

2007  
UPDATE

# A STRATEGIC CONSERVATION AGENDA 2003-2007

## Measuring Progress Toward Mission

Natural Lands  
Fisheries and Wildlife  
Waters and  
Watersheds



Forests  
Outdoor Recreation  
Natural Resources Stewardship  
Education

April 2007  
Update

Minnesota Department of Natural Resources

<http://www.dnr.state.mn.us/conservationagenda/index.html>



04/16/06

# Commissioner's Message

We face a future of rapid and unprecedented changes, including many changes that will influence natural resources here and elsewhere. We are experiencing demographic changes of natural resource users and managers. Fewer young people are hunting and fishing and experiencing the connection they provide to the environment. Within DNR, 50% of current employees could retire in the next 5-10 years. Our water supplies and their quality face increasing pressures. Changes in land ownership patterns in the north woods threaten habitat, timber management, and recreational access. Invasive species are changing how we live and recreate.

The challenge of dealing with these changes is compounded by the growing disconnect between people and the environment. We must reconnect kids and others so future generations understand the value of healthy watersheds that provide clean water for drinking, fish and wildlife, and recreation; and the value of forests, grasslands, and wetlands with abundant wildlife to watch and hunt; as well as the value of lands and minerals that help support our economy.

Part of our DNR responsibility is to align resources to focus on our conservation mission and priorities, including measurable natural resource outcomes highlighted in this Strategic Conservation Agenda. To build upon our past success, we must seek strategic, innovative ways to efficiently deliver conservation services. We must harness the energy of partnerships on a scale that changes the landscape. We must use the power of the marketplace to help achieve our conservation priorities. And we must connect citizens with the environment in ways that promote healthy lifestyles for Minnesotans and create lifelong stewards of natural resources.

The role of the Conservation Agenda in all of this is four-fold. As we lay out our vision and strategic direction for the DNR and Minnesota's natural resources, this publication:

- states priorities in specific and measurable terms,
- measures progress toward results and outcomes,
- builds accountability for results, and
- clarifies expectations with citizens and stakeholders.

To truly change the landscape and create the best possible future for natural resources, we need all hands pulling together, large and small, young and old.

The next step in maintaining strategic direction will be to build the Conservation Agenda for 2008-2012. Please feel free to share your thoughts for the next edition after you have had a chance to explore this current edition.



Mark Holsten  
Commissioner

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# Introduction

## DNR Mission

*“The mission of the Minnesota Department of Natural Resources is to work with citizens to conserve and manage the state’s natural resources, to provide outdoor recreation opportunities, and to provide for commercial uses of natural resources in a way that creates a sustainable quality of life.”*

## DNR Management Principles

These management principles are guiding our work for 2003 through 2007 as we address a focused set of key performance areas:

- Enhance communication and working relationships with core natural resource constituents; give particular attention to hunters and anglers
- Cooperate with other agencies, local units of government, citizens, and stakeholders to effectively manage and sustain natural resources
- Provide for sustainable economic use of our natural resources; place immediate focus on enhancing the state’s forest-based economy
- Make resource and land-use decisions at the local level
- Integrate planning and budgeting across area, regional, and state organizational levels
- Adapt DNR’s organizational structure to more effectively and efficiently deliver services
- Use sound scientific principles, accurate information, and state-of-the-art technology in managing natural resources
- Model the sustainable use of natural resources in our work

# About This Report

## Purpose and Audience

*A Strategic Conservation Agenda 2003–2007* describes DNR’s progress toward achieving conservation results. It uses approximately 90 measurable indicators and targets to paint a picture of natural resource conditions, DNR management activities, and the results we hope to accomplish through our management efforts.

The agenda is designed to:

- provide internal management direction by defining agency-level performance goals critical to mission success,
- demonstrate accountability to citizens and stakeholders by communicating our work in terms of measurable results, and
- fulfill the Governor’s expectations for agency accountability to results.

This report is not a “report card” for all of Minnesota’s natural resources. Nor does it describe all of DNR’s work. Rather, it highlights key areas in which DNR will commit resources to achieve specific results.

No one organization can be solely accountable for the condition of Minnesota’s natural resources. We emphasize the importance of education and partnerships as key DNR management strategies. Ultimately citizens, local government, numerous agencies, and organizations together will shape the future of Minnesota’s environment.

Better performance information provides a foundation for better decisions, a healthier environment, and sustainable natural resource use. The full-color report is available on the DNR website at <http://www.dnr.state.mn.us/conservationagenda/index.html> and will be periodically updated as new data become available. We hope it will stimulate discussion and improve understanding of the state of our natural resources, our long-term goals, and progress toward attaining those goals.

## Report Structure

Historically, resource agencies have measured investments and activities. Today’s society demands greater focus on establishing and measuring results. In response, *A Strategic Conservation Agenda 2003–2007* identifies priority indicators and targets in six key performance areas:

- Natural Lands
- Fisheries and Wildlife
- Waters and Watersheds
- Forests
- Outdoor Recreation
- Natural Resources Stewardship Education

Indicators are measures of natural resource trends or resource work performed. Targets define expected results; they serve as specific benchmarks that help us gauge progress toward long-term goals. Indicators and targets together paint for citizens a clear picture of what we are trying to do and how we are trying to do it. DNR will use indicators and targets to clearly communicate not only what funds we spend and what actions we take, but also what results we achieve.

The following sections provide selected indicators and targets for each performance area. Although they describe only a small part of DNR’s conservation work, they nonetheless illustrate the range and reach of DNR’s mission.

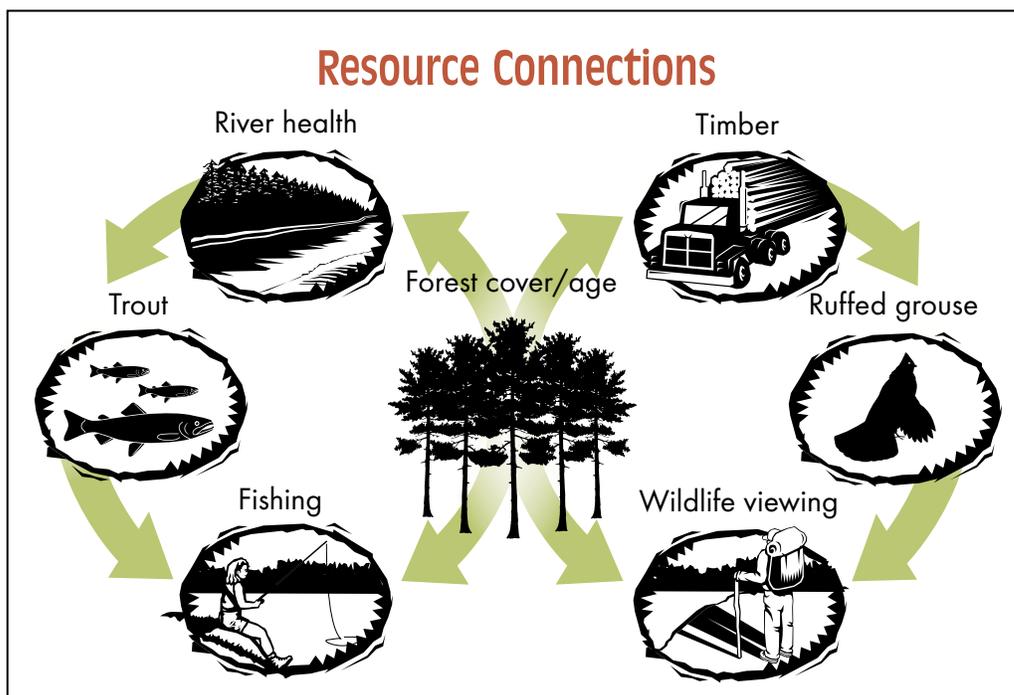
Although the indicators in this report have data of sufficient quality and coverage to support trend reporting, we recognize gaps in our ability to report on important natural resources trends. Each section concludes with a list of important indicators that require either additional data or new monitoring efforts. DNR will work cooperatively with its partners to develop new indicators that better track the health of Minnesota’s natural resources.

## Resource Connections

Pursuing multiple conservation objectives requires integrated resource management. That means our efforts must interact and reinforce each other, just as natural resources do. In the case of this agenda, it means addressing indicators together, rather than independently, recognizing the trade-offs and connections among them. And it means working with partners to accomplish our mission.

In some cases, progress in one area means progress in another. For example, efforts that seek to meet our target of no net loss of wetlands can help us meet targets related to duck harvest, flood damage reduction, and frog and toad populations. In other cases, progress in one area may conflict with progress in another area. Integrated resource management means paying attention to how management activities intended to achieve specific targets also affect other conservation values.

None of this agenda’s targets can be pursued—or achieved—in a vacuum. As we make progress toward one, we will, intentionally or not, influence progress toward others. The challenge—and, ultimately, the reward—will lie in seeing and embracing the links and anticipating and minimizing negative impacts as we work with partners and fulfill our mission “to work with citizens to conserve and manage the state’s natural resources, to provide outdoor recreation opportunities, and to provide for commercial uses of natural resources in a way that creates a sustainable quality of life.”



Improving indicators in one performance area affects indicators in others as well.

## Report Preparation and Updating

The indicators in this report were developed through a multi-step, agency-wide process under the direction of the Commissioner's Office. The Section of Policy, Planning, and Research Services, housed in DNR's Office of Management and Budget, worked with DNR operations managers (representing all DNR divisions and regions) to compile the final report. The first edition of *A Strategic Conservation Agenda* was produced in March 2004. DNR's first review and update was completed in March 2005.

This current report, updated in March 2007, represents DNR's ongoing effort to review the set of indicators and report progress toward conservation targets. DNR will continue to update this report periodically on the DNR website at <http://www.dnr.state.mn.us/conservationagenda/index.html>. We will track existing indicators over time and chart and report progress toward conservation targets. We will add new indicators to fill information gaps. We will work with our partners to adjust targets as conditions change and develop new targets as opportunities arise to better conserve natural resources. The indicators and targets presented in this report keep us up to date, help us check our progress, and allow us to better focus our efforts and constantly improve what we do.

## For More Information

This report provides an agency wide picture of DNR progress toward mission results. It does not describe all of DNR's work. For more information about specific divisions, regions, or programs, visit the DNR website at <http://www.dnr.state.mn.us>. For additional information about using indicators and targets to measure conservation results, or to comment on this report, contact OMBS-Section of Policy, Planning, and Research Services: Laura Preus (science policy program coordinator, 651-259-5556, [laura.preus@dnr.state.mn.us](mailto:laura.preus@dnr.state.mn.us)), Andy Holdsworth (science policy analyst, 651-259-5536, [andy.holdsworth@dnr.state.mn.us](mailto:andy.holdsworth@dnr.state.mn.us)), and Keith Wendt (program manager, 651-259-5563, [keith.wendt@dnr.state.mn.us](mailto:keith.wendt@dnr.state.mn.us)).

## To Provide Feedback

We welcome your thoughts on *A Strategic Conservation Agenda 2003-2007*. Please use the online feedback form at: <http://www.dnr.state.mn.us/conservationagenda/feedback.html>

# Section One: Natural Lands

## Minnesota's Natural Lands Will Be Conserved

Minnesotans enjoy a rich, varied landscape. Numerous natural resources and environments contribute to our high quality of life. Natural lands support a diversity of fish and wildlife, aquatic ecosystems, and forests that are a foundation for agriculture, timber production, mineral extraction, recreation, and environmental health.

For the sake of the future, we must carefully manage and conserve Minnesota's natural lands—parks, natural areas, working forests, wildlife areas, wetlands, and grasslands. And, because conservation efforts are interconnected, we must do so in the context of the other performance areas delineated in this report: Fisheries and Wildlife, Waters and Watersheds, Forests, Outdoor Recreation, and Natural Resources Stewardship Education.

### A Vision for the Future

Our vision for Minnesota's future is one of a healthy, sustainable network of natural lands in balance with agricultural, urban, and developed spaces. Undeveloped areas will protect for posterity our natural heritage, providing plant and animal habitat, water and watershed protection, and beauty and open space.

In the future we envision, **remaining natural ecosystems will be conserved.** Negative impacts of agriculture on water quality and flow will be minimal. Natural habitats will be better connected by natural corridors. Native prairie will be protected and grasslands and riparian forest restored through donations, purchases, and easements. We will take good care of DNR-administered lands and be a good neighbor to adjacent landowners.

We envision a future in which **degraded habitats will be restored.** Lakes, wetlands, and rivers will be renewed. Grasslands and forests will return to some areas from which they have been lost. More marginal cropland will be enrolled in long-term conservation easement programs. Resources in corridors such as public rights of way will be improved.

We envision a future in which **access to mineral resources** will be preserved. Adequate supplies of sand and gravel will be available with minimal harm to natural lands and waters. Aggregate deposits will be assessed early in areas facing development. Mining and reclamation will be planned to meet community needs, minimize conflicts, and ensure environmental integrity.

We envision a future in which **healthy, working farmland and critical habitat are protected** as land is used for food, fiber, and energy production. Expanded renewable energy production will promote the restoration and maintenance of land in natural perennial vegetation. This will create opportunities for increased wildlife habitat, outdoor recreation, clean water, and carbon sequestration.

We envision a future in which **urban and developing areas will support a diversity** of plant and animal communities. Natural lands in these areas will be connected, and will offer diverse recreational opportunities without degrading the resource. Developed areas will have water discharge rates similar to those before development. Surface and ground water will meet quality standards, and will be conserved to meet the needs of ecosystems, businesses, and residents. Local decisions will be supported by public-private partnerships, with DNR providing technical assistance and coordination.

### DNR – What We Do

- Work with partners across ownerships and landscapes to conserve natural lands and waters
- Use grants, education, and technical assistance to help landowners care for natural and agricultural lands.
- Manage 5.5 million acres of land

## Critical Trends

As we strive to achieve this vision, we must address challenging trends affecting natural lands today.

One major trend is the **conversion** of natural lands to other uses. Each day Minnesotans lose an average of 170 acres of land to development. From 1982 to 1997, the amount of urban land in the state increased by 27 percent.

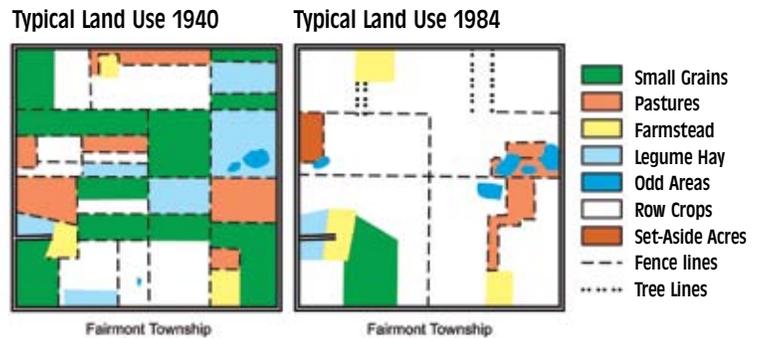
Rural Minnesota has changed dramatically in the past 50 years. Wetlands have been drained, grasslands have been converted to row crops, and fewer livestock roam the landscape. Larger, less-diverse farms support less habitat for wildlife.

Federal farm policy drives many of the day-to-day decisions of Minnesota farmers and is key to protecting wildlife habitat on private lands. While conservation land retirement programs have retired about 1.8 million acres of land and have shown success for wildlife and water quality, there remain significant long-term challenges. For example, approximately 600,000 acres now enrolled in the Conservation Reserve Program (CRP) are scheduled to expire in 2008–09. Strategies are in place to encourage contract extension and renewal. At the same time, acreage devoted to row crop production, which provides limited habitat value, has continued to increase (soybeans increased from 5.1 million acres in 1985 to 7.3 million acres in 2006). **Demand for biofuels** such as ethanol is rapidly increasing. Meeting this demand with expanded row crop agriculture poses challenges for habitat conservation and water quality. However, meeting it with restored, diverse native vegetation that is properly managed and harvested has potential for significant environmental benefits. DNR will continue to support the existing federal conservation programs, as we look forward to the development and implementation of the 2007 Federal Farm Bill to provide income protection and reward farmers for producing conservation benefits.

**Rare natural areas** such as old-growth forest and native prairie have declined in recent years. Old-growth forest today covers less than 4 percent of the area it covered before European settlement. Native prairie, Big Woods forest, and oak savanna cover less than 1 percent of their original extent.

**Fragmentation** of natural habitats is a major concern. Natural land tracts are being reduced in size and isolated from each other, creating islands of habitat too small to support a healthy ecosystem or sustainable recreational or commercial use.

Efforts to conserve natural lands face tremendous challenges. Partnerships and education are critical to surmounting them. We have a narrow window of opportunity to protect natural areas before they disappear. DNR planning and activities such as those delineated by the indicators and targets that follow are keys to achieving the sustainable future for Minnesota's natural lands that we envision.



These maps illustrate the long-term historical changes in the agricultural landscape. Land use in the 1940s was diversified and provided a variety of habitat for wildlife. By the 1980s, land use became simplified as many areas converted to row crops.



Minnesota's natural lands are a defining component of the state's quality of life. This forest-wetland complex in Scott County protects critical wildlife habitat. It was conserved through community efforts and DNR's Metro Greenways program.

# Natural Lands Indicators & Targets

Indicator	Target	Page
<b>DNR-administered lands</b>		
Number of acres protected in Wildlife Management Areas (WMAs)	Acquire 8,000 acres per year in FY 2003–05 and accelerate acquisition in FY 2007–08	4
Number of shoreline miles protected in Aquatic Management Areas (AMAs)	Acquire 10 miles of trout-stream access and permanently protect 5 miles of lakeshore in AMAs each year for the next six years	5
Number of acres protected annually within statutory park boundaries	Purchase highest priority inholdings as funding is available	6
Number of sites protected in Scientific and Natural Areas (SNAs)	Dedicate five to ten SNAs in FY 2006–07 and in 2008-09	7
Number of DNR land management units mapped for terrestrial invasive plants; acres of control efforts	Continue to map and control aggressive terrestrial invasive plant species on DNR lands	8
Completion of an updated land records system	Develop and implement plans to update DNR’s computerized land records system beginning in 2007	9
Number of school trust land parcels meeting fiduciary responsibilities	During FY 2007, DNR will complete two exchanges of about 3,100 acres of school trust land out of management units that inhibited the generation of revenue	10
Income from state mineral leases	Maximize mineral lease revenues for the Permanent School Fund, the Permanent University Trust Fund, and local units of government having tax-forfeited minerals	11

Indicator	Target	Page
<b>Farmland conservation</b>		
Acres in conservation land retirement programs under state and federal farmland programs	Have more than 2 million acres enrolled in conservation land retirement programs by the end of the 2002 Farm Bill; maintain enrollment of the highest priority acres following CRP contract expirations in 2008 and 2009	12
Number of prairie stewardship plans and management projects	Conduct at least 20 prairie stewardship plans and 50 management projects each year	13

Indicator	Target	Page
<b>Conservation partnerships and community assistance</b>		
Acres acquired for local community projects funded with grants	Acquire approximately 200-300 acres per year in 2007–08 and thereafter	14
Number of habitat acres protected and restored in the greater Twin Cities metropolitan area	During FY 2006–08, protect an additional 2,600 habitat acres and restore 2,000 more habitat acres through the Metro Conservation Corridors Partnership and Metro Greenways Program	15
Number of counties with a Minnesota County Biological Survey	Complete a total of 70 counties by 2008 and all counties by 2021	16
Number of local governments using Natural Heritage data	Provide technical assistance and natural features information to an additional 30 local governments by 2008	17
Number of development projects with environmental review; number of habitat acres affected by development projects	No target set	18
Acres of mineland reclaimed	Maintain the current rates of progressive mine-land reclamation	19
For land-use planning education indicator see section on Natural Resources Stewardship Education		108

# Wildlife Management Areas

Indicator: Number of acres protected in Wildlife Management Areas (WMAs)

## Why is this indicator important?

DNR acquires and manages Wildlife Management Areas (WMAs) to protect lands and waters that have a high potential for wildlife production, public hunting, trapping, fishing, and other compatible recreational uses. DNR manages more than 1,380 WMAs covering 1.2 million acres of high-quality habitat in 86 of the state's 87 counties. These areas provide recreation for hundreds of thousands of hunters and wildlife watchers each year, who contribute significantly to the state's economy.

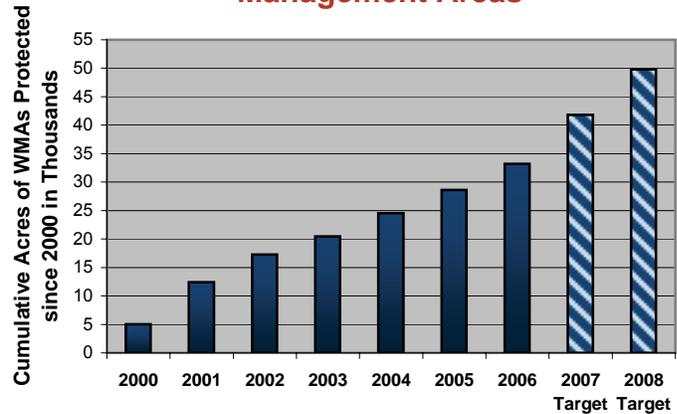
## What is DNR doing?

Continued management efforts on existing WMA lands and acquisition of new parcels will be critical to maintaining quality wildlife habitat in Minnesota. DNR works with stakeholders to develop and manage a network of WMAs across Minnesota. While most WMAs are in southern and western Minnesota, the overall widespread distribution of these areas ensures that many landscape types are represented. This helps sustain a variety of species and provides different kinds of outdoor recreation opportunities to people throughout the state. DNR provides online information and maps for WMAs, including hunter access trails, disabled access, and habitat types.

**Target: Acquire 5,000 acres per year in FY 2003–05, accelerate acquisition in FY 2006–07, and acquire 8,000 acres per year in FY 2007–08.** DNR acquired more than 11,330 acres of new WMA lands in FY 2003–05, meeting 75 percent of the target goal of 5,000 acres per year. Rising land prices across Minnesota limited the total number of acres purchased during this period. During FY 2006, DNR acquired an additional 4,584 acres of new WMA lands. A major influx of funding for WMA acquisition starting in FY 2006 will allow the DNR to significantly increase WMA acquisition efforts to an estimated 8,000 per year in FY 2007–08.

WMA acquisition efforts need to be accelerated because of increased development in rural areas, the continuing loss of critical wildlife lands, and the escalating cost of lands. Stakeholders recommended in December 2002 that DNR acquire 21,000 acres per year for the next 10 years, and then acquire 12,250 acres per year for the following 40 years. Long-range planning will help Minnesota achieve an outstanding network of WMAs totaling an additional 700,000 acres over the next 50 years.

## Acres Protected in Wildlife Management Areas



Acres protected in Wildlife Management Areas. DNR plans to add 8,000 acres to the WMA system each year during FY 2007–2008.



Minnesota has more than 1,380 public wildlife areas covering 1.2 million acres of habitat.

## Learn more about:

- WMAs at: <http://www.dnr.state.mn.us/wmas/index/html>
- Hunting at: <http://www.dnr.state.mn.us/hunting/index/html>
- Wildlife viewing at: [http://www.dnr.state.mn.us/nature\\_viewing/wildlife/index.html](http://www.dnr.state.mn.us/nature_viewing/wildlife/index.html)

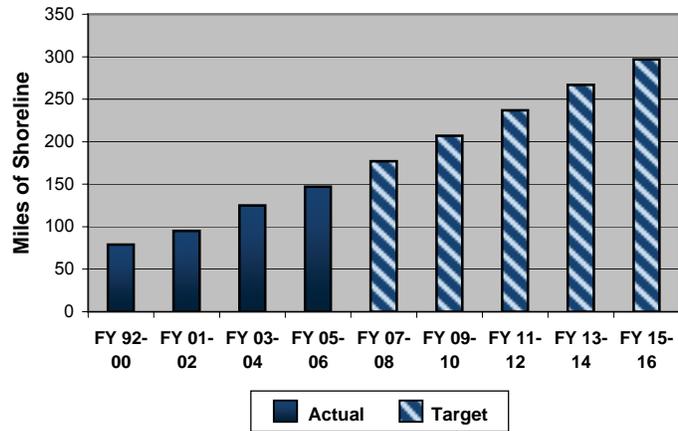
# Aquatic Management Areas

Indicator: Number of shoreline miles protected in Aquatic Management Areas (AMAs)

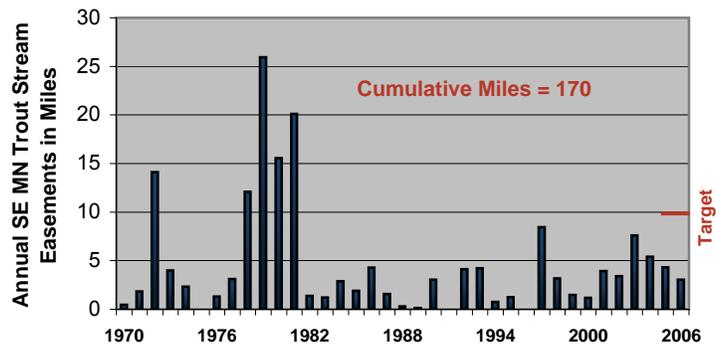
## Why is this indicator important?

Fishing is a key component of Minnesota's quality of life. Minnesota has approximately 1.5 million licensed anglers, and fishing-related tourism contributes nearly \$1.5 billion annually in direct expenditures to the state's economy. Demand for shoreline property is high, and riparian areas are rapidly being developed. DNR's acquisition of riparian parcels called Aquatic Management Areas (AMAs) ensures that critical fish and wildlife habitat will be conserved, non-boat public access to water resources will always be available, and habitat can be developed on previously disturbed areas. Acquisition of AMAs is a critical step in maintaining Minnesota's reputation for providing excellent fishing opportunities and an outstanding quality of life for those who visit and live here.

Cumulative Miles of Shoreline Protected Since 1992



Miles of Easements Purchased on Southeastern Minnesota Trout Streams



## What is DNR doing?

The AMA program, created by the 1992 Legislature as part of the Outdoor Recreation Act, administers more than 477 AMA shoreland miles across Minnesota. This is in addition to 331 miles of trout-stream access and 18 miles of lakeshore previously acquired, and still managed as Fish Management Areas (FMAs). AMAs provide angler and management access, protect critical shoreland habitat, and provide areas for education and research. The remainder of qualifying FMA units will be incorporated into the AMA program by FY 2008. DNR is currently working with stakeholders to develop a long-range AMA acquisition plan.

**Target: Acquire 10 miles of trout-stream access and permanently protect 5 miles of lakeshore in AMAs each year for the next six years.**

During FY 2005-06 DNR acquired twenty-two miles of lake and stream shore to be permanently protected as AMAs. With additional funding the goal of 15 miles each year can be reached. DNR will continue efforts to acquire permanent conservation easements on Minnesota's designated trout streams consistent with evolving management needs, angler corridor opportunities, and funding availability. DNR will continue to acquire appropriate fee title and conservation easements on lakes and warmwater streams whenever non-motorized public access to water resources is available and as parcels with critical habitat become available, partnership opportunities arise, and annual funding allows.

## Learn more about:

- DNR Trout Stream Easement Program at: <http://www.dnr.state.mn.us/fisheries/management/access.html>

# State Park Lands

Indicator: Number of acres protected annually within statutory park boundaries

## Why is this indicator important?

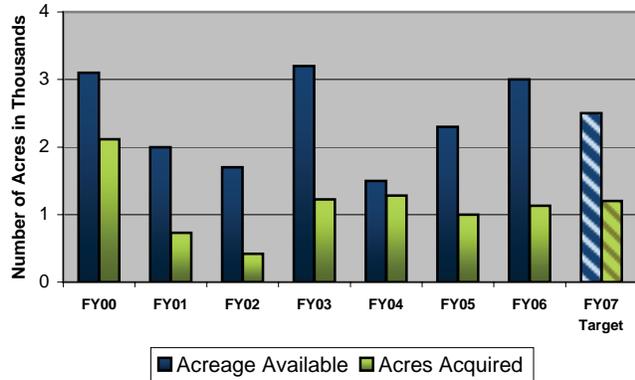
Minnesota's 67 state parks and six recreation areas protect the state's most treasured landscapes and historic sites and are enjoyed by millions of visitors each year. DNR acquires lands for state parks to preserve natural and cultural resources, provide interpretation, and offer recreation opportunities. As the number of Minnesota residents grows, so does demand for recreation space and the potential to lose these very areas to development. Failure to keep up with this growing demand and development pressure would result in overuse and deterioration of our state parks. About 45,000 acres of land within existing state parks and recreation areas remain to be acquired. Acquiring these parcels is key to providing future generations with satisfying outdoor experiences. If these lands are sold and developed privately, they are lost to the system for another generation or even permanently.

## What is DNR doing?

DNR continues to develop long-term management plans for the park system. Along with local landowners and governments, we identify boundary expansion possibilities that meet goals such as adding a buffer to an existing facility within the park, buffering the park from development outside the park, providing recreational facilities such as campground expansion, protecting a unique natural or cultural resource, expanding a trail system within the park, or providing public access to lakeshore. When a final management plan is approved, DNR proposes legislation for a boundary change. DNR focuses on acquiring the most critical properties as they become available. We have been able to acquire an average of 1,000 acres per year (including donations) over the past five years. We also partnered with organizations such as the Parks and Trails Council of Minnesota, The Nature Conservancy, and the Conservation Fund to acquire critical parcels.

**Target: Purchase highest priority inholdings as funding is available.** We will work with landowners, local governments, and the Legislature to reach this goal. Our management plan process will continue to help identify expansion needs. DNR's goal is to purchase parcels that are critical to the integrity and resource management of the parks and surrounding communities.

## Number of Acres Protected Annually within Statutory Park Boundaries



Number of acres protected annually in statutory park boundaries. DNR acquires critical parcels within statutory park boundaries as they are offered for sale. Frequently there are more acres available for sale than it is possible to acquire.



Grand Portage State Park contains Minnesota's highest waterfall.

## Learn more about:

- State parks at: [http://www.dnr.state.mn.us/state\\_parks/index.html](http://www.dnr.state.mn.us/state_parks/index.html)

# Scientific and Natural Areas

Indicator: Number of sites protected in Scientific and Natural Areas (SNAs)

## Why is this indicator important?

Minnesota's Scientific and Natural Areas (SNAs) preserve and perpetuate the ecological diversity of Minnesota's natural heritage, including landforms, fossil remains, plant and animal communities, rare and endangered species, and other biotic features and geological formations. We work to protect natural communities, rare species, and geological features in order to provide opportunities for nature observation, education, and research.

