Upper Mississippi Watershed Partnership Action Plan
(2009 - 2013)

Forestry Partnership

The goal of the Upper Mississippi Forest Partnership is to maintain and restore the water and wildlife habitat of the Upper Mississippi River Basin by restoring riparian forests and improving the condition of the forests throughout the watershed. This can only be done when many partners work cooperatively building a watershed-wide approach to sustainable forestry in the Upper Mississippi Basin.

"The relationship between forests and rivers is like father and son."
-Gifford Pinchot, 1905

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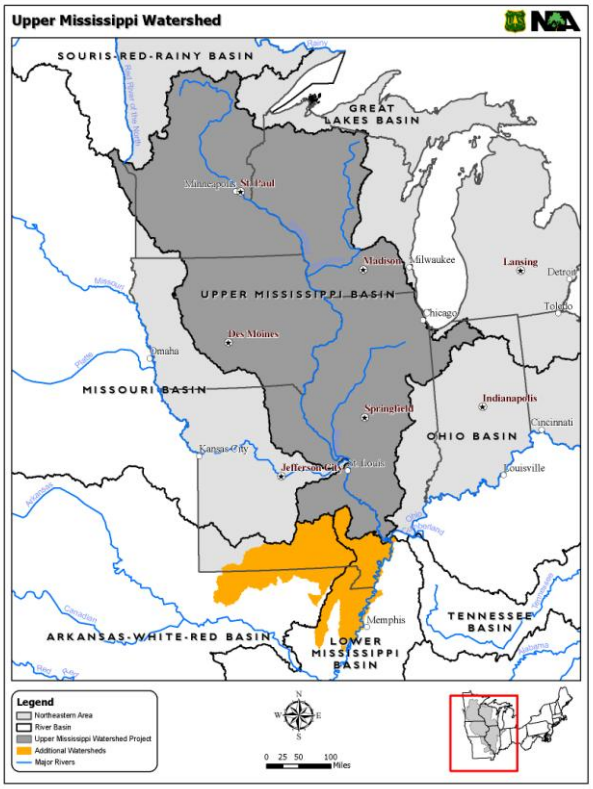
Introduction

The Upper Mississippi River Basin is a major sub-basin of the Mississippi River Basin, the largest floodplain river ecosystem in North America and the third largest of 79 such river systems in the world. Few river systems have played such an integral role in shaping our nation's history, culture, and economic heritage. The Upper Mississippi River travels 800 miles from Lake Itasca in northern Minnesota to the confluence with the Ohio River at the southern tip of Illinois. The basin (or watershed) encompasses 189,000 square miles of land area that drains to the Lower Mississippi River at Cairo, IL. For the purposes of this partnership several additional watersheds in southern Missouri that drain in to the Lower Mississippi Basin have been added as they include some of the more heavily forested areas of the state.



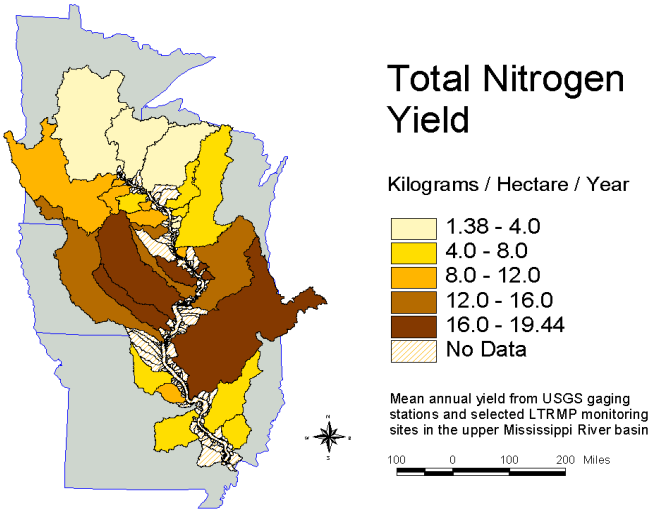
The Upper Mississippi River is a "working" river and its basin a "working" landscape. Over 200 years of changing land use in the basin and expanding navigational use of the river have transformed the river and its watershed. Harvesting the northern pine forests and conversion of prairies and forests to agriculture has altered the hydrology of the watershed. Construction of levees and locks and dams have separated the river from half its floodplain, and transformed 655-miles of the Mississippi and 323-miles of the Illinois from free-flowing rivers to a series of pools.

Today, over 50 percent of the corn and 47 percent of soybeans produced in America are grown in the Upper Mississippi River Basin. On average, 80 million tons of agricultural commodities, petroleum products, and coal are transported annually on the Mississippi and Illinois Rivers. The watershed is home to 30 million residents and over half of them use rivers as their drinking water supply. Nearly 12 million people use the river system each year to hunt, fish and recreate.

Key Issues

A mosaic of agricultural, suburban, and urban land uses has replaced the native prairie, oak savanna, forests, and wetlands in Upper Mississippi River Basin. Clearly, this change has often been at the expense of critical natural ecosystems.

- **Water Pollution.** Sediment, nitrogen and phosphorus are the primary pollutants of concern in the Basin. A significant portion of sediment, nitrogen and phosphorus loads to the Mississippi River comes from human activities: runoff and groundwater from agricultural practices, discharges from sewage treatment and industrial wastewater plants, and stormwater runoff from city streets. Small streams draining much of the Upper Mississippi region contain high amounts of nitrogen from crop fields. Sediment loads caused by row crop farming, urban development, surface mining, and indiscriminate timber harvesting have increased in tributaries to the Upper Mississippi River. Pools in the Upper Mississippi River have accumulated sediment that is filling backwaters and side-channels, critical for fish and wildlife. In addition, many environmental contaminants are strongly attached to soil particles, transported to the river pools, and deposited. Aquatic organisms and fish can be harmed by contact with contaminated sediments.

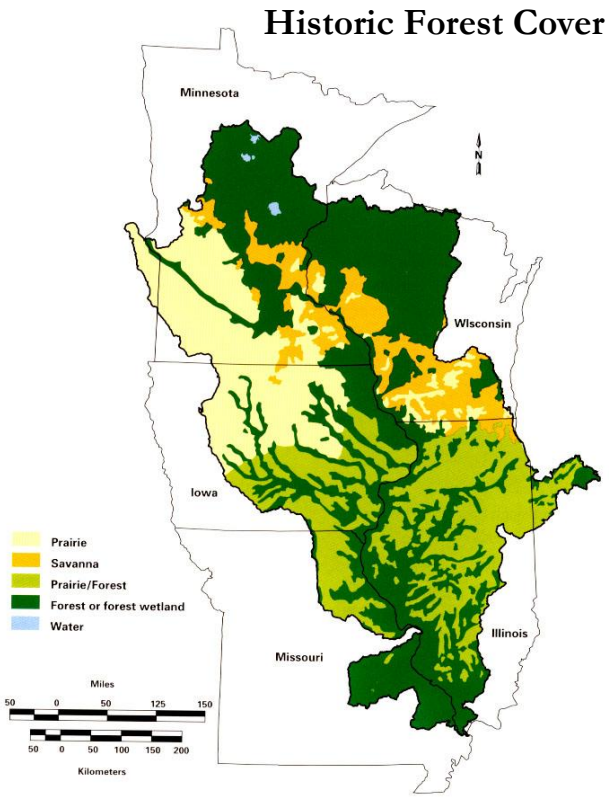


  The delivery of high amounts of nitrogen to the Gulf of Mexico causes a hypoxia zone (the presence of low levels of dissolved oxygen in bottom waters) to expand each summer. About 90% of the nitrate load to the Gulf of Mexico comes from nonpoint sources. Furthermore 75% of the nitrogen comes from only one third of the 31 state Mississippi River drainage area. States in the Upper Mississippi basin cited as contributing to this 75% are Illinois, Iowa, Indiana, and Missouri.

