

Upper Mississippi Watershed Partnership Action Plan

A cooperative venture of Northeastern Area and Midwest State Foresters (2004 - 2008)



Forestry Partnership

The USDA Forest Service Northeastern Area State and Private Forestry and the State Foresters from Wisconsin, Minnesota, Iowa, Illinois, Missouri, and Indiana have joined in partnership to build a watershed-wide approach to forestry efforts in the Upper Mississippi Basin. The Upper Mississippi River Forestry Partnership will focus activities, demonstration projects, and cooperative programs on key watershed forestry issues.

“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 entire 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.



The Upper Mississippi River is a “working” river and its basin is 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.

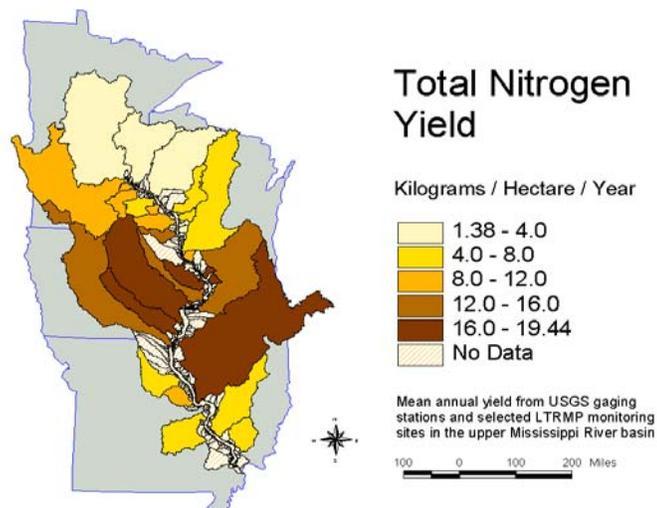
Today, over 50 percent of the corn and 47 percent of soybeans produced in America are grown in the Upper Mississippi River Basin. On average, 80 million tons of agricultural commodities, petroleum products, and coal are transported annually on the Mississippi and Illinois Rivers. The watershed is home 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, forest, and wetland 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 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, and over 31% of that load comes from the Upper Mississippi River. The hypoxia zone has persisted and grown for the past decade. Nutrient pollution not only impacts the Gulf and river ecosystems but also costs millions in added treatment costs for water suppliers who rely on the river for drinking water.

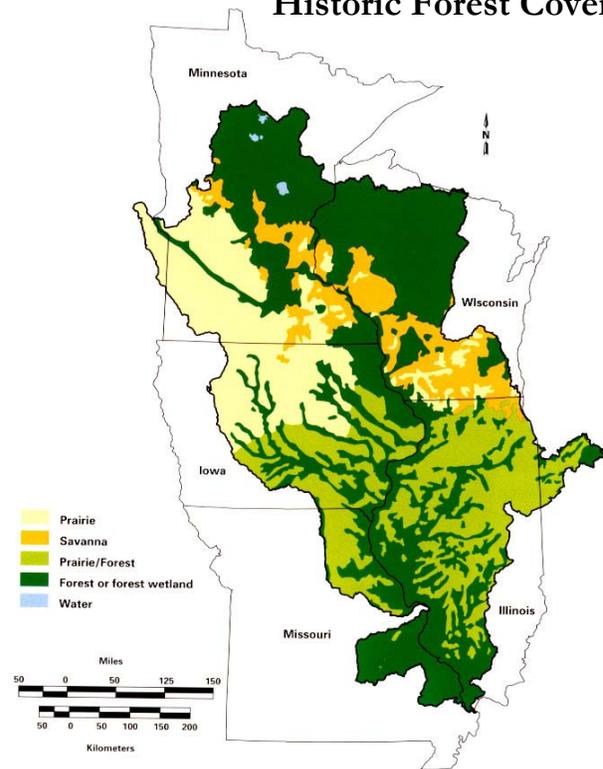


- Loss of Migratory Bird Habitat.** The Upper Mississippi River basin is a focal point for a variety of major bird conservation efforts. The rivers north-to-south orientation and contiguous habitat make it critical to the life cycle of many migratory birds. It is a globally important migratory flyway 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 many waterfowl, raptors, songbirds, and shorebirds. The boreal transition forests of the Upper Mississippi provide nearly the entire habitat for species such as Kirtland's and golden-winged warblers.

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

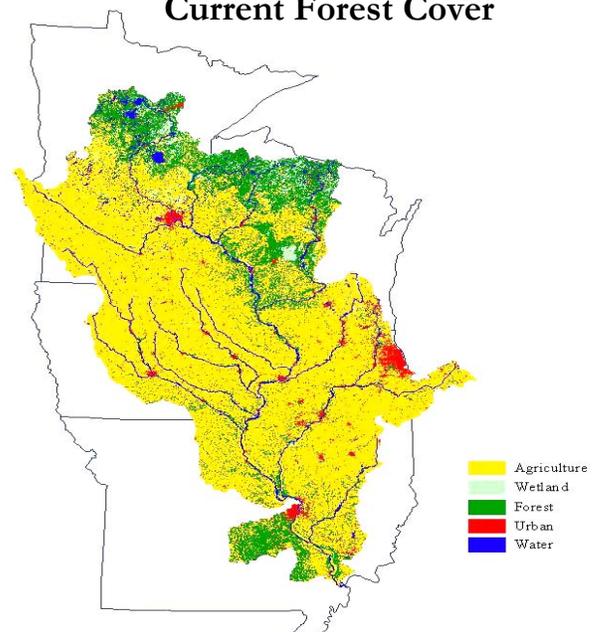
The ecosystem as a whole benefits from floodplain forests. Besides serving as a rich habitat for wildlife and fish during floods, forests reduce soil erosion, improve water quality, enhance recreational activities, and provide a scenic landscape. Floodplain forests are not regenerating in the Mississippi 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.