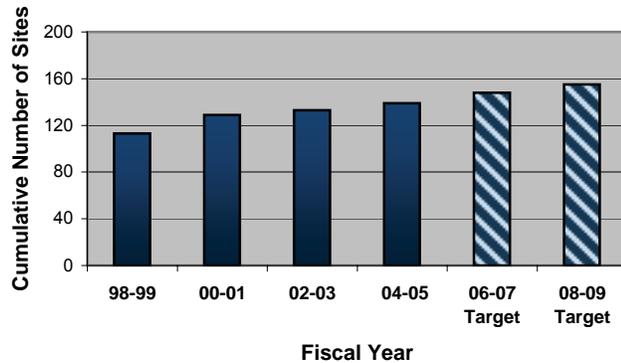
The SNA program's goal is to ensure that no rare feature is lost from any region of the state. This requires protection and management of each feature in sufficient quantity and distribution across the landscape. It is estimated that 500 natural areas are needed throughout the state to adequately protect significant features.

## What is DNR doing?

The SNA program, created by the 1969 Minnesota Legislature, administers more than 140 natural areas across Minnesota. The program protects and manages land, educates citizens, promotes research, produces publications, and helps private landowners. DNR works with stakeholders to create long-term plans to acquire priority areas.

**Target: Dedicate five to ten SNAs in FY 2006–07 and in 2008-09.** DNR's long-term goal for 2085, set with stakeholder input, is to manage a system of 500 natural areas by establishing at least five SNAs per subsection for state significant natural communities, and establishing at least three SNAs per subsection for rare species and geological features. Protecting multiple sites in each landscape region is a vital means of capturing genetic diversity and preventing loss of important species and communities.

## Number of Sites Protected as Scientific and Natural Areas



Number of sites protected as Scientific and Natural Areas (SNAs). DNR aims to establish five to ten new SNAs in FY 2006–07 and in 2008-09 for state significant rare natural features.



R. Hamilton Smith

The Blazing Star unit within the Felton Prairie SNA. This is one of the most important prairie complexes in the state, home to numerous rare plant and animal species.

## Learn more about:

- Scientific and Natural Areas at: <http://www.dnr.state.mn.us/snas/index.html>

# Terrestrial Invasive Plant Species

Indicators: Number of DNR land management units mapped for terrestrial invasive plants; acres of control efforts

## Why is this indicator important?

Invasive species are nonnative plants or animals that can naturalize, threatening natural resources and their use. They are considered the second most significant threat to biodiversity protection in the United States, affecting about half of all rare species. Some invasive species are classified as prohibited noxious weeds and must be controlled as required by Minnesota statute.

About 20 percent of plants in Minnesota are introduced species. DNR has identified invasive species as one of the greatest land and water challenges facing the state. Many DNR units, such as Ecological Services, Parks, Trails and Waterways, Wildlife, and Forestry are investing substantial time and effort in eradicating small infestations, keeping larger infestations in check, and preventing new infestations.

## What is DNR doing?

In 2004, DNR began mapping terrestrial invasive species on DNR-administered lands. The goal of this effort is to give land managers a better idea of the scope of the problem. Mapping was conducted at over 250 units between 2004–2005. To date, these mapping efforts have identified more than 13,700 infestations of terrestrial invasive plants on DNR-administered lands.

Efforts to eradicate or control invasive species are taking place on many DNR lands, such as state parks, state trails, Scientific and Natural Areas, Wildlife Management Areas, and state forests. For example, in 2006 the Division of Parks and Recreation conducted 160 invasive plant control projects affecting about 7,660 acres.

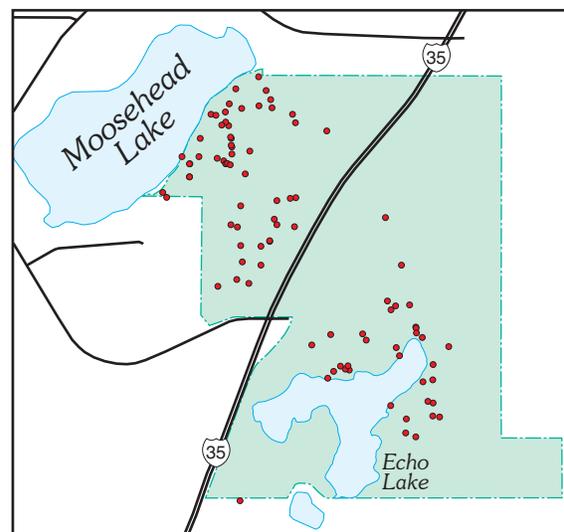
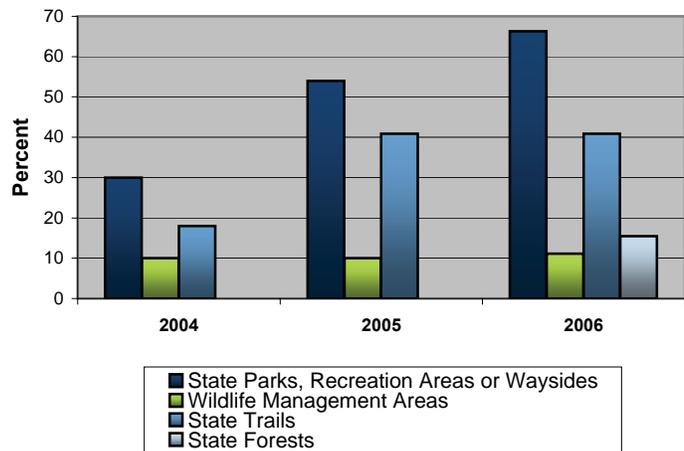
**Target: Continue to map and control aggressive terrestrial invasive plant species on DNR lands.**

DNR has two long-term goals for this indicator. The first is to document the location and abundance of priority invasive plants in state parks, state trails, Scientific and Natural Areas, Wildlife Management Areas, and state forest lands. The second is to reduce the amount and impact of terrestrial invasive species on DNR-managed lands.

## Learn more about:

- Terrestrial invasive plant species identification, issues, and control at: <http://www.dnr.state.mn.us/invasives/terrestrialplants/index.html>

Percent of DNR Land Management Units Mapped for Terrestrial Invasive Plant Species



Dots indicate locations of 91 invasive plant infestations at Moosehead Lake State Park. Moosehead Lake is located in Carlton County. The park contains a mixture of woods, open fields, lakes, and ponds.



# Land Records Management

Indicator: Completion of an updated land records system

## Why is this indicator important?

DNR manages 5.5 million acres of state-owned land and 12 million acres of mineral rights. To effectively manage this land and mineral base, DNR needs efficient access to accurate land records. This is necessary to make well-informed management decisions and to maintain accurate financial records of activities and decisions related to specific parcels of land.

## What is DNR doing?

DNR is initiating a major update of its land records system in 2007. This will be the first comprehensive change since the introduction of an interactive computer-based system in the early 1980s. The existing records system was state-of-the-art 20 years ago and still produces reliable analytic data for its original designed purposes. However, it does not utilize the information technology necessary to meet the increasingly complex demands of natural resource management. DNR's new land records system is expected to enhance access to public information on state land assets, improve integrated natural resource management, and stream-line legislatively mandated reporting requirements.



Resource management using accurate land records and current technology.

**Target:** *Develop and implement plans to update DNR's computerized land records system beginning in 2007.* Pending funding, over the next four years DNR will re-engineer its computerized land records system to meet its natural resource management needs while providing remote access for other state agencies, local government, and private land managers.

## Learn more about:

- Lands and minerals at: [http://www.dnr.state.mn.us/lands\\_minerals/index.html](http://www.dnr.state.mn.us/lands_minerals/index.html)

# Meeting Fiduciary Responsibilities for School Trust Lands

Indicator: Number of school trust land parcels meeting fiduciary responsibilities

## Why is this indicator important?

DNR manages about 2.5 million acres of school trust lands. Constitutional and legislative directives require the department to maximize the long-term economic return to the Permanent School Fund. DNR is committed to meet its fiduciary responsibilities as outlined in Minnesota Statutes, Sec. 127A.31, and the Minnesota Constitution, Article XI, Sections 8, 10, and 11.

## What is DNR doing?

To generate additional revenues, DNR is working to increase sales of timber and minerals from school trust lands. The department is also working to adopt changes in forestry management practices outlined in the *Governor's Advisory Task Force Report on the Competitiveness of Minnesota's Primary Forest Products Industry*. These include: 1) using management practices intended to increase wood and fiber availability and production, and 2) pursuing legislation that will provide additional funds for increasing field staff and dedicated accounts intended to increase timber sales.



With respect to minerals, a 2005 DNR budget request to utilize a portion of income from the sale of trust fund minerals was approved. The funds have been used to: identify new mineral resources, clear ownership title on trust lands so they can be leased, and investigate innovative mineral processing techniques, all of which are intended to increase income to the trust. Funds have also been used to cover land exchange transaction costs so trust lands that did not produce income could be exchanged for lands that will. In addition, DNR is in the process of investigating income-generating possibilities associated with recreational, entertainment, and public and private use opportunities that might be derived from trust lands and the natural resources located thereon.

**Target:** *During FY 2007, DNR will complete two exchanges of about 3,100 acres of school trust land out of management units that inhibited the generation of revenue.* These exchanges will occur in Savanna Portage and Tettegouche state parks. Additional land exchanges will be conducted in FY 2008. These include the exchange of school trust lands in three state parks and one state recreation area. When these exchanges are complete there will no longer be School Trust Lands within the state park system.

## Learn more about:

- Land exchanges at: [http://www.dnr.state.mn.us/lands\\_minerals/index.html](http://www.dnr.state.mn.us/lands_minerals/index.html)

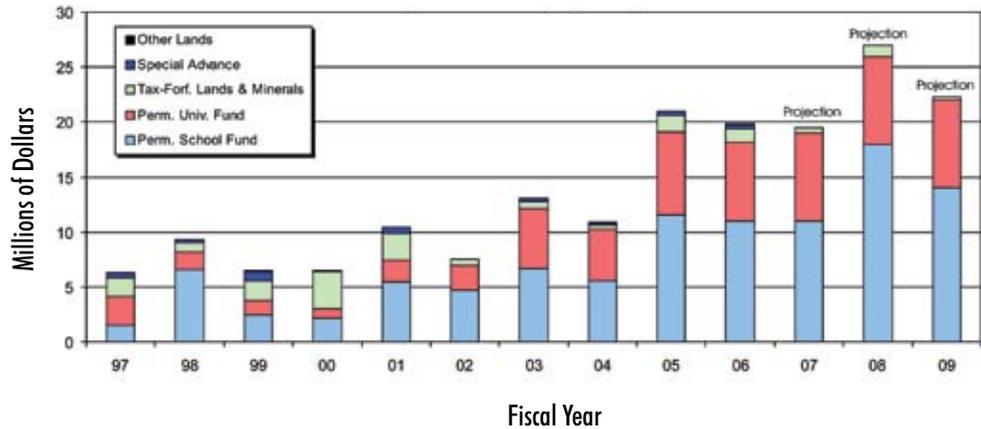
# Mineral Lease Income

Indicator: Income from state mineral leases

## Why is this indicator important?

The state owns approximately 12 million acres of mineral rights, including about 25 percent of the mineral rights on the Mesabi Range. DNR has developed mineral production and revenue projections in conjunction with Minnesota's taconite mining industry. Mineral revenues ensure that the mineral owners (school and university trust funds and local units of government) continue to receive long-term income. DNR works to ensure that mining is conducted in a manner that does not waste the mineral reserves by leaving valuable resources unmined. DNR also has an interest in the overall economic health of the mining industry in order to: 1) ensure continuation of operations, 2) protect jobs, and 3) maintain the industry's contributions to the state's economy.

State Mineral Lease Revenue, Fiscal Years 1997-2009  
(FY07-09 data are projections)



## What is DNR doing?

DNR is working to encourage the mining of state minerals at prices that will keep Minnesota's taconite pellets competitive with other iron ore producers around the world. We have initiated a number of contacts with companies to develop value-added technologies that will enhance the competitive nature of Minnesota's taconite industry. Finally, DNR is investigating innovative uses of mine wastes that may result in future income streams for the Permanent School Fund, the University Fund, and local units of government, all of which may potentially benefit from the materials produced on state-owned lands.

**Target: Maximize mineral lease revenues for the Permanent School Fund, the Permanent University Trust Fund, and local units of government having tax-forfeited minerals.** The chart above contains actual revenue through FY 2006 and projected revenues for FY 2007 through 2009. The projections may be affected by the U.S. economy, the demand for steel, and/or international commodity markets.

## Learn more about:

- DNR lands and minerals at: [http://www.dnr.state.mn.us/lands\\_minerals/index.html](http://www.dnr.state.mn.us/lands_minerals/index.html)

# Farmland Conservation

Indicator: Acres in conservation land retirement programs under state and federal farmland programs

## Why is this indicator important?

Farming has dramatically altered the landscape in Minnesota's agricultural areas. Wildlife populations declined as the historic prairie wetlands of southern and western Minnesota were converted to croplands.

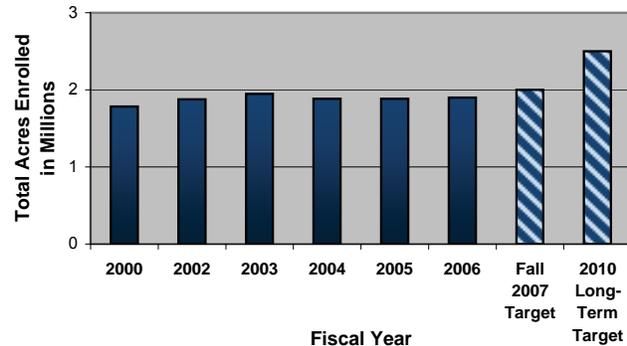
Federal farm policy has played an important role in shaping this landscape. The Federal Farm Bill's Conservation Reserve Program (CRP) has provided substantial conservation opportunities on agricultural lands. The 2007 Federal Farm Bill should continue to provide significant conservation provisions vital to habitat conservation.

## What is DNR doing?

DNR is increasing collaboration with the Minnesota Board of Water and Soil Resources (BWSR), federal conservation agencies, conservation organizations, Soil and Water Conservation Districts (SWCDs) and others to promote the full range of conservation provisions of the 2002 Federal Farm Bill on private lands. For example, DNR provided \$337,500 in FY 2005, 06, and 07 to hire technicians who work out of local SWCD offices and help landowners enroll in Federal Farm Bill and state land retirement conservation programs. DNR is encouraging enrollment in continuous CRP and the state's Reinvest in Minnesota (RIM) Reserve program. DNR also supported the Governor's initiative that successfully requested an additional 120,000 acres in a new conservation reserve enhancement program (CREP). We will continue to partner with the Wildlife Management Institute, the International Association of Fish and Wildlife Agencies, and others to further expand and improve the conservation provisions within federal farm policy.

**Target: Have more than 2 million acres enrolled in conservation land retirement programs by the end of the 2002 Farm Bill; maintain enrollment of the highest priority acres following CRP contract expirations in 2008 and 2009. Develop new policies and programs to increase enrollment to 2.5 million acres by 2010.** DNR and partners are preparing for upcoming changes in federal farm policy. In FY 2007, nearly 400,000 acres of CRP contracts expired in Minnesota, of which 334,000 acres were extended or renewed. Another 400,000 acres will expire in FY 2008. Rising land values and changing program requirements will make it difficult to maintain enrollment after contract expirations. DNR is working with partners to encourage contract extension or renewal. This issue as well as the Wetlands Reserve Program, Conservation Security Program, sustainable agriculture, and other conservation programs also need to be addressed in the conservation provisions of the 2007 Federal Farm Bill.

Acres in State and Federal Conservation Land Retirement Programs



Acres enrolled in state and federal farmland retirement programs. Nearly 2 million acres of land have been enrolled in conservation programs to improve soil and water quality and increase wildlife habitat. Natural resource staff help tailor conservation programs to individual farming operations.

## Learn more about:

- Land conservation grant programs at: <http://www.dnr.state.mn.us/grants/land/index.htm>
- Financial assistance at: <http://www.dnr.state.mn.us/grants/matrix.html>
- Farmland programs at: <http://www.bwsr.state.mn.us>

# Prairie Stewardship Assistance

Indicator: Number of prairie stewardship plans and management projects

## Why is this indicator important?

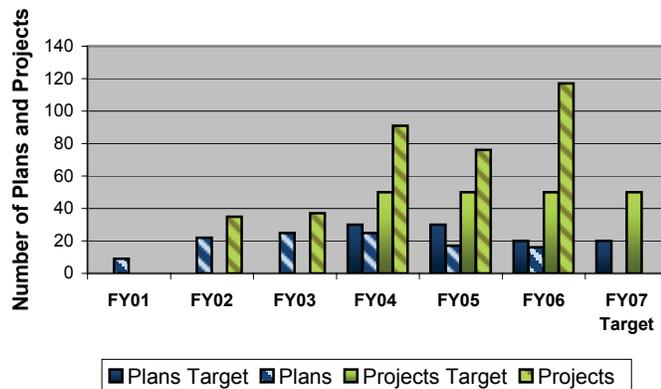
Prairies are Minnesota’s most endangered major habitat type. About 150,000 of the state’s original 18 million acres of prairie remain; these lands are home to more than 40 percent of Minnesota’s state-listed species (see Endangered Species indicator in Fisheries and Wildlife section). Native prairie requires management such as prescribed burning and invasive species control to remain healthy. Approximately 70 percent of prairie land is privately owned, so conservation depends on private landowners.

## What is DNR doing?

DNR manages several programs to help private landowners manage native prairie. Landowners can receive help developing a stewardship plan from Scientific and Natural Areas (SNA) program prairie specialists, or from private consultants funded by the SNA program. The SNA program then uses its prairie management staff, private sector contractors, Minnesota Conservation Corps, Sentence to Serve crews, or direct cost-share assistance to help selected landowners carry out their plans. Landowners can also enroll qualifying prairie land in the DNR Native Prairie Bank easement program (74 sites totaling more than 6,073 acres), and/or the Prairie Tax Exemption program (about 400 landowners and 16,000 acres enrolled). DNR has been providing planning assistance to private prairie landowners since FY 2000 through LCMR-funded projects. We began providing technical and management assistance in FY 2002 by stationing a private lands prairie specialist in the DNR Windom office.

**Target: Conduct at least 20 prairie stewardship plans and 50 management projects each year.** To reach this target DNR will combine state funding with federal funding for the Landowner Incentive Program – “Prairie Species at Risk” project. Expanded funding will be sought to continue and accelerate existing programs to provide 100 plans and projects each year.

## Number of Prairie Stewardship Plans and Management Projects



Number of prairie stewardship plans and management projects. DNR plans to assist with at least 20 prairie stewardship plans and 50 management projects each year.



Prairie Landowners. Three generations of landowners and a DNR prairie specialist survey a protected Jackson County prairie.

## Learn more about:

- Prairie Restoration at: <http://www.dnr.state.mn.us/prairierestoration/index.html>
- MN Prairie Bank easement programs at: <http://www.dnr.state.mn.us/fad/land/prairiebank.html>
- Northern Prairie Wildlife Research Center at: <http://www.npwrc.usgs.gov>

# Helping Local Communities Protect Open Space

Indicator: Acres acquired for local community projects funded with grants

## Why is this indicator important?

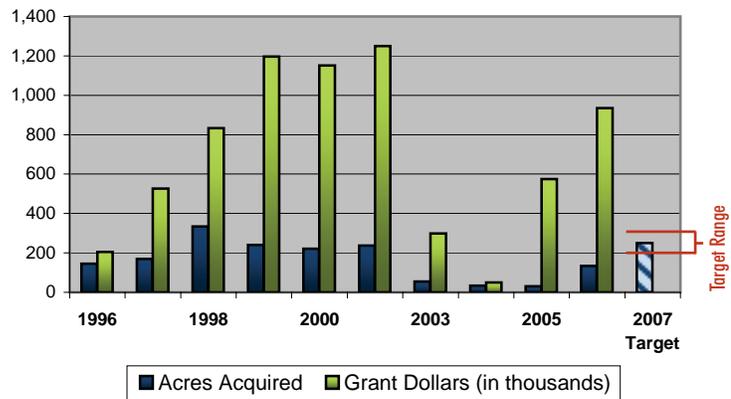
Open spaces are often lost because local governments lack resources to acquire them. Local governments, particularly in the fast-growing counties ringing the Twin Cities metropolitan area and in the growth corridor between the Brainerd Lakes area and Rochester, have an opportunity to acquire and protect open space and natural areas. But that opportunity is fading fast.

## What is DNR doing?

DNR manages several matching grant programs to help local governments protect open space and natural habitats. These programs reimburse local governments for 50 to 60 percent of the appraised value. Because local governments assume responsibility for the areas, this partnership allows the state to help protect natural resource and recreation areas without having to operate or maintain them. In the last six years, DNR helped local governments acquire 2,042 acres of regional parkland outside the Twin Cities metro area. Over the past ten years, 52 Natural and Scenic Areas grants helped local governments acquire almost 1,860 acres of high-quality land. In 2006 DNR awarded three Natural and Scenic Area grants totaling \$935,000 to help acquire 134 acres, including a 42 foot high waterfall. DNR also awarded five Regional Park Grants totaling \$1,650,000 to help five fast growing counties acquire 968 acres of new or expanded regional park lands. We exceeded the target of 200-300 acres.

**Target: Acquire approximately 200 to 300 acres per year in 2007–08 and thereafter.** This target is a rough estimate because DNR responds to local government grant requests, which vary from year to year depending on location, acreage, and land value. To reach this target, we periodically request funding for the Natural and Scenic Areas and Regional Parks (Outside the Metro) grant programs through DNR’s bonding requests. In addition, we are seeking continued funding through the Legislative-Citizen Commission on Minnesota Resources (LCCMR) and the federal Land and Water Conservation Fund (LAWCON) program.

## Natural and Scenic Areas Grants



Natural and Scenic Areas Grants. Grants totaling more than \$7.6 million have helped local communities acquire 1,811 acres of high quality lands.



Lutsen township, natural and scenic area

## Learn more about:

- Financial assistance at: <http://www.dnr.state.mn.us/fad/matrix.html>, see “Grants”

# Habitat Protection in Urban and Developing Areas

Indicator: Number of habitat acres protected and restored in the greater Twin Cities metropolitan area

## Why is this indicator important?

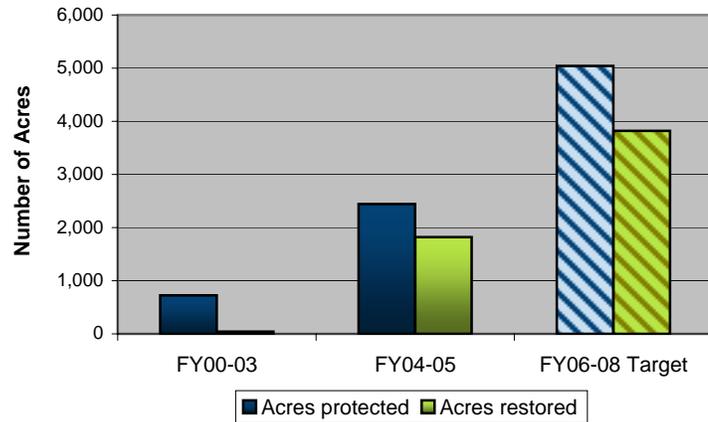
Urban growth patterns directly and indirectly impact natural habitats. Current patterns of low-density development threaten remaining habitats by fragmenting areas into smaller and smaller parcels that cannot sustain healthy plant and animal populations or by eliminating habitat altogether. Each day, nearly 60 acres of undeveloped land in the greater metropolitan area is converted to other land uses. By 2030, more than 1 million new residents and nearly 500,000 new homes are projected in the 11-county metropolitan area alone. In the face of such growth pressures, the protection and restoration of undeveloped lands is essential to conserve the many benefits of natural habitats that contribute to quality of life and economic stability.

## What is DNR doing?

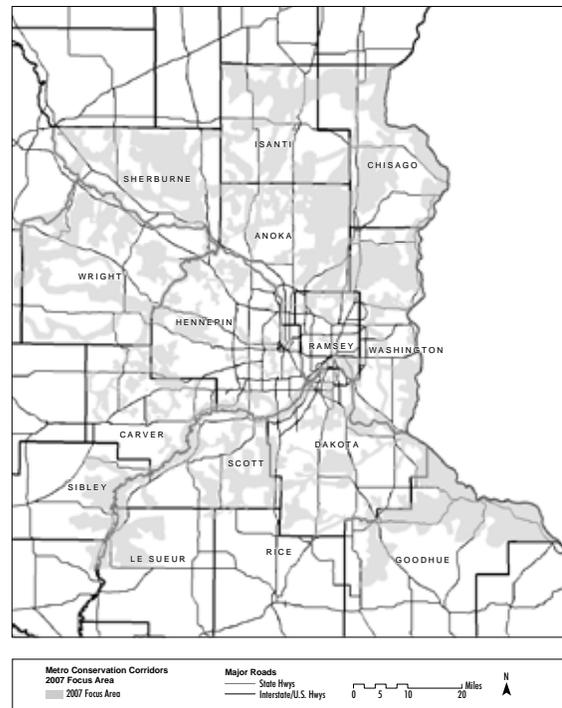
DNR works in partnership in a variety of ways to conserve habitat in the face of development, including: 1) conducting regional and statewide natural resource assessments for use by regional and local governments and conservation organizations; 2) providing technical assistance to increase local capacity to conserve natural resources; and 3) offering grants to local communities to inventory, plan for, restore, and acquire natural areas. Additionally, DNR is directly involved in state acquisition and management of habitat areas for public use. Two key partnerships that help support the protection and restoration of targeted habitat areas in a 14-county area are DNR's Metro Greenways Program and the Metro Conservation Corridors Partnership, a consortium of nonprofits and local governments.

**Target: During FY 2006–08, protect an additional 2,600 habitat acres and restore 2,000 more habitat acres through the Metro Conservation Corridors Partnership and Metro Greenways Program.** To reach this target, partners will need additional funding appropriated through the Legislature, which will be used to leverage additional funds from other public and private partners.

## Cumulative Habitat Acres Protected and Restored



## Metro Conservation Corridors 2007 Focus Area



12/12/2006

The Focus Area for the Metro Conservation Corridors Partnership and Metro Greenways directs habitat protection and restoration work toward interconnected areas of regional ecological importance.

## Learn more about:

- Metro Conservation Corridors Partnership and Metro Greenways Program at: <http://www.dnr.state.mn.us/greenways/index.html>
- Remaining significant terrestrial and wetland habitats at: <http://www.dnr.state.mn.us/rsea/map.html>
- Growth pressures on Central Region natural resources at: [http://www.dnr.state.mn.us/nrplanning/community/ameregis\\_report/index.html](http://www.dnr.state.mn.us/nrplanning/community/ameregis_report/index.html)

# Minnesota County Biological Survey

Indicator: Number of counties with a Minnesota County Biological Survey

## Why is this indicator important?

An important goal for DNR is to ensure that all landowners have the information they need to manage natural resources wisely. The Minnesota County Biological Survey (MCBS), a systematic survey of the state's native plant communities, rare species locations, and potential natural areas, provides baseline information about unique natural areas and rare features, as well as tools to help sustain them. We must complete surveys in a timely manner because development pressure is resulting in loss of natural habitats and creating a rapidly rising demand for rare features data and ecological management tools.

## What is DNR doing?

We have completed surveys in 61 of Minnesota's 87 counties, have surveys underway in 14 others, and are proposing two additional counties for survey. We make survey information available in various formats, including maps, publications, and electronic data files. Published maps of MCBS results in 24 counties are available upon request and digital map files for all or portions of 53 counties are accessible at [http://deli.dnr.state.mn.us/data\\_catalog.html](http://deli.dnr.state.mn.us/data_catalog.html).

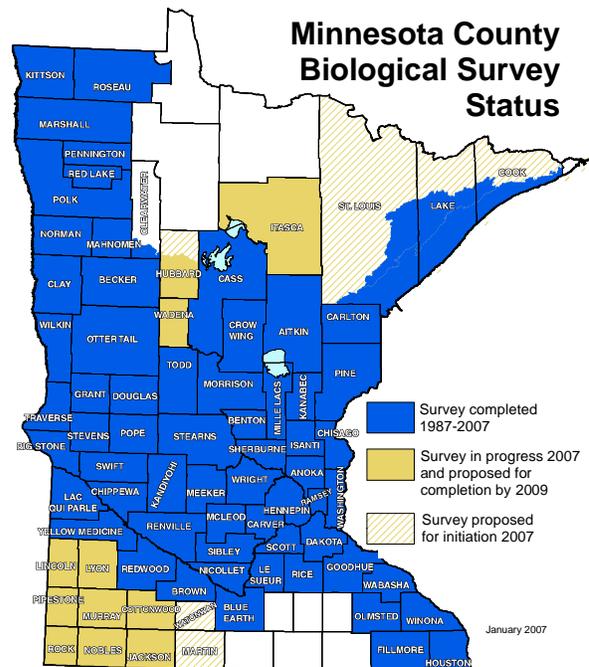
MCBS surveys are useful to decision makers. For example:

- MCBS collaborated with partners to publish field guides to native plant communities. These field guides are of use to land managers, field surveyors, researchers, ecological consultants, and anyone interested in the diversity and ecology of the state's vegetation.
- MCBS data are being used as part of the forest certification process and for DNR state forest plans.
- MCBS has worked closely with the Manitou and the Sand Lake Seven Beavers collaborative landscape planning partnerships to establish management goals that take into account several MCBS sites with outstanding and high biodiversity significance.
- Cedar Mountain, a site identified by MCBS as having outstanding biodiversity significance in the Minnesota River Valley, was approved in 2005 as a state Scientific and Natural Area.
- The web product, AniMap, is a tool to deliver MCBS data on common animals for counties where MCBS is completed.

**Target: Complete a total of 70 counties by 2008 and all counties by 2021.**

## Learn more about:

- A Minnesota County Biological Survey at: [http://www.dnr.state.mn.us/ecological\\_services/mcbs/index.html](http://www.dnr.state.mn.us/ecological_services/mcbs/index.html)
- MCBS county maps: [http://www.dnr.state.mn.us/ecological\\_services/mcbs/maps.html](http://www.dnr.state.mn.us/ecological_services/mcbs/maps.html)
- Field guides at: [http://www.dnr.state.mn.us/ecological\\_services/pubs\\_plants.html](http://www.dnr.state.mn.us/ecological_services/pubs_plants.html)



Using County Biological Survey information and a Natural and Scenic Area grant, Stearns County expanded its Quarry Park Natural Area, now a 622-acre multi-use area providing habitat for rare populations of turberled rein-orchid, red-shouldered hawk, and Acadian flycatcher.