  The hypoxia zone has persisted and grown for the past decade. The current Gulf Hypoxia Action Plan (2008) strives to "make significant progress towards" reducing the 5-year running average areal extent of the Gulf hypoxic zone to less than 5,000 square kilometers by the year 2015. States are to implement nutrient and sediment reduction actions.

- **Loss of Migratory Bird Habitat.** The Upper Mississippi River basin is a focal point for a variety of major bird conservation efforts. The north-to-south orientation of the river and adjacent habitat make it critical to the life cycle of many migratory birds. It is a globally important migratory flyway for 40 percent of all North American waterfowl and 60% of all the bird species in North America. However, the loss of over 50% of historic floodplain and valley hardwood forests creates a problem for some waterfowl, raptors, and songbirds. The boreal transition forests of the Upper Mississippi provide nearly the entire habitat for species such as

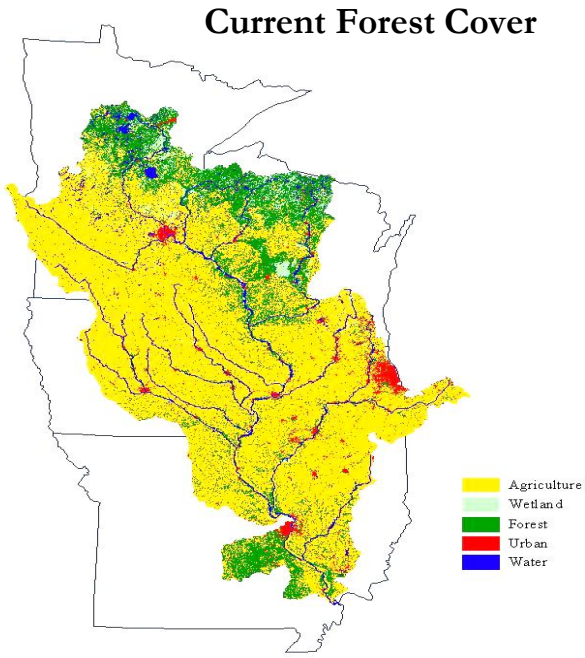
golden-winged warblers. Losses of prairie and oak savanna and transition habitats have threatened other species such as the prairie chicken, and Bell's vireo. The management of these unique and rich hardwood forest ecosystems is of particular interest to future recovery and conservation of many target species.



The ecosystem as a whole benefits from floodplain forests. Besides serving as a rich habitat for wildlife and fish during floods, forests reduce soil erosion, improve water quality, enhance recreational activities, and provide a scenic landscape. Floodplain forests are not regenerating in the Mississippi and Illinois River system due to agricultural and urban developments, changes in natural river flood pluses, the rising water table, and aggressive invasion of non-native invasive plants, such as Reed's Canary grass. The floodplain forests that remain are changing in composition from a variety of species, including mast trees; to a forest dominated by silver maple.

The loss of livestock from the agricultural landscape since World War II has negatively impacted on all kinds of habitat and many species. This problem has the potential to intensify as bio-energy crop prices drive the conversion of conservation lands to intensive production. Diversified farmers, particularly managed grazers and organic producers, are some of the best conservationists left in the farming business. This type of production should be encouraged especially where the soils and water quality concerns warrant it.

The importance of pasture and hay on the landscape and the benefits of managed grazing for both woodlands and riparian areas need to be recognized. Some of our best savanna remnants and goat prairies have been sustained over decades with light grazing and occasional fire.



♣ **Forest Loss and Fragmentation.** Forests and prairies are the most beneficial land use in the Upper Mississippi River Basin in terms of protecting watersheds and water quality. Nearly all of the prairies and about 70 percent of the forest land have been converted to agriculture and urban land uses. The remaining forest land is critical to watershed health and clean water. The ability of forest land to produce abundant

clean water declines as forests are fragmented and then eventually lost. Fragmentation is a process where larger contiguous forest landscapes are broken into smaller, more isolated pieces, often surrounded by human-dominated uses. The loss and continued break up of forest land increasingly impairs water flow and quality, forest health and diversity, and other economic and recreational benefits. The Upper Mississippi River watershed experienced rapid loss of forest lands in the late 1800's to early 1900's. Since then, forest conversion is most severe in high-growth areas. Trends in forest ownership show a similar movement to smaller and smaller forest tracts further complicating fragmentation impacts.

What can be done?

Prior to European settlement, water and associated nutrients and sediment were delivered to the Upper Mississippi River in two ways: 1) by undisturbed tributaries bordered by riparian forest and prairie and 2) by forests, wetlands and prairies that stored water during wet periods and slowly released it during dry periods. The intact stream network buffered high and low flows, and nutrients were delivered more evenly during the year. Floodplain forests and wetlands provided rich habitats for a vast diversity of migratory birds, mammals and aquatic species, and Upper Mississippi River once supported nearly 50 species of freshwater mussel.

In the altered landscape of today, flows reach the river faster and with greater velocity, they carry greater amounts of nutrients, sediment, including urban and agricultural contaminants that were not present in the past. Because of its scale, the ecological problems of the Upper Mississippi River Basin and ultimately the Gulf of Mexico cannot be solved with only with technology. Therefore, the use of natural ecosystems to solve environmental problems will be a prominent part of the solution. The suite of techniques includes:

- Modifications of farm practices to ensure major reductions in nitrogen, phosphorus, and sediment loading including more effective use of nitrogen from fertilizer, and manure.
- Market development to allow switching from traditional row crops such as corn and soybeans to alternative cropping systems including agroforestry systems and biofuels.
- Expanded incentives to create major tracts of wetlands and forest riparian buffer ecosystems located between farmland and streams and rivers, particularly in those areas where concentrations of subsurface nitrate-nitrogen is highest and where wetlands once existed.
- Flood control by means of riparian retention of floodwaters, rather than by efforts to confine floodwaters in the river channel.
- Conservation and restoration of remaining upland woodlands and reestablishment of oak savannas and other unique forest habitats for migratory birds
- Management of existing forests to improve health and natural composition.
- Increased technical assistance and incentives to encourage private woodland owners, who control the majority of forest ownership in the Upper Mississippi River watershed, to practice sustainable forest management.
- In parts of the watershed where much of the forests are fragmented and exist either on steep slopes or narrow strips bordering waterways, focus resources on enhancement, enlargement, and protection from development, livestock grazing, and other negative impacts.
- Increase the level of awareness and action about the relationship between forests, clean water, and bird habitat. Constituents would include from private forest landowners to citizens close to a tributary or urban residents adjacent to the Mississippi River.

The Upper Mississippi Forest Partnership members can:

1) Demonstrate and increase awareness of the important role forests play in healthy watersheds.

2) Assess forest extent, condition, and change in relation to water quality and river and stream conditions.

3) Educate landowners and resource professionals through documents, workshops and demonstrations on forestry solutions that reduce sediment and nutrient losses from the basin and diversify landowner income.

4) Provide accelerated technical assistance to private landowners in targeted watersheds.

5) Assist federal, state, local, and landowner partners develop restoration strategies.

6) Be a catalyst for innovative approaches to tree and forest restoration projects through a cooperative grants program aimed at local and watershed partners.

