Wisconsin State Forests
Monitoring the Implementation of State Forest Master Plans

Property: Kettle Moraine State Forest – Northern Unit

Master Plan Year: September 1991

Recreation

MASTER PLAN OBJECTIVES	Providing opportunities for a high quality recreational experience is a primary objective of forest management and development. Recreational development will generally be concentrated in existing intensive development areas.
Resource Management Prescriptions	Development 1. Expand the New Prospect Horse Riders Campground to meet the needs of the modern day camper with horses. Add additional water and restroom facilities. Not completed. 2. Remodel or replace six sets of four-unit pit toilets - - three at the Mauthe Lake Recreational Area, one at the Horse Riders Campground, one at the Long Lake Picnic Area, and one at the Parnell Tower picnic area. Completed 2006. 3. Construct a modern toilet shower building at the Mauthe Lake Campground. Completed 2007. 4. Develop a parking lot for the Dundee Mountain Trail. Completed 2007. 5. Construct an addition to the Ice Age Visitor Center and transfer most of the administrative operations to that facility. Not completed. 6. Develop a bike trail between Mauthe and Long Lakes. Partially completed in 2007. 7. Construct one restroom shower building at the Long Lake Campground. Not completed. 8. Construct on additional picnic shelter each at Mauthe and Long lake for use during inclement weather. Not completed. 9. Construct two picnic shelters/warming houses at the Greenbush and Zillmer trails for picnickers and skiers. Greenbush shelter completed in 1992. 10. Construct a classroom/arts and crafts building at the indoor group camp. Completed 1998, 11. Redesign the campsites at the Greenbush outdoor group camp. Not completed. 12. Install playground equipment at Mauthe and Long Lake Recreation Areas. Install at Mauthe Lake 2000. 13. Construct a campground road and bridge at Mauthe Lake to bypass the picnic area. Not completed. 14. Develop a scenic overlook near the top of Dundee Mountain. Completed 1994. 15. Construct a 20-foo observation structure at the Ice Age Visitor Center. Not completed. 16. Construct a backpacking shelter at the north end of the Ice Age Trail. Materials purchased. Operations 1. Manage the Ice Age National Scenic Trail and Equestrian Trail as single use trails (except for winter

	uses – Equestrian Trail use as Snowmobile. Completed. 2. Prohibit the use of motorized all terrain vehicles on the forest except possibly for disabled person by permit only. Completed. 3. Designate the New Fane and Greenbush trails for mountain biking. Create a monitoring program to document user conflicts and environmental concerns. Completed; master plan variance approved in 2003 to develop stand along mountain bike trails to eliminate multiple use conflicts. 4. Schedule special events and management activities to minimize conflicts between user groups and disturbance to nesting wildlife species. On going – hunting groups / share cropping 5. Encourage citizens to form a friends group with Department assistance. Completed 1991. 6. Establish firearms prohibition area in the Zillmer Trail Area. Completed 1994. 7. Encourage volunteer help in the forest with programs such as campground hosts, nature center programs, ski and mountain bike patrol, trail maintenance and development programs. Ongoing 8. Expand the area closed to hunting around Long Lake to include the Dundee Mountain Trail. Completed 1994. 9. Develop and implement a prescribed burn policy across the forest. Completed. 10. Maintain a good distribution of approximately 65 off-road parking lots in the forest. Completed. 11. Allow multiple use of some snowmobile access trails from nearby communities during the non-winter season. This will provide a connection between the communities and the forest trail networks for hikers and equestrians. Ongoing. 12. Expand the recycling program to be in compliance with state laws. Completed 1994. 13. Remove underground storage tanks and replace with above ground tanks. Completed 1996. 14. Collaborate with Fisheries Management in developing and maintaining boat ramps and fishing piers. Completed. 15. Landscape old building sites, and abandon wells and septic tanks when new properties area acquired. Completed 2000 and ongoing. 16. Maintain two dog training areas in the forest. Completed. 17. Modify ski trails in the Greenbush area to accommodate diagonal and skating skiers and eliminate skiers / snowmobiler conflicts. Partially completed. 18. Upgrade wastewater facilities at the Mauthe and Long Lake Recreation Areas. Completed 1997. 19. Upgrade existing facilities to provide adequate service to the public to meet current stands and codes. Ongoing. 20. Upgrade the energy efficiency of buildings through insulation, water conservation, electric modifications and other methods. Ongoing. 21. Improve Mauthe Lake Boat Access to provide easier and safer boat launching. Increase ramp slope and construct a disabled accessible pier. Completed in 2004 and 1991. 22. Formulate a task force consisting of Department personnel, resort owners, lakeshore residents, and trailered boat user to develop a lake use and access plan for Long Lake. Completed and expanded. 23. Provide limited-impact concessions at various locations in the state forest. Completed and ongoing.
Accomplishments 2007	1. Constructed a parking lot to serve Dundee Mountain Trail and the Mauthe to Long Lake Bike Trail. 2. Constructed a modern toilet shower building at the Mauthe Lake Campground. 3. Constructed phase 1 of the Mauthe to Long Lake Bike Trail – 5 miles. 4. Constructed 2.5 miles of mountain bike trail at the Greenbush Recreation Area.