# Local Governments Using Natural Heritage Data

Indicator: Number of local governments using Natural Heritage data

## Why is this indicator important?

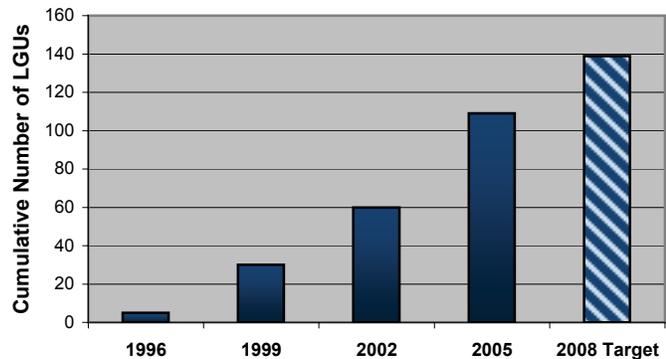
Local government staff and elected officials make numerous decisions that affect natural resources. Technical assistance and up-to-date data on natural features can help them protect natural resources in a cost-effective, collaborative manner. Processes such as comprehensive planning, parks and open space planning, development of zoning and subdivision ordinances, review of development proposals, and stewardship of public lands are much more effective when such assistance and data are easily available.

## What is DNR doing?

DNR's regional plant ecologists provide technical assistance to local governments and citizens in DNR's northwest, central, and southern regions using data collected by the Minnesota County Biological Survey and stored in the Natural Heritage Information System. In 2006, a new regional plant ecologist position was added in the northeast region. The regional plant ecologists' activities include making presentations to county boards, city councils, planning and parks commissions, and local government staff about the importance of natural features; providing information about funding sources for natural resource inventory, planning, and land acquisition; and providing electronic data, maps showing local natural features, and books detailing land protection options. Since the inception of the regional plant ecologist program in 1996, a total of 109 local governments have received technical assistance with natural features information.

**Target: Provide technical assistance and natural features information to an additional 30 local governments by 2008.** To reach this target, regional plant ecologists will respond to the many requests for assistance they receive from local governments. They also will contact local governments where important natural areas and rare species finds have been recently documented to offer assistance. Other DNR programs will provide related technical assistance. For example, in a pilot effort, 60 local governments that were awarded MN ReLeaf Community Forestry Grants will also receive Composite Community Natural Resource Maps. Such maps help local governments set priorities and conserve natural features by making more informed zoning and comprehensive planning decisions.

## Number of Local Governments Using Natural Heritage Data



Number of local government units (LGUs) using natural heritage data. The first regional plant ecologist position was created in 1996. The addition of two more regional plant ecologists accelerated technical assistance to local governments.



County, state, and city officials celebrate the establishment of the Sandhill Crane Natural Area, a collaborative effort to protect an important natural area in East Bethel.

## Learn more about:

- Case studies of communities using information at: [http://www.dnr.state.mn.us/ecological\\_services/pubs\\_protect.html](http://www.dnr.state.mn.us/ecological_services/pubs_protect.html)
- Rare plants, animals, and natural features at: [http://www.dnr.state.mn.us/ecological\\_services/nhrp/index.html](http://www.dnr.state.mn.us/ecological_services/nhrp/index.html)

# Environmental Review by DNR

Indicators: Number of development projects with environmental review; number of habitat acres affected by development projects

## Why are these indicators important?

Between 900 and 1,000 land development projects are proposed each year by local, state, and federal government agencies as well as private citizens and businesses. In total, these projects annually convert thousands of acres of natural habitats such as woodlands, grasslands, and wetlands into developed landscapes that are less supportive of healthy wildlife populations. The number of projects reviewed each year and the amount of natural habitat involved in project proposals provide two metrics for the level of conservation assistance provided by DNR staff.

## What is DNR doing?

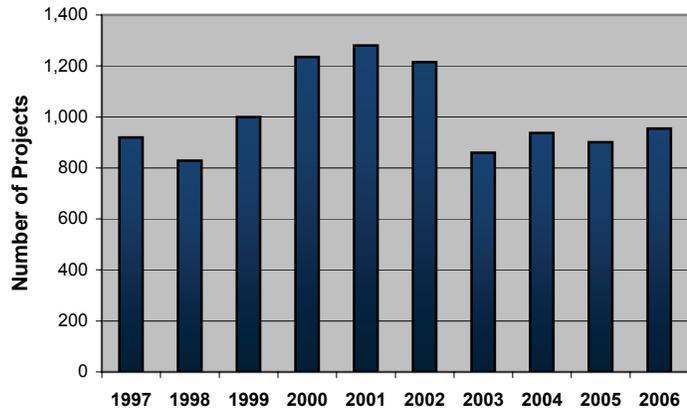
Through environmental review, we seek to reduce fish, wildlife, and native plant habitat losses due to development; ensure long-term health (sustainability) of ecosystems and natural communities; conserve a healthy economy for environmental products and services; and incorporate consideration of natural resources and environmental health into project design.

Almost 80 percent of Minnesota's land base is in private ownership. Many of the land development activities that occur on private land affect public resources such as fish and wildlife living on that land or nearby public lands. Environmental review is one of few tools we have to influence decisions on private land.

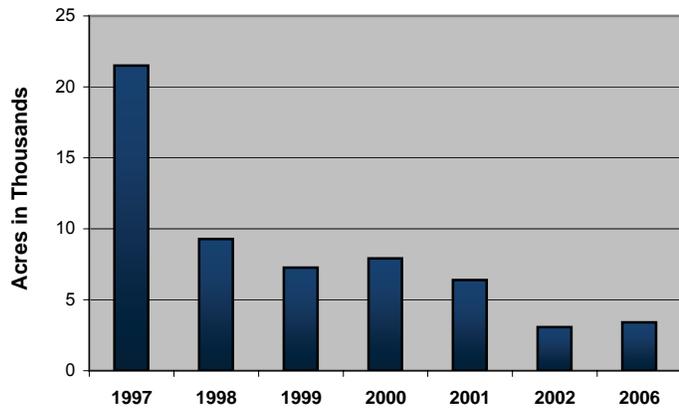
Environmental review looks at real, on-the-ground projects. We are able to examine the whole project, not just the pieces that require permits. Our review is timely, and can inform permit decisions that follow. We analyze both direct and off-site impacts associated with project proposals, and examine cumulative impacts when applicable. Through environmental review, we can also look at multiple landscape scales.

**Target: No target set.** Our expected output is between 900 and 1,000 new project proposals reviewed each year. The number of projects we review and the number of wetland, grassland, and woodland acres potentially affected by those development proposals are measures of DNR's environmental review activity. Our long-term desired result is to stem the loss and degradation of natural habitat. DNR qualitatively tracks the effectiveness of environmental review in protecting natural resources by documenting success stories each year. Case studies can also document significant trends in loss of habitat due to development. Quantitative indicators that measure damage prevented because of environmental review or related program activities are lacking; such indicators are difficult to develop and accurately assess.

## Development Projects Reviewed



## Wetland, Woodland and Grassland Habitat Affected



The number of development projects reviewed each year and the amount of natural habitat involved in project proposals provide two metrics for the level of conservation assistance provided by DNR staff.

## Learn more about:

# Land Stewardship Through Mineland Reclamation

Indicator: Acres of mineland reclaimed

## Why is this indicator important?

Iron ore and taconite mining has disturbed more than 100,000 acres of land since mining began in Minnesota in the 1890s. Most disturbed lands are on the Mesabi Iron Range in northeastern Minnesota.

Reclamation of disturbed areas, conducted in a manner that provides for future uses such as recreation, light industry, tourism, community growth, and infrastructure, is at the core of land stewardship along the Mesabi Iron Range. The Mineland Reclamation Law (Minnesota Statutes Sec. 93.44–93.51) requires mine operators to submit long-range mining and reclamation plans. Proper mine planning and reclamation, in conjunction with local planning and zoning, can alleviate many future land-use conflicts.



Wetland replacement and restoration are important reclamation activities.

## What is DNR doing?

Progressive mineland reclamation is a process that begins with the mine plan and occurs throughout the life of a mine. Since 1980, mining companies have permanently reclaimed more than 13,000 acres of disturbed land. While the majority of reclamation primarily involves revegetation, mine site restoration, wetland replacement and wildlife habitat establishment, the DNR is exploring other options for reclaimed lands. For example, DNR is investigating the use of tailing basins for growth of short-rotation biomass for wood fiber and fuel; the use of biosolids as a soil amendment to increase fertility of mine lands; and the establishment of wetlands in tailings basins. DNR is also participating with industry, Iron Range Resources, and other governmental organizations in the Laurentian Vision, a public planning process for post mining land use.

**Target: Maintain the current rates of progressive mineland reclamation.** About 500 acres of land are permanently reclaimed each year on the Mesabi Iron Range, while 2,000 acres of tailings are temporarily stabilized for dust control. About 100 acres of wetlands are impacted and replaced each year. To reach this target, DNR will continue to monitor reclamation work and compliance with approved plans. Close monitoring ensures that long-range reclamation goals are met. DNR will also continue to undertake cooperative projects with other units of government and industry to expand knowledge about wetland creation, use of biosolids, and other ways of enhancing the usefulness of reclaimed minelands.

## Learn more about:

- Aggregate mining and reclamation at: [http://www.dnr.state.mn.us/lands\\_minerals/pubs.html](http://www.dnr.state.mn.us/lands_minerals/pubs.html)

# Natural Lands Key Indicator Gaps

## Indicator Gaps:

Although the indicators in this report have data of sufficient quality and coverage to support trend reporting, we recognize gaps in our ability to report on important natural resources trends. The following is a preliminary list of important indicators that require either additional data or new monitoring efforts. When baseline and trend data for new indicators are available, cooperative efforts will be needed to establish conservation targets.

A preliminary list of indicator gaps includes:

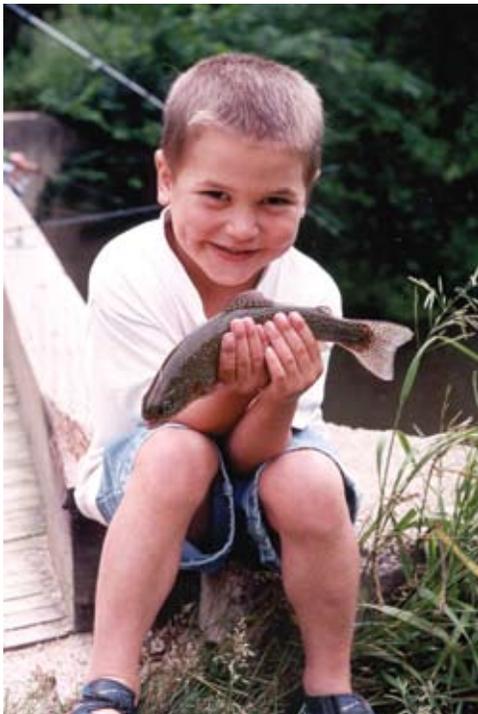
Indicator to track land use change in rapidly developing areas
Indicator to measure the status and change in the extent of natural habitat in urban and developing areas
Indicator to track acres of critical habitat restored in urban areas each year
Indicator to track the number of partnerships actively conserving natural lands and habitats

# Section Two: Fisheries and Wildlife

## Minnesota's Fish and Wildlife Will Be Conserved

Fishing with an old friend . . . walking through the crisp autumn woods in search of deer . . . marveling with family at the sight of an eagle soaring far overhead . . . just about anyone who has spent time in Minnesota has a fond memory that involves animals in the outdoors.

Conserving fish and wildlife resources, ensuring the health and abundance of habitats and fish and wildlife populations, and supporting recreation tied to these resources are all part of DNR's mission.



"It's for me, too!" Conserving fish and wildlife ensures future generations will enjoy Minnesota's outdoors heritage.

### A Vision for the Future

When we look to the future we envision **great fishing, hunting, trapping, and wildlife viewing opportunities** that meet the expectations of hunters, anglers, and wildlife watchers. Minnesotans and visitors will have access to rich public lands and recreational opportunities. Businesses dependent on fish and wildlife resources will support long-term and sustainable management of these resources.

We envision a future in which fish and wildlife populations and the habitats that support them are **stable and healthy**.

Habitat types in jeopardy, such as prairies, wetlands,

and shallow lakes, will be restored. Endangered and threatened species and species of special concern will be conserved.

We envision a future with **strong conservation partnerships** and a **strong stewardship ethic**. Public and private sector partners will work together to support Minnesota's resources and promote conservation.

Natural resources education and enforcement will help citizens safely enjoy outdoor recreation and provide decision makers with the information they need to make wise resource-related decisions.

### Critical Trends

Our efforts to achieve this desired future will be greatly challenged by trends related to our fish and wildlife resources. Most critical is an alarming **loss of habitat**. Natural lands and waters are being degraded, fragmented, and developed. Urban development and agriculture are reducing natural habitats and affecting the quality of waterways. Wetlands critical to waterfowl and many other species are being polluted and drained. Lakeshores are losing vegetation buffers needed to protect habitat and water quality.

**Trickle-down effects of human actions** pose serious threats. Intentional and unintentional

### DNR – What We Do

- Conserve, improve, and restore fish and wildlife populations, habitats, and ecosystems
- Protect endangered and threatened species and species of special concern
- Promote natural resources stewardship through partnerships, technical assistance, and education
- Support fish and wildlife recreation opportunities by acquiring and developing access opportunities
- Conduct fish, wildlife, and native plant community inventory and research
- Propagate fish for stocking in publicly accessible waters

introductions of invasive species can result in the crowding out of native plants and animals. And man-made vehicles accelerate the movement of diseases. These diseases can negatively impact fish and wildlife and threaten recreation that depends on healthy animal populations. Human alterations to the environment can change the impacts of natural disturbances such as fires and floods.

**Changing land ownership patterns** also affect fish and wildlife and related recreation. Ownership of multiple small parcels creates challenges for managing ecosystems as functional units. Fragmentation of land ownership makes it harder to maintain quality habitat and reduces hunting and wildlife-watching opportunities. Growing demand for land makes acquiring key habitat more challenging and expensive than ever.

**Increasing recreational and economic demands** on fish and wildlife resources foster opportunities for conflict. Some hunters want motorized access, while others want silence. Different people want land managed for different economic uses. In some places and at some times the number of motorized watercraft can have an impact on the quality of outdoor experiences.

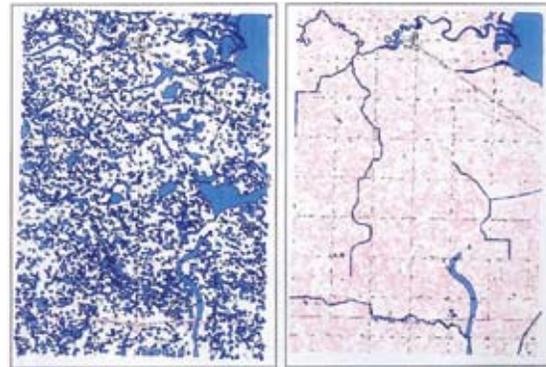
Increasing **interactions between people and wildlife** also challenge us as we pursue our vision for fish and wildlife. More people are spending more time in places

that bring them into contact—and sometimes conflict—with deer, geese, turkey, bears, and other animals. Our increasingly urban population may not always be aware of fish and wildlife needs and laws. Natural resources education can improve people’s conservation knowledge and help everyone appreciate and nurture Minnesota’s abundant fish and wildlife resources.

On the positive side, we are seeing a **growth in conservation partnerships** between public and private entities and a **growth in natural resources stewardship**. Agencies and organizations are working together to restore and protect habitat and promote conservation of specific species. People are paying more attention to conservation issues such as harmful invasive species, chronic wasting disease, and species recovery efforts.

Conserving fish and wildlife is a large and complex task. Emerging challenges demand creative responses. We are committed to growing conservation by bringing unprecedented time, energy, and enthusiasm to the cause. As we strive to sustain Minnesota’s fish and wildlife populations, in part through the indicators and targets outlined here, we look forward to working with our partners in the months and years ahead.

150 Years of Wetland Drainage in Minnesota



Circa 1844      50 mi<sup>2</sup> of Jackson County      Circa 1994

These maps illustrate 150 years of wetland drainage in southern Minnesota. Shaded areas represent wetland coverage. The left map (heavy shading) illustrates former, extensive wetland coverage. The right map (light shading) illustrates today’s lack of wetland habitat.

### Fish and Wildlife Resource Facts

- 16,000 miles of fishable streams
- 5,400 fishing lakes
- More than 50 game species managed through regulated harvest
- More than 1,100 known wildlife species; many in conservation need
- 15% of Minnesotans hunt or trap
- 29% of Minnesotans fish
- 54% of Minnesotans view/photograph wildlife

# Fisheries and Wildlife Indicators & Targets

Indicator	Target	Page
<b>Fisheries resources and angler satisfaction</b>		
Amount of lakeshore habitat restored; number of lakeshore workshop participants	Restore 10,000 to 15,000 linear feet of shoreline in FY 2007; reach 100 local government units with shoreline workshops in 2007	26
Pounds of walleye fingerlings stocked; walleye population levels	Stock 160,000 pounds of walleye fingerlings each year beginning in FY 2004	27
Red Lake walleye biomass and mature female spawning stock	Maintain a self-sustaining walleye population that supports a thriving sport fishery. Mature female spawning stock will exceed 2.0 pounds per acre and be composed of a diverse age structure	28
Brown trout population levels	Maintain or increase populations of larger brown trout and add 10 miles of easements on southeastern Minnesota trout streams by the end of 2007	29
Lake Superior steelhead trout catch rates and spawning numbers	Maintain an average catch rate of 0.06 to 0.10 steelhead greater than 16 inches per angler-hour shorewide, and increase the average annual number of spawners returning to the Knife River from about 400 to 1,000 over the next 10 years	30
Percentage of wild lake trout in the recreational fishery of Lake Superior	Achieve a self-sustaining lake trout population capable of supporting a productive fishery. Reduce or eliminate stocking in MN-1 when criteria are met	31
Number of metro region ponds stocked for fishing and education	Stock 45 to 50 ponds, primarily with bluegill and crappie, by the end of FY 2007	32
Angler satisfaction levels as measured by surveys	Maintain or improve angler satisfaction levels	33
For additional aquatic education indicators see section on Natural Resources Stewardship Education		108

# Fisheries and Wildlife Indicators & Targets

Indicator	Target	Page
<b>Wildlife resources and hunter satisfaction</b>		
Hunter satisfaction levels as measured by surveys	Maintain 90 percent satisfaction rates among hunters	34
Chronic wasting disease (CWD) sampling of harvested deer	DNR will maintain targeted surveillance of wild deer for CWD in the foreseeable future	35
Percentage of deer permit areas within goal range for harvest levels	Maintain deer populations within goal ranges in at least 75 percent of deer permit areas	36
Number of wild turkey hunting permits offered; harvest levels; range expansion	Offer 30,000 permits by 2006 and 35,000 permits by 2010	37
Pheasant harvest levels	Achieve an average harvest level of 450,000 pheasants by 2008 and 750,000 pheasants by 2025	38
Ruffed grouse harvest levels	Provide an average annual harvest of 650,000 ruffed grouse	39
Number of landscapes designated as priority open landscape areas	Designate 40 LTAs across the forest and transition zones of Minnesota as priority open landscape areas during DNR's Subsection Forest Resources Management plan development process	40
Acres of prairie wetlands and grasslands protected annually	Increase the number of high-quality prairie wetland complexes through the restoration and protection of 30,000 wetland and grassland acres by all partners each year	41
Number of wild rice lakes actively managed for waterfowl	Working with partners such as Ducks Unlimited, increase the number of actively managed wild rice lakes to at least 170 in the next 10 years	42
Minnesota's share of the yearly Mississippi Flyway duck harvest	Increase Minnesota's share of the Mississippi Flyway duck harvest to 1970s average levels of one duck in six by 2011	43
Number of youth license sales; number of participants in special youth hunts	Maintain youth hunter participation as measured by license sales and increase special youth hunt opportunities in 2007	44

Indicator	Target	Page
<b>Fish and wildlife enforcement</b>		
Number of law enforcement hours by activity	Hire and train 18 new officers in FY 2007	45
Number of enforcement hours designated to work experimental and special regulation waters	Maintain FY 2006 enforcement hours spent on experimental and special regulation waters in FY 2007	46
Number of enforcement hours designated for the Waterfowl Task Force	Maintain FY 2006 migratory waterfowl enforcement hours in FY 2007	47

# Fisheries and Wildlife Indicators & Targets

Indicator	Target	Page
<b>Nongame wildlife populations and wildlife observation</b>		
Loon population levels in six lake index areas	Sustain a population of two to three adult loons per 100 acres of lake in the Aitkin/Crow Wing area	48
Frog and toad species distribution	Maintain or increase the distribution of frog and toad species	49
Number of species on the Minnesota endangered species list	Move fewer species to endangered status with each list revision	50
Percentage of stream reaches in the Missouri River watershed with Topeka shiner	Maintain or increase the percentage of stream reaches in the Missouri River watershed with Topeka shiner present	51
Number of species in greatest conservation need	Invest State Wildlife Grant funds in projects benefiting key habitats and species of greatest conservation need; develop a monitoring system for prairies and savannas by 2008	52
Number of participants in wildlife observation; number of local birding events	Assist local communities with four birding trail/wildlife festival events or products per year.	53

# Shoreland Habitat Conservation

Indicators: Amount of lakeshore habitat restored; number of lakeshore workshop participants

## Why is this indicator important?

Healthy shorelines have long been recognized as critical for water quality, aquatic plants, and fish and wildlife that live in or near Minnesota's lakes and streams. In 2003, a Bemidji State University study showed that lake water clarity is significantly related to lakeshore property values. The study states that the worst land-use practices include the removal of trees, native plants, and aquatic vegetation along shorelines. As native shoreline habitat is lost to development, shorelines lose their ability to support the fish, wildlife, and clean water that are so appealing to the people attracted to Minnesota's water resources.

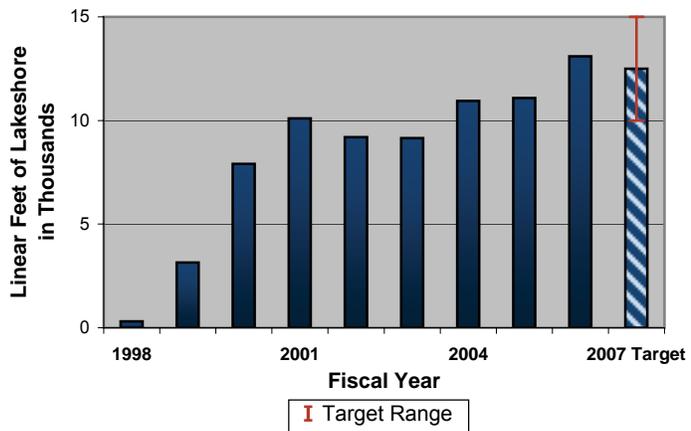
## What is DNR doing?

DNR provides education, technical assistance, and grants to private citizens, conservation organizations, and local governments to restore altered shoreline habitat in order to expand diversity and abundance of native aquatic plants, improve and protect quality of shoreline habitat, and enhance and protect water quality. Since 1998, DNR has completed restoration projects on over 206 sites, comprising 74,928 linear feet and over 54 acres of shoreland habitat.

DNR also produces educational materials on conserving and restoring shoreline habitat, including the book *Lakescaping for Wildlife and Water Quality* and the interactive CD-ROM *Restore your Shore: A Guide to Protecting and Restoring the Natural Beauty of Your Shoreland*. It also hosts shoreline management workshops for citizens, natural resource professionals, and nursery and landscaping companies.

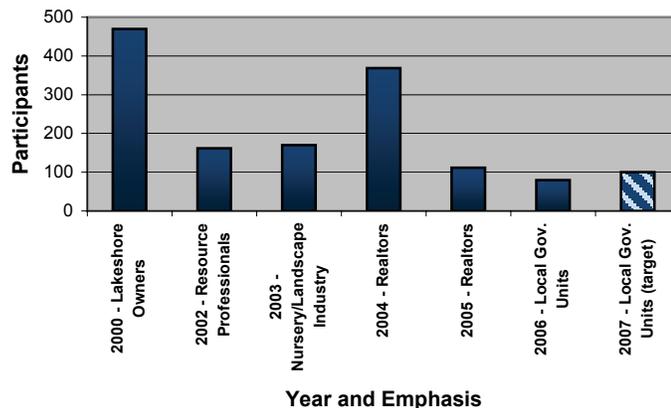
**Target: Restore 10,000 to 15,000 linear feet of shoreline in FY 2007; reach 100 local government units with shoreline workshops in 2007.**

## Amount of Lakeshore Habitat Restored



Amount of lakeshore habitat restored. DNR has helped restore over 74,000 linear feet of lakeshore.

## Education Workshop Participants



Number of lakeshore workshop participants. Workshops have reached more than 1,400 individuals.

## Learn more about:

- Shoreland habitat and fisheries management at: <http://www.dnr.state.mn.us/fisheries/management/habitat.html>
- Shoreline restoration interactive CD-ROM and books at: <http://www.dnr.state.mn.us/restoreyourshore/index.html>
- Natural shorelands at: [http://www.dnr.state.mn.us/shorelandmgmt/ecosystems/natural\\_shoreland.html](http://www.dnr.state.mn.us/shorelandmgmt/ecosystems/natural_shoreland.html)

# Walleye Stocking

Indicators: Pounds of walleye fingerlings stocked; walleye population levels

## Why is this indicator important?

Walleye fishing is an integral part of Minnesota's outdoor fishing heritage. Minnesota has a 29 percent participation rate in fishing.

## What is DNR doing?

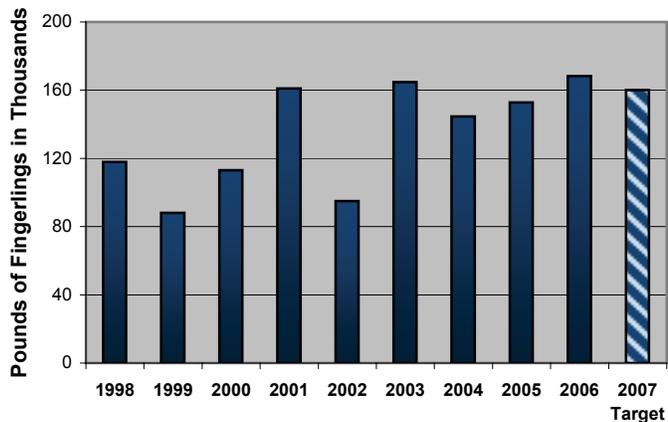
DNR protects and improves walleye habitat, regulates catch, and stocks walleye into approximately 900 lakes where natural reproduction is lacking. DNR has obtained public input on walleye management for more than 350 lakes since 1999. Each lake has its own fisheries management objectives, such as stocking targets. To achieve individual lake stocking targets, the DNR produces fingerlings (4- to 6-inch walleyes) in natural rearing ponds. Stocking is one part of the picture. Most walleyes caught in Minnesota are from natural reproduction.

### ***Target: Stock 160,000 pounds of walleye fingerlings each year beginning in FY 2004.***

This 160,000-pound target was raised from an earlier target of 120,000 to 130,000 pounds. Annual variations above or below the target are to be expected because walleye fingerling production, which occurs in natural ponds around the state, is strongly influenced by weather. Walleye abundance in stocked lakes remains good and continues to fall within the normal range of variability.

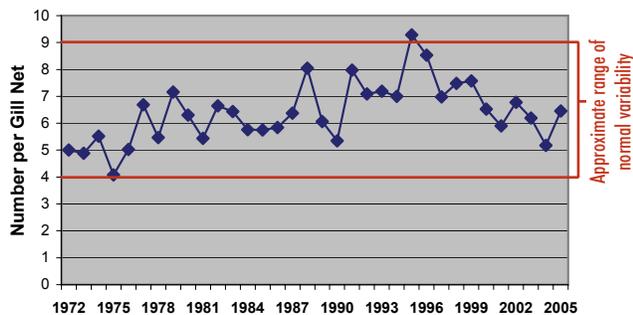
The target is sufficient to supply walleye fingerlings for lakes that depend on stocking. Walleye stocking has undergone an extensive lake-by-lake review. Current stocking guidelines are based on an analysis of the success of different stocking rates. Walleye populations will be evaluated over the next decade to determine if they are responding to increased stocking.

## Pounds of Walleye Fingerlings Stocked



Pounds of walleye fingerlings stocked. DNR's target is to stock 160,000 pounds of walleye fingerlings per year.

## Walleye Populations in Currently Stocked Lakes



Walleye abundance in stocked lakes remains good and continues to fall within the normal range of variability.



Walleye

## Learn more about:

- Walleye management and stocking at: <http://www.dnr.state.mn.us/fish/walleye/management.html>
- Individual lake and stocking reports at: <http://www.dnr.state.mn.us/lakefind/index.html>
- Other fish species at: <http://www.dnr.state.mn.us/fishing/index.html>

# Red Lake Walleye Restoration

Indicator: Red Lake walleye biomass and mature female spawning stock

## Why is this indicator important?

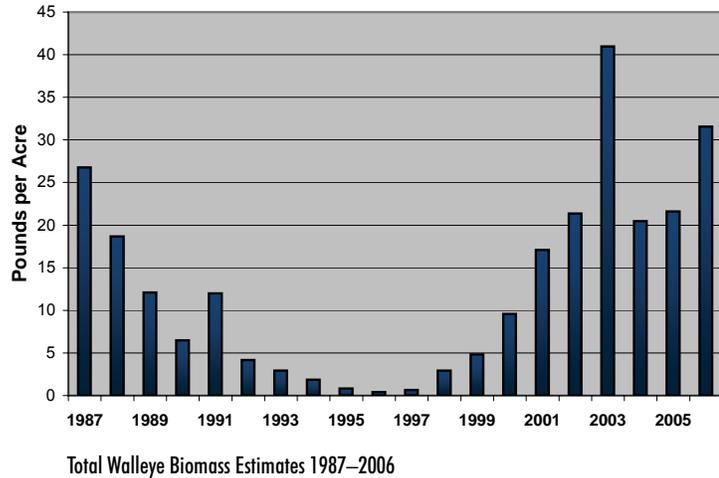
The Red Lakes encompass more than 285,000 acres, with 48,000 acres lying outside of the Red Lake Reservation and under state jurisdiction. The walleye population collapsed in the mid-1990s due to overharvest. The biomass of mature female walleye was reduced to a level that was deemed too low to sustain the fishery. Overall walleye biomass and the portion of the population that represents mature female spawning stock are key indicators of ecosystem health in large natural walleye lakes. Biologists have identified a threshold of 2.0 pounds per acre of mature female walleye as a long-term management goal.