Upper Mississippi Watershed Forestry Partnership Action Plan (2009-2013)

This action plan continues the first regional watershed-based effort among forestry partners in the Upper Mississippi Basin begun in 2004. Watershed management requires the development and use of broad-based partnerships. Already many organizations are involved with the Partnership, some formally through a Memorandum of Understanding and others informally as working group members. The steering committee is looking at the present organization of the partnership to find the most effective way to incorporate and utilize skills and resources of existing and new partners.

Every partnership needs resources to support its' work. For the Upper Mississippi Forest Partnership the support has come through the National Fish and Wildlife Foundation's Upper Mississippi Watershed Fund. The Foundation is continually seeking to expand the financial resources of this fund. See the Appendix for more information on what projects have been supported to date.

Upper Mississippi Forest Partnership memorandum of understanding signatories as of 12/2008:

Federal	State	Local	NGO
US Forest Service Northeastern Area, S&PF	Illinois Department of Natural Resources	Soil and Water Conservation Districts	The Nature Conservancy
US Forest Service Region 9	Indiana Department of Natural Resources	Resource Conservation and Development Areas	Trout Unlimited
Army Corps of Engineers	Iowa Department of Natural Resources		Ducks Unlimited
Fish and Wildlife Service	Minnesota Department of Natural Resources		Upper Mississippi River Basin Association
US Geological Survey	Missouri Department of Conservation		Audubon Society
Environmental Protection Agency	Wisconsin Department of Natural Resources		
USDA Natural Resource Conservation Service			

The action plan seeks to:

1. Strengthen coordination among the Upper Mississippi River Basin organizations working on sustainable forest management, bottomland restoration, improvement of habitat for upland and bottomland birds, and improving the connection between forests and grasslands and water quality through functioning riparian systems.
2. Develop and implement demonstration projects in targeted watersheds.
3. Conduct educational efforts that will help address key watershed issues.

Under each category there is a goal statement, a desired future condition, indicators of success, objectives, and tasks.

2009-2013 Action Plan Objectives

Sustainable Forests

Demonstrate through partnership conservation efforts the application of sustainable forestry to protect, maintain, and restore healthy forests.

Desired Future Condition: several highly visible forest watershed demonstration projects within the Upper Mississippi River watershed are helping citizens, managers, landowners, and policy makers understand the role trees and forests play in producing clean water and priority wildlife habitat.

Indicators of Success:

- Trends in the amount of forestland in the UMR and the forest watershed demonstration sites in particular are stable or increasing.
- An increasing trend in the amount of larger blocks (500 acres) of forestland that is managed in a sustainable way (permanent protection or forest management plan) in the UMR and the forest watershed demonstration sites in particular.

OBJECTIVE #1--Identify several forest watershed demonstration sites within the Upper Mississippi watershed to highlight sustainable forestry.

Tasks

1.1 Determine criteria for selecting forest watershed demonstration sites highlighting the role trees and forests play in producing clean water and wildlife habitat.
1.2 Determine a measurement metric for significant unfragmented forest.
1.3 Utilize criteria for selecting potential forest watershed demonstration sites.
1.4 Develop operating guidelines to use in implementing and sustaining a model forest watershed demonstration site, with education as key component.

OBJECTIVE #2—Develop an Action Plan for each forest watershed demonstration site.

Tasks

2.1 Assess the forest resource in each forest watershed demonstration site, threats, and management/ restoration needs.
2.2 Assess what tools are available to address the concerns of each forest watershed demonstration site.
2.3 Implement actions items to address concerns.
2.4 Share the story of each forest watershed demonstration site.

OBJECTIVE #3—Develop a tool kit for forest watershed demonstration sites consisting of similar projects done elsewhere and financial and technical resources.

Tasks

3.1 Investigate other model forests and what can be learned from them.

3.2 Investigate what technical resources are available for each forest watershed demonstration site.

3.3 Investigate what financial resources are available for each forest watershed demonstration site.

3.4 Compile and inform our partners of the forest watershed demonstration site electronic tool kit.

OBJECTIVE #4—Develop guidelines on how to identify forest fragmentation, how to monitor change over time and opportunities to address negative impacts.

Tasks

4.1 Assess how State Forestry agencies are addressing the status of and trends in forest fragmentation this as part of their state forest assessment requirement in the 2008 Farm Bill.

4.2 Assess how the Forest Service FIA data addresses the status of and trends in forest fragmentation from 1990 to present.

Water Quality

Improve water quality to support healthy and productive aquatic ecosystems with forest-based strategies at the site, watershed, and basin scale.

Desired Future Condition: a riparian forest that is diverse in terms of both species and structure helping to sustain a native aquatic species community.

Indicators of Success: In development. The Upper Mississippi River Basin Association has been looking at how to track the impact of ecosystem restoration projects on water quality. Several items have been suggested including an Index of Biological Integrity, utilizing the Long Term Monitoring Program data, or developing a new landscape metric.

OBJECTIVE #1—By 2013, we have resources available to assist in the restoration and management of bottomland forests.

Tasks:

1.1 Distribute newly revised "Bottomland Hardwoods Managers Handbook" to landowners and resources managers in the UMR.

1.2 Facilitate on-going dialogue between those resource mangers interested in bottomland forest restoration.

1.3 Monitor bottomland restoration along the entire Mississippi River. Look for areas of collaboration.

1.4 Continue gathering information on bottomland reference sites in the UMR watershed.

1.5 Conduct a bottomland tree planting survival study assessing causes for planting success or failure.

OBJECTIVE #2—Restore and actively manage at least 25,000 acres of bottomland forests by 2013 to meet multiple objectives—flood control, sediment and nutrient capture, carbon sequestration and more.

Tasks

2.1 Prioritize target areas for bottomland forest restoration based on partner interest, soils, and historic vegetation.

OBJECTIVE #3—Strengthen partnership and coordination between local, state, and federal agencies, NGO's, and other partners to work together on common water quality and forestry concerns.

Tasks:

3.1 Share IN DNR riparian buffer prioritization tool to other UMR states.

3.2 Develop a watershed forestry model toolkit for communities along the Mississippi National River and Recreation Area.

3.3 Initiate a discussion among partners concerning barriers to expanding the amount of riparian buffers.

OBJECTIVE #4—We have boots on the ground working with landowners on forestry and water quality problems.

Tasks:

4.1 Coordinate with other UMFP objectives to target high priority areas.

4.2 Coordinate with UMFP partners who have staff working at the local level (ie NRCS and State Agencies) to target technical assistance to high priority areas.

Migratory Bird Habitat

Increase migratory bird habitat quality and quantity to support stable or increasing forest bird populations.

Desired Future Condition: improved forest habitat that results in stable or increasing target bird populations

Indicators of Success:

- Stable or increasing trends in indicator bird species selected by forest habitat type.
- At the project level and at the watershed-scale, there are increases in those bird species that require higher quality forest habitat.

OBJECTIVE #1—Develop a forest bird conservation toolbox tailored for the different ecosystems and forest types found within the Upper Mississippi River (UMR) basin.

Tasks:

1.1 Using existing partnership evaluations of bird conservation vulnerability (e.g, Partners in Flight and state Wildlife Action Plans), develop prioritized lists of target bird species for the portions of each of the Bird Conservation Regions (BCRs) found within the Upper Mississippi River basin.

1.2 Identify existing forest management best practices for target bird species.

1.3 Bring foresters and bird experts together to evaluate existing best practices or develop forest management best practices for target bird species as needed.

1.4 Identify forest ownership and management directions by BCR's within in the UMR and those responsible for implementing the management direction.

1.5 Work with those responsible for implement the management direction by ownership class to find out the best format for the forestry best practices for each targeted bird species.

