leopard Frog	<i>Lithobates pipiens</i>	All aquatic habitat types, wetlands
Snapping Turtle	<i>Chelydra serpentine</i>	All aquatic habitat types, wetlands
Common Water Snake	<i>Lampropeltis calligaster</i>	Lakes, ponds marshes, streams, backwaters
Gopher (Bull) Snake	<i>Pituophis catenifer sayi</i>	Sand & bluff prairie, savannah, pasture
Butterflies		
Monarch	<i>Danaus plexippus</i>	Open habitat, disturbed areas
Mammals		
Long-tailed Weasel	<i>Mustela frenata</i>	Generalist, found in all habitat types near water
Breeding Birds		
Grassland/shrub-nesting birds:		
Northern Bobwhite	<i>Colinus virginianus</i>	Grassland, shrubland
Eastern Kingbird	<i>Tyrannus tyrannus</i>	Grassland-shrub, edges
Horned Lark	<i>Eremophila alpestris</i>	Sparse grassland, agricultural land
Brown Thrasher	<i>Toxostoma rufum</i>	Shrubby grassland
Common Yellowthroat	<i>Geothlypis trichas</i>	Shrubland and grassland
Field Sparrow	<i>Spizella pusilla</i>	Grassland-shrub, edges
Grasshopper Sparrow	<i>Ammodramus savannarum</i>	Short grassland
Henslow's Sparrow*	<i>Ammodramus henslowii</i>	Large, older grasslands
Dickcissel	<i>Spiza Americana</i>	Shrubby grassland
Bobolink	<i>Dolichonyx oryzivorus</i>	Medium height grassland
Eastern Meadowlark	<i>Sturnella magna</i>	Grassland, savanna
Western Meadowlark	<i>Sturnella neglecta</i>	Grassland
Wetland-nesting birds:		
Blue-winged Teal	<i>Anas discors</i>	Wetlands
American White Pelican	<i>Pelecanus erythrorhynchos</i>	Wetlands
Wilson's Snipe	<i>Gallinago delicata</i>	Hemi-marsh
Belted Kingfisher	<i>Ceryle alcyon</i>	Wetlands, riparian with cutbanks
Purple Martin	<i>Progne subis</i>	Riparian forest, towns and wetlands
Sedge Wren	<i>Cistothorus plantensis</i>	Marsh, dense grasslands
Woodland/Forest Nesting Birds:		
Bald Eagle	<i>Haliaeetus leucocephalus</i>	Forest, rivers
American Woodcock	<i>Scolopax minor</i>	Moist, brushy woodlands with openings
Red-headed Woodpecker	<i>Melanerpes erythrocephalus</i>	Savanna, open woodland, deciduous forest
Northern Flicker	<i>Colaptes auratus</i>	Savanna, open woodland
American Kestrel	<i>Falco sparverius</i>	Savanna, open woodland
Eastern Wood-pewee	<i>Contopus virens</i>	Forest, woodland, savanna
Baltimore Oriole	<i>Icterus galbula</i>	Open woodland, savanna

Common Name	Scientific Name	Habitat Preference
Non-breeding Birds		
Pectoral sandpiper	<i>Calidris melanotos</i>	Wetland
Semipalmated sandpiper	<i>Calidris pusilla</i>	Wetland
Harris's Sparrow	<i>Zonotrichia querula</i>	Pastures, hedgerows

*State Threatened Species

Conducting Timber Sales on State Lands

Iowa Department of Natural Resources

Timber sales may be conducted on state owned forested lands in accordance with an approved Forest Management Plan. Once an area has a plan in place, forest management activities (including timber harvesting) may be scheduled and implemented according to the plan.

Management Planning

A District Forester will meet with the Area Manager, stand map and inventory the area, and develop a management plan based upon the Area Manager's management objectives and the current, science based forestry practices that will meet those objectives. Once a plan is developed, it will be sent to the Area Supervisor, Bureau Chief, State Forester and Lands and Waters staff (*currently send to John Pearson, Mark Leoschke and Kelly Poole*) for distribution and review. Once the plan is reviewed and approved by the State Forester, it will be posted on the respective Bureau's website.

Public Meeting

The management plan will be presented at a public meeting.

Natural Areas Review

Planned timber sales must be sent to Land and Waters Bureau staff for review to determine if a natural areas inventory needs to be conducted (*currently send to John Pearson, Mark Leoschke and Kelly Poole for distribution and review*). Land and Waters staff will complete a natural areas review and identify any species of concern; or determine that no inventory is necessary.

Timber Sale Checklist

A timber sale checklist must be completed for the sale using the current template from the Forestry Section. The checklist must be completed and signed by appropriate staff (or email confirmation must be attached) before the sale can proceed.

Timber Marking

The District Forester will mark and scale the trees in the timber sale area. A tally of board foot volume and number of trees by species will be completed.

Bid Solicitation

The Area Manager, with the assistance of the District Forester will prepare a "Notice of Timber for Sale". The District Forester will provide a list of Bonded Timber Buyers to whom bid notices can be sent. (*The contract routing process will begin here. Legal approval of the bid notice is needed before it is sent out.*) The bid opening date will be set at least 4 weeks from the date the bid notices are sent. Bids will be opened locally, and the results will be sent to the Area Supervisor.

Additional Public Meeting

If the timber sale is in a state park or preserve, a public hearing must be conducted prior to the sale if the amount of timber sold exceeds 10,000 board feet in volume, or \$5000 in value. Once the public hearing has been conducted, the sale may proceed (Code of Iowa 461A.31A).

NRC Approval

If the winning bid is \$25,000 or more, the sale must be approved by the Natural Resource Commission prior to executing a contract. The Area Supervisor will prepare the project brief for the NRC agenda if approval is necessary. Once the NRC has either approved the sale, or the sale is under \$25,000 and does not need approval, a contract may be executed.

Execution of Contract

The District Forester will assist the Area Manager with drafting of the timber sale contract. (The current contract routing process must be followed, including legal approvals and the use of the current timber sale contract template from the Forestry Bureau.) Once legal has approved the contract, **the timber buyer must sign the contract and pay for the sale in full before any trees are cut.** The timber buyer may proceed with the harvest once the full payment has been received and the contract is signed by the timber buyer and the appropriate DNR signatory.

Follow-up Management

Once the harvest is completed, the District Forester will meet with the Area Manager and assist with implementing the plan for reforestation. Post-harvest work, tree planting, or any other prescribed work will commence during the first year following completion of the harvest.

Checklist for Conducting Timber Sales

Item	Description	Date Completed
Management Plan	Area Manager and District Forester develop a Forest Management Plan	
Public Meeting	Forest Management Plan is presented at a public meeting	
Natural Areas Review	Land and Waters Bureau staff will review site and conduct a natural areas inventory if required	
Timber Sale Checklist	Checklist is completed and approval signatures or emails are obtained	
Timber marking	District Forester marks and scales the timber and provides volume estimates	
Bid Solicitation	Area Manager and District Forester prepare bid notice, bid notices are sent out and bids are received	
Additional Public Meeting	For state parks and preserves only if sale is over 10,000 board feet or \$5000	
NRC Approval	Required for sales over \$25,000	
Execution of Contract	Contract is drafted, reviewed, and signed by both parties	
Follow-up Management	Reforestation and follow –up work completed following harvest	

