## What is DNR doing?

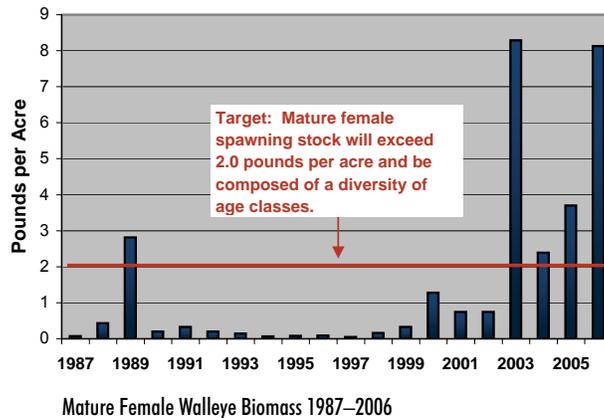
In April 1999, DNR, the Red Lake Band of Chippewa Indians, and the Bureau of Indian Affairs signed a historic agreement committing each to implement a program to restore walleye populations in the Red Lakes. Before the walleye collapse, the band operated an important commercial and subsistence fishery and the state had a thriving sport fishery. Key components of the recovery plan included a lakewide moratorium on walleye harvest, a short-term fry stocking program to accelerate recovery, joint monitoring, and increased enforcement by band and DNR conservation officers. Progress to date has been excellent. Stocking has been successful at establishing three strong year-classes of walleye, and spawning stock abundance has increased to the point where no additional stocking is needed. Substantial natural reproduction, an important sign that significant recovery of this fishery has occurred, was documented in 2004, 2005, and 2006. The DNR and Red Lake Band developed a framework for sustainable harvest that was implemented with the opening of the walleye fishery in May 2006. Special angling regulations have been applied to manage walleye harvest within established safe harvest levels.

**Target: Maintain a self-sustaining walleye population that supports a thriving sport fishery. Mature female spawning stock will exceed 2.0 pounds per acre and be composed of a diverse age structure.**

## Red Lake Walleye Biomass



## Mature Female Walleye Biomass



Learn more about:

# Brown Trout Populations

Indicator: Brown trout population levels

## Why is this indicator important?

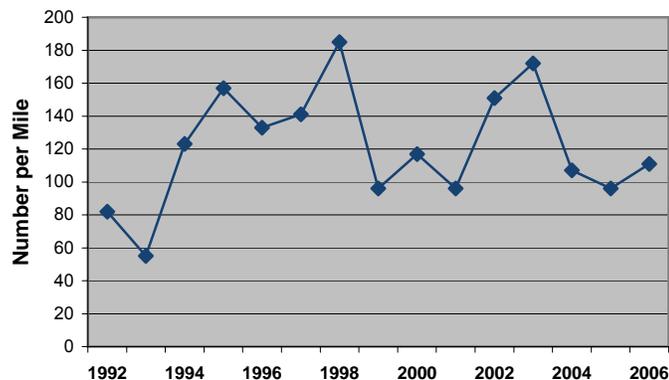
Trout management in southeastern Minnesota streams dates back to the 1870s with the introduction of angling regulations and trout stocking. Today, southeastern Minnesota has 181 cold-water streams totaling 790 miles. This resource provides a popular fishery with an estimated 53,000 angler-trips annually generating an economic impact of almost \$30 million in sales and \$18 million in income. Healthy trout populations are needed to maintain angler satisfaction.

## What is DNR doing?

DNR's activities in southeastern Minnesota focus on the protection and improvement of trout streams. DNR purchases easements from landowners to provide angler access. We improve trout streams through in-stream habitat rehabilitation, riparian corridor management, environmental protection, and watershed management. Trout are stocked in streams that cannot support a fishery through natural reproduction. We also use special regulations on some streams to increase catch rates and the number of large trout.

***Target: Maintain or increase populations of larger brown trout and add 10 miles of easements on southeastern Minnesota trout streams by the end of 2007.*** (See Aquatic Management Areas indicator for progress on easement acquisition). DNR has completed a long-range plan for the management of trout streams in southeastern Minnesota. This plan will guide trout management over the next six years. The long-term goal of this plan is to conserve, enhance, and restore self-sustaining trout populations and their habitats for anglers and the people of Minnesota.

## Abundance of Brown Trout $\geq$ 12 Inches



Number of brown trout  $\geq$  12 inches per mile in southeastern Minnesota trout streams.



Brown trout. DNR aims to maintain or increase populations of larger brown trout in southeastern Minnesota trout streams.

## Learn more about:

- Trout fishing at: <http://www.dnr.state.mn.us/fish/trout/index.html>
- Other fish species at: <http://www.dnr.state.mn.us/fishing/index.html>

# Steelhead Trout Populations

Indicators: Lake Superior steelhead trout catch rates and spawning numbers

## Why is this indicator important?

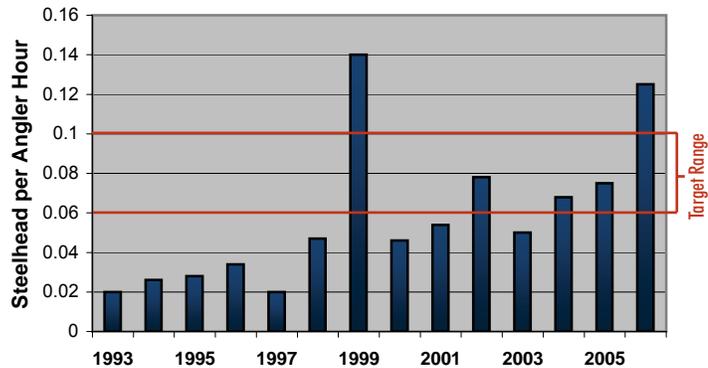
Steelhead trout were introduced into Lake Superior in the early 1900s and have since become naturalized throughout the lake. They migrate up streams to spawn each spring and are highly prized by sport anglers for their fight and beauty. During the 1970s and 1980s numbers declined due to overfishing, habitat degradation, and major changes in the Lake Superior fish community. Because of the sustained recovery of native Lake Superior fish species (lake trout and lake herring), it is unlikely that steelhead numbers will ever approach those anglers recall from the 1950s and 1960s. However, anglers are still interested in improving this fishery.

## What is DNR doing?

DNR has worked closely with anglers over the past 15 years to implement the North Shore Steelhead Plan. This plan included restrictive harvest regulations, increased habitat protection and improvement, and stocking of hatchery-reared fish in selected streams. The 1992 North Shore Steelhead Plan was revised in 2003 with a renewed effort to rehabilitate steelhead in the Knife River system and continue the positive direction the population has taken over the past 10 years. Steelhead in Minnesota's portion of Lake Superior are at the thermal margin of their range; given the increased numbers of native species, it is uncertain how much more steelhead numbers can increase.

**Target: Maintain an average catch rate of 0.06 to 0.10 for steelhead greater than 16 inches per angler-hour shorewide, and increase the average annual number of spawners returning to the Knife River from about 400 to 1,000 over the next 10 years.**

## Catch Rate of Wild Steelhead ( $\geq 16$ inches) from Lake Superior



Catch rate of wild steelhead from Lake Superior spring anadromous creel surveys, 1993-2006.



Steelhead migrate up Lake Superior streams to spawn each spring and are highly prized by sport anglers.

## Learn more about:

- Lake Superior fisheries management at: <http://www.dnr.state.mn.us/areas/fisheries/lakesuperior/management.html>
- Minnesota trout fishing at: <http://www.dnr.state.mn.us/fish/trout/index.html>
- Other fish species at: <http://www.dnr.state.mn.us/fishing/index.html>

# Lake Trout Populations

Indicators: Percentage of wild lake trout in the recreational fishery of Lake Superior

## Why is this indicator important?

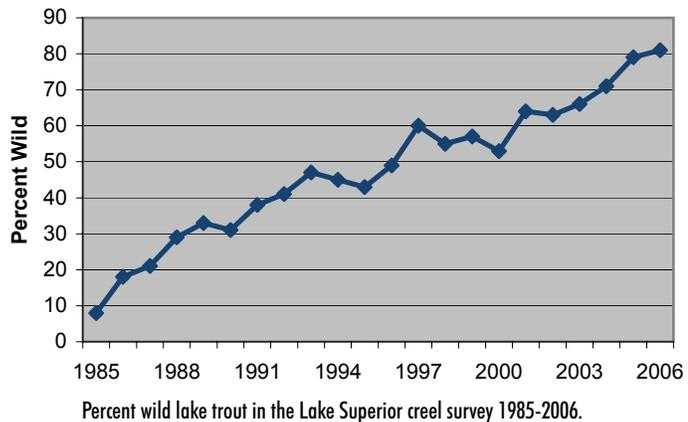
The lake trout is the top native predator in the Lake Superior ecosystem and the most harvested salmonid in the recreational fishery. Overfishing in the 1940s and 1950s and predation by exotic sea lamprey during the 1950s virtually extirpated the fish. Since then, fish management agencies around Lake Superior have been working together, facilitated by the Great Lakes Fishery Commission (GLFC), to rehabilitate lake trout. Rehabilitation efforts include sea lamprey control, harvest regulation, and stocking. Rehabilitation is deemed successful when wild, self-sustaining populations predominate and stocking is no longer necessary or desirable. Rehabilitation has occurred in much of Lake Superior and is accelerating in Minnesota.

## What is DNR doing?

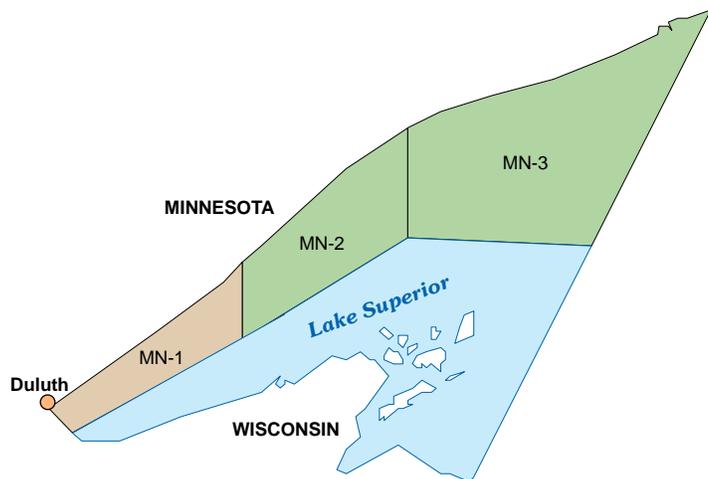
Strategies for lake trout rehabilitation are outlined in *Lake Superior Fisheries Management Plan for the Minnesota Waters of Lake Superior 2006*. DNR continues to work with the GLFC and the U.S. Fish and Wildlife Service to control sea lamprey. Restrictive commercial fishing and a regulated sport fishery also have helped. Because of high natural reproduction by lake trout, stocking has been greatly reduced in Minnesota, and discontinued in the upper two-thirds of Minnesota waters. DNR coordinated, facilitated, and funded a project to identify and map lake trout spawning substrate along the Minnesota shoreline so it can be better protected. Recently, DNR completed Statistical-Catch-At-Age (SCAA) models that will help determine total allowable catch (TAC) for the lake trout fishery.

**Target:** Achieve a self-sustaining lake trout population capable of supporting a productive fishery. Reduce or eliminate stocking in MN-1 when criteria are met.

Percent Wild Lake Trout in the Lake Superior Creel Survey 1985-2006



Percent wild lake trout in the Lake Superior creel survey 1985-2006.



Lake trout rehabilitation has occurred in much of Lake Superior. When wild self-sustaining populations predominate, stocking is no longer necessary or desirable. This has already been achieved in the upper two-thirds of Minnesota waters (MN-2 and MN-3).

## Learn more about:

- Lake Superior Fisheries Management at: <http://www.dnr.state.mn.us/areas/fisheries/lakesuperior/management.html>
- Minnesota trout fishing at: <http://www.dnr.state.mn.us/fish/trout/index.html>
- Other fish species at: <http://www.dnr.state.mn.us/fishing/index.html>

# Twin Cities Metropolitan Area Fishing

Indicator: Number of metro region ponds stocked for fishing and education

## Why is this indicator important?

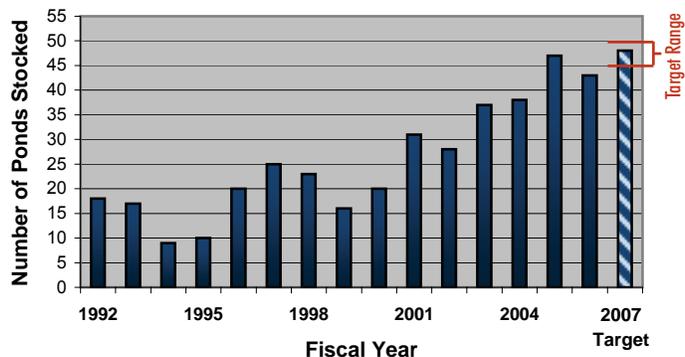
With more than 2 million anglers in Minnesota, it's clear that fishing is one of our state's most popular pastimes. As the state's population has grown, people have become concentrated in the greater metro region. The metro region has hundreds of small lakes, but many area residents don't have access to them. We need to provide adequate shore-fishing locations and fishery management in the metro region to assure future generations will have opportunities to experience our outdoor fishing heritage.

## What is DNR doing?

Fishing in the Neighborhood (FiN) manages small lakes in the Twin Cities metropolitan area to make recreational fishing as good as it can be for present and future generations. The program benefits urban residents by providing stocked fish, shore-fishing structures, and fishing piers on small, local lakes. The program has a strong emphasis on cooperation with local groups to do shoreland habitat restoration projects. The program also collaborates with the MinnAqua program to meet with schools, environmental learning centers, or other organizations involved with environmental education to provide fishing and educational opportunities.

**Target: Stock 45 to 50 ponds, primarily with bluegill and crappie, by the end of FY 2007.**

## Number of Metro Area Ponds Stocked for Fishing and Education



Number of metro region ponds stocked for fishing and education. DNR manages small lakes in the Twin Cities metropolitan area to benefit urban residents and promote recreational fishing.



DNR works with local partners to install fishing piers and platforms, stock fish, restore shoreline habitat, and support education programs.

## Learn more about:

- Fishing in the Neighborhood at: <http://www.dnr.state.mn.us/fishing/fin/index.html>
- Fisheries aquatic education at: <http://www.dnr.state.mn.us/minnaqua/index.html>

# Angler Satisfaction

Indicator: Angler satisfaction levels as measured by surveys

The Minnesota DNR:	1987	1998
adequately manages Minnesota's fishing waters.	66.0%	71.3%
should allow more angler participation in making fish management decisions.	84.6%	86.5%
listens to anglers' concerns.	84.2%	<b>78.8%</b>
responds to anglers' concerns.	80.8%	<b>69.5%</b>
manages fisheries for special interests.	53.9%	<b>62.5%</b>
needs more funding to do a better job.	62.9%	64.8%
should manage lakes to have many fish, though the average size would be smaller.	67.3%	65.9%
should manage lakes to have big fish, though the number of fish harvested would be less.	53.4%	<b>43.6%</b>

Percent of Minnesota resident anglers that agreed with the statements about fisheries management issues, from statewide surveys in 1987 and 1998. The 1998 values in bold are significantly different ( $p < 0.05$ ) than the 1987 values.

## Why is this indicator important?

The purpose of fisheries management is to ensure the sustainability of recreational, social, environmental, and economic benefits from fishing. In 2001, some 1.6 million anglers spent 30 million days fishing in Minnesota, with \$1.3 billion in total expenditures, according to the U.S. Fish and Wildlife Service. Anglers vary in their interests, from being alone in a natural area to competing in tournaments, from harvest to catch and release. Fisheries management is a complex balancing act that seeks to satisfy these diverse interests while sustaining the resource. Angler satisfaction is an important measure of how well we are managing fisheries.

## What is DNR doing?

Statewide surveys were conducted in 1987 and 1998. DNR has obtained stakeholder input at annual fisheries roundtables since 1991. The first roundtables provided guidance on individual waters management, aquatic education programs, and habitat protection. Subsequent roundtables have provided guidance on fishing tournament permitting, statewide bag limit changes, walleye stocking, and license fee increases. DNR also seeks input through public meetings and open houses. We work with several citizen oversight committees to see that dedicated funds are used efficiently and appropriately.

**Target: Maintain or improve angler satisfaction levels.** DNR intends to conduct statewide angler surveys every five to six years using key questions shown in the table above. In addition, we may ask single questions of people through the electronic license sales program. Survey results will be used to guide our efforts to protect and improve fish habitat, regulate fishing, inventory fisheries resources, conduct aquatic education programs, and stock fish.

## Learn more about:

- Minnesota fishing at: <http://www.dnr.state.mn.us/fishing/index.html>

# Hunter Satisfaction

Indicator: Hunter satisfaction levels as measured by surveys

## Why is this indicator important?

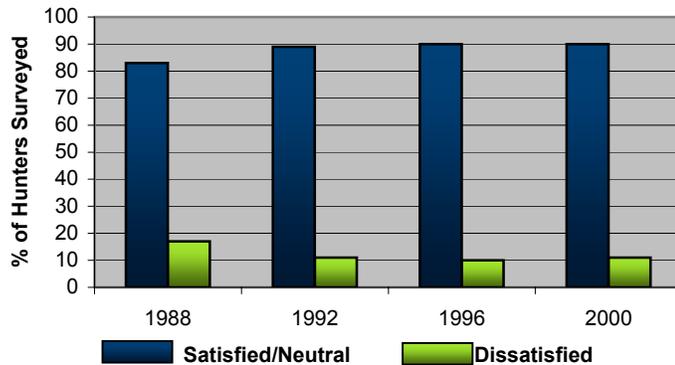
DNR is committed to providing high-quality recreational experiences associated with wildlife. Hunting is an important component of Minnesota's outdoor heritage, as evidenced by the fact that more than 77 percent of voters in the 1998 general election supported amending Minnesota's constitution to affirm hunting, fishing, and the taking of game and fish as a valued part of our heritage that shall be forever preserved.

## What is DNR doing?

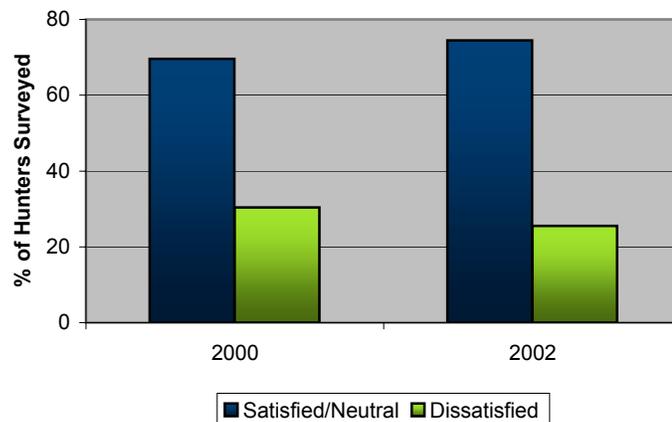
Hunter satisfaction is related to healthy wildlife populations and habitats, but it is a complex relationship. Satisfaction may be affected by the degree of crowding, availability of hunting areas, animals seen, animals bagged, size of animals, length and timing of seasons, bag limits, and other factors. In addition to managing populations and habitats for wildlife, DNR is conducting more "human dimensions" surveys to assess satisfaction and the contributors to high or low satisfaction.

**Target: Maintain 90 percent satisfaction rates among hunters.** While surveys indicate overall hunter satisfaction at or near this goal for hunting in general and for deer hunting, other types of hunting, such as waterfowl, do not meet this goal. Survey results will be used to modify hunting programs within biological limits to improve satisfaction. DNR has conducted two waterfowl hunter surveys within the past three years and is planning another in 2006. We have also developed a duck recovery plan, including plans to improve Minnesota's share of the flyway waterfowl harvest (see Mississippi River Flyway Duck Harvest indicator). In addition, DNR is assessing other contributors to satisfaction, such as harvest levels and regulations, that could be adjusted to improve satisfaction.

## Hunting Satisfaction



## General Waterfowl Hunting Experience



Hunter satisfaction levels as measured by surveys. Overall hunter satisfaction in Minnesota is relatively high, but for some specific types of hunting, particularly waterfowl, satisfaction rates are below the DNR goal of 90 percent.

## Learn more about:

- Minnesota hunting opportunities at: <http://www.dnr.state.mn.us/hunting/index.html>
- The USFWS 2001 National Survey of Fishing, Hunting, and Wildlife-Associated Recreation at: <http://www.far9.fws.gov/surveys/surveys.html>

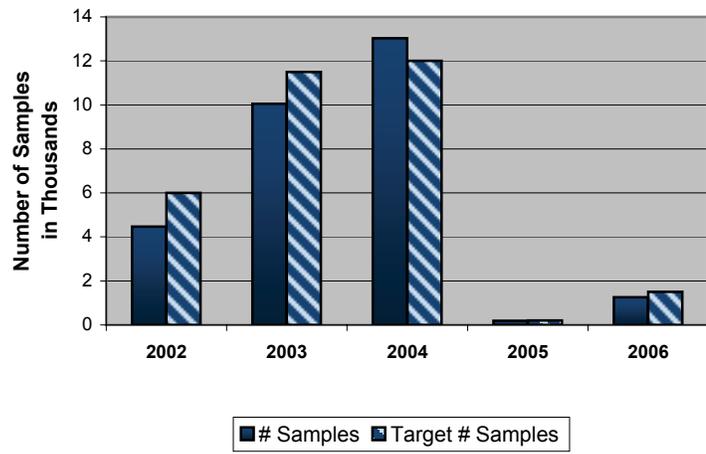
# Chronic Wasting Disease

Indicator: Chronic wasting disease (CWD) sampling of harvested deer

## Why is this indicator important?

Deer hunting is an important part of Minnesota's social and cultural heritage. The state has more than 1.1 million wild deer; each year nearly half a million deer hunters generate \$236 million of retail spending here. Chronic wasting disease (CWD), a fatal disease of cervids (deer and elk), has not been detected in the state's wild deer population, but has been found in two captive elk and one captive deer. Although the disease is not known to affect human health, it has the potential to devastate wild deer populations. Sampling will help us detect and respond to CWD quickly to minimize its adverse impacts on the deer herd.

CWD Sampling of Harvested Deer



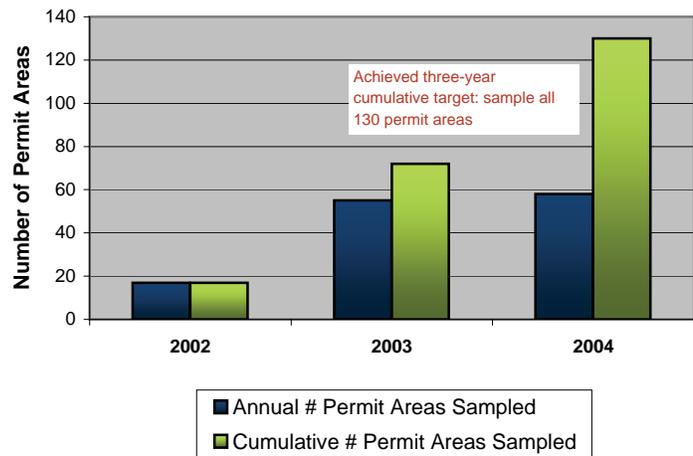
## What is DNR doing?

Legislation has allowed us to take preventive steps to minimize the risk of CWD being brought into the state. For more than five years, DNR has been testing deer that are found sick or displaying symptoms consistent with CWD. In 2002 DNR began testing samples of hunter-harvested deer for the disease. DNR efforts now focus on monitoring for CWD in wild deer so we can quickly limit spread if it is detected.

**Target: DNR will maintain targeted surveillance of wild deer for CWD in the foreseeable future.** Targeted surveillance involves testing sick deer or deer exhibiting abnormal behavior consistent with the symptoms of CWD.

DNR has already met its original target to complete cervid monitoring for CWD detection by 2004. Since 2001, DNR tested nearly 30,000 wild deer for CWD in all 130 permit areas. The disease has never been detected in the state's wild deer herd.

Permit Areas with CWD Sampling of Harvested Deer



CWD sampling of harvested deer. DNR monitors wild deer populations for chronic wasting disease (CWD) so management programs can be applied quickly to limit spread of the disease if it is found. During 2002–2004, DNR tested samples of hunter-harvested deer for the disease in all 130 permit areas. DNR tested 4,462 deer in 2002; 10,000 deer in 2003; and 13,000 deer in 2004. No positives were found in any of the tests.

## Learn more about:

- CWD and monitoring at: <http://www.dnr.state.mn.us/mammals/deer/cwd/index.html>

# White-tailed Deer

Indicator: Percent of deer permit areas within goal range for harvest levels

## Why is this indicator important?

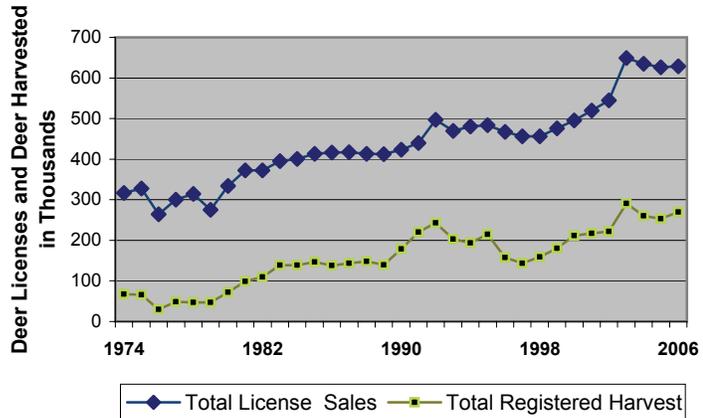
Deer provide substantial recreational and economic benefits to Minnesota. However, high densities of deer may have a negative impact on forests, farms, and personal property. Hunters expect high deer densities and harvests, and represent a significant lobbying force for maintaining or expanding deer populations. At the same time, negative deer-human interactions due to high deer populations have increased and broadened public interest in deer management.

## What is DNR doing?

DNR modified the process of distributing either-sex deer permits in the 2003 season to facilitate antlerless deer harvest and improve customer service. Beginning in 2005 DNR brought stakeholders together to redetermine deer population goals in all deer permit areas. The process will be completed by spring 2007. In addition, DNR researchers are determining the effectiveness of different regulatory packages that lower deer densities. Several surveys are underway to ascertain the degree of public support for regulations that lower deer densities.

**Target: Maintain deer populations within goal ranges in at least 75 percent of deer permit areas.** Currently nearly two-thirds of the examined areas are within 25% of their goal population. Further work is needed to trend some populations down. DNR will meet this target by applying deer harvest strategies that manage deer populations within established goal levels. We will use DNR's Subsection Forest Resources Management Plan (SFRMP) process to maintain northern Minnesota's conifer cover, which is important to wintering deer. We will also make sure early successional habitats are distributed across the landscape. DNR will increase the use of regulated harvest to address deer overabundance. We will continue to target the harvest of antlerless deer. When appropriate, antlerless permits will be available for purchase over the counter, with no application necessary. We will continue to expand youth hunting opportunities to improve hunter recruitment.

## Total Deer License Sales and Harvest Levels



Deer hunting permits and harvest levels. Deer license and permit sales have increased to over 600,000 per year. Deer harvest has more than doubled since the 1970s. DNR's target is to maintain populations within goal ranges in 75 percent of permit areas.



## Learn more about:

- Deer hunting at: <http://www.dnr.state.mn.us/hunting/deer/index.html>
- Other hunting at: <http://www.dnr.state.mn.us/hunting/index.html>

# Wild Turkeys

Indicators: Number of wild turkey hunting permits offered; harvest levels; range expansion

## Why is this indicator important?

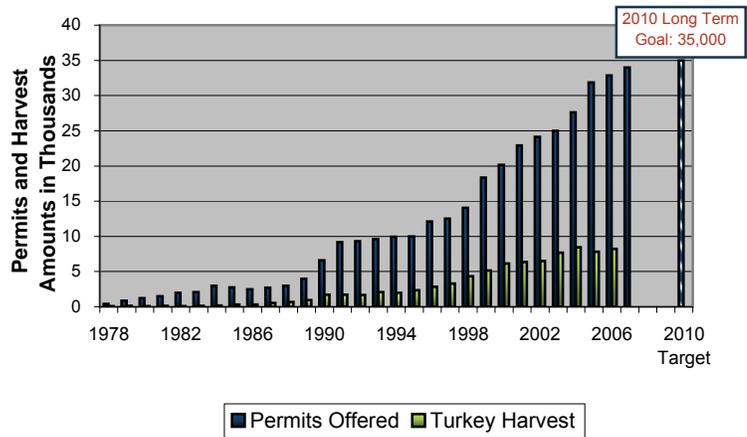
DNR's efforts beginning in the late 1960s to transplant wild turkeys to southeastern Minnesota have been hugely successful. Turkeys have spread to much of southern Minnesota and to the west and north. In 1978, the first spring turkey season was held with 10,720 people applying for 420 permits. Since then, wild turkeys have greatly increased in numbers and range. For spring 2007, DNR will offer 33,976 permits in 66 permit areas. Continued growth in wild turkey populations and well-managed hunting seasons are necessary to improve hunter satisfaction.

## What is DNR doing?

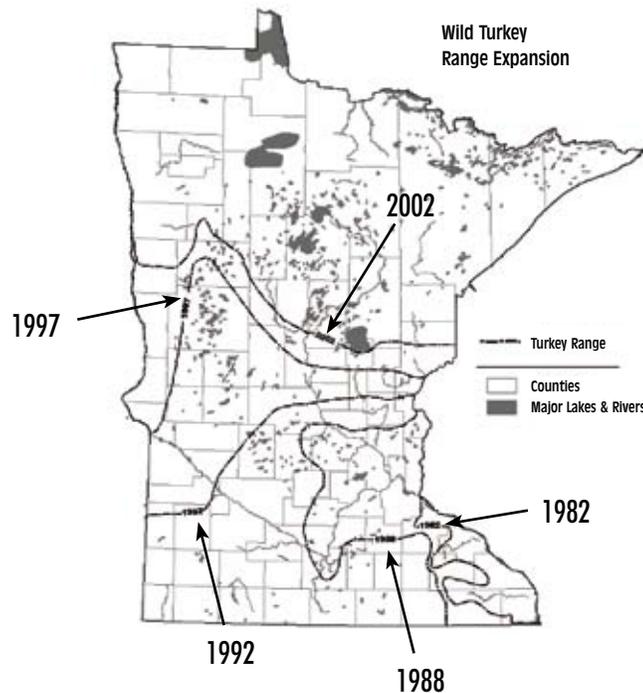
DNR traps wild birds from areas of high populations and releases them in areas of suitable habitat not already occupied by wild turkeys. DNR cooperates in research to evaluate impact of winter food on survival of wild turkeys at the northern portion of their range in Minnesota. DNR completed a six-year plan to guide wild turkey management through 2011.

**Target: Offer 30,000 permits by 2006 and 35,000 permits by 2010.** DNR exceeded the 2006 target and expects to meet the 2010 target by 2008 or 2009. DNR's wild turkey management plan provides targets and strategies related to the number of wild turkey permit areas open to hunting and expansion of turkey geographic range. DNR will continue to improve turkey habitat on public and private lands and acquire land to protect critical wild turkey habitat.