1.6 Disseminate forest/target bird best practice information to partners for inclusion in their plans.

OBJECTIVE #2—Create a network of BIRDs (Bird-Intensive Restoration Demonstrations) strategic demonstration/restoration landscapes representing the major forest types in the UMR. For example: upland forest (Cerulean Warbler), bottomland hardwood forest (Prothonatory Warbler), and transitional/successional forest (Golden-winged Warbler or Woodcock.)

Tasks:

2.1 Identify existing spatially explicit models that identify priority areas for achieving population objectives of target species (e.g., those developed by the Upper Mississippi Joint Venture Science Team, the Central Hardwoods Joint Venture, and USGS Upper Midwest Environmental Sciences Center.)

2.2 Identify BIRD priority areas within the UMR for achieving broader regional bird population objectives for priority forest birds. Note—there should be collaboration here with other objectives that are identifying priority areas.
2.3 Identify gaps/needs for the development of strategic conservation needs for achieving forest bird objectives within each BIRD.
2.4 Through the UMR partners, fill in the gaps in achieving forest bird objectives within each BIRD.

OBJECTIVE #3—Develop a framework for monitoring bird response to forest management activities.

3.1 Consider developing the UMFP bird habitat conservation monitoring objective within the context of the developing Midwest Coordinated Bird Monitoring Partnership (FWS).
3.2 Participate in a sub-regional workshop to develop forest bird monitoring within the context of a broader regional coordinated bird monitoring partnership.
3.3 Develop monitoring protocols for evaluating local project success in terms of bird species response metrics within the context of regional monitoring of trends for the same species.
3.4 Identify frameworks for contributing monitoring information to the Avian Knowledge Network (AKN).
3.5 Identify visualization and decision support tools that might be possible under the AKN framework.
3.6 Develop a plan for contributing to the development of a Midwest node for the AKN.
3.7 Disseminate information from the AKN to partners so they know what areas to protect and restore.

Closing

Water quality in the Mississippi River Basin is severely impacting local water supplies, fish and wildlife habitats, and contributing significantly to nitrogen loading in the Gulf of Mexico. Forests can play a part in enhancing the quality of the River ecosystem. Through a coordinated and focused partnership, trees and forests can help enhance the river and its tributaries, reduce impacts from agriculture and urban areas, restore and connect wildlife habitats, and help ensure the future health of the Upper Mississippi River Basin and its residents.

Because of its scale, the ecological problems in the Upper Mississippi River Basin will not be solved overnight. Conventional technology presents costs that are overwhelming. A focus on the restoration, conservation, and stewardship of natural systems such as forests is necessary to solve the environmental problems faced by the River. A combination of restoration and conservation practices would result in a landscape that would not only enhance water quality and increase wildlife use in the wetlands, forests, and adjacent streams; but such a landscape would be more livable, more ecologically sound, and ultimately more economically sustainable than the one it would replace.

The key to solving the problems in the Upper Mississippi River is working at the watershed level. By working locally with landowners and a diverse array of partners, and by coordinating across the state boundaries, forestry programs and actions can contribute to maintaining and restoring the Upper Mississippi River ecosystem. This watershed partnership provides a vehicle to begin the process of defining a conservation vision for forests in the Upper Mississippi River and a way to facilitate localized forestry solutions.

Appendix
2004-2008 Action Plan Objectives and Accomplishments

Expand the Upper Mississippi Watershed Forestry Partnership

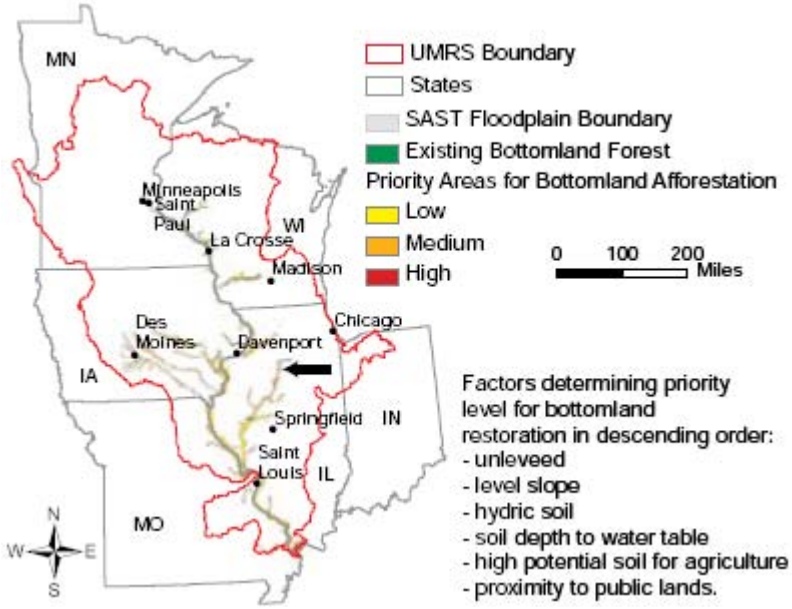
Actions:

Maintain an Upper Mississippi River Basin Forestry Coordinator Position **–**The Coordinator would serve as a liaison between the State Foresters and federal and state agencies, and work to establish linkages with other groups working in the basin.
Accomplishments: A coordinator was funded from 2004-2007 through a Northeastern Area grant managed by the WI Department of Natural Resources. Funding for the position ended in 2007. Currently the coordinator position is provided by the Northeastern Area S&PF, St. Paul Field Office.

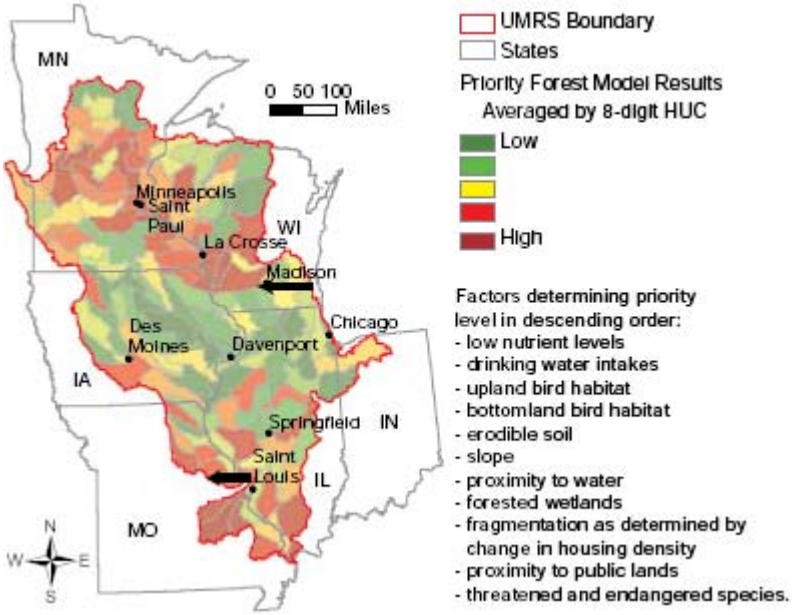
Strengthen an Upper Mississippi River Forestry Steering Committee **–** With support from the Upper Mississippi Forestry Coordinator, partnership representatives meet regularly to discuss individual efforts and to develop integrated multi-state approaches for addressing watershed issues.
Accomplishments: At present the steering committee has representatives from the Forest Service including the Northeastern Area-S&PF and National Forest System-Region 9, six State Forestry agencies, Fish and Wildlife Service, Natural Resource Conservation Service, and Ducks Unlimited.