	5. Over 4,000 volunteer hours logged assisting forest management in the campground host, interpretive, trail maintenance programs. 6. Prescribed burned 120 acres. 7. Used herbicides to control wild parsnip in the upland dog training area. 8. Managed the Greenbush Ski Trail System cooperatively with the Northern Kettle Moraine Nordic Ski Club to provide routinely groomed ski trails. 9. Partnered with the Long Lake Preservation Association to control the spread of invasive species through education efforts. 10. Managed four concessions in the state forest: firewood; food concessions (2); and boat. 11. Replaced two snowmobile bridges; Hwy SS and Mauthe Swamp East Bridges.

Interpretation and Education

MASTER PLAN OBJECTIVES	Provide interpretation and education of the natural history of the Northern Unit's flora, fauna, ecology, geology, archeology and history. Focus interpretation and education on ecosystem processes, plant communities and rare species.
Management Prescriptions	Development 1. Develop the unique features of the Ice Age Reserve through cooperation with the National Park Service and promote use of the Ice Age Center. Ongoing 2. Create demonstration areas in the forest to show private landowners goo timber harvesting techniques and the multiple benefits gained from proper forest management. 3. Expand the naturalist program to include education in forest, wildlife, fish and endangered species management. 4. Continue publication of the forest hunter information map.
Accomplishments 2007	1. Forest naturalists conducted 153 programs with 10,704 in attendance. 2. Programs topics included: forestry - invasive species, old growth; wildlife management - timber wolf of Wisconsin, birding, native plantings, bats, warblers, Wisconsin habitats, birds of prey; recreation - canoeing, kayaking, fishing, outdoor cooking and special events; and state forest management. 3. Updated the Moraine Nature Trail booklet.