## Wild Turkey Hunting Opportunities



Wild turkey hunting opportunities. As wild turkeys increase their numbers and range, so do hunting opportunities. DNR sets permits to ensure healthy turkey populations and quality hunting experiences.



Following efforts in the late 1960's to transplant wild turkeys to southeastern Minnesota, the bird has spread to the west and north.

## Learn more about:

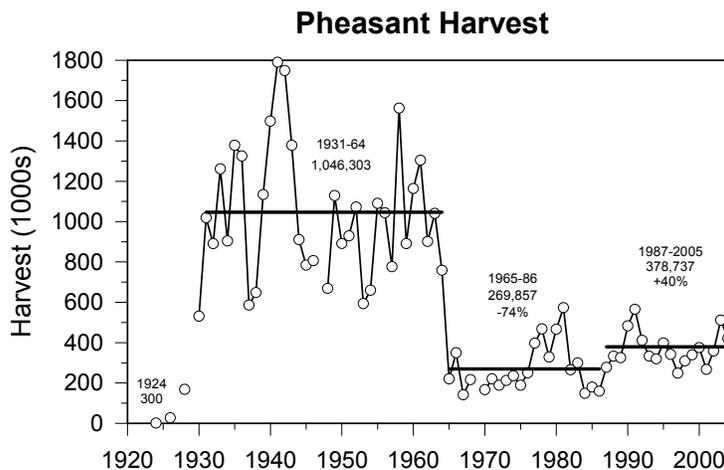
- Wild turkey hunting and success rates by permit area at: <http://www.dnr.state.mn.us/hunting/turkey/index.html>

# Pheasants

Indicator: Pheasant harvest levels

## Why is this indicator important?

The ring-necked pheasant is the most popular upland game species in Minnesota's agricultural region. High harvests indicate high populations, which in turn indicate a healthier agricultural ecosystem with prime farmlands under crop production and environmentally sensitive lands managed to conserve soil, water, and diverse game and nongame wildlife species. High populations also mean good hunting and corresponding economic benefits to agricultural regions. Populations were high until the "soil bank" long-term set-aside program ended in the mid-1960s and agriculture became more intensive and less diversified. Pheasant numbers have increased since long-term farm bill conservation programs resumed in the mid-1980s.



Pheasant harvest levels. Over the years agricultural practices have had a significant impact on pheasant populations. Harvest numbers reflect these trends. Recent increases correspond with successful farmland conservation.

## What is DNR doing?

Pheasant populations depend largely on land-use practices on private farmland. The single largest influence on these land-use practices is U.S. Department of Agriculture farm policy and programs. Pheasant populations have fluctuated over the years in response to changes in farm policy. Since the mid-1980s, farm programs have become more long-term and conservation-oriented and pheasant populations have grown. DNR has completed a long-range plan to guide pheasant management in Minnesota through 2008 and provide a strategic vision through 2025.

Since 2002 there have been approximately 198,000 new acres of wildlife habitat added throughout the pheasant range. In 2006 the Farm Bill Assistance Partnership, in which DNR is a major partner, enrolled nearly 65,000 acres into Federal conservation programs and assisted with mid-contract management on another 15,000 acres. DNR will continue to accelerate land acquisition to protect critical pheasant habitat, direct farmland research toward better understanding pheasant winter habitat and other needs, and provide technical and cost-share assistance to private landowners for improving pheasant habitat.

**Target: Achieve an annual average harvest of 450,000 pheasants by 2008 and 750,000 pheasants by 2025.** To meet the target we need a habitat base that can support an average fall population of 3 million pheasants, providing 175,000 hunters with more than a million days afield each year. DNR will continue to work with other agencies and groups to fund technicians, located at county Soil and Water Conservation District offices, who will promote landowner enrollment in relevant 2002 federal Farm Bill programs. The 2002 Farm Bill expires in 2007. DNR is working with other state agencies and the governor's office to develop Minnesota's desired goals and outcomes for the 2007 Farm Bill.

## Learn more about:

- Pheasant hunting at: <http://www.dnr.state.mn.us/hunting/pheasant/index.html>

# Ruffed Grouse

Indicator: Ruffed grouse harvest levels

## Why is this indicator important?

The ruffed grouse is Minnesota's most important game bird in the terms of harvest. Average annual harvest is 600,000, compared to (last 10 years) 200,000 for mallards, and 365,000 for pheasants. During the peak of the 10-year population cycle, annual harvest exceeds 1.2 million. Minnesota consistently ranks within the top three states, and frequently is the nation's top producer of ruffed grouse. High population and harvest levels mean high hunter satisfaction.

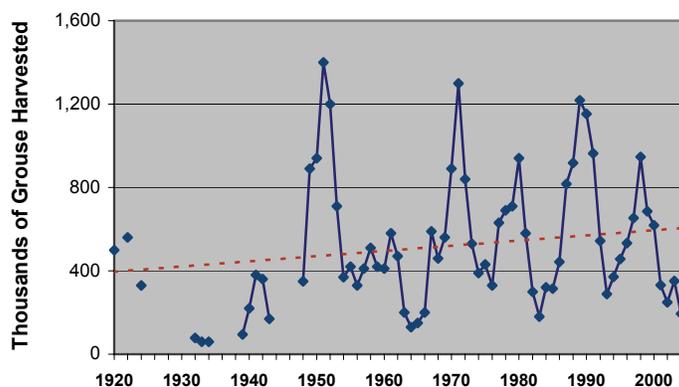
## What is DNR doing?

DNR is actively managing our aspen resource (an important part of grouse habitat), with aspen and balsam poplar harvest rates at record levels. Wildlife managers actively participate in DNR's Subsection Forest Resource Management Plan (SFRMP) development process, ensuring ruffed grouse habitat management issues are addressed. DNR is completing a long-range management plan for ruffed grouse.

**Target: Provide an average annual harvest of 650,000 ruffed grouse.**

By promoting forest management practices that are ecologically sound and socially and economically beneficial to Minnesota citizens, DNR will provide abundant ruffed grouse habitat. DNR's SFRMP process will help ensure that early successional forest habitats used by ruffed grouse and other wildlife are adequately represented in appropriate landscapes (see Subsection Forest Resource Management Plans and DNR Timber Sales indicators).

## Ruffed Grouse Harvest Levels



Ruffed grouse harvest levels. DNR's target is to provide mean annual harvests of 650,000 ruffed grouse.



Ruffed grouse

## Learn more about:

- Grouse hunting at: <http://www.dnr.state.mn.us/hunting/grouse/index.html>

# Brushland Habitat Conservation

Indicator: Number of landscapes designated as priority open landscape areas

## Why is this indicator important?

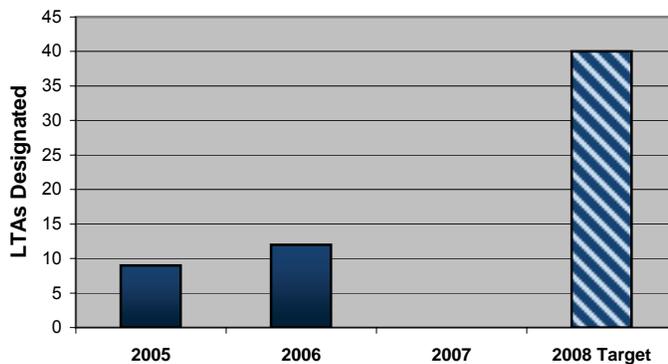
Brushlands, which provide critical wildlife habitat, were once a conspicuous feature of Minnesota. At the time of European settlement, up to 11.3 million acres of the state's forest and transition areas were vegetated with brushy prairie, oak openings and barrens, jack pine barrens and openings, conifer bogs and swamps, and open muskeg. During settlement, agriculture and logging created additional brushland habitats. Since then, however, brushlands have declined in quantity and quality, and wildlife populations that depend on them have declined as well. For example, hunter harvest of sharp-tailed grouse decreased from more than 15,000 in 1949 to some 5,000 in 1995; in 1999, the Minnesota population of sharp-tailed grouse was 70 percent below 1980 levels.

## What is DNR doing?

DNR has completed a wildlife assessment of open landscapes in the transition and forested regions of northern and central Minnesota using the Ecological Classification System as a framework and land type associations (LTAs) as the unit for assessment. This assessment is now being used in our Subsection Forest Resources Management Plan development process. In addition to nine LTAs already designated as priority open landscape areas in the Mille Lacs subsection plan, in 2006 DNR designated three LTAs as part of the Chippewa Plains/Pine Moraines and Outwash Plains subsection planning process. DNR will focus brushland management and funding within these LTAs to maintain them as open landscape areas. DNR will also use forest management activities to enhance brushland within these areas.

**Target:** Designate 40 LTAs across the forest and transition zones of Minnesota as priority open landscape areas during DNR's Subsection Forest Resources Management Plan development process. This target will help enhance conservation of brushland habitat and associated wildlife populations.

## Land Type Associations (LTAs) Designated as Open Landscapes



Land Type Associations (LTA's) designated as open landscapes. DNR's target is to designate 40 LTAs across the forest and transition zones of Minnesota as priority open landscape areas.



The once-thriving sharp-tailed grouse population has declined sharply in the last 50 years. The reason for this has been the loss of grassland and brushland habitats. Designating priority open landscape areas helps enhance brushland habitat conservation and wildlife populations.

## Learn more about:

- Subsection Forest Resource Management Plan process at: <http://www.dnr.state.mn.us/forestry/subsection/index.html>
- Sharp-tailed grouse at: <http://www.dnr.state.mn.us/snapshots/birds/sharptailedgrouse.html>

# Prairie Wetland Complexes

Indicator: Acres of prairie wetlands and grasslands protected annually

## Why is this indicator important?

Prairie wetland complexes—restored or native grasslands mixed with a range of wetland types and sizes—are important for many species, including waterfowl, shorebirds, amphibians, pheasants, and deer. To be of the most value to wildlife, such complexes should be at least 4 square miles in size. At least 20 percent of the area should be in wetlands with a strong emphasis on seasonal wetlands. A minimum of 40 percent should be in grassland, with half as permanent grassland cover protected by easements or public land ownership.

To meet Minnesota's long-term goals for waterfowl and pheasant populations, we will work with public and private partners to restore and protect an additional 2 million acres of prairie wetlands and grasslands while maintaining our existing habitat base. These new acres added after 2005 will generally be targeted to restore 4- to 9-square-mile habitat complexes.

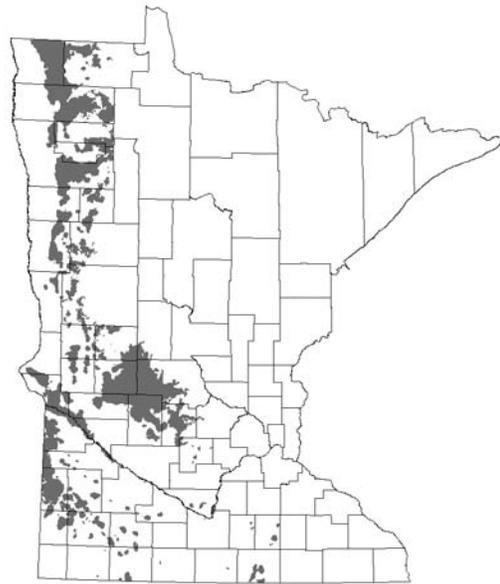
## What is DNR doing?

DNR programs that benefit prairie wetland complexes include enforcement, promotion of federal farm programs, and protecting and managing prairie wetland habitat through the Prairie Stewardship Program. Wildlife Management Areas, state parks, and Scientific and Natural Areas (see other specific indicators). DNR is working with the Working Lands Initiative discussion group to better target conservation and agricultural programs that benefit prairie wetlands and grasslands. Local teams of public and private partners have identified target areas in 10 counties and will be investing \$800,000 in FY 2007 to restore and protect prairie wetland complexes.

**Target: Increase the number of high-quality prairie wetland complexes through the restoration and protection of a total of 40,000 wetland and grassland acres by all partners each year.** According to the Board of Water and Soil Resources, over 43,000 acres of lands were newly protected as lands with conservation purposes in FY 2006. While almost all contribute to wetland and grassland habitat, nearly 36,000 acres are within Minnesota's prairie pothole region.



Prairie wetland complexes, found in the historical prairie areas of Minnesota, are valuable waterfowl habitat when they cover at least 4 square miles and include a variety of wetland and grassland types. This photo shows a cooperative Board of Water and Soil Resources/DNR restoration site.



DNR and partners are focusing efforts to conserve quality complexes that have: 1) adequate wetlands to attract 30 or more pairs of ducks per square mile, and 2) adequate grasslands under permanent protection to promote nesting success. The map shading represents areas with the best opportunities for restoring and protecting prairie wetland grassland complexes based on existing habitat.

## Learn more about:

- Wetlands at: <http://www.dnr.state.mn.us/wetlands/index.html>
- Prairies at: <http://www.dnr.state.mn.us/prairierestoration/index.html>
- Waterfowl hunting and habitat at: <http://www.dnr.state.mn.us/hunting/waterfowl/index.html>

# Wild Rice Lakes

Indicator: Number of wild rice lakes actively managed for waterfowl

## Why is this indicator important?

Minnesota has more acres of natural wild rice than any other state in the country. Wild rice has been historically documented in over 1,400 basins in 60 of Minnesota's counties. Wild rice lakes play an important social and cultural role in Minnesota's rural communities. They are also important habitat for wildlife—especially migrating waterfowl. Many wild rice lakes are traditional harvesting and waterfowl hunting areas.

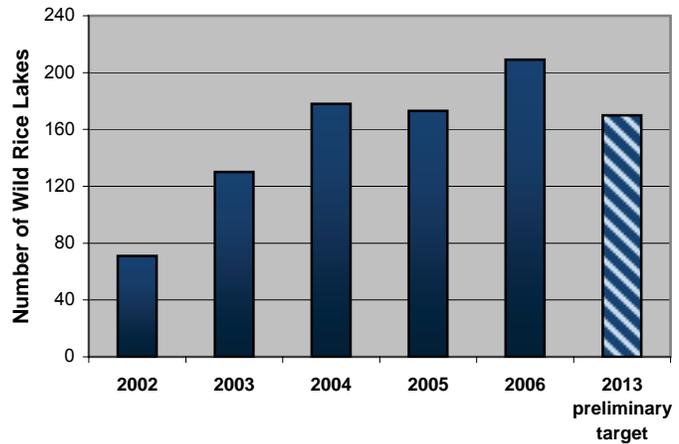
## What is DNR doing?

A DNR assessment found more than 700 lakes and impoundments in 31 counties that contain significant wild rice. DNR is working with partners to increase the number of wild rice lakes that are actively managed for waterfowl. Activities include monitoring and managing water levels on wild rice lakes, improving or maintaining outlets, and assessing habitat. Cooperative projects help improve the overall quality of wild rice lakes for waterfowl hunting.

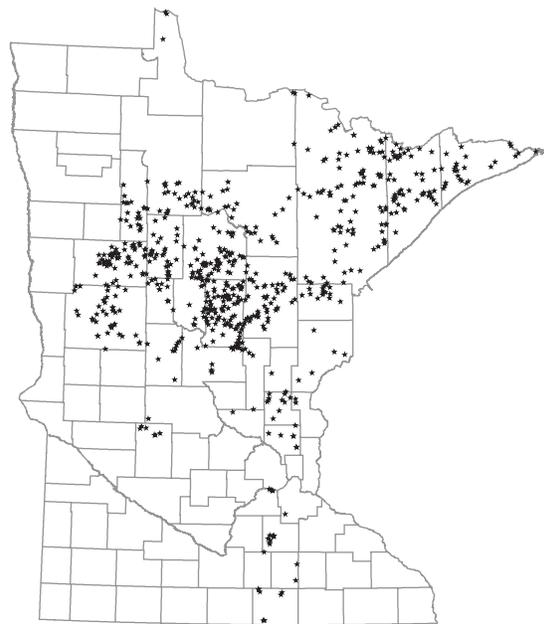
**Target:** Working with partners such as Ducks Unlimited, increase the number of actively managed wild rice lakes to at least 170 in the next 10 years. Partnerships are critical to improving the quality of waterfowl habitat in areas throughout the state.

In 2006, DNR and Ducks Unlimited managed 209 lakes and 53 impoundments for a total of 262 basins. 2006 was an excellent year for wild rice production. In addition to wild rice lakes in the forest region, DNR works to enhance prairie wetland complexes in the historical prairie areas of Minnesota (see Prairie Wetland Complexes indicator).

## Number of Wild Rice Lakes Actively Managed for Waterfowl



Number of wild rice lakes actively managed for waterfowl. DNR and partners such as Ducks Unlimited manage wild rice lakes to increase ideal waterfowl habitat.



Minnesota lakes with wild rice. DNR's target is to improve the quality of wild rice lakes, ideal waterfowl habitat, in the primarily forested regions of the state.

## Learn more about:

- Wild rice lake management at: <http://www.dnr.state.mn.us/wildlife/shallowlakes/wildrice.html>

# Mississippi Flyway Duck Harvest

Indicator: Minnesota's share of the yearly Mississippi Flyway duck harvest

## Why is this indicator important?

Minnesota's share of the Mississippi Flyway duck harvest has declined from one-sixth of the total harvest during the 1970s to one-tenth in recent years. This decline has environmental, economic, and cultural significance. A good duck harvest is indicative of high-quality habitat. A good harvest contributes to the state's economy; waterfowl hunting and viewing contribute \$100 million annually, and we are currently losing \$20 million a year in expenditures because waterfowl hunters go to other states to hunt. A good harvest also contributes to the satisfaction of the state's many waterfowl enthusiasts, who comprise one of the largest populations of duck hunters in the nation.

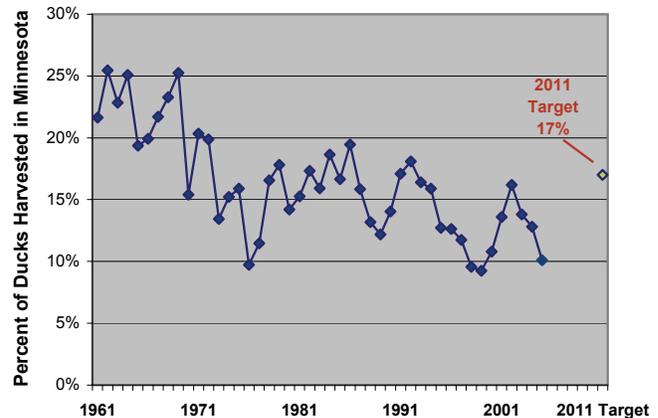
## What is DNR doing?

To increase the duck harvest in Minnesota, DNR is committed to an action plan developed with stakeholders to: 1) increase local duck production by restoring wetland habitat complexes; 2) improve fall migration habitat by eliminating carp and managing water levels where possible in shallow lakes; and 3) reduce disturbances to migrating ducks by improving and enlarging refuges and resting areas. DNR relies on partnerships with local groups and government agencies to carry out habitat improvement activities.

**Target: Increase Minnesota's share of the Mississippi Flyway duck harvest to 1970s average levels of one duck in six by 2011.** Because duck populations take time to respond to habitat restoration and protection, and because external factors (such as weather, other states' harvest levels, bag limits, and season length) influence Minnesota's harvest success, we will measure this indicator yearly and will examine average results over at least three-year intervals before drawing conclusions about the effectiveness of our efforts.

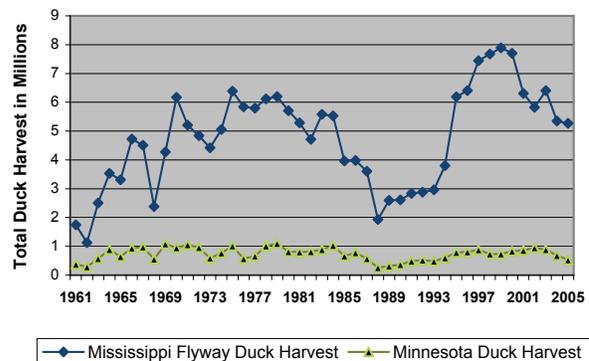
Note: This indicator may be difficult to interpret; it gives a limited view of waterfowl health, and consolidates many sources of information into just one measure. As a result, DNR will be re-evaluating this indicator to determine if we can develop a more suitable measure related to duck use or abundance. U.S. Fish and Wildlife Service Harvest Information Program data for Minnesota and the Mississippi Flyway were used for estimates beginning in 2000. Future updates of *A Strategic Conservation Agenda* may include new indicators.

Minnesota's Share (%) of the Yearly Mississippi Flyway Duck Harvest



DNR's target is to increase Minnesota's share of the duck harvest to 1970's average levels of one duck in six (17%) by 2011. (Data based on mail surveys. Data from 2000 onward rely on the U.S. Fish and Wildlife Service [USFWS] Harvest Information Program [HIP] estimates).

Total Mississippi Flyway Duck Harvest and Total Minnesota Duck Harvest



Annual flyway duck harvest is affected by many factors, including drought cycles. (Data based on mail surveys. Data from 2000 onward rely on the USFWS HIP estimate).

## Learn more about:

- Waterfowl hunting at: <http://www.dnr.state.mn.us/hunting/waterfowl/index.html>

# Hunter Recruitment

Indicators: Number of youth license sales; number of participants in special youth hunts

## Why is this indicator important?

Hunting is an important part of Minnesota's outdoor heritage and culture. The right to hunt has been preserved in the state constitution. According to the U.S. Fish and Wildlife Service, in 2001 Minnesota was tied for fifth among states in hunter participation with 15 percent of Minnesotans participating. Hunting generates more than \$664 million per year in direct expenditures in the state, according to the International Association of Fish and Wildlife Agencies. Hunters fund more than 75 percent of DNR's wildlife management operating budget through license fees and federal excise taxes on hunting equipment.

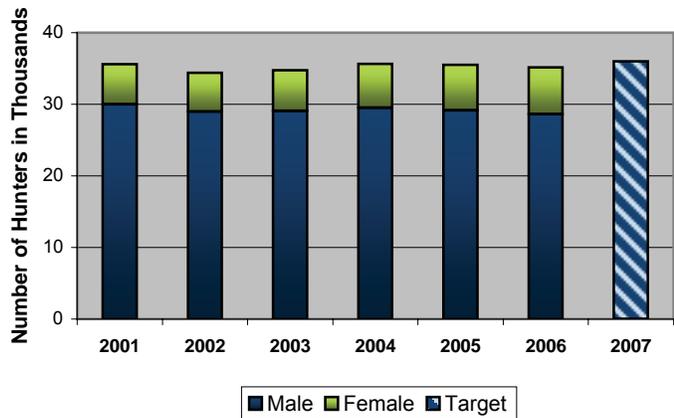
## What is DNR doing?

DNR has initiated efforts to promote and sustain hunting by identifying barriers to participation and enacting programs and policies that reduce or remove them. DNR has reduced youth hunting license fees, eliminated age restrictions for turkey hunters, initiated special youth hunts, and is working with hunting organizations to provide educational and introductory experiences. DNR is also developing marketing strategies to boost youth hunter participation.

**Target: Maintain youth hunter participation as measured by license sales and increase special youth hunt opportunities in 2007.**

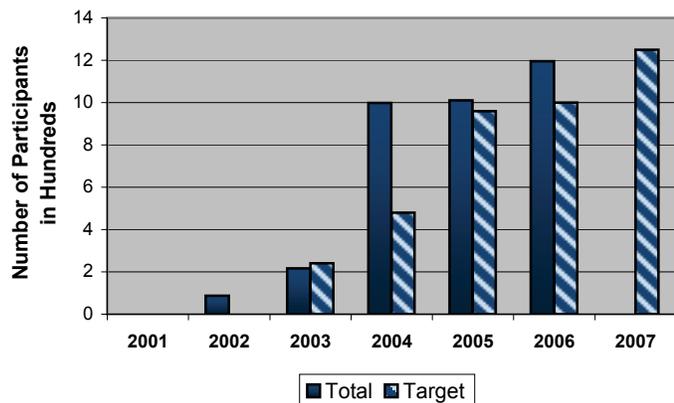
This target represents a systematic strategy to maintain and increase hunter participation rates. Using Electronic Licensing System (ELS) data, DNR can track how many hunters participate by age and sex. These data help DNR determine recruitment and retention rates and make decisions about resource allocation. License sales provide a valuable general indicator of interest, satisfaction, and participation trends. Other indicators, such as application levels for lottery hunts (e.g., bear and turkey) can also be used to measure hunter interest.

## Firearms Deer Hunters Age 12-15 License Sales



Number of youth license sales. DNR's target is to maintain youth hunter participation.

## DNR Special Youth Hunt Participation



Number of participants in special youth hunts. DNR's target is to increase special youth hunt opportunities in 2007.

## Learn more about:

- DNR's hunter and angler recruitment and retention program at: <http://www.dnr.state.mn.us/harr/index.html>
- The International Hunter Education Association at: <http://www.iheda.com>

# Fisheries and Wildlife Enforcement

Indicator: Number of law enforcement hours by activity

## Why is this indicator important?

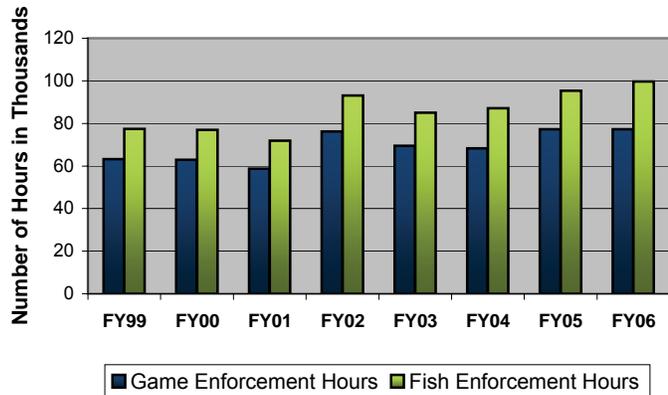
Protection of our wildlife resources and habitat is imperative if we are to enhance the benefit of DNR management efforts. Without adequate law enforcement and protection, the minority who violate can despoil the resources for the majority. The result is that our investments into sound wildlife management practices do not yield the expected results.

## What is DNR doing?

Retirements within the ranks of conservation officers have reduced DNR's ability to put forth the needed hours in traditional law enforcement patrol activities. DNR is hiring replacements for retired officers. The new officers will be trained and strategically stationed so service is restored and adequate law enforcement coverage and educational programs are provided.

**Target: Hire and train 18 new officers in FY 2007.** DNR also hired and trained 18 officers in FY 2006. This number of recruits will go a long way in bringing the conservation officer strength back to the historical level and increase law enforcement for fisheries and wildlife.

## Number of Law Enforcement Hours by Activity



Number of law enforcement hours by activity. DNR seeks to increase law enforcement for fish and wildlife by hiring and training 18 new officers in FY 2007.



## Learn more about:

- Enforcement at: <http://www.dnr.state.mn.us/enforcement/index.html>

# Law Enforcement on Experimental and Special Regulation Waters

Indicator: Number of enforcement hours designated to work experimental and special regulation waters

## Why is this indicator important?

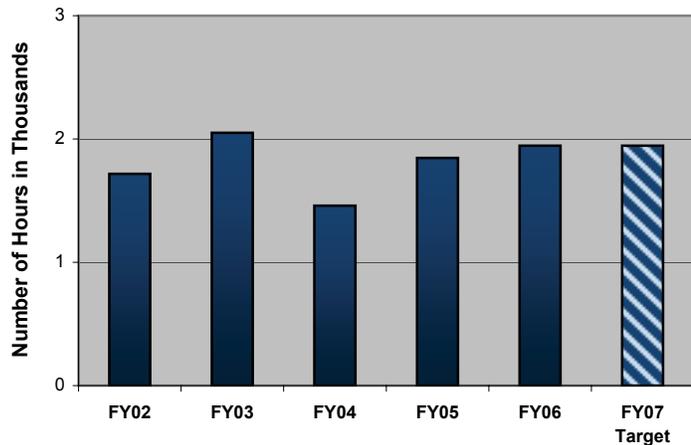
DNR has provided increased opportunities for anglers by intensively managing individual lakes and streams. There are currently 323 experimental and special regulation waters in Minnesota. This management strategy has produced good results in the proliferation of trophy fish and in maximizing the ability of some waters to produce more desirable numbers of popular species, thus increasing angler satisfaction. As little as a 10 percent noncompliance can affect the success of an experimental/special regulation, masking the potential positive effects of such regulations. Thus, our ability to both successfully implement and evaluate the success of programs to improve fishing success is directly related to our ability to enforce regulations.

## What is DNR doing?

Retirements within the ranks of conservation officers have reduced DNR's ability to enforce fishing regulations. DNR is hiring more conservation officers and allocating approximately 55 percent of each officer's game and fish enforcement time to fisheries-related activities. Additionally, enforcement and fisheries staff are working together to determine where enforcement efforts should be deployed to best protect fish stocks and support the fisheries management program. For example, enforcement officers devoted special attention to the reopening of Upper Red Lake for walleye angling in 2006.

**Target: Maintain FY 2006 enforcement hours spent on experimental and special regulation waters in FY 2007.** In FY 2006 officers spent 1,939 hours working experimental and special regulation waters. Maintaining this enforcement effort should make management more effective and increase satisfaction among anglers and resorters.

## Fish Enforcement Hours on Experimental and Special Regulation Waters



Conservation Officer hours in support of fisheries management on experimental and special regulation waters.



Anglers enjoy the fishing on a lake with special regulations.

## Learn more about:

- Enforcement at: <http://www.dnr.state.mn.us/enforcement/index.html>
- Fishing at: <http://www.dnr.state.mn.us/fishing/index.html>

# Law Enforcement and Waterfowl Protection

Indicator: Number of enforcement hours designated for the Waterfowl Task Force

## Why is this indicator important?

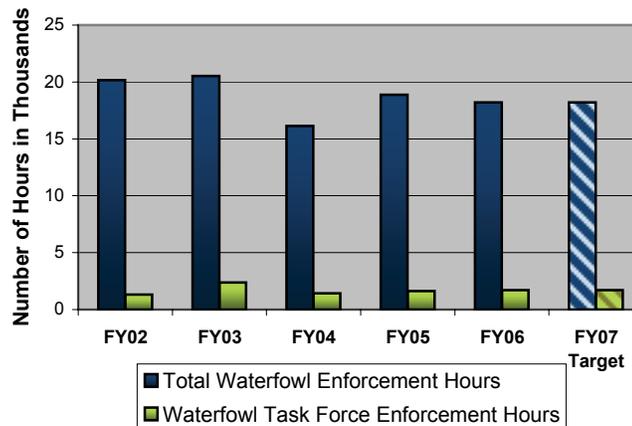
Over the past several years, constituents have voiced displeasure with the state's dwindling fall migrations of waterfowl and the reduction of opportunities for harvest. Constituents have especially voiced displeasure with the reduced number of ducks that use the state's feeding and resting areas during the fall. DNR has undertaken a number of projects to restore the traditional fall flights to Minnesota skies. Law enforcement is an integral part of these wildlife management efforts to improve waterfowl hunting.