Evaluate forest land condition and trends **–** Gather existing data and information and evaluate forest land status, trends, and conditions on a watershed scale.
Accomplishments: The USGS Upper Midwest Environmental Science Center conducted an analysis identifying the priority forests of the Upper Mississippi River basin. The final report and maps may be found at the UMFP website: www.na.fs.fed.us/watershed

Coordinate and target forestry program goals and actions across the watershed **–** Watershed issues do not respect jurisdictional boundaries. In addition, many watershed problems are best addressed on a scale that transcends political boundaries. Targeting specific projects or programs in multiple states using common watershed wide objectives will provide an opportunity to better measure progress and communicate results.
Accomplishments: The UM priority areas maps indicate:
1. Bottomland forest restoration highlighting those areas with wet soils, unleveed, and currently in row crop agriculture.



2. Priority forest for conservation.



In addition to this work the U.S. Army Corps of Engineers, St. Louis District and the Middle Mississippi River Partnership evaluated ecosystem restoration options in the Middle Mississippi corridor from St. Louis to where the Ohio River joins the Mississippi in southern Illinois. In this process pre-European settlement ecosystem conditions were compared to current conditions. Then factoring in altered hydrology and vegetative communities, restoration and management approaches were identified. This analysis was a much more detailed analysis than that done by the UMFP. As the Corps of Engineers funding allows, this type of analysis will be continued upstream to St. Paul, MN.

Link State Foresters with other watershed-based groups – A key to increasing effectiveness and sharing experience is to better coordinate and leverage skills and resources. In addition, a focus on the watershed helps to expand the network of potential conservation partners.

Accomplishments: The UMFP has focused much of its work with two already existing, mature partnerships:

The Driftless Area Initiative http://www.driftlessareainitiative.org/

Trout Unlimited-Driftless Area Restoration Effort
http://www.tu.org/site/c.kkLRJ7MSKtH/b.3302703/

The Middle Mississippi River Partnership
http://www.swircd.org/mmrp/

Several National Fish and Wildlife Foundation grants have gone to these organizations. Staff from these organizations have been participating in UMFP working groups where interests overlap.

In addition there is a proposal being developed for the Upper Mississippi River Basin to the National Fish Habitat Action Plan called "Fishers and Farmers Partnership." The goal of this effort is to advance long-term strategies to improve stream health and sustainable agriculture. This effort is complimentary to the UMFP in several ways: it covers the same geography and targets the agricultural community.
http://www.fishersandfarmers.org/

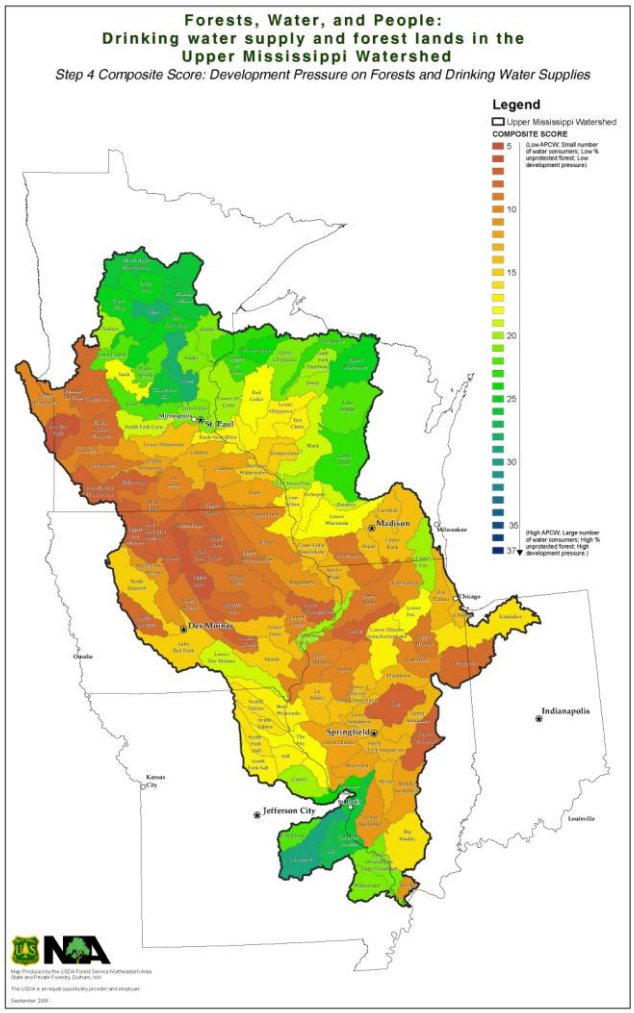
Use forestry practices and programs to improve water quality

Actions:

Document forest watershed values – Forests produce clean water and modify streamflow. Research will be used to produce evidence on how forests improve watershed health, and identify critical locations on the landscape where they need to be present.

Accomplishments: The Northeastern Area conducted an assessment to highlight the important connections between forests and the protection of surface drinking water quality. Forests are the crucial first barrier in the protection of drinking water and managing forests for source water protection is becoming more important as the population and water demand in the region increases. Approximately 50 to 75 percent of the Midwest and Northeast's population relies on surface water as their municipal drinking water source. These water supplies are protected largely by private forest lands.

Below is a map highlighting those Upper Mississippi watersheds that have the ability to produce clean water, a large percentage of surface water consumers, a large percentage of privately owned forest land, and forest land that is projected to be threatened by development in the future. The blue/green colors indicate more at risk.



Increase tree planting on highly erosive land – Forests can be a solution to non-point source pollution in agricultural and urbanizing areas. Identify highly erosive soils and focus technical and financial assistance in these areas. Partner with wildlife and migratory bird initiatives for assistance in gaining landowner interest. Promote block planting, vegetative terraces, and other agroforestry practices to reduce erosion rates and trap sediment.

Expand the use of riparian forest buffers – Promote the use of riparian forests along streams in agricultural regions to reduce the amount of nutrients, sediment, and chemicals entering tributary streams and eventually the river. Assist in the restoration of land from cropland and pasture to forest. Build on successful efforts in the Minnesota River, Upper Iowa River, and Illinois River.

Accomplishments: The Conservation Reserve Program (CRP) and the Conservation Reserve Enhancement Program (CREP) target permanent vegetative cover on erosive land. The table below summarizes CRP and CREP acres by state for bottomland wetlands with trees, hardwood tree planting, and riparian buffers.

Conservation Reserve Program 1996-2008	**Illinois acres**	**Iowa acres**	**Minnesota acres**	**Missouri acres**	**Wisconsin acres**	**Total Acres**
CP31 bottomland wetland with trees	1,815	1,079	228	774	0	3,896
CP32 Hardwood Tree planting Re-enroll	637	1,551	1,862	546	948	5,544
CP22 Riparian buffers	110,129	64,739	47,331	28,375	16,772	267,346
3A Hardwood Tree planting	50,757	14,570	25,528	16,147	45,735	152,737
TOTALS	163,383	81,939	74,949	45,842	63,455	429,568
Conservation Reserve Enhancement Program 1998-2008	**Illinois acres**	**Iowa acres**	**Minnesota acres**	**Missouri acres**	**Wisconsin acres**	**Total acres**
CP31 bottomland wetland with trees	0	0	6	27	0	33
CP22 Riparian buffers	21,460	0	6,107	548	9,229	37,344
3A Hardwood Tree planting	3,988	0	88	22	0	4,098
Totals	25,448	0	6,201	597	9,229	41,475

Increase use and effectiveness of timber harvest Best Management Practices for water quality protection – Target BMP training, outreach, and use incentives in sensitive areas (erosive soils, high nutrient and sediment yields). Monitor effectiveness and compile results.
Accomplishments: All UMFP states are promoting using forestry BMP's to control erosion from harvest practices. However, the use of BMP's with harvests on privately owned forest land is not required in all cases. Also monitoring of the effectiveness of the BMP's is not conducted in all states.