Forestry

MASTER PLAN OBJECTIVES	Implement integrated silvicultural and other vegetation management practices to promote a balance between recreational goals, aesthetic values, wildlife habitat, and educational activities, and the continued production of forest products. Vegetation management has a direct impact on outdoor recreational areas, wildlife habitat, natural areas, watershed protection, water quality, and the production of a sustained yield of forest products. Management proposals for the forest resource have a considerable impact on the unique scenic qualities of the forest.
Management Activities	Management - the long range cover type goals established for the forest are based on two principles – biodiversity and aesthetic management. The general management prescription for various vegetation cover types is presented below. Old Field – management recommendation is to burn every five years. Dry-Mesic Prairie – management recommendations is to girdle problem woody species and allow them to dry and burn once every three to six years. Sedge Meadow – management recommendation is to girdle problem woody species and allow the to dry, and to burn once every three to five years. Wet Lowland – management recommendation is to burn once every five years. Brush Fields – management recommendation is to cut or girdle problem woody species and allows them to dry, and to burn once every five years. Oak/Central Hardwoods – management recommendation is to perpetuate the oak type. Much of the oak timber in the forest is mature or over-mature and needs to be regenerated. Because oak does not reproduce well in heavy shade, clear cutting, shelterwood harvesting, and prescribed burning are accepted silver cultural methods for regeneration. Timber sales in this cover type are designed to retain three to four den trees per acre. On some sites, succession from the oak to a central hardwood forest will be allowed to occur. Northern Hardwood – management recommendation for this cover type is to restore productivity and to upgrade the wildlife habitat and quality of timber produced. Timber sales in this type this type will be designed to retain at least eight to ten nut-producing trees and three to four den trees per acre. Aspen – primary management prescription is regeneration or expansion of aspen stands through clear cutting. Conifer Plantations – management activities prescribed for this timber type include thinning to maintain vigor, and pruning to improve stand quality, reduce fire hazard and prevent insect or disease infestations. Plantations will be harvested at rotation age and the site evaluated for continued pine plantation or conversion. Some new pine plantations will be considered in old field situations and be used as accents to hardwood associations. 1. Site preparation – prescribed burning, mechanical means, and herbicide application will be used to remove competing vegetation to prepare a site for regeneration. These methods could also be used to maintain wildlife openings, and to restore prairie-type conditions. The use of herbicides will be minimal. 2. Reforestation – Natural regeneration is encouraged, but where this is not possible or practical, tree planting will be used. Native species best suited to the site will be planted. Limited herbicide use may be required. Tree shelters, such as protective tubes, may be used enhance reforestation effort by minimizing

	damage to seedlings from mice, rabbits and deer. 3. Timber Stand Improvement – Timber stand improvement includes a variety of practices, including thinning, release, salvage, and pruning, designed to improve the growth or species composition of immature forest stands. Aesthetics or wildlife habitat needs will be considered. 4. Big tree silver culture is a management technique that is used to encourage the development of large diameter trees in long-lived species on specific habitats. Management techniques produce den trees and nuts for wildlife, and add to the aesthetics of the forest. Some timber harvesting is also allowed. 5. Timber harvest decisions will consider the affect on outdoor recreation, wildlife habitat and forest aesthetics. Approximately 100 acres each of hardwood and softwood will be harvested annually. Timber sales also will be in accordance with the forest objectives and management guidelines established for the stand in which a timber sale would take place. Timber harvesting will occur during the period in which the affected area of a forest is least used by the public. Timber harvesting will also be restricted during the months of March through July to protect wildlife species from disturbance during the nesting season. 6. Aesthetics – Aesthetic management techniques are designed to minimize the negative affects on forest aesthetics and recreation values. In addition, timber harvesting techniques such as reduction of slash visibility, winter logging, and precautionary skidding are practices to minimize logging impacts. <u>Operations</u> 1. Update forest vegetative surveys by 1994, including revised stand prescriptions to implement the integrated management recommend in this plan. 2. Manage hardwood and conifer stands according to accepted silviculture guidelines as scheduled in the 1994 vegetation survey update. 3. Use integrated pest management methods to minimize or prevent the development of pest problems. 4. Reinstate a tree planting program based on two principals – biodiversity and aesthetic management. Roadside buffer strips will be used at many location, and 260 acres will be planted on an annual basis over the next ten years. 5. Implement site preparation, planting and timber stand improvement as scheduled in the 1994 compartment vegetation survey.
Accomplishments 2007	During CY2007 the forestry program noted the following accomplishments: 1. Sold 63 aces of Conifer Timber Type for a maintenance thinning. 2. Sold 57 acres of Northern Hardwood Timber Type for an all-aged thinning 3. Sold 35 acres of Oak Timber Type for a thinning designed to maintain healthy oak. 4. Sold 5 acres of Aspen Timber Type for a regeneration cut. 5. Chemically prepared 48 acres of agricultural fields for conversion (planting) to native hardwoods in CY2008. 6. Chemically treated invasive plants on nearly 200 acres of conifer plantations in preparation for harvest activities and subsequent post-harvest planting of the units to native hardwoods. 7. Chemically treated invasive plants on nearly 180 acres of hardwood forest in preparation for timber sale activities. 8. Completed a complete re-inventory of the forest resources on the 30,000 acre property, the inventory began during CY2005. 9. Forester acted as a Prescribed Burn Boss on 5 prescribed burns intended to maintain warm