Historic Forest Cover



- 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.

Current Forest Cover



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 technology. The cost would be overwhelming. Therefore, the use of natural ecosystems to solve environment 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, soil, and manure.
- Market development to allow switching from traditional row crops such as corn and soybeans to alternative cropping systems including agroforestry systems.
- 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.

The Northeastern Area and State Forestry Agencies along with local resources 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 (2004-2008)

This action plan initiates the first regional watershed-based effort among forestry partners in the Upper Mississippi Basin. Watershed management requires the development and use of broad-based partnerships. Federal agencies such as the U. S. Geological Service, U. S. Environmental Protection Agency, U. S. Fish and Wildlife Service, U. S. Army Corps of Engineers, and USDA Natural Resources Conservation Service have been directly involved in assessing watershed conditions and developing conservation efforts. Private conservation groups such as Ducks Unlimited, Audubon Society, The Nature Conservancy, and many other non-governmental organizations have made the Upper Mississippi River Basin a focus of their programs. The Northeastern Area and the Wisconsin, Minnesota, Iowa, Illinois, Missouri, and Indiana State Foresters have agreed that it is time to be more actively involved with these agencies and organizations in addressing critical issues in the Upper Mississippi River Basin.

The action plan seeks to:

1. Strengthen coordination among the Upper Mississippi River Basin state forestry agencies.
2. Link State Foresters directly to other agencies and groups working on common basin issues.
3. Develop and implement assessments and demonstration projects.
4. Conduct educational efforts that will help address key watershed issues.

Together, these actions will illustrate the potential use of trees and forests to lessen the impact of altered landscapes on water quality, improve forest management, restore and manage forests to connect and improve habitats of special interest, and demonstrate the ability to target cooperative forestry programs on a watershed scale.

Action Plan Objectives:



Expand the Upper Mississippi Watershed Forestry Partnership



Actions:

Maintain an Upper Mississippi River Basin Forestry Coordinator Position – A Watershed Coordinator was hired with financial assistance from the Northeastern Area State & Private Forestry, and support from the State Foresters of Illinois, Indiana, Iowa, Minnesota, Missouri, and Wisconsin. The Coordinator serves as a liaison between the State Foresters and federal and state agencies, and will work to establish linkages with other groups working in the basin.

Strengthen an Upper Mississippi River Forestry Steering Committee – With support from the Upper Mississippi Forestry Coordinator, representatives from the six state forestry agencies meet regularly to discuss individual efforts and to develop integrated multi-state approaches for addressing watershed issues. Coordination across state boundaries will greatly increase the flow of knowledge and sharing of tools and experience.

Evaluate forest land condition and trends – Gather existing data and information and evaluate forest land status, trends, and conditions on a watershed scale. Work with USDA Forest Service, University and other state and federal agencies to gather and evaluate data.

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.

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.



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 critical locations on the landscape where they need to be present.

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 conversion of land from cropland and pasture to forest. Build on successful efforts in the Minnesota River, Upper Iowa River, and Illinois River.

Increase use and effectiveness of timber harvest BMP's – Target BMP training and outreach and use incentives in sensitive areas (erosive soils, high nutrient and sediment yields), monitor effectiveness, and compile results.

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.

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 targets 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.

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.



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.

Use criteria and indicators to measure forest sustainability – The Upper Mississippi River Forest Partnership hosted the Sustainable Forest Regional Roundtable that gathered information on criteria and indicators useful to the Upper Mississippi River Watershed. These criteria and indicators will be used to evaluate current forest sustainability in the watershed, and identify actions to improve sustainable forest management.

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.



David Powell, USDA Forest Service
www.forestryimages.com



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.

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.

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.
 - Establish accountability and performance measures.
 - Develop a 6-state governor's resolution.
 - Build congressional awareness and support.

- 🌳 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).
 - Develop a portfolio of existing forestry projects that demonstrates forestry's role.
 - Communicate what forestry brings to the issues, and how it adds value to other organizations projects.
 - Create a brochure that describes the Forestry Partnership as a calling card.

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.
 - 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.

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

Implement actions

- 🌳 Build a framework for actions.
 - Focus on issues that forestry can impact.
 - Focus on priority watersheds where forestry can have a key role by using other agency's priorities.
- 🌳 Demonstrate progress and action.
 - Complete projects that connect with key objectives.
 - Use key indicators to measure project impacts.
 - Continue to refine this action plan as priority watersheds, projects and partners are identified.

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.

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