Create a watershed restoration project portfolio -- Inventory and network existing activities, projects, and programs currently available or being implemented in each state to address objectives. Identify how trees and forests can help these initiatives reach their goals.

Restore floodplain forests, prairies, and oak savanna habitats

Actions:

Expand Connections with Migratory Bird Programs – Work with the USFWS and other wildlife groups in the watershed to develop strategies and partnerships for tree planting and management efforts for migratory birds and waterfowl.
Accomplishments: The Driftless Area Initiative completed "Managing from a Landscape Perspective: A Guide for Integrating Forest Interior Bird Habitat Considerations and Forest Management Planning in the Driftless Area of the Upper Mississippi River Basin. Version 1.0. June, 2008. Also the Iowa Natural Heritage Foundation produced "A Bird's Eye View—A Guide to Managing and Protecting your Land for Neotropical Migratory Birds in the Upper Mississippi River Blufflands."

Accelerate forest planting along waterways – Replanting floodplain valleys that once supported forests is a primary objective. Restoration and reinforcement of contiguous riparian corridors along tributary streams is also important. Identify programs and target efforts to replant forest areas critical to bird habitat. Explore opportunities to utilize carbon sequestration and other market based initiatives to finance the restoration of forest lands.
Accomplishment: The Middle Mississippi River Partnership coordinated bottomland forest restoration efforts on both the Missouri and Illinois sides of the river from St. Louis, MO to southern Illinois where the Ohio Rivers joins the Mississippi. Since 2004 a total of 1,879 acres have been planted including 767 acres on the Shawnee National Forest and 1,063 through the NRCS Wetland Reserve Program easements.

Expand efforts to capitalize on existing cost-share and incentive programs. – Making strong links to government and private incentive and cost-share programs will increase the potential for success. Seek federal and state funding specifically for tree planting for water quality enhancement.

Create a Habitat Restoration Portfolio – Identify and inventory activities and projects that are restoring habitat and that address these objectives. Help implement demonstration projects. Identify how trees and forests can help these initiatives reach their goals.

Implement a Migratory Bird Habitat Restoration Initiative – seek national funding, engage partners in developing a network of sites that demonstrate the use of forestry actions to expand and enhance migratory bird habitat.
Accomplishments: The Forest Service funded 10 projects to support the enhancement of bird habitat. The projects funded included:

IL---Hanover Bluff Forest and Savanna Restoration Project **Natural Land Institute---$10,375**

The Natural Land Institute restored 10 acres of upland hardwood forest and 36 acres of savanna on land in the 1,066 acre Hanover Bluff complex.

IL---Oak Bluff Savanna Bird Habitat Improvement Project Peoria Audubon Society---$5,500
Oak savanna bird habitat was improved on private land located in the migratory corridor of woodland bluffs of the Illinois River. Overstocked oak-hickory woodland were thinned and exotics removed.

IL---Wightman Lake Bottomland Forest Improvement Project Ducks Unlimited—$21,250
Wightman Lake is 370 acre complex of backwater lake, forested wetland, and flooded cropland along the Illinois River. Ducks Unlimited restored 20 acres of bottomland hardwood forest and enhanced 30 acres of existing forested wetlands.

IN---Yellow River Initiative Arrow Head Country RC&D Council---$5,000
Information was provided to Yellow River watershed landowners illustrating the benefits or riparian woodlands and their importance for neotropical migratory birds. These educational programs will lead to an increase in the size and continuity of the riparian forests in the Yellow River watershed.

IA---Expand and Strengthen Iowa's New Important Bird Areas (IBA) Program IA IBA---$50,000
Volunteer bird watchers implemented monitoring protocols for neotropical bird populations and forest habitat condition surveys at 80 Important Bird Areas (IBA) in Iowa. A standardized protocol was developed and the baseline data collected is critical to expanding the IBA program in Iowa.

IA---Restoring Upper Mississippi Bird Habitat IA Nat'l Heritage Foundation---$38,240
A four-state collaboration among six non-profit land trusts delivered a major education initiative about the importance of forest habitat to neotropical bird survival. Concurrently a complimentary forest stewardship component worked with private forest landowners to remove invasives, improving the health of native trees and shrubs.

IA---Increase Habitat for Neotropical Migratory Birds in the Driftless Area NE IA RC&D---$44,710
This project encouraged multi-state collaboration and cooperation to educate, plan, and support projects promoting forest habitat for neotropical migratory birds. This was accomplished through workshops, regional planning, and technical support for on the ground natural resource projects.

MN---Closing the Canopy Metro Wildlife Corridors Partnership---$50,000
The Metro Wildlife Corridors is a collaborative of public and non-profit organizations that work to acquire and restore the network of regionally significant habitat for fish, wildlife, and native plant communities in the Twin Cities Metropolitan area. Forest invasive plant species were controlled and native forest species re-established providing food and cover for priority neotropical migratory and forest bird species.

MN---Managing Private Forests for Songbird Institute for Agriculture and Trade Policy---$24,800
The 535 acres of woodlands of the Audubon Northwood facility are managed for enhanced bird and wildlife habitat, ecological restoration, recreation, and education. The grant supported management goals for white oak and white pine regeneration and monitoring for bird population responses. Training and cost-share funds were provided to forestry professionals for developing and implementing certified forest management plans focusing on forest sustainability for wildlife habitat.

WI---Driftless Area Forest Stewardship Initiative Southwest Badger RC&D---$48,500
The Driftless Area Forest Stewardship Initiative increased the amount of private forest land in the Driftless Area under forest management reducing forest fragmentation, improving forest health, and educating landowners about the importance of forest lands in bird conservation.

Practice sustainable forest management on all forests

Actions:

Accelerate forest management – A well-managed forest enables landowners to accomplish their objectives and at the same time provide many public benefits. The first step to a well-managed forest is a management plan. Strive to focus resources in critical watersheds to increase the number of landowners with forest management plans. Work with agencies and non-profit organizations to find incentives that help landowners implement their forest management plans.
Accomplishments: The primary cost-share program that targets management plans on private forest land is the Forest Stewardship Program. Each state forestry agency in the Upper Mississippi has participated in the Stewardship Analysis project designed to spatially define important forest resource areas where program outreach and activity will be emphasized.

Use criteria and indicators to measure forest sustainability – The *Forest Sustainability Assessment for the Northern United States, March 2007* provides a snapshot of today's forests and a baseline for tracking future trends. The assessment is organized according to an international system of criteria (7) and indicators (18) known as the Montreal Process. The six forest sustainability criteria are:

1. conservation of biological diversity
2. maintenance of productive capacity of forest ecosystems
3. maintenance of forest ecosystem health and vitality
4. conservation and maintenance of soil and water resources
5. maintenance of forest contributions to global carbon cycles
6. maintenance and enhancement of long-term multiple socio-economic benefits to meet the needs of societies
7. legal, institutional, and economic framework for forest conservation and sustainable management.

The major conclusions of this document include:

- In the northern and Midwestern United States, forest land was more extensive at the time of European settlement than it is today. It is unlikely that total forest acreage will reach those levels again due to trends in urban and suburban development and agricultural usage.
- No natural communities are known to be eliminated since European settlement; however the cumulative impacts of land drainage, conversion to agriculture, fire suppression, land parcelization, and urban development have affected landscape patterns, plant and animal species distributions, and population levels.
- Assessment of species at risk are incomplete, but so far, most native plants and animals evaluated in the midwestern and northern US are doing well, while a tenth are not doing well.
- The greatest threat to forest-dependent species now is the permanent loss of forest land habitat to urban and suburban development. Species requiring extensive areas of unbroken forest land are in decline.
- Public land plays a key role in biodiversity conservation; however, the large amount of private land in the region means conservation efforts must include private land strategies. Information on private forest land conservation is limited.