	season grasslands

Wildlife

MASTER PLAN OBJECTIVES	Wildlife management activities will focus on preserving and enhancing habitat types beneficial to game and non-game, especially rare, species. Because the state forest is the only large contiguous forested area remaining in southeastern Wisconsin, the preservation of the forest environment is critical to the continued existence of several game and non-game species in this region of the state.
Management Activities	Development 1. Restore 48 impoundments / wetlands. 2. Develop a cooperative agreement and plan with the Ruffed Grouse Society to improve ruffed grouse and woodcock habitat in portions of the forest. This plan will emphasize the retention and expansion of aspen and the retention of alder cover types in the forest. 3. Increase the amount and distribution of permanent grass cover averaging about 50 acres per year. In addition, complete development of the native grass/prairie area on Jersey Flats. 4. Plant fruit-bearing shrubs to complement pine and hardwood tree plantings and along selected segments of hiking trails. 5. Initiate a prescribed burn program in cooperation with forestry in oak forest areas to encourage regeneration of oak and suppression of northern hardwood species. 6. Incorporate information on the wildlife observation areas into forest literature. Operations 1. Maintain artificial nesting structures for wood ducks, bluebirds, swallows, and other cavity nesting species through cooperative efforts with volunteer groups. Maintain at least 50 wood duck boxes and 50 other structures. 2. Maintain grassland areas, both cool season and native warm season grasses, through prescribed burning. Approximately 150 acres will be burned a year. 3. Continue the sharecropping program with local farmers to provide winter food plots, brood cover, and maintain opening; and to help develop nesting cover areas or convert open fields to other permanent cover types. Improve the distribution of sharecropping in the forest and maintain at least 2% of the forest land in the sharecrop program. 4. Conduct surveys to monitor wildlife populations, evaluate the effectiveness or need for habitat programs, and regulation changes. • Expand from one to two routes per years, the annual ruffed grouse drumming survey by Department personnel and volunteers. • Continue annual woodcock singing ground surveys at one route per year. • Continue grassland bird survey on Jersey Flats. • Conduct routine hunter surveys as appropriate to assess hunter pressure, distribution, and success.

	• Monitor deer and turkey populations through harvest registration. • Conduct game bird brood observations. • Continue sharecropping program questionnaires on wildlife observations. 5. Continue the pheasant stocking program at a rate of 1800 birds per year, but restrict release to three to four general areas. 6. Improve composition of upland shrub communities through selective brush management techniques including prescribed burning, cutting, and herbicide treatment. 7. Work with volunteer groups and special interest groups to promote public involvement and cooperative projects in the forest.
Accomplishments 2007	Development 1. Restored 2 wetland basins with ditch plugs, restoring 3.2 acres of wetland adjacent to the Milwaukee River. 2. Planted 40 acres of prairie, to the north of Jersey Flats (SE CTH G & State Hwy 67 intersection). Operations 1. Conducted prescribed burns on 122 acres. 2. We had 17 sharecrop contracts on 765 acres of land. We also maintained cool season grass cover on 15 parcels, totaling 204 acres, through the hay sale program. 3. We continued to monitor deer and turkey populations through mandatory registration of hunter harvest of these species. Field personnel kept records of broods of upland game birds during the 10 week observation period. Questionnaires were sent to sharecroppers to obtain wildlife observations and cropping records. 4. Approximately 1760 pheasants were stocked prior to and during the pheasant season.