## What is DNR doing?

DNR has invested precious resources into restoration of the state's waterfowl breeding populations and other efforts to increase the numbers of waterfowl in the fall migrations. DNR has made waterfowl protection and the continued operation of the Waterfowl Task Force one of its highest enforcement priorities. The officers that comprise the Waterfowl Task Force are very knowledgeable in waterfowling techniques and practices. They respond at short notice to work anywhere within the state where, due to the dynamic and fluid nature of waterfowl migrations and hunting pressure, a law enforcement presence is required. These officers use the opportunity to try new equipment and develop new enforcement tactics. They also help train other conservation officers.

**Target: Maintain FY 2006 migratory waterfowl enforcement hours in FY 2007.** DNR has increased Waterfowl Task Force enforcement hours by 20% and total waterfowl enforcement hours by 13% since FY 2004. In 2007 DNR will maintain this level of enforcement effort.

### Waterfowl Enforcement Hours



Waterfowl enforcement is an integral part of efforts to improve waterfowl hunting.



Conservation officer checking a waterfowl hunter.

## Learn more about:

- Waterfowl hunting at: <http://www.dnr.state.mn.us/hunting/waterfowl/index.html>
- Legal and safe hunting at: <http://www.dnr.state.mn.us/hunting/tips/enforcement.html>

# Loon Abundance

Indicator: Loon population levels in six lake index areas

## Why is this indicator important?

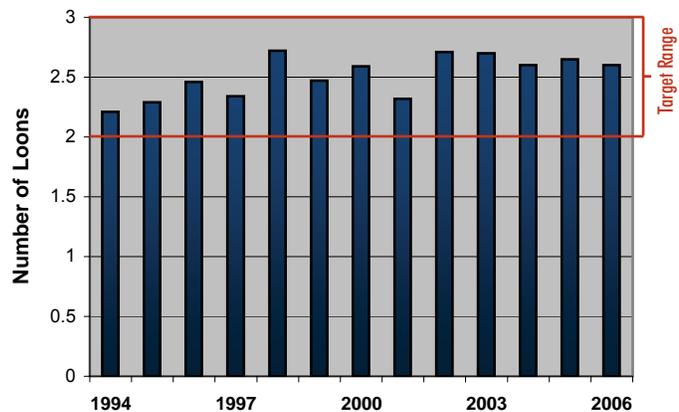
Minnesota is the summer home to approximately 12,000 adult loons—the largest population in the continental United States. Loons thrive in clear lakes that have healthy fish and undisturbed shorelines with plenty of natural vegetation. Loons reflect the overall quality of Minnesota’s lakes.

## What is DNR doing?

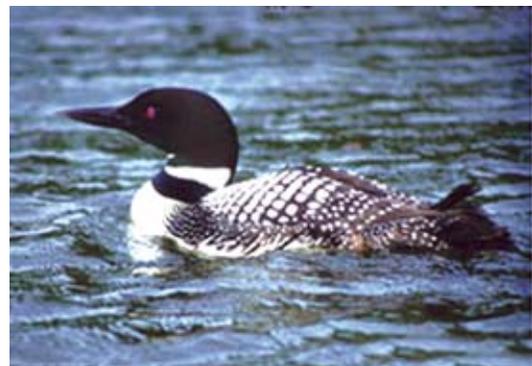
To assess the stability of loon populations over time, DNR’s Minnesota Loon Monitoring Program relies on nearly 1,000 volunteers using standardized protocols to collect data on six 100-lake “index areas” in central and northern Minnesota. The Aitkin/Crow Wing index area (see graph) is of interest because the lakes are on predominantly private lands in a region of rapid population growth. Besides tracking loon populations, DNR promotes healthy shoreline habitat for loons and other wildlife. For example, DNR works with partners to support lakescaping workshops designed to meet landowner goals while sustaining native vegetation and shoreline habitat.

**Target: Sustain a population of two to three adult loons per 100 acres of lake in the Aitkin/Crow Wing area.** The target aims to maintain stable loon populations in the face of growing pressures. Loon populations are currently stable in all six index areas in the state. Because of natural variability, loon populations will fluctuate somewhat from year to year.

## Adult Loons Per 100 Acres



Loon populations. The conservation target for viable loon populations is two to three adults per 100 acres of lake in the Aitkin/Crow Wing index area.



The common loon, Minnesota’s state bird.

## Learn more about:

- The common loon at: <http://www.dnr.state.mn.us/snapshots/birds/commonloon.html>
- The Minnesota Loon Monitoring Project at: [http://www.dnr.state.mn.us/ecological\\_services/nongame/projects/mlmp\\_state.html](http://www.dnr.state.mn.us/ecological_services/nongame/projects/mlmp_state.html)
- Volunteering for loon surveys at: [http://www.dnr.state.mn.us/ecological\\_services/nongame/projects/loon\\_survey.html](http://www.dnr.state.mn.us/ecological_services/nongame/projects/loon_survey.html)

# Frogs and Toads

Indicator: Frog and toad species distribution

## Why is this indicator important?

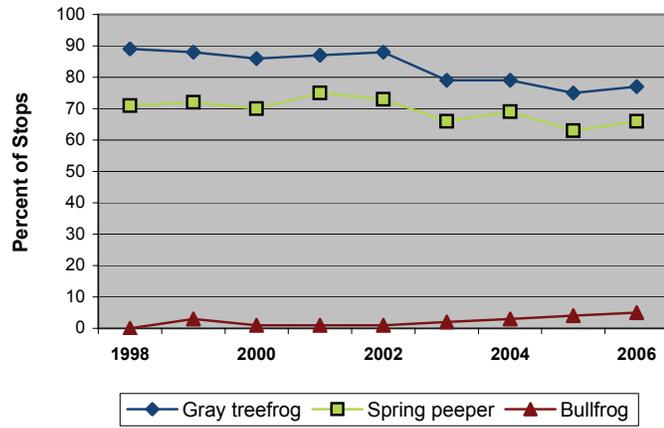
Biologists around the world have discovered that populations of frogs and toads are in decline. The causes are uncertain, but they likely include habitat loss and degradation, loss of stratospheric ozone, increased vulnerability to disease, and exposure to pollution and pesticides. With a life cycle that exposes them to aquatic habitats as tadpoles and terrestrial habitats as adults, and a semipermeable skin that makes them sensitive to environmental contaminants, Minnesota's 14 frog and toad species are valuable indicators of air and water quality.

## What is DNR doing?

Since 1996, DNR has conducted the Minnesota Frog and Toad Calling Survey, which is designed to detect trends in the state's frog and toad populations over time. Trained volunteers conduct three nighttime surveys on routes distributed throughout the state, and report on which of the state's 14 species of frogs and toads are heard singing. Data are analyzed to evaluate changes in the distribution and abundance of these species within the state. In addition, it is hoped that wetland conservation efforts will have a positive impact on frog and toad distribution.

**Target: Maintain or increase the distribution of frog and toad species.** While atypical spring weather makes interpretation difficult, statewide population trends may be emerging for three species. There has been an apparent decrease in two species (gray treefrog and spring peeper) and an increase in bullfrogs. Additional years of data will allow us to clarify these possible trends.

Percent of Survey Stops at which Selected Frog Species were Heard



Percent of stops along survey routes at which selected species were heard statewide during the Minnesota Frog and Toad Calling Survey 1998-2006.



Spring peeper

## Learn more about:

- Minnesota's frogs and toads at: [http://www.dnr.state.mn.us/reptiles\\_amphibians/frogs\\_toads/index.html](http://www.dnr.state.mn.us/reptiles_amphibians/frogs_toads/index.html)
- The Minnesota Frog and Toad Calling Survey at: [http://www.dnr.state.mn.us/volunteering/frogtoad\\_survey/index.html](http://www.dnr.state.mn.us/volunteering/frogtoad_survey/index.html)

# Endangered Species

Indicator: Number of species on the Minnesota endangered species list

Group	Endangered	Threatened	Special Concern	TOTAL
Mammals	0	1	14	15
Birds	7	6	15	28
Amphibians & Reptiles	2	3	9	14
Fish	0	1	20	21
Mollusks	10	15	5	30
Arthropods	8	6	35	49
Vascular Plants	69	69	144	282
<b>TOTAL</b>	<b>96</b>	<b>101</b>	<b>242</b>	<b>439</b>

Species on state list by group.

## Why is this indicator important?

Maintaining the full complement of native plants and animals in the state is important for a variety of reasons—biological, ecological, genetic, educational, and aesthetic. Animals such as the brown bear, bison, and passenger pigeon, and more than 50 species of plants, have been lost from Minnesota since European settlement. Habitat loss is the major cause of endangerment.

## What is DNR doing?

Minnesota Statutes, Sec. 84.0895 directs the commissioner to adopt rules under chapter 14 to designate wild animal or plant species as endangered, threatened, or species of special concern. It also directs the commissioner to undertake management programs and adopt rules necessary to improve the status of species formerly designated as endangered or threatened, and to reevaluate the designated species list every three years. Staff experts on native animals and plants inform public and private land managers about the needs of rare and endangered species. DNR acquires habitats crucial to the conservation of these species as state natural areas. Incentives for habitat enhancement on private lands are available through a variety of state and federal programs.



The western prairie fringed orchid, an endangered plant.

**Target: Move fewer species to endangered status with each list revision.** DNR hopes to complete the next revision of the state’s endangered species list by early 2008. DNR has also completed a strategic assessment of the needs of wildlife species in greatest conservation need as part of its Wildlife Action Plan (see Wildlife Action Plan indicator). This plan articulates key measures of success and provides a blueprint for preventing the endangerment of additional wildlife species.

## Learn more about:

- Minnesota’s list of endangered, threatened, and special concern species at: <http://www.dnr.state.mn.us/ets/index.html>

# Topeka Shiner

Indicator: Percentage of stream reaches in the Missouri River watershed with Topeka shiner

## Why is this indicator important?

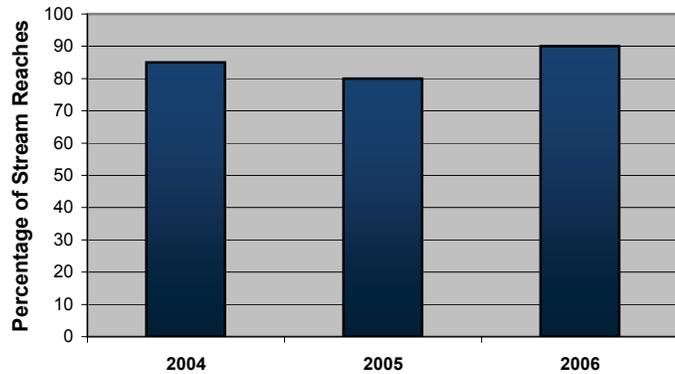
The Topeka shiner (*Notropis topeka*) was once a common prairie stream fish throughout the central United States. It received federal endangered status designation in January 1999 due to its disappearance from 80 percent of its historic range. The species' decline is attributed to the impacts of intensive agriculture, stream channelization, dam construction, and bank erosion on its habitat. Recent studies conducted by the DNR have demonstrated that Topeka shiner preferred habitat consists of off-channel pools, oxbows, and backwaters found along naturally meandering low-order streams flanked by an undisturbed floodplain that can accommodate channel-cutting and meandering. Minnesota is now home to one of the healthiest remaining populations of this prairie stream fish, and its distribution is an indicator of the health of these rare streams.

## What is DNR doing?

DNR has conducted studies to determine the Topeka shiner's preferred habitat, food habits, demography, predators, and hydrologic requirements. Based upon this information, the DNR works with private landowners to protect and restore its habitat. DNR also conducts an annual survey of 20 randomly-selected stream segments to monitor Topeka shiner distribution in the state, and to insure that the species remains well-distributed throughout its range in Minnesota.

**Target: Maintain or increase the percentage of stream reaches in the Missouri River watershed with Topeka shiner present.** Annual surveys indicate that the Topeka shiner remains well-distributed throughout its range in Minnesota.

## Percentage of Stream Reaches with Topeka Shiner



Percent of stream reaches in which Topeka shiners were found. Minnesota is now home to one of the healthiest remaining populations of this prairie stream fish.



Topeka shiner, a prairie stream fish, is now rare throughout its range.

## Learn more about:

- DNR Topeka shiner surveys at: [http://www.dnr.state.mn.us/ecological\\_services/nongame/projects/topeka\\_shiner.html](http://www.dnr.state.mn.us/ecological_services/nongame/projects/topeka_shiner.html)
- Topeka shiner at: [http://www.gen.umn.edu/research/fish/fishes/topeka\\_shiner.html](http://www.gen.umn.edu/research/fish/fishes/topeka_shiner.html)

# Wildlife Action Plan

Indicator: Number of species in greatest conservation need

## Why is this indicator important?

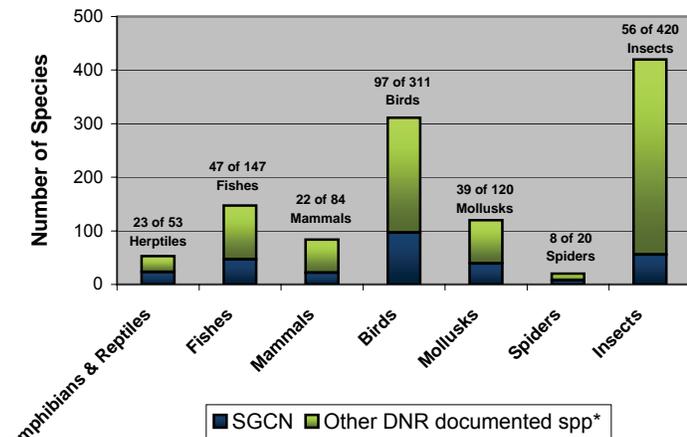
Congress mandated that partnerships within states and territories develop Wildlife Action Plans to manage their “species in greatest conservation need.” Minnesota’s plan was completed in 2005. About one-quarter (292) of Minnesota’s more than 1,100 known wildlife species are identified in this wildlife action plan as species in greatest conservation need because they are rare, their populations are declining, or they face serious threats of decline.

## What is DNR doing?

DNR distributed over 1,000 copies of *Tomorrow’s Habitat for the Wild and Rare: An Action Plan for Minnesota Wildlife* and staff have made over fifty presentations on the Wildlife Action Plan to interested stakeholders. This plan satisfies U.S. Fish and Wildlife Service (USFWS) requirements for a comprehensive wildlife conservation strategy. As a result, Minnesota will continue to receive federal matching funds in the form of “state wildlife grants” to manage species in greatest conservation need. DNR is working with internal and external partners to coordinate implementation of the Wildlife Action Plan. The plan includes goals and targets for stabilizing and increasing populations of species in greatest conservation need, improving knowledge about these species, and enhancing people’s appreciation and enjoyment of them.

**Target:** Invest State Wildlife Grant funds in projects benefiting key habitats and species of greatest conservation need; develop a monitoring system for prairies and savannas by 2008. Many other indicators in the Conservation Agenda address populations of species in greatest conservation need (e.g., frog and toad species distribution), key habitats (e.g., no net-loss of wetlands), and wildlife recreation (e.g., birding trails). These will also help us measure the success of The Wildlife Action Plan.

Species in Greatest Conservation Need (SGCN) in Minnesota



About one-quarter of the nearly 1,200 of Minnesota’s wildlife species assessed are identified as species in greatest conservation need. Habitat conservation is important for these rare and declining species. \*Note: the documented species numbers underestimate the total number of invertebrate species in Minnesota.



The bobolink is one of Minnesota’s 97 bird species in greatest conservation need.

## Learn more about:

- Minnesota Wildlife Action Plan at: <http://www.dnr.state.mn.us/cwcs/index.html>

# Wildlife Observation and Birding

Indicators: Number of participants in wildlife observation; number of local birding events

## Why is this indicator important?

An increasing number of people are expressing their enjoyment of wildlife by bird watching, feeding birds, traveling to see birds and other wildlife, and photographing wildlife. Bird-watching and nature tourism activities are harder to track than hunting, trapping, and fishing because licenses are not required for participation. Information on nonconsumptive enjoyment of wildlife is important so participants can be included in the dialogue regarding conservation, legislative issues, and habitat-related wildlife initiatives.

## What is the DNR doing?

DNR has been at the forefront of promoting wildlife tourism in Minnesota by helping publicize state birding trails and birding festivals. The number of such trails and festivals has grown from 9 in 2001 to 21 in 2006. Wildlife tourism training workshops were held at Mankato and Grand Rapids for local community leaders and citizens to understand how to develop the potential for wildlife tourism in their communities. There were 70 participants at those workshops including city mayors, motel managers, members of the Mille Lacs Band of Ojibwe, representatives of convention and visitor bureaus, tourism officials, natural resource managers, birding field trip leaders, and federal wildlife biologists.

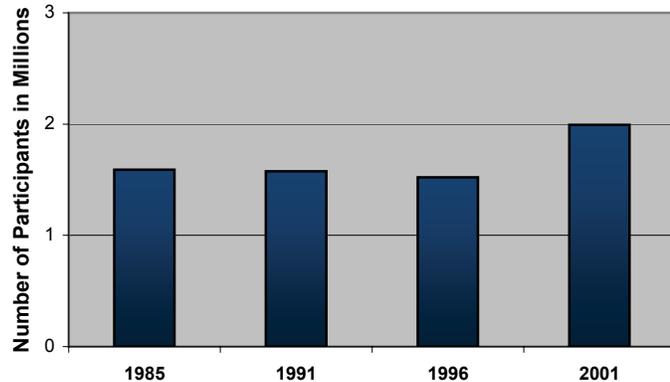
DNR has also arranged for Watchable Wildlife Inc. to publish and market *Saga of Grackle Junction*, a training workbook initially published by the Nongame Wildlife Program for teaching local communities about wildlife tourism. Sales of the *Traveler's Guide to Wildlife in Minnesota*, which was written by the Nongame Wildlife Program staff, have reached a cumulative total of 11,000 copies sold. DNR has also completed bird checklists for 69 state parks. The lists are available on the DNR website.

**Target:** Assist local communities with four birding trail/wildlife festival events or products per year. Achieving this target will help serve the increasing numbers of wildlife observers.

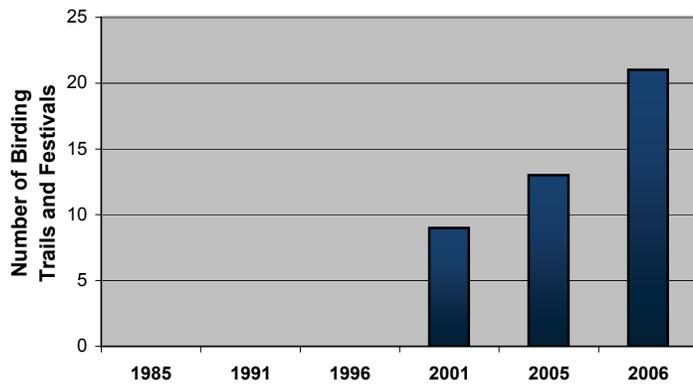
## Learn more about:

- Wildlife observation and birding at: [http://www.dnr.state.mn.us/nature\\_viewing/index.html](http://www.dnr.state.mn.us/nature_viewing/index.html)

Number of Minnesota Participants (over age 16) in Wildlife Observation



Number of Birding Trails and Festivals in the State



Nearly 2 million Minnesotans actively watch, feed, or photograph wildlife—a 54 percent participation rate. Minnesota ranks No. 2 in the nation.

# Fisheries and Wildlife Key Indicator Gaps

## Indicator Gaps:

Although the indicators in this report have data of sufficient quality and coverage to support trend reporting, we recognize gaps in our ability to report on important natural resources trends. The following is a preliminary list of important indicators that require either additional data or new monitoring efforts. When baseline and trend data for new indicators are available, cooperative efforts will be needed to establish conservation targets.

A preliminary list of indicator gaps includes:

Indicators to measure compliance with special regulations as a result of education and enforcement
Indicators to measure rate of shoreline development and loss of shoreline habitat
Indicators to measure demographic trends in recreation, as tracked in DNR's electronic licensing system
Indicator to measure trends in access to public and private lands for hunting, fishing, and wildlife observation
Indicator to measure trends in the distribution and abundance of turtles and other nongame species
Indicators to measure the viability of populations of rare, threatened, and endangered species

# Section Three: Waters and Watersheds

## Minnesota's Water Resources and Watersheds Will Be Conserved

Water resources permeate every part of our lives. Ground and surface reservoirs provide for drinking, household, and industrial use. Waterways support a diversity of life. Lakes, rivers, and wetlands enrich us with recreation, relaxation, and beauty.

DNR conserves Minnesota's water resources in all forms—lakes, rivers, streams, wetlands, and ground water. In doing so, we seek to meet people's current needs while also ensuring a future in which Minnesota's waterways and watersheds forever remain an abundant source of clean water, enjoyable recreation, and trademark beauty for all citizens.

### A Vision for the Future

When we look to that future, we see **clean water** and plenty of it. We envision aquatic ecosystems that are healthy and sustainable. Fish and wildlife populations and natural communities that depend on them will be balanced and self-sustaining. Management will respect the interrelationships among lands and waters.

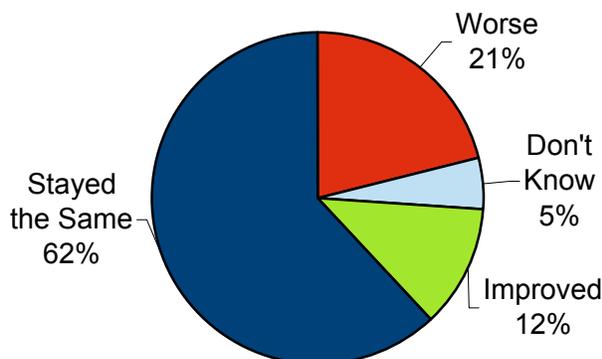
We envision waterways that have **integrity**. Natural characteristics of shorelines, ground-water aquifers, and wetlands will be protected. Stream flow that has been disrupted will be restored whenever possible to meet environmental and economic benefits. Storm water will be managed in ways to protect downstream resources. Point and nonpoint source pollution will be minimized. Harmful, invasive species will be reduced and no new invaders will be introduced.

We envision water resources that are appropriately **conserved**. Ground water and other water resources will be used in a way that does not degrade them for future generations. They will be shared fairly among recreation, residential, and commercial uses while

### DNR – What We Do

- Collect water data and coordinate technical analysis for Minnesota's ground water and surface water
- Regulate activities that affect the state's waters, such as water use and shoreland alterations
- Provide technical assistance to local units of government on water management and safety issues, e.g., related to flooding
- Assist local watershed planning through information and education, e.g., related to storm-water management

### Perceptions of Lake Quality



Perceptions of lake quality. About one in five Minnesota lake users responding to a 1998 statewide survey perceived the lake they used most to be in a state of decline. About three in five thought it was remaining the same, and about one in 10 thought it was improving.



DNR partners with citizens and local groups to restore shoreline habitat and promote water quality.

protecting their ability to sustain natural systems. Sensitive and rare aquatic communities, such as trout streams and calcareous fens, will be protected.

As we work to turn this vision to reality, we need to consider a number of trends that affect water resources. Some are positive, while others work against our efforts to achieve our envisioned future.

## Critical Trends

**Shoreline development** is a major factor in maintaining and improving lakes and rivers for natural habitat and recreation. The median number of homes per lakeshore mile in Minnesota has grown from fewer than three in 1950 to more than 16 today. Along with homes come septic systems, recreational impacts, introduction of invasive species, and changes in shorelines and near-shore vegetation. As baby boomers retire, we expect shoreline development to become even more intensive. Small, single-lot changes to the shore can add up to a huge negative impact on the environment and all life that depends on it.

Trends in **water use** are a sobering reminder of the need to think and act creatively and strategically to meet the needs of an increasing—and increasingly demanding—population within the constraints of a finite resource. From 1990 to 2000, Minnesota’s population grew 12.4 percent while public water use grew at a rate close to double that. Further impacts to water use could be substantial as our population grows another 11 percent by 2010.



DNR provides water resources information to citizens and local governments. Here, a DNR hydrogeologist discusses ground-water chemistry with a farmer in Otter Tail County.



Local governments use water resources information to guide local water planning efforts. Here, DNR staff train county staff to use County Geologic Atlas data.

Continued **wetland loss** will be a significant impediment to efforts to renew and sustain Minnesota’s water resource. Wetlands provide habitat and protect water quality in lakes and streams. Nearly half of Minnesota’s wetland acres have been drained or filled. High-quality prairie wetland complexes, important for healthy waterfowl populations, are in short supply. Drain tiling continues to remove water off the landscape. Although the Wetland Conservation Act of 1991 has slowed wetland loss, we are still losing wetlands. Efforts to measure specific trends are underway and will help guide decision making.

Trends in **stream management** have the potential to affect water resources in positive ways. Local community interest in restoring natural stream flows and removing many of the

state’s unsafe and unsound dams bodes well for water resources and efforts to expand fisheries habitat, improve water quality, and benefit river recreation and public safety.

To make progress we can no longer treat water issues as isolated problems. We must manage our wetlands, surface waters, and ground water as interdependent systems. Although we clearly face an uphill battle against the forces that threaten water quality, we have many allies in the form of individuals, nongovernmental organizations, and public agencies committed to protecting Minnesota’s valuable and vulnerable water resources. DNR’s work to advance the Governor’s Clean Water Vision and Minnesota’s Clean Water Legacy Act provides a significant opportunity to improve water quality and realize our envisioned future. The indicators and targets that follow illustrate just some parts of

# Water Resources Indicators & Targets

Indicator	Target	Page
<b>Managed and protected water supplies</b>		
Gallons of public water use	Distribute water conservation education materials to DNR facilities and encourage implementation of water conservation practices	59
Number of counties with a County Geologic Atlas or a Regional Hydrogeological Assessment	Produce one additional atlas in 2007	60
Number of abandoned wells sealed on state lands	Finish sealing nearly all unused wells on state lands in FY 2007	61
Number of hydrologic monitoring sites	Evaluate all forms of hydrological monitoring during FY 2007	62

Indicator	Target	Page
<b>Flood damage reduction</b>		
Number of buildings removed from flood plains to prevent flood damages	Maintain or increase efforts to remove buildings from flood plains with available funding and through other cooperative efforts	63

Indicator	Target	Page
<b>River and stream conservation</b>		
Number of miles under Adopt-A-River stewardship	Clean up 525 miles of shoreline each year in FY 2006 and FY 2007	64
Number of unsafe or unsound dams removed or modified	Remove additional unsafe or unsound dams where possible with partners	65
Number of river and stream restoration projects	Update the statewide stream restoration priority list biannually; complete priority projects with partners	66
Number of water bodies with current mussel data; number of long-term mussel monitoring sites	Complete mussel surveys of highest-priority water bodies by 2008. Establish a set of long-term mussel monitoring sites based on statewide mussel survey results	67
For river education indicator see section on Natural Resources Stewardship Education		108

# Water Resources Indicators & Targets

Indicator	Target	Page
<b>Lakes conservation</b> (Note: see Fisheries and Wildlife section for additional lake indicators.)		
Number of shoreline alteration permits requested and approved for riprap and retaining walls	Decrease the number of shoreline alteration permits issued for riprap and retaining walls	68
Fish contaminant levels in important fishing waters	Resample major lakes and rivers for fish contamination on an approximate five-year cycle; work with PCA for mercury trend lake resampling on a two-to-five-year cycle; collect and test additional samples to support the Clean Water Legacy Initiative	69
Number of mine pit lakes and associated watersheds restored	Incorporate watershed planning into each company's Permit to Mine, and restore selected pit lakes and associated watersheds by 2009	70
<b>Wetlands conservation</b> (Note: see Fisheries and Wildlife for additional wetland indicators.)		
Ability to monitor "no net loss" of wetlands; net change in wetland acres	Implement a comprehensive monitoring program to monitor no net loss statewide beginning in 2006; achieve no net loss of Minnesota wetlands	71
Number of enforcement hours on the Wetlands Conservation Act (WCA)	Continue Operation Bird's-Eye View in FY 2007	72
<b>Limited spread of harmful, invasive exotic species</b>		
Number of water bodies infested with Eurasian watermilfoil and zebra mussels	Limit the rate of spread of Eurasian watermilfoil to no more than 10 new water bodies per year, and prevent spread of zebra mussels to waters not connected to previous infestations	73

# Water Use

Indicator: Gallons of public water use

## Why is this indicator important?

In Minnesota, growth in demand for water resources is outstripping population growth. To protect water-related resources and help prevent water shortages, we need to plan water supply. Tracking water use helps us maintain the integrity of Minnesota's lakes, rivers, and ground water.

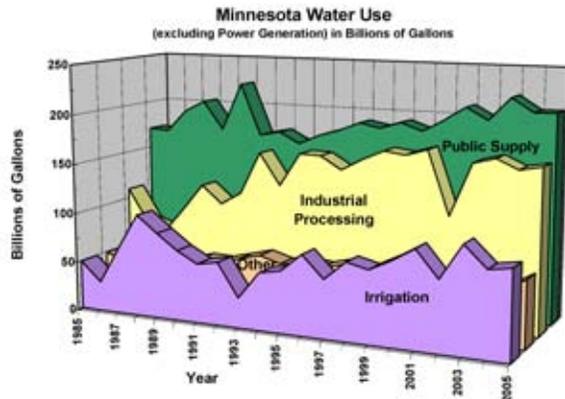
## What is DNR doing?

DNR administers Minnesota's water appropriation program, which was established in 1937 to develop and manage water resources to assure adequate supplies for domestic, municipal, industrial, agricultural, fish and wildlife, recreational, power, navigation, and quality-control purposes. The program resolves water-use conflicts and well interferences caused by competing demands, and helps municipalities and others with long-term water supply planning.

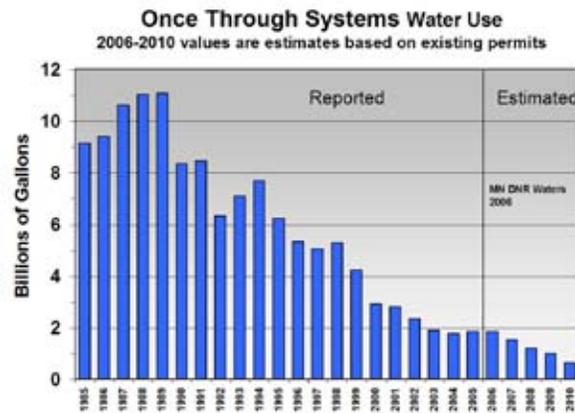
Users that exceed 10,000 gallons per day or 1 million gallons per year must obtain permits and submit annual water use reports. There are currently 6,784 active permits. The program uses report data to identify impacts of water withdrawals on resources.

Protecting water supplies for high-priority uses requires reducing waste. In 1988, some 11 billion gallons of ground water were used for once-through heating and air conditioning. DNR is working to help phase out such use by 2010.