Identify signature landscapes with which to focus forest conservation efforts **–** Forest fragmentation and forest destruction that comes with sprawling growth threatens forests and therefore, watershed health. With help, communities can successfully protect and establish green infrastructure and improve their quality of life. Building on efforts such as the Driftless Area Initiative, identify important signature landscapes within which to target landowner education and land conservation planning.
Accomplishments: The USGS Upper Midwest Environmental Science Center conducted an analysis identifying the priority forests of the Upper Mississippi River basin. The final report and maps may be found at the UMFP website: www.na.fs.fed.us/watershed

Identify, reduce spread, and control invasive plants, insects, and diseases **–** Invasive species threaten forest sustainability. Work with federal and state agencies and non-governmental organizations to prevent the invasive species introduction into the Upper Mississippi River Watershed. Find ways to reduce their damage once they are present in the watershed. Learn how to manage forests in which invasive species can not be eliminated.
Accomplishments: While there are many invasive issues in the Upper Mississippi River region one of the most significant in terms of long-term forest composition, particularly in the bottomland forest, is the Emerald ash borer. Emerald ash borer (EAB), *Agrilus planipennis* Fairmaire, is an exotic beetle that was discovered in southeastern Michigan near Detroit in the summer of 2002. The larvae feed on the inner bark of ash trees, disrupting the tree's ability to transport water and nutrients, eventually killing the tree. Emerald ash borer probably arrived in the United States on solid wood packing material carried in cargo ships or airplanes originating in its native Asia. Emerald ash borer is also established in Windsor, Ontario, was found in Ohio in 2003, northern Indiana in 2004, northern Illinois and Maryland in 2006, western Pennsylvania and West Virginia in 2007, and Wisconsin, Missouri and Virginia in summer 2008. Many federal and state agencies and universities are collaborating on management strategies for this invasive pest. For the most up to date information go to: http://www.emeraldashborer.info/

Another well established plant disease that has significantly changed the landscape is Dutch Elm Disease. Dutch elm disease (DED) is one of the most destructive shade tree diseases in North America. The disease affects American elms (and other elm species, to a varying extent), killing individual branches and eventually the entire tree within one to several years. Since its introduction, DED has swept through urban areas, causing tremendous losses of high value American elm street trees. It has also greatly altered the role of elm in bottomland ecosystems. Despite DED, elm remains as a component of natural stands. Trees often survive to seed producing age, but later succumb to the disease. Waves of disease incidence may be related to population fluctuations of the beetles that vector the disease. The US Forest Service, Northern Research Station, has been working on developing strains of elms with enhanced tolerance to DED. About 100 elms with enhanced DED tolerance have been planted in 4 Upper Mississippi sites. These trees will be monitored for survival and seed production.

Finally the other accomplishment is increased awareness of the impact of invasive plants on native ecosystems. One particular invasive plant that has been a problem in bottomland restoration is the Reed canary grass. The Midwest Invasive Plant network works on public awareness and early detection and treatment of invasive plants, particularly new species before they become well-established. For more information go to: http://mipn.org.

Plan Implementation

The task to build a watershed-wide approach to forestry activities is daunting. There are over 75 local, State, Federal, and private funded programs designed to address sediment and nutrient loss in the Upper Mississippi River Basin. There are many more watershed organizations and lake associations working to protect their lake or stream. An umbrella agency or organization coordinating watershed programs and projects does not exist. Given these realities the Forestry Partnership must strategically organize, partner, and implement actions that identify and demonstrate forestry's role in restoring Upper Mississippi River and watershed.

Build the Watershed Forestry Partnership

- Develop a Forestry Partnership Operational Plan (bring order to the chaos).
  - Develop an MOU and an organizational structure among partners**.-COMPLETED**
  - Establish accountability and performance measures**.-ONGOING**
  - Develop a 6-state governor's resolution**.-NOT STARTED**
  - Build congressional awareness and support. **.-ONGOING**

- Establish the Forestry Partnership's Identity.
  - Identify the compelling need for forestry to be involved in the Upper Mississippi River Watershed (Communicate clear and simple key messages). **.-COMPLETED**
  - Develop a portfolio of existing forestry projects that demonstrates forestry's role. **.-NOT STARTED**
  - Communicate what forestry brings to the issues, and how it adds value to other organizations projects. **.-ONGOING**
  - Create a brochure that describes the Forestry Partnership as a calling card. **-COMPLETED**

Build Partnerships with Upper Mississippi River Agencies and Organizations

- Identify areas of overlap and synergy with existing activities and programs
  - Understand other Upper Mississippi organizations' key issues and goals, and build connections with forestry**. -ONGOING**
  - Gather a base of science and information (trends, data, and key issues) that establish a powerful and compelling messages on forestry's role in the watershed. **-COMPLETED**

- Work with partners
  - Identify key partners with a common vision with which we can build initiatives, actions, and projects that can carry the forestry. **-ONGOING**
  - Serve as a catalyst to bring groups together. **-ONGOING**

Implement actions

- Build a framework for actions.
  - Focus on issues that forestry can impact. **-ONGOING**
  - Focus on priority watersheds were forestry can have a key role by using other agency's priorities. **-ONGOING**

- Demonstrate progress and action.
  - Complete projects that connect with key objectives. **-ONGOING**
  - Use key indicators to measure project impacts. **-ONGOING**
  - Continue to refine this action plan as priority watersheds, projects and partners are identified. **-ONGOING**

A very important accomplishment in the UMFP ability to implement actions was the development of a relationship with the National Fish and Wildlife Foundation (NFWF) to establish an "Upper Mississippi Watershed Fund."

Through this partnership, the Forest Service provides funding from two sources: 1) the Forest Service NFWF appropriation; and 2) funding provided by Northeastern Area through the cooperative agreement. These sources of funding are used to support selected projects. In addition, a portion of the cooperative agreement funds are used to cover the NFWF operating costs of administering the Fund. As part of that administration, NFWF solicits and accepts pre-proposals and full proposals, applies Federal funds from other partnerships, seeks other non-Federal sources of support, and leverages Federal dollars through grantee match. NFWF also manages all grants and reports to the Forest Service at least semi-annually on the funding and implementation of selected projects. Funding decisions are based on the recommendations of the Upper Mississippi River Partnership's steering committee. The NFWF Board of Directors makes the final decisions on all awards.

The Fund supports projects that address the following key issues:

- Conservation of priority forest areas
- Reversing the loss of migratory bird habitat
- Regeneration of bottomland hardwoods
- Enhancement of water quality and aquatic habitat through establishment of riparian forest buffers
- Outreach and education
- Improvement of wildlife habitat through wildfire management.

FUNDED PROJECTS

<u>2006 Funded Projects</u>

1) **Project Title:** Rockwood Island Wetland Restoration (IL)
Recipient: Ducks Unlimited, Inc.

Project Description: Ducks Unlimited, Inc. will restore 235 acres of wetlands and bottomland hardwood forest on Rockwood Island on the Mississippi River in west–central Illinois.

2) **Project Title:** Lower Chippewa River Restoration (WI)
Recipient: Wisconsin Department of Natural Resources

Project Description: The Wisconsin Department of Natural Resources will restore 180 acres of floodplain forest, savanna and sand terrace prairie along the Lower Chippewa River in west–central Wisconsin.

3) **Project Title:** Restoring Upland Habitat to the St. Croix River (MN)
Recipient: The Science Museum of Minnesota

Project Description: The Science Museum of Minnesota will restore 165 acres of forest, savanna and prairie habitats for priority bird species near the confluence of the federally designated Wild and Scenic St. Croix River and the Mississippi River.