Endangered Resources

MASTER PLAN OBJECTIVES	The mission of the endangered resource program is to identify, protect and manage native plant and animal species, natural communities, and other natural features; enhance and restore populations and habitats of rare and endangered species to pre-settlement conditions; and promote knowledge, appreciation, and stewardship of Wisconsin's native species and ecosystems for present and future generations.
Management Activities	Development 1. Inventory the Kettle Moraine Red Oak habitat Preservation Area for rare species, determine their densities, and map their locations. 2. Develop and erect interpretive signs at Little Mud Lake Habitat Preservation Area. 3. Inventory forestry compartments 26, 27, and 31 for rare species, determine their densities and map their locations. 4. Inventory the forest for prairie remnants, rank them, and determine appropriate classification and

	management plans. 5. Develop a long-range management plan for the Kettle Moraine Red Oak Habitat Preservation Area. 6. Develop information and regulation signs on the long-eared sunfish and greater red horse state-threatened fish species. 7. Inventory the forest for locations of rare plant species. 8. Inventory the forest for locations of rare aquatic animal species and reptiles and amphibians. <u>Management</u> A. State Natural Areas 1. Designate the following sites as State Natural Areas or Habitat Preservation Areas. Completed • Milwaukee River Floodplain State Natural Area • Milwaukee River and Swamp State Natural Area • Kettle Hole Woods State Natural Area • Crooked Lake Wetlands State Natural Area • Milwaukee River Tamarack Lowland & Dundee Kame State Natural Area • Butler Lake and Flynns Spring State Natural Area • Johnson Hill Kame State Natural Area • Kettle Moraine Red Oak State Natural Area • Kettle Moraine Red Oak Preservation Area • Little Mud Lake Habitat Preservation Area 2. These areas will be inspected annually for and removal of problem exotic species such as purple loosestrife, buckthorn, honeysuckle, and garlic mustard, to search for other factors considered detrimental to the natural area. 3. A management plan will be developed for the Kettle Moraine Red Oak Habitat Preservation Area. 4. Little Mud Lake will be managed to protect the salamanders and their habitat. The lake, its surrounding wetlands, and timbered lands will be managed with the ecological needs and perpetuation of the amphibians of special concern in mind. A no cut zone will be established around the lake. B. Interior Birds - Forest interior bird species are species whose long-term existence depends on large forested tracts. Management recommendations - • Minimize forest fragmentation. • Minimize isolation by connecting forest patches with corridors, if feasible. • Use selective cutting on a long-term biological rotation in diverse or riparian forests. • Convert pine plantations to hardwoods following the gradual thinning and eventual harvesting. • Cut areas suitable for oak regeneration in larger blocks using clear cutting or shelterwood techniques on a longer-term biological rotation that will approach old-growth state. Advanced regeneration work may include the removal of shrub and exotics, prescribed burns, or planting. • Retain a 70-percent crown closure of the forest canopy, except for oak and aspen regeneration cuts, using selective cutting or timber stand improvement practices. • Increase the rotation length of even-aged stand to 100 years or more, except for aspen. • Minimize edge by clear cutting areas in circles or squares. • Limit aspen management to the peripheries of any large forested block. • Retain several uncut trees, or groups of trees and snags, per acre in clear cutting operations.

	• Preserve vegetative buffers along stream, lake shores, and sensitive plant sites. • Minimize right-of–way corridors and roads through large forested areas to prevent the creation of more edge. • Plan future intensive development away from large forested areas. • Discourage day-lighting of logging roads. • Restrict landings to forest exteriors. • Give high priority to reforesting openings within or between larger wooded tracts. • Minimize logging during the breeding season. C. Grassland Birds – Grassland birds exhibit the same type of problems from fragmentation as forest interior birds, but grasslands are fragmented by trees and shrubs rather than through the removal of vegetation. Management recommendations – • Manage grassland conditions for grassland birds if these sensitive and declining species are present. • Minimize grassland fragmentation and isolation. • Remove encroaching woody vegetation, primarily along corridors, fence-rows, roads, and ditches. • Restore natural hydrological conditions by filling ditches and re-establishing natural stream meanders • Incorporate an appropriate prescribed burn plan to meet the needs of special concerns species. • Burn only a portion of grassland in any one year to ensure different grassland conditions for the variety of grassland species. • Incorporate mowing with controlled burning to eliminate problem shrubs. • Reconstruct prairies on units larger than 40 acres. Smaller units are of limited benefit to grassland birds. • Establish a mix of forbs and grasses in prairie reconstruction. Plant grasses and forbs in a patchwork pattern. A mosaic of plants causes a wider diversity of birds to use the site.
Accomplishments 2007	1. Approximately 126 acres in the Milwaukee River and Swamp State Natural Area were treated for glossy and common buckthorn. The project prescription directed the buckthorn to be cut and stump treated with glyphosate. 2. Conducted surveys of forest interior birds in and adjacent to the Wisconsin Public Service pipeline project to determine potential impacts and to assist in scheduling construction. 3. Conducted red shoulder hawk surveys in timber sale areas to determine potential impacts and to better schedule cuttings. 4. Routinely conducted Natural History Inventory checks for all projects that alter the landscape.

