

Corkwood Conservation Area

Ten-Year Area Plan
FY 2018-2027



Lisa M. Allen

Forestry Division Chief

2-28-18

Date

OVERVIEW

- **Official Area Name:** Corkwood Conservation Area, #8424
- **Year of Initial Acquisition:** 1984
- **Acreage:** 434 acres
- **County:** Butler
- **Division with Administrative Responsibility:** Forestry
- **Division with Maintenance Responsibility:** Forestry
- **Statements of Primary Purpose:**
 - A. Strategic Direction**

Protect the area's sand dune and swale bottomland forest community and preserve the wetland habitat that supports Missouri's largest remaining stand of state rare corkwood shrubs and other species of conservation concern.
 - B. Desired Future Condition**

The desired future condition of Corkwood Conservation Area (CA) is diverse upland and bottomland hardwood forest habitat that supports and sustains the area's natural communities, species of conservation concern, associated wildlife, and opportunities for public recreation.
 - C. Federal Aid Statement**

N/A

GENERAL INFORMATION AND CONDITIONS

I. Special Considerations

- A. Priority Areas:** Corkwoods Conservation Area is in the Big Cane Forests – Forest and Woodland Conservation Opportunity Area and the Big Cane Forests – Wetland Conservation Opportunity Area (Figure 3).
- B. Natural Areas:** None

II. Important Natural Features and Resources

- A. Species of Conservation Concern:** Species of conservation concern are known from this area. Area managers should consult the Natural Heritage Database annually and review all management activities with the natural history biologist.
- B. Caves:** None
- C. Springs:** None
- D. Other:** Corkwood CA is located near the far western edge of the Mississippi River alluvial lowlands of southeast Missouri. It contains part of an unusual sand dune field with many large, rounded forested sand dunes that rise 2 to 5 feet above adjacent swales and the surrounding lowland forest. Some of the larger swales are permanently marshy and one contains the largest stand of the state rare corkwood shrub left in

Missouri. Wet-mesic bottomland forest occurs on the lowest elevations and mesic sand forest occurs on the dunes that are scattered throughout the larger matrix of bottomland forest. The larger open marshy swales are succeeding to wet bottomland forest.

III. Existing Infrastructure

- One gravel parking lot
- Gravel entrance road (1/8 mile)

IV. Area Restrictions or Limitations

A. Deed Restrictions or Ownership Considerations: None

B. Federal Interest: Federal funds may be used in the management of this land. Fish and wildlife agencies may not allow recreational activities and related facilities that would interfere with the purpose for which the State is managing the land. Other uses may be acceptable and must be assessed in each specific situation.

C. Easements: Associated Natural Gas Company has a right of way easement adjacent to and parallel to the south line of this property.

D. Cultural Resources Findings: Yes, records kept with the environmental compliance specialist. Managers should follow best management practices for cultural resources found in the Resource Policy Manual.

E. Endangered Species: Endangered species are known from this area. Area managers should consult the Natural Heritage Database annually and review all management activities with the natural history biologist.

F. Boundary Issues: None

MANAGEMENT CONSIDERATIONS

V. Terrestrial Resource Management Considerations

After the large drainage ditch along the east border was built around 1920, some of the adjacent and nearby forest was cleared for agricultural use. Most of the upland sand dune fields were in agricultural production when the area was purchased by the Missouri Department of Conservation (the Department) in 1984. Only a small amount of the bottomland areas were ever cleared for agriculture. Most of the merchantable timber was removed from the area in the mid-1970s. A selective harvest was conducted in Stands 1, 15, and 16 in 2003. Approximately 153 acres of open fields were planted and direct seeded to upland and bottomland forest tree species beginning in 1985 and continuing through 1993. In 2012 through 2014, the former 22-acre warm-season grass field (Stand 8) was planted with appropriate tree species. The January 2009 ice storm severely damaged the mature timber stands on the area. Up to 50 to 75 percent of most tree crowns were destroyed. An inadvertent result of the 2003 selective timber harvest and the 2009

ice storm damage has been the expansion of Japanese honeysuckle into the ground layer of the lowland forest.