**Target: Distribute water conservation education materials to DNR facilities and encourage implementation of water conservation practices.** Water use is related to a number of factors, including climate, population, and economic conditions, so it is difficult to set annual targets. However, general information on water use will help DNR and local communities maintain sustainable water resources. Developing water-use protection thresholds is another activity that will help communities and other users with long-term water supply planning.



Minnesota water use (excluding power generation), 1985 thru 2005.



Ground water used for once-through heating and air-conditioning. DNR is working to phase this use out by 2010.

## Learn more about:

- Water supply data from the DNR: <http://www.dnr.state.mn.us/waters/data/index.html>
- Water quality data from the Pollution Control Agency: <http://www.pca.state.mn.us/water/groundwater/index.html>

# Water Resources Data

Indicator: Number of counties with a County Geologic Atlas or a Regional Hydrogeological Assessment

## Why is this indicator important?

Hydrogeologic information helps communities find reliable sources of water and manage water and land in a way that sustains high-quality water resources. Without water supply planning, shortages may occur. Surface waters (wetlands, lakes, rivers, and unique resources such as trout streams and fens) can be degraded from ground water pumping or land-use changes.

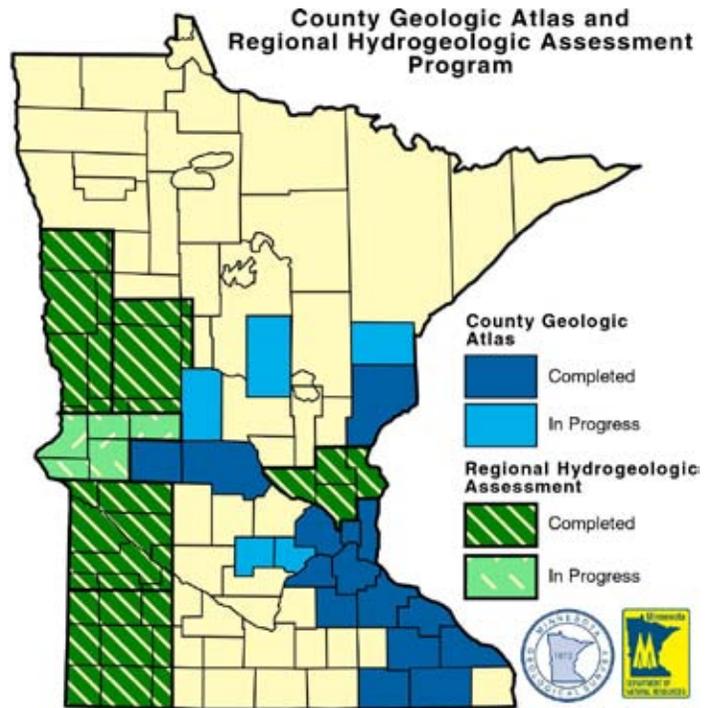
## What is DNR doing?

DNR works with the Minnesota Geological Survey to develop County Geologic Atlases and Regional Hydrogeological Assessments. These provide information on geology and ground water for individual counties and regions. DNR generates maps and reports describing ground water and its sensitivity to pollution. Communities provide some funding, help guide project planning, and help train staff to use the information.

Communities use these resources in many ways. Planners might use them to help screen sites for environmentally sensitive facilities, guide agricultural practices, manage geologic resources, evaluate water supply issues, identify and protect critical water resources, and help prepare wellhead protection plans for public wells. For well drillers, consultants, and landowners, they provide a common framework within which to evaluate site-specific hydrogeologic data. State agency personnel use the information to assist local units of government, facilitate grants for water projects, and guide permitting for wells, waste disposal facilities, and feedlots.

### **Target: Produce one additional atlas in**

**2007. DNR met the 2006 target to complete one additional atlas.** Fifteen atlases and five assessments have been completed. Completed and in-progress atlases and assessments include 78 percent of the state's population and 39 percent of the state's area. At current funding levels, development of the information and production of reports will be limited to completing one more atlas in 2007.



Information for local communities. DNR and the Minnesota Geological Survey help communities manage water resources by working together to provide hydrogeologic information.



DNR hydrogeologists collect data and develop useful information and maps for citizens and local governments.

## Learn more about:

- Atlases and assessments at: [http://www.dnr.state.mn.us/waters/ground\\_water\\_section/mapping/index.html](http://www.dnr.state.mn.us/waters/ground_water_section/mapping/index.html)
- County maps at: [http://www.dnr.state.mn.us/waters/ground\\_water\\_section/mapping/status.html](http://www.dnr.state.mn.us/waters/ground_water_section/mapping/status.html)
- The Minnesota Geologic Survey at: <http://www.geo.umn.edu/mgs/index.html>

# Abandoned Wells

Indicator: Number of abandoned wells sealed on state lands

## Why is this indicator important?

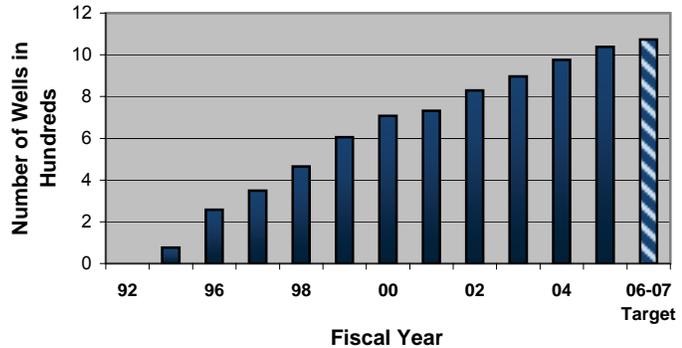
Unused wells should be sealed so they don't carry contamination to ground water or pose a falling risk to people and animals. Until all unused wells on state-administered lands are sealed, the state will not be in compliance with the law and may be liable for costs of cleaning up contamination entering these wells. Minnesota law requires DNR to inventory wells on state-administered lands and prepare a plan and appropriation request to seal inactive wells.

## What is DNR doing?

A total of \$2.522 million (\$1.494 million bonding and \$1.028 million general fund) has been made available for the well-sealing program. Through June 30, 2006, we searched for wells on 2,107 sites where wells were likely to be found and sealed 1,039 unused wells. The program has completed its work in 83 counties.

**Target:** *Finish sealing nearly all unused wells on state lands in FY 2007.* All site searches have been completed. Thirty-five wells remain to be sealed in areas that are difficult to access due to, for example, wet soils. DNR plans to seal these wells by June 29, 2007.

## Number of Abandoned Wells Sealed on State Lands



Number of abandoned wells sealed on state lands to eliminate potential ground water contamination

## Learn more about:

- Well management at: <http://www.health.state.mn.us/divs/eh/wells/index.html>
- Minnesota's water resources at: <http://www.dnr.state.mn.us/waters/index.html>
- DNR's water programs at: <http://www.dnr.state.mn.us/waters/programs.html>
- Links to other state water programs at: <http://www.dnr.state.mn.us/waters/links.html>

# Hydrologic Monitoring Network

Indicator: Number of hydrologic monitoring sites

## Why is this indicator important?

Water constantly moves among air, lakes, streams, soil, and ground. Natural changes in this cycle, such as flood or drought, affect other parts and can harm humans and the environment. Human changes to the landscape also affect the cycle, resulting in problems such as rapid runoff, high lake levels, altered subsurface water levels, and changes in water supply. Information about how the system responds to stress is essential to making good management decisions.



DNR and partners measure precipitation, lake levels, stream flow, and well-water levels around the state.

## What is DNR doing?

Working with volunteers and other agencies, DNR measures precipitation amounts, lake levels, stream flow, and ground water levels around the state. These data are used to assess the condition of water resources and as a baseline against which to evaluate fluctuations, whether natural or human induced.

In cooperation with others, DNR staff periodically examine particular situations in detail to evaluate effects of human activity. We have looked at the impacts of pumping ground water on water levels in surface waters such as calcareous fens, rivers, and trout streams, and in other wells. Other issues relate to impacts of drought and flooding or inputs from human growth.

DNR regulates human alterations of surface and ground water to minimize adverse effects. Hydrologists examine proposals to determine likely impacts on the water resource. DNR staff or the proposer may perform technical studies to assess likely impacts. Regulatory criteria create a preference for the alternative with the least environmental consequences.

**Target: Evaluate all forms of hydrologic monitoring during FY 2007.** The evaluation will focus on what, where and why monitoring activities are presently occurring, and determine appropriate levels of monitoring that are required to support core work priorities as defined by DNR's Waters Management Committee.

## Learn more about:

- Minnesota's water resources at: <http://www.dnr.state.mn.us/waters/index.html>

# Preventing Flood Damage

Indicator: Number of buildings removed from flood plains to prevent flood damage

## Why is this indicator important?

Flooding is a natural part of river systems, but flood extremes can harm people and property. While some causes of flooding—climate and precipitation—are beyond our control, we can reduce flood damage by protecting healthy watersheds and preparing for floods when they do occur.

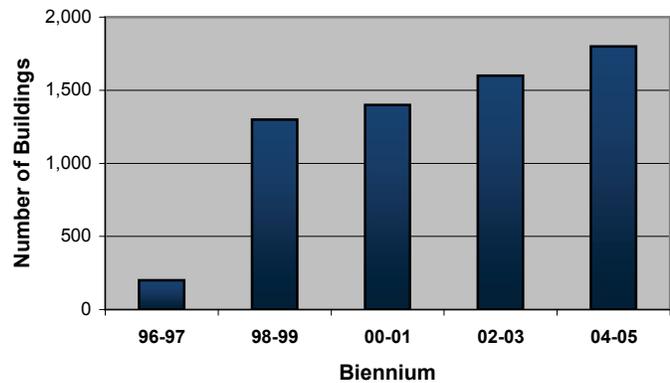
## What is DNR doing?

DNR monitors 38 stream gauges around the state to provide data for flood forecasting and promotes sound land use in flood plains. DNR helps local governments plan, carry out, and pay for flood damage reduction measures.

Since 1987, DNR has provided funds to communities to build flood-control structures, define flood hazard areas, and buy and remove flood-prone buildings. Austin, for example, spent \$13 million of federal, state, and local funds to acquire flood-prone homes and businesses. When major flooding occurred there in 2000 and 2004, cost savings due to removal of flood-prone buildings exceeded the cost of acquiring the structures.

**Target: Maintain or increase efforts to remove buildings from flood plains with available funding and through other cooperative efforts.** Current biennium data will be analyzed in late 2007. DNR also supports local flood plain management zoning and regional flood control efforts, such as those in the Red River Valley. DNR will work with the Governor's Initiative in the Red River Valley to develop indicators and targets related to flood damage.

## Number of Buildings Removed from Flood Plains



Number of buildings removed from flood plains. By removing homes and businesses from flood plains, DNR and communities save the expense and danger of protecting them when floods occur.



Oslo, Minnesota, during the devastating Red River flood of 1997. This event spurred efforts for greater coordination of flood protection throughout the Red River valley.

## Learn more about:

- Flood damage reduction programs at: [http://www.dnr.state.mn.us/waters/watermgmt\\_section/flood\\_damage/index.html](http://www.dnr.state.mn.us/waters/watermgmt_section/flood_damage/index.html)
- Flood plain management at: [http://www.dnr.state.mn.us/waters/watermgmt\\_section/floodplain/index.html](http://www.dnr.state.mn.us/waters/watermgmt_section/floodplain/index.html)

# Adopt-a-River Program

Indicator: Number of miles under Adopt-a-River stewardship

## Why is this indicator important?

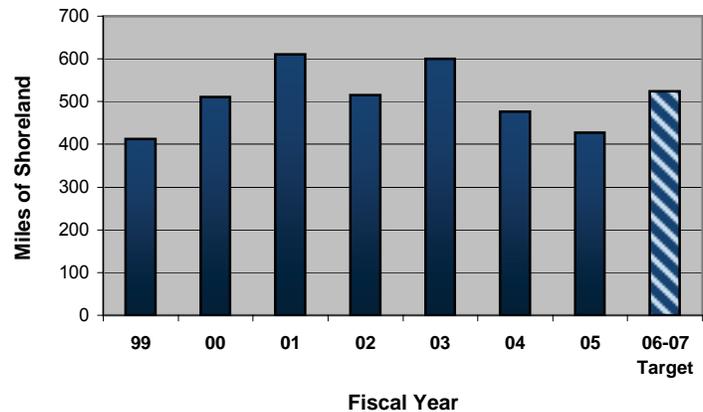
Rubbish enters public waters from littering and illegal dumping. It may be carried in by storm water in the streets, eroded from dumpsites or construction sites, or blown in by the wind. Rubbish can have negative health and other consequences for people and injure wildlife with cuts, entanglements, strangulations, suffocations, digestive disorders, and toxic effects. Much of the nation depends upon public waters both for drinking and recreation. The quality of public waters is linked directly with community health and wellness.

## What is DNR doing?

DNR supports volunteer efforts to improve Minnesota's surface waters, including river and shoreline restoration projects. One such program, the Adopt-a-River program, encourages volunteers to carry out annual cleanups on a section of a lake, river, wetland, ditch, or ravine. These groups work around all sorts of obstacles, including floods, droughts, mud, heat, insects, and nettles. Between 1989 and 2006, over 67,000 volunteers completed nearly 2,300 cleanups. They removed over 4.8 million pounds of rubbish from public waters. In 2005 alone, 139 cleanup efforts removed over 149,000 pounds of trash.

**Target: Clean up 525 miles of shoreline each year in FY 2006 and 2007.** As of January 2007, there were 195 groups registered as "active" with the Adopt-a-River program. In addition, many community and business/corporate cleanups have been completed and supporting corporate partnerships have been maintained.

Adopt-a-River Miles of Shoreland Cleaned



DNR's Adopt-a-River Program aims to spearhead volunteer cleanups of 525 miles of shoreline in each of the next two years. Citizen groups are most active during summer months and report their successes each calendar year. The graphic shown here is adjusted for fiscal year.



In 2005, 139 volunteer cleanup efforts removed over 149,000 pounds of trash along Minnesota waters.

## Learn more about:

- Rivers and streams at: [http://www.dnr.state.mn.us/rivers\\_streams/index.html](http://www.dnr.state.mn.us/rivers_streams/index.html)
- Lakes at: <http://www.dnr.state.mn.us/lakes/index.html>
- Wetlands at: <http://www.dnr.state.mn.us/wetlands/index.html>
- Adopt-a-River Program at: <http://www.dnr.state.mn.us/adoptriver/index.html>

# River Dams

Indicator: Number of unsafe or unsound dams removed or modified

## Why is this indicator important?

Low-head dams on rivers can act as drowning machines, prevent fish migration, degrade water quality, block canoe passage, and be a legal liability for the owner. Most of the remaining river dams are more than 50 years old, in poor structural condition, and no longer serve their original purpose. Removal of river dams can eliminate public safety hazards, expand fisheries habitat, improve water quality, benefit river recreation, and eliminate an ongoing financial liability.

## What is DNR doing?

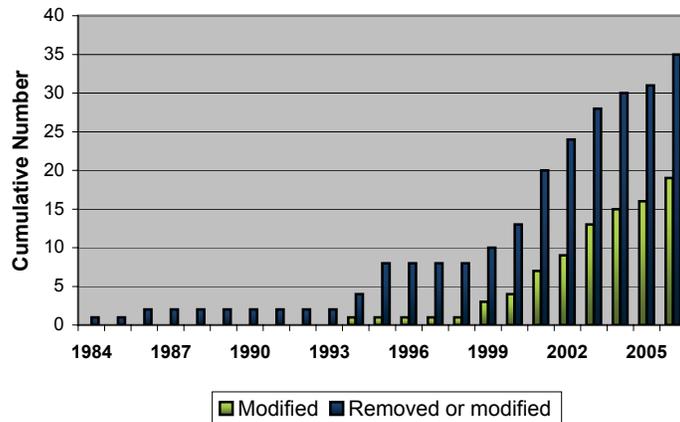
DNR encourages removal or modification of certain river dams by providing information and funding assistance to dam owners and communities. DNR participates in community meetings and provides information about the impacts of dams on river safety, ecology, and recreation. It also provides information on the state dam safety program, which can provide financial assistance for removing or modifying dams. DNR can provide grants of up to 100 percent of the costs of dam removal and 50 percent of the costs of dam modification. DNR has helped remove or modify 35 river dams that posed public safety hazards or degraded fisheries habitat.

**Target: Remove additional unsafe or unsound dams where possible with partners.** DNR will seek opportunities to partner with dam owners and communities on dam removal and modification projects. DNR will seek capital budget investments in the dam safety program at a base level of at least \$1 million per year to fund priority dam projects.

## Learn more about:

- Dam safety at: [http://www.dnr.state.mn.us/waters/surfacewater\\_section/damsafety/index.html](http://www.dnr.state.mn.us/waters/surfacewater_section/damsafety/index.html)
- River dam management at: [http://www.dnr.state.mn.us/waters/surfacewater\\_section/damsafety/dam\\_policy.html](http://www.dnr.state.mn.us/waters/surfacewater_section/damsafety/dam_policy.html)

## Number of Dams Removed or Modified



Cumulative number of river dams removed or modified. Many of Minnesota's river dams are aging, unsafe, or bad for the river environment. DNR provides financial assistance to help communities remove or modify obsolete river dams.



Mazeppa dam site before and after dam removal. Dam removals can help restore fish passage, improve water quality, and benefit river recreation.

# Stream Restoration

Indicator: Number of river and stream restoration projects

## Why is this indicator important?

Rivers are among the most greatly impacted ecosystems in Minnesota. When rivers are degraded, water quality, biological condition, erosion, sediment movement, hydrology, and aquatic habitat are all affected. Restoration of rivers will improve property values, fish and wildlife habitat, water quality, and water availability, while reducing erosion and downstream flooding. Restoration also reflects our commitment to change our environment for the better, to return degraded systems to health.



## What is DNR doing?

Restoration means returning a river to a condition where its channel dimensions, pattern, and profile are matched with the water and sediment provided by its watershed, so the channel neither accumulates nor removes too much sediment. To plan a restoration, we make close, quantified observations of the natural, stable channel form and transfer this “blueprint” to the impacted reach. DNR has designed and implemented five types of river restoration projects: 1) channel restoration; 2) dam removal and channel restoration; 3) dam conversion; 4) bank stabilization; and 5) fish passage restoration.

Stream restoration on the Pomme de Terre River in Appleton. About 30 percent of Minnesota streams historically have been channelized. Local communities and DNR are now partnering to restore stream channels to natural meandering shapes that benefit fish and wildlife, diminish erosion, and improve water quality.

**Target: Update the statewide stream restoration priority list biannually; complete priority projects with partners.** The DNR has completed a statewide stream restoration priority list to ensure a systematic funding process and coordination with related river resource efforts. The stream restoration priority list relies on ranking criteria developed interdivisionally within the DNR. DNR will pursue capital bonding for restoration projects that have local support and are a priority from a natural resources standpoint. Seven stream restoration projects were targeted for funding in 2006. We continue to monitor stream geomorphology and establish an information base to assist with designs and ensure successful restorations.

## Learn more about:

- River and stream habitat protection and restoration at: [http://www.dnr.state.mn.us/ecological\\_services/streamhab/index.html](http://www.dnr.state.mn.us/ecological_services/streamhab/index.html)

# Freshwater Mussels

Indicators: Number of water bodies with current mussel data; number of long-term mussel monitoring sites

## Why is this indicator important?

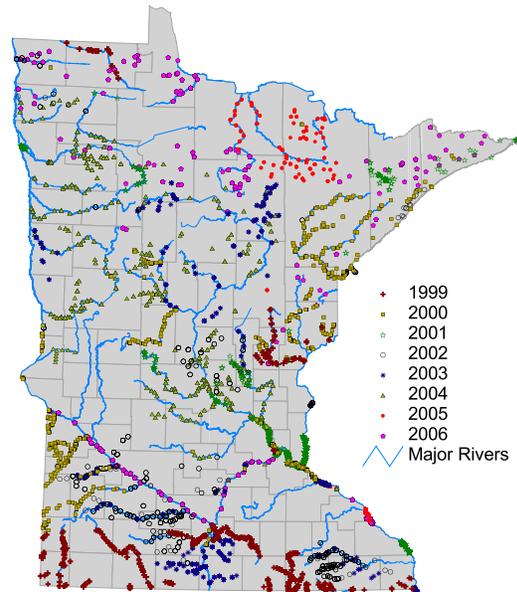
Freshwater mussels are among the most imperiled organisms in North America. Of Minnesota's 49 native species, 27 are listed as either extirpated, endangered, threatened, or of special concern under the state endangered species law. Freshwater mussels thrive in unpolluted streams and lakes with stable bottoms. For this reason they are excellent indicators of aquatic health and water quality. The health of Minnesota's freshwater habitats is threatened by physical and chemical changes from many causes, including drainage, polluted runoff, wastewater discharge, and the loss of mussel communities that are themselves important aquatic habitats for fish. Healthy streams and lakes are important to a myriad of other aquatic organisms, to water-based recreation, and to the economy.

## What is DNR doing?

In 1999, DNR sought funding through the LCMR to initiate a statewide survey of freshwater mussels. At that time the status of mussels was known in only about one-third of Minnesota's river systems. A state wildlife grant provided funding to continue the surveys for 2002–07. Since the inception of the statewide survey project, 1,936 sites in 391 water bodies have been surveyed. Collected data will assist scientists in establishing long-term monitoring sites to measure success in stream restoration efforts as well as providing a baseline for understanding stream and mussel population health over time. To support this effort and summarize what is known to date, DNR produced a *Field Guide to Freshwater Mussels of Minnesota* and a *Mussels of Minnesota* poster, and contributed to the publication of two scientific articles.

**Target:** Complete mussel surveys of highest-priority water bodies by 2008. Establish a set of long-term mussel monitoring sites based on statewide mussel survey results. Field crew members wade, snorkel, and scuba dive to obtain data on species composition and general abundance of mussel populations at selected sites. They conduct quantitative surveys at a subset of sites with high mussel density. Quantitative surveys provide data on mussel density or abundance, species diversity, and size structure within species (an indicator of reproductive success).

## Mussel Sampling Sites 1999 - 2006



Status of statewide mussel survey. Native mussels are indicators of river health. Despite some water quality improvements in recent decades, surveys in southern Minnesota reveal that native mussels are still on the decline.



Examples of Minnesota's mussel diversity. Minnesota has 49 native mussel species. Of these, 27 are either extirpated, endangered, threatened, or of special concern under the state endangered species law.

## Learn more about:

- Minnesota mussels and surveys at: [http://www.dnr.state.mn.us/ecological\\_services/nhnrp/mussel\\_survey](http://www.dnr.state.mn.us/ecological_services/nhnrp/mussel_survey)

# Shoreline Alterations

Indicator: Number of shoreline alteration permits issued for riprap and retaining walls

## Why is this indicator important?

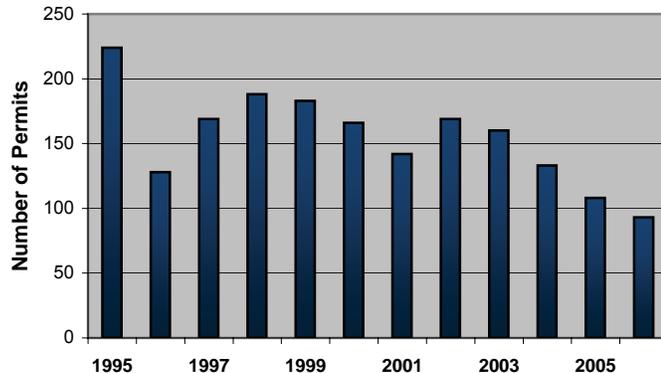
In the mid-1970s it was common for lakeshore property owners to consider erosion control measures such as retaining walls, used railroad ties, used tires, or even broken concrete rubble as a means to control shoreline erosion. In many cases such use was inappropriate and detrimental to the water resource. A reduction in the number of permits issued indicates less alteration of the shoreline using better alternatives.

## What is DNR doing?

In the 1970s DNR made a concerted effort, through rule change, to discourage the above methods of erosion control and encourage, as a better alternative, the placement of rock riprap. Subsequently the number of permits issued dropped, but it was found that rock riprap was being overused on many shorelines. As a result the DNR revised its rules in 2002, to require a “demonstrated need to prevent erosion” before riprap would be permitted. (DNR Public Waters Work Permit Program Rules Chapter 6115.0215 Subp. 4. E). DNR also updated its public information brochures clarifying the use of rock riprap and encouraging other means of erosion control measures such as lakescaping.

**Target: Decrease the number of shoreline alteration permits issued for riprap and retaining walls.** DNR will continue to track annual permits requested and issued. Education and technical assistance will be used to promote natural shoreline management approaches and help reduce the number of shoreline alteration permits for riprap and retaining walls. Climate variability and fluctuating water levels, however, can also affect permit trends.

Number of Shoreline Alteration Permits Issued for Riprap and Retaining Walls



Number of shoreline alteration permits issued for riprap and retaining walls. DNR's target is to decrease the number of permits issued for riprap and retaining walls and encourage natural shoreline management.



Natural shoreline vegetation supports good water quality, native plants and animals, and scenic views.

## Learn more about:

- Shoreline alteration brochures at: <http://www.dnr.state.mn.us/waters/index.html>
- Shoreland Management Program at: [http://www.dnr.state.mn.us/waters/watermgmt\\_section/shoreland/index.html](http://www.dnr.state.mn.us/waters/watermgmt_section/shoreland/index.html)

# Fish Contamination

Indicator: Fish contaminant levels in important fishing waters

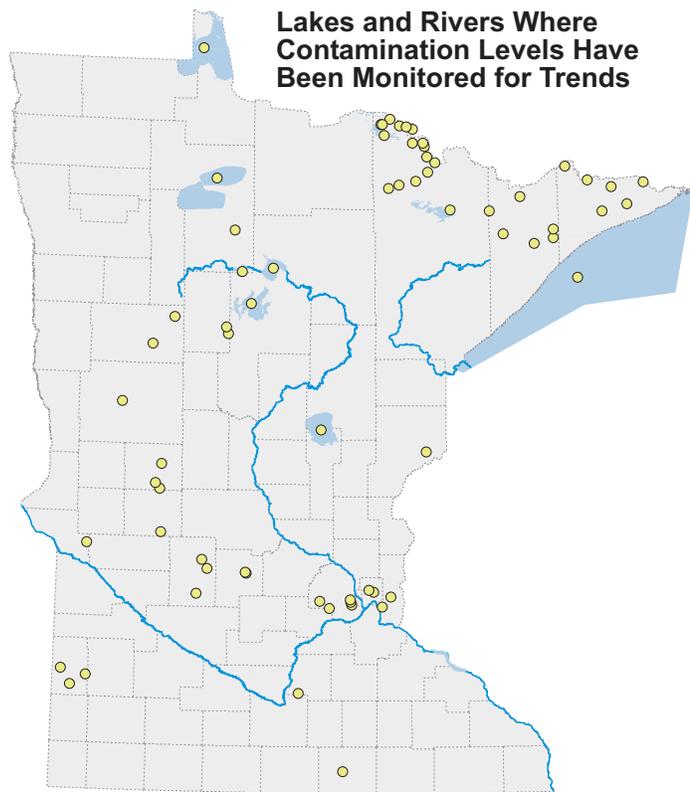
## Why is this indicator important?

Many outdoor recreationists enjoy fishing and eating the fish they catch. Unfortunately, much of the fishery is contaminated with chemicals, primarily mercury. This has resulted in the issuance of numerous consumption advisories. Fish contaminant data provide the basis for these advisories. They also provide some measure of the threat to other fish-consuming species, including mink, otter, and loons. In addition, the measurement of mercury levels in fish provides an important indicator of progress in attempts to decrease the release of additional mercury into the environment.

## What is DNR doing?

Since 1990, DNR has managed the Minnesota Fish Contaminant Monitoring Program (FCMP), and has collaborated closely with other agencies to identify appropriate monitoring goals and to gather and disseminate fish contaminant data. As of 2006, more than 1,000 lakes (out of 6,000 fishable lakes) and more than 90 river reaches had been sampled, including all the state's 11 large lakes, six major rivers, and certain more highly contaminated waters. The FCMP has a plan for resampling the state's 11 large lakes and six major rivers approximately every five years. DNR also is resampling selected mercury trend lakes for Minnesota Pollution Control Agency (PCA) studies on a cycle of two to five years.

**Targets:** *Resample major lakes and rivers for fish contamination on an approximate five-year cycle; work with PCA for mercury trend lake resampling on a two- to five-year cycle; collect and test additional samples to support the Clean Water Legacy Initiative.* DNR received new funding in 2006 through the Clean Water Legacy Act for expanded testing of mercury in fish from other water bodies throughout the state. If this source of funding continues, it is anticipated that up to 40 additional water bodies could be tested annually, resulting in data that can be used for determining consumption advisories, impairment status, and trend markers for those sites.



**Lakes and Rivers Where Contamination Levels Have Been Monitored for Trends**

Minnesota waters monitored for trends in fish contaminant levels. DNR works with the Minnesota Pollution Control Agency and the Minnesota departments of Health and Agriculture to monitor important fishing waters, analyze trends, and report on fish consumption advisories to Minnesota citizens.

## Learn more about:

- Minnesota's Fish Contaminant Monitoring Program at: <http://www.pca-state.mn.us/publications/p-p2s4-05.pdf>
- Minnesota lakes at: <http://www.dnr.state.mn.us/lakes/index.html>
- Lake water quality at: <http://www.pca.state.mn.us/water/lake.html>
- Fish consumption advisories at: <http://www.dnr.state.mn.us/lakefind/fca/index.html>

# Mine Pit Watershed Restoration

Indicator: Number of mine pit lakes and associated watersheds restored



View of the Hull-Rust Mine near Hibbing, Minnesota.

## Why is this indicator important?

Mining on the Mesabi Iron Range results in watershed alterations, including the formation of new lakes as depleted open-pit mines fill with water. Some pits are more than 5 miles long and a mile wide. Depths can exceed 300 feet. Planned management of these lakes will improve their potential for recreation, water storage, and postmining development.

## What is DNR doing?

Mineland Reclamation Rules and Water Law require watershed restoration based on sound hydrologic principles. This creates a need for information on a number of natural factors that affect both surface and ground water accumulation and movement. During 2004–2005, DNR conducted an Legislative Commission on Minnesota Resources-funded project to compile all known hydrogeologic data from across the Iron Range. Using these data with additional site-specific information, DNR has been testing a water balance model to help predict future pit water levels, outflow locations, and outflow volumes. Modeling information is used to help develop restoration plans carried out during and after mining. A current example is the Central Iron Range Initiative, an LCMR-funded project evaluating pit water hydrology of five pits near Chisholm. Ultimate water elevations are needed for directing future land development surrounding the five pits.