Fisheries

MASTER PLAN OBJECTIVES	Fisheries management activities will focus on enhancing fish habitat, populations, and water quality while increasing angling and education opportunities.
Management Activities	Development 1. Construct a disabled access fishing pier at Long Lake. 2. Dredge the spring pond at Glenbeulah Springs. 3. Dredge the fishing pond at the indoor group camp to improve habitat quality for rainbow trout. 4. Construct a carry-in boat access facility at Forest Lake. Construct and post informational signs showing access location. 5. Construct disabled access fishing pier at Auburn Lake. 6. Construct a boat ramp and associated roadway for Auburn Lake. Construct improvements to the bridge crossing at Lake Fifteen Creek and on the road leading to access. Operations 1. Formulate a task force consisting of Department personnel, resort owners, lake shore residents, and trailered boat users to develop a lake and access plan for Long Lake. 2. Continue fish stocking at Long Lake, Forest Lake, Crooked Lake, Glenbeulah Springs Lake, Fifteen Creek, Watercress Creek and the Mullet River. 3. Use Mauthe Lake as a research site to evaluate the impact of aquatic vegetation management on fish communities. Remove brazon milfoil. Discontinue stocking Rainbow Trout in Butler Lake and manage for native species. 4. Conduct comprehensive fishery surveys for Butler Lake, Butzke Lake, Cedar Lake, Mauthe Lake, and Little Mud Lake. These surveys shall collect information on the relative abundance and condition of major fish species.
Accomplishments 2007	1. Partnered with the Long Lake Preservation Association to educate boaters on controlling the spread of aquatic invasive species at boat landings in the state forest.

Cultural Resources

MASTER PLAN OBJECTIVES	The state forest is responsible for proper management of its cultural resources. Protect the cultural resources by conducting archaeological and historical reviews prior to any land use changes or development projects.

Management Activities	Management 1. Develop long-term management plans for properties listed on or eligible for the National or State Register of Historic Places. 2. Consider cultural resource protection and preservation in any land use changes or development projects. 3. Plant sensitive site areas in grasslands to protect them from future disturbances and looting. 4. Negotiate with the State Historical Society to mitigate adverse affects on cultural resources before any land disturbances activities. 5. Consider alternate uses, intact sale, or donation of historic structures before demolition. If not possible, fully document these structures before removal. 7. Provide educational literature on the preservation and protection of archeological and historic sites. 8. Prohibit collection of artifacts on cropped land and other exposed areas controlled by the Department. 9. Develop friends groups to aid in the preservation of known sites and the discovery of new ones.
Accomplishments 2007	1. Conducted an archaeological investigation of the Mauthe to Long Lake Bike Trail route. 2. Routinely considered cultural resource protection in any land use changes or development projects.

Land Acquisition

MASTER PLAN OBJECTIVES	The state forest encompasses 28,021 acres as of December 1990. The forest project boundary expands by 6,849 acres which brings the total project to 36,391 acres. It is the policy of the Natural Resources Board to acquire land through purchases from willing sellers or donations. The Department will focus its real estate acquisition activities on land within the proposed project boundary that has high probability of change in use, land now used for or suitable for intensive outdoor recreation, land needed for habitat management, land needed for public facility development, and scenic land with a high potential for incompatible use.
Accomplishments 2007	1. 300’ x 14’ permanent trail easement purchased as part of the Mauthe to Long Lake Bike Trail providing direct access to the small village of Dundee.

Administration and Operations

MASTER PLAN DESCRIPTION	
Accomplishments 20_ _	