This predominantly forested area is a mixture of upland sand forest and bottomland forest in the lower elevations. The forest was last inventoried in 2012. Lowland forest stands are comprised of cherrybark oak, willow oak, overcup oak, swamp chestnut oak, sweetgum, shagbark hickory, red maple, green ash, sugarberry, persimmon, elm, and deciduous holly trees. The upland sand forest is comprised of cherrybark oak, white oak, sugarberry, winged elm, sugar maple, red maple, sassafras, sweetgum, and black cherry trees. Most of the forest is in the saw-timber size class. The 153 acres of reforested former crop fields are currently in the small-pole size class. The 22-acre tree planting (2012-2014) is still in the seedling size class. The marshy swales that contain the large stands of corkwood (Stands 5 and 14, Figure 2) have reverted to wet bottomland forest with predominantly persimmon, honey locust, willow oak, pin oak, and red maple trees.

Because of the block of forest cover, wildlife populations are normal to abundant. Wildlife species using the area are typical upland wildlife species (deer, turkey, rabbits) and wildlife of the Lower Mississippi Alluvial Valley forested wetlands. Mallard and other waterfowl use the area during winter and wood ducks are permanent residents. Wading birds, shorebirds, and forest interior songbirds use the forest cover and associated wetlands. Alligator snapping turtles and many other amphibians and reptiles use the lowland sites and ponded swales. Deer, turkey, squirrels, and cottontail and swamp rabbits use the forest.

Challenges and Opportunities:

- 1) Maintain the area's natural communities.
- 2) Control invasive species such as Japanese honeysuckle.
- 3) Provide habitat for any rare or endangered species that occupy the area.

Management Objective 1: Manage bottomland hardwood forest and mesic sand forest for a species mix characteristic of the natural communities. Priority wildlife species should be those that depend on and utilize lowland wetland forests and associated sand dune forest and marshy forest swales.

Strategy 1: Follow the Southeast Region's forest inventory schedule and inventory each compartment on a 10- to 20-year re-entry schedule. (Forestry)

Strategy 2: From inventory data, develop and implement forest management actions, such as harvest and forest thinning, as budget and time constraints allow. (Forestry)

Strategy 3: Uneven aged (or all aged) harvests and forest thinning are used to create forest habitat conditions suitable for wetland forest wildlife species. A

long-term goal is to have 35 to 50 percent of forested acres meet the desired stand structure conditions, per the table in *Restoration, Management and Monitoring of Forest Resources in the Mississippi Alluvial Valley: Recommendations for Enhancing Wildlife Habitat* (Lower Mississippi Valley Joint Venture Forest Resource Conservation Working Group, 2007) (Figure 6). Manage for snags and cavities at the optimum level. (Forestry)

Strategy 4: Maintain the old growth designation for Stand 16 (35 acres). (Forestry)

Strategy 5: Continue pre-commercial thinning on all 20- to 25-year old tree plantings. Use guidelines stated in Figure 6 to maintain species diversity. (Forestry)

Strategy 6: Explore the feasibility of applying aerial applications of herbicides to control large patches of Japanese honeysuckle in Stands 1 and 15. If feasible, conduct applications and budget for them. (Forestry)

Management Objective 2: Monitor, maintain, and enhance the habitat needs of rare and endangered species with an emphasis on corkwood and water canna populations.

Strategy 1: Under the direction of the natural history biologist, periodically remove some overstory and ensure that there is adequate sunlight to sustain the corkwood in Stands 5 and 14. (Forestry)

Strategy 2: Maintain the area's populations of water canna. There are two populations in Stand 5 and one population in Stand 12. (Forestry)

VI. Public Use Management Considerations

Challenges and Opportunities:

- 1) Keep area information up-to-date for the public.
- 2) Maintain area boundaries and area facilities.
- 3) Enforce area regulations.

Management Objective 1: Maintain hunting and recreational access for the public.

Strategy 1: Annually maintain current parking lot and entrance road, cantilevered Corkwood CA sign, and bulletin board in parking lot. (Forestry)

Strategy 2: Maintain boundary and signs with paint and proper signage every 5 years or as needed. (Forestry)

Strategy 3: Discourage illegal all-terrain vehicle use on the area with signage. (Forestry)

VII. Administrative Considerations

Challenges and Opportunities:

- 1) Consider land acquisition, when available.