4) **Project Title:** Driftless Area Private Land Demonstration Projects (IL, IA, MN, WI)
Recipient: Institute for Agriculture and Trade Policy (IATP)

Project Description: The project will enable landowners to manage their forest resources in a manner that enhances crucial habitat for neotropical migrant bird species. IATP and its partners will establish demonstration sites, train local natural resource specialists and assist landowners to develop habitat-friendly land management plans by promoting Forest Stewardship Council (FSC) standards for forest management.

5) **Project Title:** Driftless Area Stream Restoration (MN, WI, IA, IL)
Recipient: Trout Unlimited, Inc.

Project Description: Trout Unlimited, Inc. will implement five in-stream restoration projects in the Driftless Area in Wisconsin, Iowa, Minnesota and Illinois to enhance aquatic habitat, native fish populations, and water quality.

2007 Funded Projects

6) **Project Title:** River Hills Restoration Partnership Project (MO)
Recipient: Missouri Conservation Heritage Foundation

Project Description: The Missouri Conservation Heritage Foundation will improve wildlife habitat on 1,400 acres of public and private forested lands in east–central Missouri through non-commercial thinning, establishing forest openings, and glade restoration.

7) **Project Title:** Upper Iowa River Restoration (IA)
Recipient: Iowa Natural Heritage Foundation

Project Description: The Iowa Natural Heritage Foundation will restore 150 acres of tallgrass prairie and oak savanna habitat along the Upper Iowa River in northeastern Iowa.

8) **Project Title:** Conservation of Big River Forests (WI)
Recipient: Wisconsin Department of Natural Resources

Project Description: The Wisconsin Department of Natural Resources (WDNR) will develop detailed conservation and management strategies for forested corridors and associated natural communities of three major rivers in southern Wisconsin. The focus areas

include some of the largest forested blocks in southern Wisconsin, including extensive tracts of floodplain forest, southern mesic and dry-mesic forest, and oak.

2008 Funded Projects

9) **Project Title:** Middle Meramec River Conservation Opportunity Area (MO)
Recipient: Missouri Conservation Heritage Foundation

Project Description: Improve, restore & protect the riparian corridor and 150 acres upland forest/oak savanna habitat on private land to enhance water quality/provide bird habitat.

10) **Project Title:** Mississippi River Floodplain Forest Restoration (MN)
Recipient: Friends of the Mississippi River

Project Description: Restore a 297-acre tract of floodplain forest in the Vermillion Bottoms, one of the most significant Mississippi River floodplain sites in Minnesota.

11) **Project Title:** Restoring the Riparian Corridor of the Pecatonia River(WI)
Recipient: The Nature Conservancy

Project Description: Return a stretch of the Pecatonica River to close to its pre-European settlement condition. Methods used will be soil removal, invasive control, revegetation, and bank stabilization.

12) **Project Title:** Ecological Restoration of a Swamp White Oak Woodland (IA)
Recipient: The Nature Conservancy

Project Description: An 82 acre portion of the swamp white oak woodland will be restored through timber stand improvement and fire. Monitoring of vegetation, amphibians, and reptiles will occur.

13) **Project Title:** Biomass Harvest Effects on Mammals and Amphibians (MN)
Recipient: University of Minnesota

Project Description: Increased biomass harvest from forests to meet energy needs will affect wildlife. We will develop, evaluate, and distribute guidelines for sustainable management of logging residue removal.

14) **Project Title:** Ecological Restoration of a Swamp White Oak Woodland (IA)
Recipient: The Nature Conservancy

15) **Project Title:** Hazardous Fuels Reduction in Pine-Oak Barrens (WI)
Recipient: Wisconsin DNR

Project Description: The publicly-owned Burnett County Forest and the DNR Buckhorn Wildlife Area are pine-oak barrens designated as Conservation Opportunity Areas of Global Significance. Partners are lowering the threat of wildfires by removing excess fuels, re-establishing fuel breaks, and returning pine-oak barrens to a more natural condition.

16) **Project Title:** Anoka Sandplain Forest and Savannah Conservation (MN)
Recipient: Great River Greening

Project Description: This proposal represents the first regional effort within the Anoka Sandplain to implement a coordinated outreach across all ownerships to promote sustainable forest and grassland habitat management. At least 120 acres of oak savanna will be restored through prescribed burning and invasive species management and planting.

17) **Project Title:** Fuel Reduction for Wildlife—A Landowner Based Approach (MN)
Recipient: Minnesota DNR

Project Description: The Minnesota Department of Natural Resources designed this project as an effort to educate landowners about how to conduct prescribed burns on their Conservation Reserve Program (CPR) lands.

18) **Project Title:** Conservation Demonstration Areas in Flooded Watersheds (IA)
Recipient: Trees Forever

Project Description: In 2008, flooding in Iowa and Illinois caused extensive soil erosion and stream bank degradation both in urban and rural areas. In an effort to educate landowners about riparian conservation practices, Trees Forever proposes will establish riparian buffer demonstration sites to provide educational opportunities to the public.

2009 Funded Projects

19) **Project Title:** Oak Savanna Habitat Restoration/Fuel reduction in NW Indiana (IN)
Recipient: The Nature Conservancy

Project Description: Oak savanna once covered a significant part of the Midwest landscape but today only a few thousand hectares of high-quality savanna remain. A two phased approach will be implemented restoring 80 acres by mechanically and chemically thinning the canopy and applying prescribed fire and evaluating restoration success.

20) **Project Title:** Maiden Rock Bluff State Natural Area Oak Savanna Restoration (WI)
Recipient: Wisconsin DNR

Project Description: The project will focus intensive restoration activities on a 40 acre site of oak savanna located on a limestone bluff overlooking the Mississippi River. Restoration will rescue existing mature oak trees from suppression by invasive woody vegetation and follow-up treatments will include invasive species control and prescribed fire.

21) **Project Title:** Zumbro Bottoms Floodplain Restoration (MN)
Recipient: Minnesota DNR

Project Description: The lower Zumbro River has populations of several threatened species or those of special concern including the cerulean warbler. About 150 acres of flood plain forest will be restored through tree planting, direct seeding and other forestry practices.

22) **Project Title:** Restoring the Lower St. Croix Floodplain and Blufflands (MN/WI)
Recipient: Great River Greening

Project Description:. Project partners will collaborate to: 1) elevate forest management and restoration across public and private lands using a variety of tools (prescribed fire, invasive species and woody encroachment control, forest seeding), 2) conduct landowner outreach and training to broaden active participation in forest management, and 3) implement monitoring protocols to track the effectiveness of efforts and to combat alien invasive species through a coordinated rapid response program.

23) **Project Title:** Forest Protection in the Meramec River Watershed (MO)
Recipient: Ozark Regional Land Trust

Project Description: The goal of this project is to restore and protect important forest habitats of the Meramec River watershed by securing donated conservation easements on large tracts of forest land and by providing incentive payments to landowners who restore forested riparian buffers under the Conservation Reserve Program. Also conservation easements will be purchased on critical riparian lands.

24) **Project Title:** Glacial Lake Grantsburg Pine/Oak Barrens Project (WI)
Recipient: Wisconsin DNR

Project Description: The Northwest Sands Ecological Landscape contains the largest tracts of Pine Barrens in Wisconsin, a globally rare natural community. The objectives of this project are to restore 600 acres of new pine/oak barrens habitat, enhance 3700 acres of pine/oak barrens habitat, and improve 1500 acres of sedge marsh.

"The relationship between forests and rivers is like father and son."
-Gifford Pinchot, 1905