Lands Proposed for Acquisition:

When available, adjacent land may be considered for acquisition from willing sellers. Tracts that improve area access, provide public use opportunities, contain unique natural communities and/or species of conservation concern, or meet other Department priorities, as identified in the annual Department land acquisition priorities, may be considered.

MANAGEMENT TIMETABLE

Strategies are considered ongoing unless listed in the following table:

	FY18	FY19	FY20	FY21	FY22	FY23	FY24	FY25	FY26	FY27
Public Use Management Considerations										
<i>Objective 1</i>										
Strategy 2		X					X			

APPENDICES

Area Background:

Corkwood Conservation Area (CA) is in Butler County, about 1 mile west of Neelyville on Highway 142. The Missouri Department of Conservation (the Department) purchased this 434-acre area, which is one of the few remaining tracts of bottomland forest in southeastern Missouri, in 1984 in order to protect and manage its forest communities and the rare and endangered species they support.

This area contains part of an unusual sand dune field with many forested dunes that rise 2 to 4 feet above adjacent swales. The forested dunes support plant species often associated with upland areas, including white oak, sugar maple, black walnut, Kentucky coffee tree, sassafras, and pawpaw. Corkwood, a rare shrub found in wet swales on the area, has the lightest wood of any wood plant in North America and occurs in only three southeastern counties in Missouri. Other species found in the wet swales include buttonbush, willow, cottonwood, and swamp red maple.

The bottomland forest at Corkwood CA is dominated by willow oak and includes swamp red maple, hickories, sugarberry, green ash, overcup oak, winged elm, red mulberry, persimmon, and deciduous holly. Tree seedlings and acorns have been planted in most open fields to help restore the diverse forest communities that the land once supported. Over time, these areas will add to the area's dwindling supply of lowland bottomland forests.

Current Land and Water Types:

Land/Water Type	Acres	% of Area
Forest	240	55
Reforestation 1985-1993	152	35
Reforestation 2012-2014	22	5
Marshy swales	20	5
Total	434	100

Public Input Summary:

The draft Corkwood Conservation Area was available for a public comment period June 1–30, 2017. The Missouri Department of Conservation received no comments during this period.

References:

Lower Mississippi Valley Joint Venture Forest Resource Conservation Working Group. (2007). *Restoration, management and monitoring of forest resources in the Mississippi Alluvial Valley: Recommendations for enhancing wildlife habitat*. Wilson, R., Ribbeck, K., King, S., & Twedt, D. (Eds.). Vicksburg, MS: LSU Printing Services.

Maps:

Figure 1: Area Map

Figure 2: Forestry Stands Aerial Map

Figure 3: Land Cover Map

Figure 4: Area Easement Map

Figure 5: Terrestrial Conservation Opportunity Areas in Southern Butler County

Figure 6: Desired Forest Conditions Table

Figure 1: Area Map

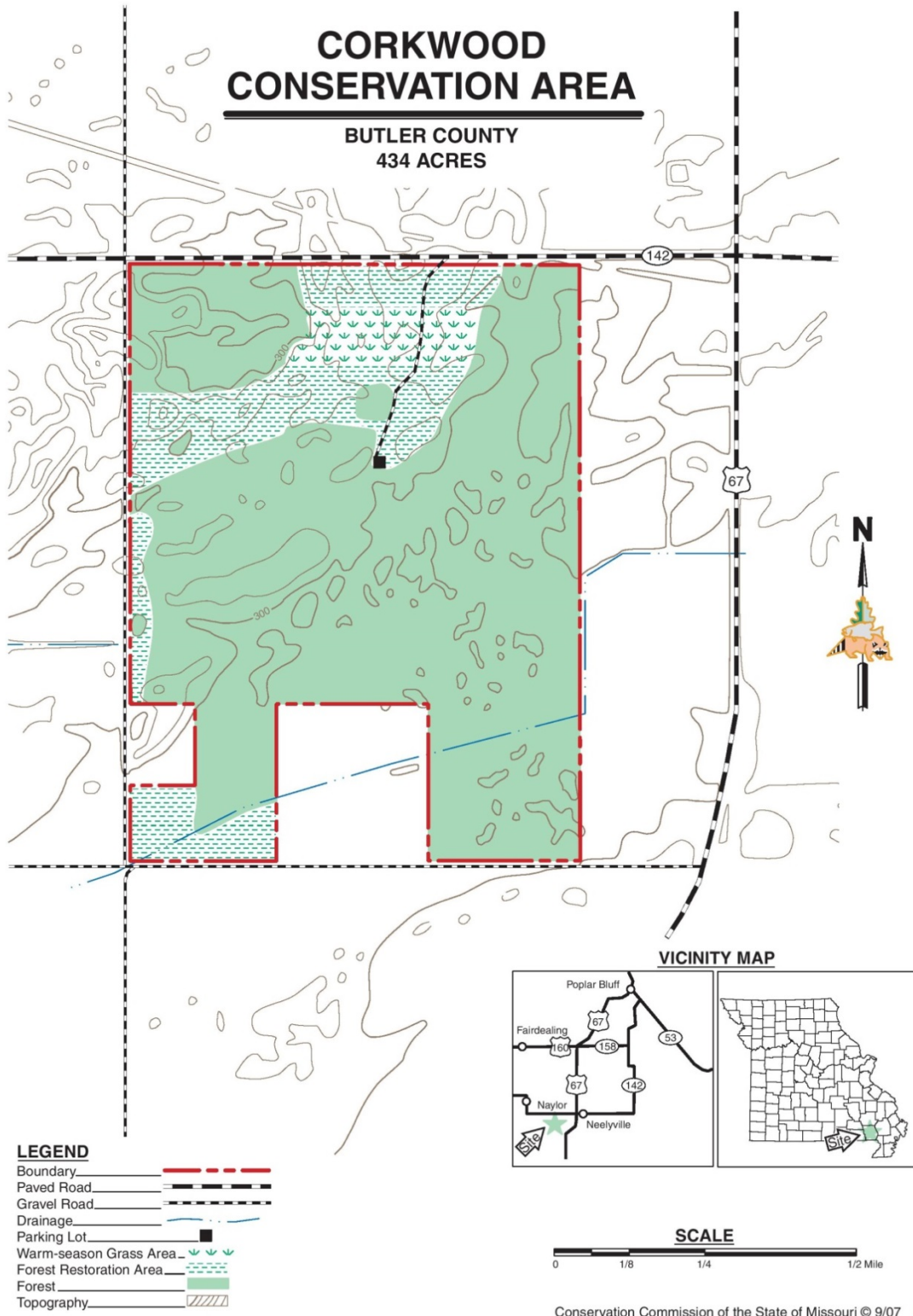


Figure 2: Forest Stands Aerial Map

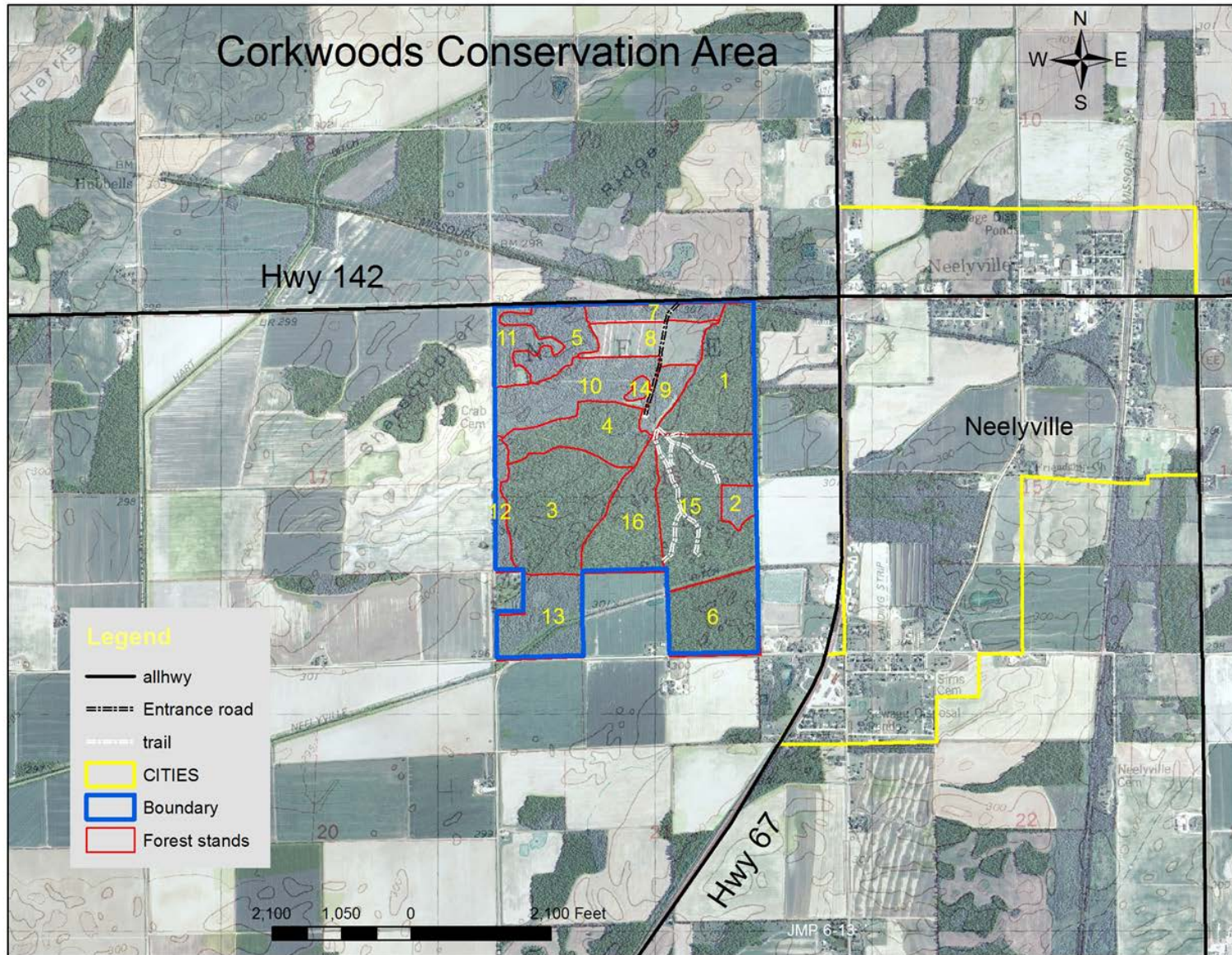


Figure 3: Land Cover Map

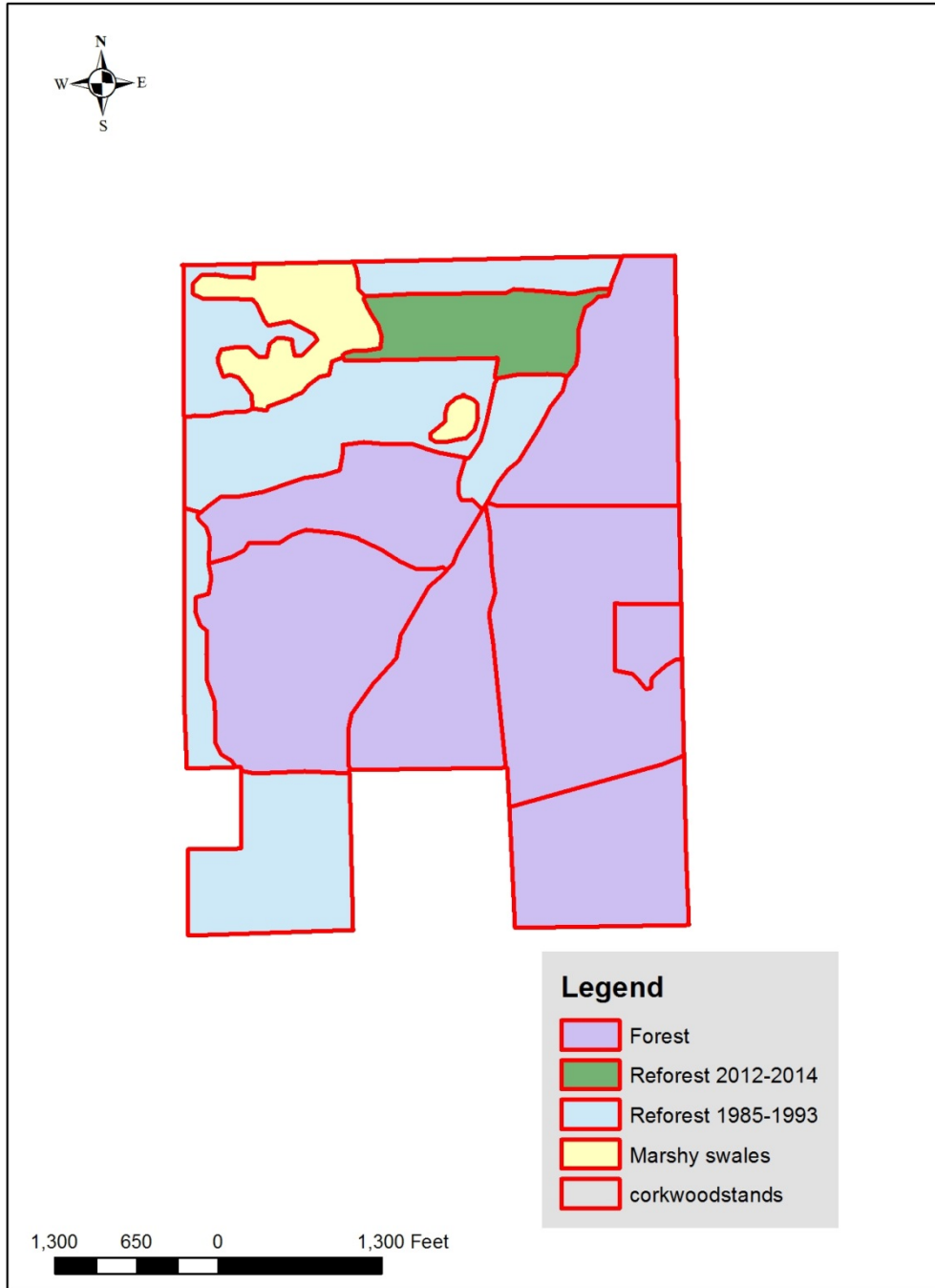


Figure 4: Area Easement Map

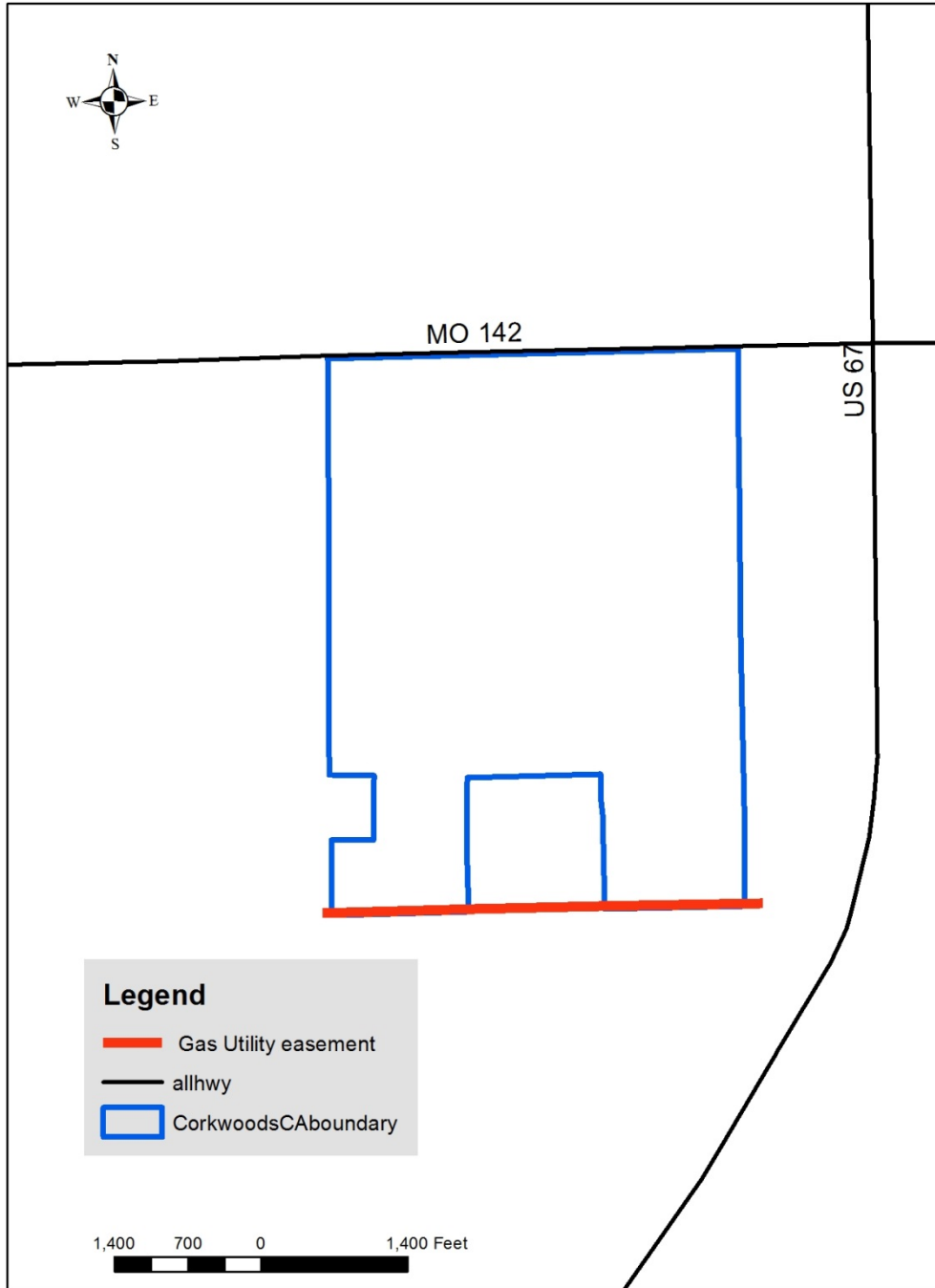


Figure 6: Desired Forest Conditions Table



Desired Forest Conditions

within Bottomland Hardwood Forests in the Mississippi Alluvial Valley

Forest Resource Conservation Working Group, Lower Mississippi Valley Joint Venture

Priority Wildlife Species

Our objective is to **provide forest habitat capable of supporting sustainable populations of all native species** within the Mississippi Alluvial Valley. However, forest loss, fragmentation, and hydrological change has markedly altered habitat conditions within bottomland forests. Of particular concern are species such as Ivory-billed Woodpecker, Louisiana black bear, and several forest interior songbird species that have been negatively impacted by these forest changes. Thus, **we advocate forest conditions that are conducive to the viability of a suite of priority wildlife species.**

Forest Restoration

Extensive forest restoration (e.g., Wetland Reserve Program) has provided progress toward landscape objectives. However, we recognize the previous restoration methods may not readily provide "Desired Forest Conditions." **We recommend planting multiple species** combining shade-intolerant, early successional species, shade-tolerant and/or hard-mast producing trees. Plantings, and natural colonization, **should result in an average of >300 trees/acre within 3 years** – preferably within a matrix of high stem density patches and canopy gaps with sparse stem density.



Desired Landscape Condition		
Habitat Type	% of Area	Description
Forest Cover	70 – 100%	Forest (habitat with >25% tree crown coverage) in a matrix of large patches and closely associated forest fragments, of which 35 - 50% should meet "Desired Stand Conditions" at any point in time.
Actively Managed	70 – 95%	Forests that are managed via prescribed silvicultural treatments to meet desired stand conditions.
↳ Regenerating Forest	<10%	A subset of actively managed forests which targets regeneration of shade-intolerant trees on areas >7 acres via removal of >80% of forest canopy (e.g., clear-cuts). Areas are considered regenerating until canopy trees achieve 1/3 of their anticipated site-specific height.
↳ Shrub-Scrub	0 – 5%	Thamnic, semi-permanent or ephemeral woody vegetation – often represented by early seral (successional) forests that result from active forest management.
Passively Managed	5 – 30%	Areas that are representative of different forest types within which little or no anthropogenic silviculture occurs (e.g., wilderness, set-aside, or natural areas).

WILDLIFE FORESTRY

Forest-dependent (silvicolous) wildlife are responsive to **Landscape Quality and Site Quality**. We define **Desired Forest Conditions** as forests meeting both Desired Landscape and Stand Conditions. Traditional forest management has focused on maximizing timber volume (lumber or pulp) through silvicultural methods that promote optimal growth and vigorous health of desired tree species. Often traditional silviculture is not optimal for silvicolous wildlife. Indeed, quality habitat for priority wildlife likely requires a sacrifice in timber production and retention of less healthy trees. Even so, **commercially viable, wildlife-oriented silviculture using variable retention harvests can be used in conjunction with forest restoration and natural processes to achieve Desired Forest Conditions** within bottomland hardwood forests.

Landscape Condition

To address landscape scale habitat needs of priority wildlife species, we advocate local **landscapes (>10,000 acres) should be extensively forested** in a matrix of large blocks of contiguous forest and closely associated smaller forest fragments. Where possible forest corridors should link forest landscapes. **Some area should be passively managed** (i.e., set-aside as "unmanaged" controls). However, to ensure development of "Desired Stand Conditions" **most forests should be actively managed using wildlife forestry silviculture methods**. Regeneration harvests of areas >7 acres (i.e., clear-cuts) should be restricted to <10% of the landscape and management should ensure some early successional (i.e., shrub-scrub) habitat is available.

Stand Condition

Size, structure, and composition of forests are important parameters for predicting suitability for silvicolous wildlife. Many **priority wildlife species favor structurally diverse and species rich forests which harbor large trees and frequent gaps in the canopy**. These conditions provide suitable habitat for foraging and cover within all dimensions of the forest and provide a desirable blend of regeneration, maturity, and senescence of forest trees. The distribution and abundance of suitable forest habitat is largely dependent on disturbance. Historically, disturbances resulted from flood, fire, tornadoes, etc. Under current conditions, many of these disturbances are spatially and temporally restricted which, in combination with unsustainable forest management practices, have resulted in homogeneous, closed canopy forests with little structural diversity or understorey vegetation. **We advocate the use of wildlife forestry silvicultural practices to introduce disturbance to these forests and thereby stimulate development of "Desired Stand Conditions"**

Desired Stand Condition		
Primary Factors ¹	Desired Structure	Conditions that may warrant management
Canopy cover	60 – 70%	≥80%
Mid-story cover	25 – 40%	<20% or >50%
Basal area	60 – 70 ft ² / acre (≥ 25% older age class)	>90ft ² / acre (≥ 60% older age class)
Tree stocking	60 – 70%	<50% or >90%
Secondary ²		
Dominant trees ³	≥0.5/ac	≤0.25/ac
Under-story cover	25 – 40%	<20% or >60%
Regeneration ⁴	30-40% of area	<20% of area
Woody debris (>10 inch diameter)	≥200 ft ³ / acre	<100ft ³ / acre
Small cavities (<10 inch diameter)	>4 visible holes / acre or >4 snags >4 inch dbh	<2 visible holes / acre or <2 snags >4 inch dbh
Large cavities (>10 inch diameter)	≥1 visible hole / 10 acres or ≥2 stems >6 inch dbh	<1 visible hole / 10 acres or <1 stem >6 inch dbh
Dead, dying, or stressed trees	>6 stems / acre (≥10 inch dbh)	<4 stems / acre (≥10 inch dbh)

¹ Stand conditions management actions directly impact. Management should strive for tree species and forest structure diversity. Areas lacking canopy cover (group selection cuts) should be <20% of stand area.
² Stand conditions usually indirectly impacted by management actions. Proliferation of vines, cane, and Spanish moss should be encouraged where possible.
³ Trees with >25% of crown above general forest canopy (a.k.a. emergent trees) that should receive greater emphasis on more diverse sites (e.g., ridges).
⁴ Advanced regeneration of shade-intolerant tree species in sufficient numbers (ca. 500/acre) to ensure their succession to the forest canopy.