DNR and partners developed a watershed restoration plan for the Canisteo natural iron ore pit near Bovey. Because this pit was deactivated before the promulgation of reclamation rules, there is no longer a mining company available to perform restoration. Instead, DNR is working with local governments, Iron Range Resources, and the U.S. Army Corps of Engineers to secure funding to stabilize rising water and provide for an appropriate outflow.

Finally, several pits controlled by Cliff-Erie Mining Company are undergoing watershed reclamation planning, including the depleted Dunka Pit near Babbitt, and several abandoned taconite pits near Hoyt Lakes. The purpose of the planning is to stabilize rising water levels and provide for pit outflow to natural streams, returning the area to stable hydrologic conditions.

**Target: Incorporate watershed planning into each company's Permit to Mine, and restore selected pit lakes and associated watersheds by 2009.** DNR has begun working with each company to develop long-range watershed reclamation plans. By 2009, DNR intends to have each mining operator incorporate watershed reclamation planning into its Permit to Mine.

## Learn more about:

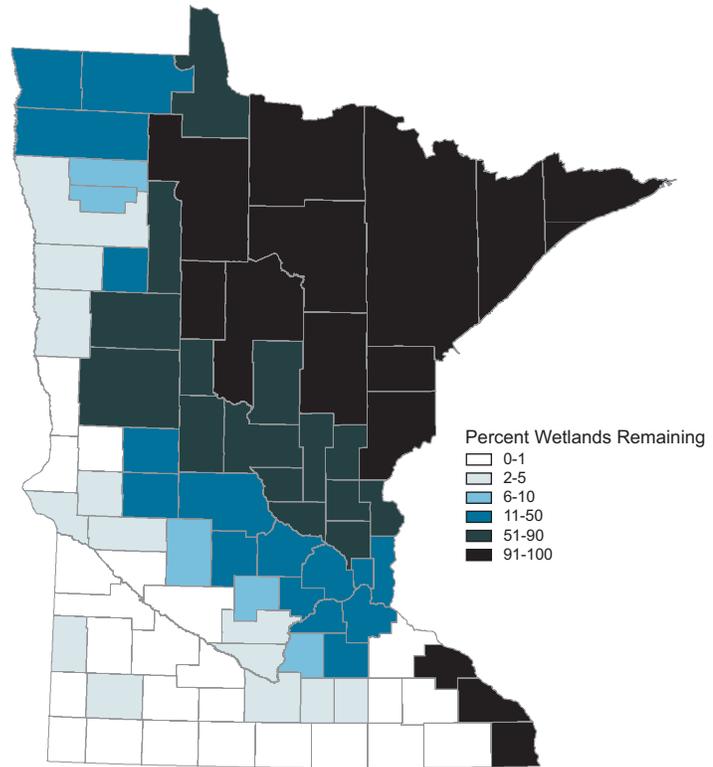
- Mineland educational resources at: [http://www.dnr.state.mn.us/lands\\_minerals/pubs.html](http://www.dnr.state.mn.us/lands_minerals/pubs.html)

# Wetlands Quantity, Quality, and Biological Diversity

Indicators: Ability to monitor “no net loss” of wetlands; net change in wetland acres

## Why is this indicator important?

Minnesota Statutes, Sec. 103A.201 notes: “The legislature finds that the wetlands of Minnesota provide public value by conserving surface waters, maintaining and improving water quality, preserving wildlife habitat, providing recreational opportunities, reducing runoff, providing for floodwater retention, reducing stream sedimentation, contributing to improved subsurface moisture, helping moderate climatic change, and enhancing the natural beauty of the landscape, and are important to comprehensive water management, and that it is in the public interest to: 1) achieve no net loss in the quantity, quality, and biological diversity of Minnesota’s existing wetlands; 2) increase the quantity, quality, and biological diversity of Minnesota’s wetlands by restoring or enhancing diminished or drained wetlands.”



Remaining wetlands in Minnesota. Wetlands are distributed unevenly across the state. Many southern and western parts of the state have less than 10 percent of presettlement wetlands remaining. The northern region, with its extensive peatlands, has retained the majority of presettlement wetlands.

## What is DNR doing?

DNR influences impacts to wetlands through the Public Waters Permit Program and by providing technical information and onsite reviews for other regulatory programs. DNR acquires and restores wetlands on state lands. DNR staff help develop regulations and policies affecting wetlands.

Minnesota is currently lacking the necessary data to assess overall progress toward the state’s “no net loss” wetlands policy. DNR has cooperated with other agencies to develop a strategy to monitor wetland quantity and quality to provide accurate information on wetland gains and losses and link trends to specific programs. Funds for implementing the monitoring and assessment strategy have been obtained through legislative appropriation and from a U.S. Environmental Protection Agency grant. Implementation began in spring 2006, with acquisition and interpretation of aerial photos on 1,800 sample plots, statewide. Initial monitoring results will be available beginning in 2010.

**Target: Implement a comprehensive monitoring program to monitor no net loss statewide beginning in 2006; achieve no net loss of Minnesota wetlands.** Because it has no direct influence over most of the state’s wetlands, DNR by itself will not be able to achieve the overall no-net-loss goal. However, DNR will follow its own no-net-loss policy, which is stricter than state or federal wetlands laws, on DNR-owned land. It will diligently apply no-net-loss standards and seek to achieve gains in wetland quantity, quality, and biological diversity where possible.

## Learn more about:

- Minnesota wetlands at: <http://www.dnr.state.mn.us/wetlands/index.html>
- Wetland monitoring strategy: <http://www.dnr.state.mn.us/waters/wetlandmgmt.html>

# Enforcement of the Wetlands Conservation Act

Indicator: Number of enforcement hours on the Wetlands Conservation Act (WCA)

## Why is this indicator important?

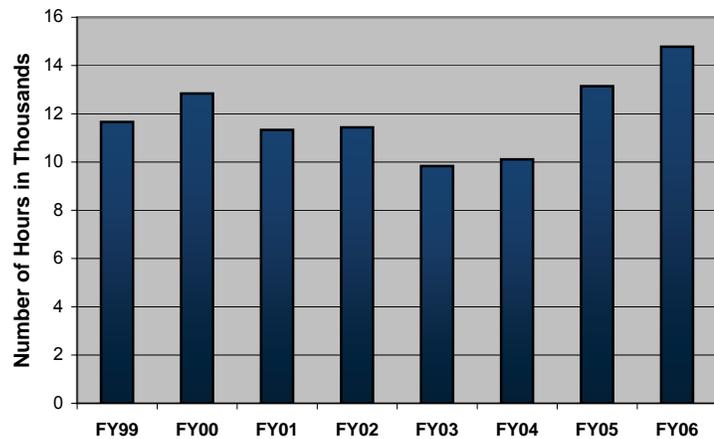
Wetlands are extremely important for sustaining fish, wildlife, and other living organisms. They are also important to human health because they absorb, filter, and clean polluted surface water before it enters lakes, rivers, and underground drinking water supplies. Wetlands serve as holding areas for water, reducing flood damage and soil erosion downstream. Wetlands are also important in the development of commercial activities such as vegetable farming, peat mining, sod farming, and minnow and timber harvesting. Wetlands are a key resource that will enable DNR to protect and preserve wildlife populations and help provide clean water in the state. It is imperative that DNR work to preserve remaining wetlands and restore lost wetland acreage.

## What is DNR doing?

DNR uses conservation officers and wetland enforcement officers (WEO) to enforce the provisions of the Wetlands Conservation Act (WCA). Because WCA cases can be very complex and involve multiple jurisdictions, WEOs have intensive training and expertise in water resources and related issues. WEOs work with landowners, private business professionals such as real estate agents, and various local, state, and federal agencies to ensure the integrity of WCA. Over the past decade, countless wetlands have been protected or restored thanks to conservation officers and WEOs. In 2006 DNR initiated Operation Bird's-Eye View, a statewide wetlands enforcement operation relying on aviation support, conservation officers, and wetland enforcement officers.

**Target: Continue Operation Bird's-Eye View in FY 2007.** As part of Operation Bird's Eye View, DNR increased the number of hours spent on WCA enforcement by 50% in FY 2006. In FY 2006 Operation Bird's-Eye View identified hundreds of potential wetlands violations, received substantial media coverage, and increased public awareness of wetlands violations. During FY 2007 DNR will continue to focus on illegal draining and filling of wetlands.

## WCA Enforcement Hours



Low enforcement hours on the Wetlands Conservation Act. DNR increased the number of hours spent on WCA enforcement by 50% between FY 2003 and FY 2006.



Patrolling for wetlands violations during Operation Bird's-Eye View.

Learn more about:

# Aquatic Invasive Species

Indicators: Number of water bodies infested with Eurasian watermilfoil and zebra mussels

## Why are these indicators important?

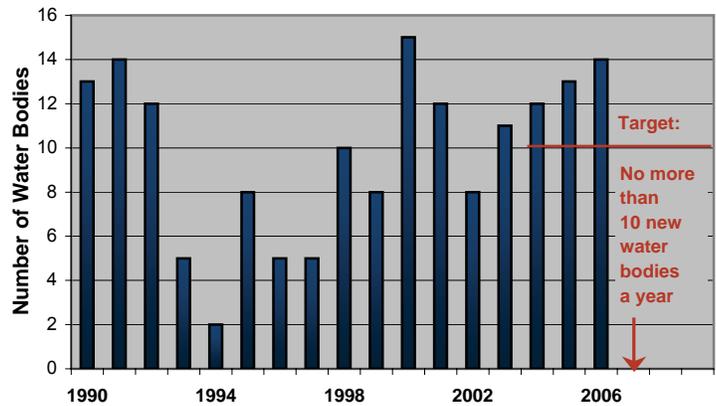
Eurasian watermilfoil and zebra mussels are invasive species that harm Minnesota waters. Eurasian watermilfoil can displace native plants, degrade habitat for fish and wildlife, and limit lake recreation. Zebra mussels can block industrial water intakes (increasing operating costs), alter aquatic food webs, and eliminate populations of native mussels. Unintentional transport on trailered watercraft and equipment is believed to be the primary means of spread for these aquatic species.

## What is DNR doing?

DNR works to increase public awareness and enforce related laws. DNR stations some 40 seasonal watercraft inspectors each year at public water accesses, primarily on infested water bodies, where they inspect boats and inform boaters about invasive species and actions they can take to prevent spread. Numbers of water bodies with Eurasian watermilfoil and zebra mussels likely are much lower than they would have been without these efforts. DNR surveys Minnesota boaters and monitors the distribution of these non-native species to evaluate containment efforts. Ninety percent of Minnesota boaters responding to a question in a 2000–2001 survey said they took action to avoid spreading aquatic invasive species, an increase over a similar survey in 1994, when 70 percent of Minnesota boaters said they took action.

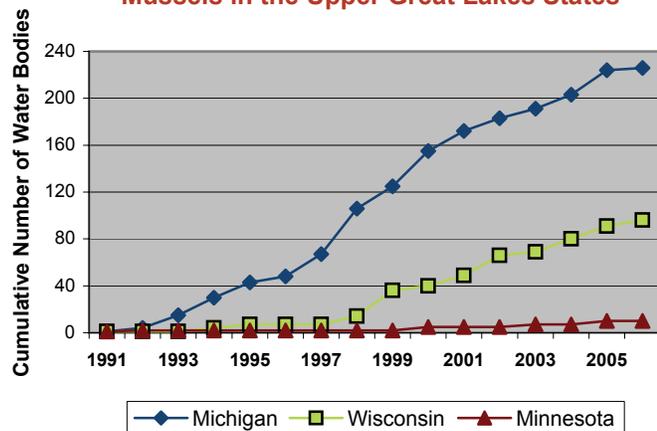
**Target: Limit the rate of spread of Eurasian watermilfoil to no more than 10 new water bodies per year, and prevent spread of zebra mussels to waters not connected to previous infestations.** The best way to reduce impacts of harmful invasive nonnative organisms is to prevent their establishment. DNR is working to prevent introductions of new invasive species such as Asian carp.

Number of Additional MN Water Bodies Where Eurasian Watermilfoil was Found



DNR control efforts have helped keep Eurasian watermilfoil from spreading to additional water bodies at a rate slightly higher than the target of 10 new water bodies per year.

Number of Water Bodies with Zebra Mussels in the Upper Great Lakes States



Minnesota populations of zebra mussels are relatively low—and DNR aims to keep them that way.

## Learn more about:

- Other aquatic invasive species at: <http://www.dnr.state.mn.us/invasives/index.html>

# Waters and Watersheds Key Indicator Gaps

## Indicator Gaps:

Although the indicators in this report have data of sufficient quality and coverage to support trend reporting, we recognize gaps in our ability to report on important natural resources trends. The following is a preliminary list of important indicators that require either additional data or new monitoring efforts. When baseline and trend data for new indicators are available, cooperative efforts will be needed to establish conservation targets.

A preliminary list of indicator gaps includes:

Indicator to measure water storage capacity and flood damage reduction in the Red River Valley
Indicators to track shoreline development and habitat loss trends (see Fisheries and Wildlife)
Indicators to measure of lake quality and pressures related to septic systems, development, etc.
Indicators to measure nonpoint source pollution
Indicators to measure the state's drainage infrastructure; trends in tile line construction; and consequences for flooding, habitat conservation, and water quality

# Section Four: Forests

## Minnesota's Forests Will Be Managed for a Full Range of Forest Values

A place to hunt and hike. Raw material for a thriving industry. Habitat for songbirds. Everyone has a vision of what Minnesota's forests should be.

The DNR has a vision, too. We know that forests are important to people and integral to Minnesota's environmental and economic health. They provide clean water, wood products, fish and wildlife habitat, biodiversity, recreational opportunities, and more. When we look to the future we envision for our forests, we see interconnected expanses of healthy forest land . . . a diversity of species and ecosystems that produce a variety of benefits . . . a strong, sustainable natural resource that meets current needs while remaining healthy and productive for future generations.

### A Vision for the Future

We envision a forest resource that is **substantial** and **protected**. We want this future forest to be as big as, or bigger than, our forests today. With incentives, private landowners will protect existing forest and manage forests where tree cover has been removed. Corridors will link tracts of forest land and provide wildlife the extensive habitat it needs to thrive.

We envision a forest that is **healthy** and **resilient**. Damage from invasive insects and diseases will be minimal. Young-, middle-, and old-aged forests will all have a place in the picture. Uncommon and rare habitats will be protected and restored. Fire will be a part of the forest ecosystem, but we will remain committed to protecting people and property from harm, including reducing the risk of wildfire in and adjacent to communities.

We envision a forest that is **sustainably managed** to provide a **diversity of benefits**—ecological, economic, and recreational—for current and future generations. State forest lands will be third-party certified as well-managed forests. Improved forest science “tools” and diversification of forest management practices will help keep the forest-based industry vibrant while maintaining forest health and our ability to meet nontimber needs.

In this ideal future forest, recreational opportunities will be many and varied. This includes both motorized and nonmotorized trail use, and the management needed to reduce conflicts and natural resource damage as people have fun in the forest.

To move vision toward reality, we must address a series of trends that are shaping our forests today. Some, such as partnerships across forest ownerships, help us move in the direction of our vision. Others present formidable challenges to conservation progress.

### Critical Trends

Certain kinds of **development** impede Minnesota from achieving this desired future for our forests. In recent years forest land has been converted to other uses—primarily residential—at a rate of 3,600 acres per year. Thousands of acres of northern forest lands owned and managed for decades by timber and mining companies are being sold in large chunks to Timber Investment Management Organizations (TIMOs). TIMOs and the investors they represent generally see these lands as being worth more in real estate transactions than as a source of trees or wildlife habitat. Private forest lands

### DNR – What We Do

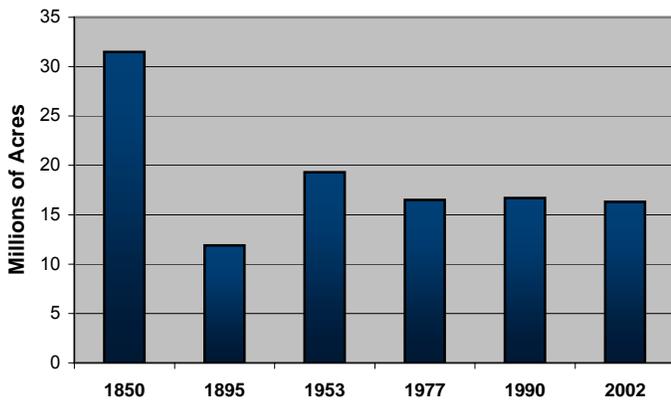
- Protect people, property, natural resources from wildfire harm
- Manage 4.5 million acres of forest land for multiple values
- Help landowners and communities manage forest resources
- Produce native tree seedlings for conservation planting
- Implement policies of the Sustainable Forest Resources Act

are thus being divided into smaller and smaller tracts. The distribution of this parcelization increases risk of wildfire, reduces forest quality and public access, and makes forest lands harder to manage.

Threats to forest **ecosystem health** also work against us. Fragmentation of large tracts of forest reduces habitat for certain wildlife species. Changing forest age classes, increasing introduction of invasive species, and climate change all contribute to greater threat from disease and destructive

wildfires. Animal damage, disease, and unique habitat requirements challenge our ability to regenerate certain types of forests.

### Minnesota Forestland



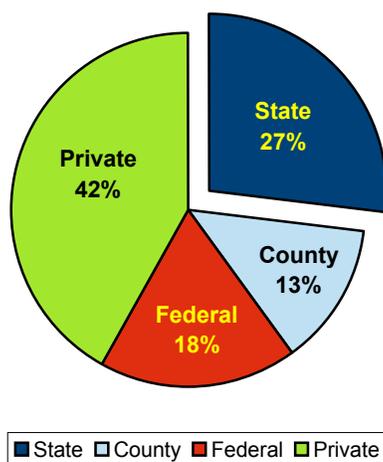
Minnesota's forested acreage dropped dramatically in the late 1800s. Currently, nearly one-third of the state is forested.

Source: 1953 – 2002, U.S. Forest Service - FIA; 1850, GEIS Maintaining Productivity Tech.

Encouraging trends include increased interest in **forest certification**, application of new **science-based tools**, and **public awareness**. These hold much promise for our forests' future as consumers increasingly demand—and producers increasingly supply—wood products that have been produced in a sustainable manner.

Changes in **forest-based economics and recreation** call for creative approaches to meeting multiple demands. The fate of our forests is being influenced by increasing global competition in the forest products industry, changes in the species and size of timber used by forest industries, increasing demand for woody biomass, changing forest land ownership, shrinking access to forest land for public recreational use, and growth in demand for off-highway vehicle recreation opportunities.

### Minnesota Forest Land Ownership



About one-quarter of Minnesota forest land is state managed.

Source: 2002 U.S. Forest Service - FIA

Our vision paints the picture of a desired future. Trends affect the path we must take to achieve it. DNR's task today—and it is a big one—is to work within the context of these trends to achieve this vision. The targets and indicators that follow are signposts along the path by which we plan to do so. Each paired indicator and target delineates one part of the path. Together they will move us toward a healthy, sustainable future for Minnesota's forests.

# Forests Indicators & Targets

Indicator	Target	
<b>State forest land management</b>		
Acres of state-administered lands approved for forest certification	Maintain certification on 4.8 million acres of state-administered forest lands	78
Number of cords of wood offered for sale on DNR lands	Offer 755,000 to 835,000 cords of timber for sale from DNR lands in FY 2007	79
Acres of protected old-growth forest protected on DNR lands	Maintain a 44,000-acre network of designated DNR old-growth forest sites	80
Percentage of extended rotation forest (ERF) maintained on DNR lands	Target to be established at the landscape level	81
Early successional forest maintained on DNR lands	Target to be established at the landscape level	82
Net annual growth of growing stock on DNR-administered lands	Significantly improve wood fiber production on DNR forest lands by 2010	83
Acres of DNR forest lands reinventoried	Reinventory 104,000 acres of DNR forest land in FY 2007	84
<b>Fire management</b>		
Number and acres of wildfires suppressed by DNR	No target set	85
<b>State-of-the-art technology and science</b>		
Forested Native Plant Community Classes with silvicultural interpretations	Produce silvicultural interpretations for at least 10 forested Native Plant Community Classes in 2007 and each year until 2012	86
Number of Subsection Forest Resource Management Plans (SFRMPs) completed	Complete most SFRMPs by 2007, and all by 2008	87
Satisfaction levels of Minnesota state forest recreational users	Complete two additional recreation use studies in Minnesota state forests by 2009	88
<b>Private forest stewardship</b>		
Acres of private forest lands with forest stewardship plans	Complete 65,000 acres of forest stewardship plans in FY 2007 with 18,000 acres completed by DNR staff and the remainder by the private sector	89
Acres of permanent forest conservation easements	Help the Partnership acquire up to 75,000 acres of permanent forest conservation easements by 2008	90
For forest education indicator see section on Natural Resources Stewardship Education		108

# Forest Certification

Indicator: Acres of state-administered lands approved for forest certification

## Why is this indicator important?

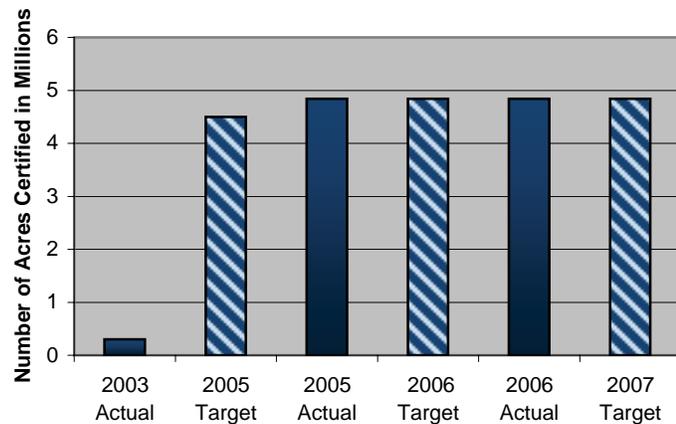
Forest certification (specifically, third-party audited certification) is a credible system to evaluate and verify sustainable forest management practices. It is becoming a common benchmark for forest management organizations. Certification is helping DNR continually improve its forest management practices, ensuring a sustainable supply of forest resource products and services within diverse, healthy, and productive forests. In addition, Minnesota's forest market competitiveness is improved with each additional certified landbase, be it state, county, industrial, or privately held.

## What is DNR doing?

In 1998, DNR and Aitkin County Land Department received third-party certification of state- and county-administered forest lands in Aitkin County. These were the first public forest lands to be certified in the United States. DNR used this pilot project to better understand the costs and benefits of forest certification. Since then, forest certification has become a more pressing consideration for forest managers worldwide. In response to anticipated increases in market demand and to the *Governor's Task Force Report on the Competitiveness of Minnesota's Primary Forest Products Industry*, DNR committed to and completed third-party certification on 4.8 million acres of state-administered forest lands.

**Target: Maintain certification on 4.8 million acres of state-administered forest lands.** In the coming years, DNR will complete actions necessary to maintain certification. In December 2005, 4.8 million acres of state lands were dual certified by two forest certification systems, the Sustainable Forestry Initiative and Forest Stewardship Council. These two systems certified 100% of lands administered by the DNR Division of Forestry and Section of Wildlife in the forested regions of the state. The other indicators in this section reflect key criteria used by forest certification systems to evaluate and verify sustainable forest practices. The DNR will be working to address a number of corrective action requests (CAR). CARs are areas of forest management, identified by third-party certification auditors, where DNR needs to concentrate additional resources or implement new procedures to resolve a gap between the certification standard and DNR's management of state-administered forest lands.

## Forest Certification



Forest certification. DNR completed certification of 4.8 million acres of state-administered forest lands in 2005. DNR's annual target is to maintain certification of these lands.



Over the next two years, DNR will work to maintain certification by addressing minor corrective action requests identified by the certification auditors.

## Learn more about:

- The DNR's forest certification project at: <http://www.dnr.state.mn.us/forestry/certification/index.html>
- Forest Stewardship Council information at: <http://www.fscus.org>
- Sustainable Forestry Initiative information at: [www.aboutsfi.org/core.asp](http://www.aboutsfi.org/core.asp)

# DNR Timber Sales

Indicator: Number of cords of wood offered for sale on DNR lands

## Why is this indicator important?

DNR sets targets to ensure a predictable, sustainable supply of quality wood from DNR-administered lands. With 27 percent of the state's timberland, DNR is a significant source of raw materials for forest products industries. Sales from DNR lands generate funds for schools and public services. Also, harvests create habitat for many kinds of wildlife.

## What is DNR doing?

With citizen and legislative guidance, DNR balances timber production with other goals such as wildlife, recreation, water quality, and biodiversity. The amount of timber for sale on DNR lands is determined through the Subsection Forest Resource Management Planning (SFRMP) process. This process determines sustainable harvests on state lands over the near term (currently seven to 10 years) with projections over 10 to 50 years. DNR also promotes sustainable forest management by private landowners.

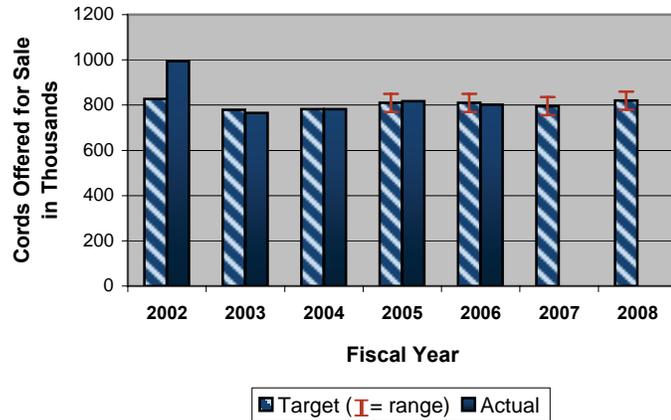
**Target: Offer 755,000 to 835,000 cords of timber for sale from DNR lands in FY 2007.** DNR has met or exceeded targets in most recent years. Selling 755,000 to 835,000 cords of timber results in timber harvests from DNR lands that generate approximately \$20 million in direct revenue to the state and 40,000 acres of habitat. Long-term projections will be possible once Forest Subsection Plans are complete (see SFRMP indicator).

Total annual harvest (all forest lands, all ownerships) is about 3.6 million cords. The 1994 Generic Environmental Impact Statement on Timber Harvesting and Forest Management in Minnesota (GEIS) concluded that a harvest of up to 4.9 million cords appears sustainable, "providing recommended mitigation strategies are implemented within the next few years." (See Old-Growth Forest and Extended Rotation Forest indicators for examples of mitigation.) Including imports, the primary forest products industry in Minnesota consumes 4.2 million cords of wood, provides over 22,400 jobs, and contributes \$6.9 billion to the state's economy each year. Based on the proportion of total wood consumed, approximately 20% of these contributions can be attributed to timber harvested from state forest lands.

## Learn more about:

- Timber harvesting on state lands at: <http://www.dnr.state.mn.us/forestry/harvesting/index.html>
- Forest mitigations and the GEIS at: <http://www.frc.state.mn.us>
- Statewide timber harvest at: <http://www.mnplan.state.mn.us/mm/goal.html>
- Minnesota's Forest Resources at: [http://files.dnr.state.mn.us/forestry/um/2006mn\\_forest\\_resources.pdf](http://files.dnr.state.mn.us/forestry/um/2006mn_forest_resources.pdf)

## Number of Cords Offered for Sale on DNR Lands



Number of cords of wood offered for sale on DNR lands. DNR has met or exceeded its timber-production targets in most recent years.



DNR lands are a major source of wood and fiber for Minnesota's forest products industry.

# Old-Growth Forest

Indicator: Acres of protected old-growth forest on DNR lands

## Why is this indicator important?

Old-growth forests are a rare type of old forest (typically more than 120 years old) that provide special habitat for plants and wildlife, serve as scientific benchmarks, and have aesthetic appeal. Before European settlement, about half of Minnesota's forests were old growth. Today that figure is less than 4 percent. As part of sustainability goals, DNR has set targets to ensure that older forests persist in Minnesota.

## What is DNR doing?

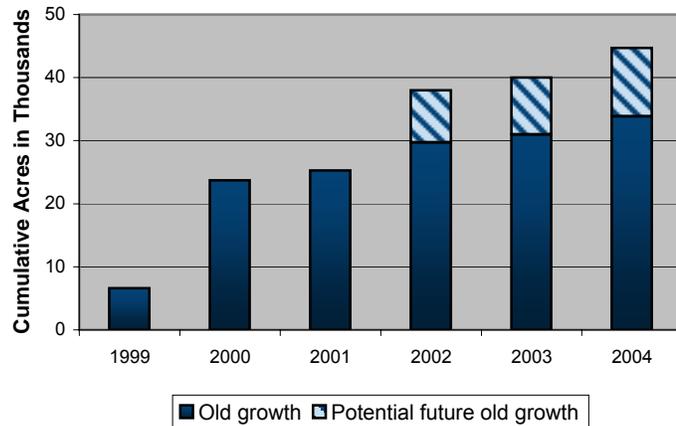
In 1994 DNR, forest industry, and environmental interests committed to "identify and protect the highest quality remaining natural old-growth forest communities." DNR set preliminary targets, conducted a statewide inventory, and ultimately designated a 44,000-acre network of old-growth forest sites (including Itasca State Park). DNR manages these sites for old-growth characteristics and they are reserved from timber harvest.

DNR will maintain the old-growth forest network and create connected, mature forest landscapes where appropriate, using corridors of extended rotation forests (see extended rotation forest indicator). This is a recommended mitigation in the 1994 Generic Environmental Impact Statement (GEIS). Reserving old growth also fulfills forest certification requirements (see forest certification indicator).

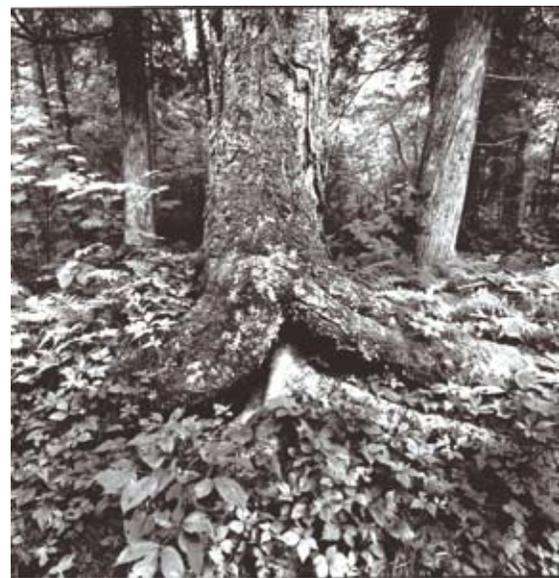
**Target: Maintain a 44,000-acre network of designated DNR old-growth forest sites.** DNR's old-growth guideline is adaptive in response to new information. In 2006, 33 acres of old-growth white and red pine near Burntside Lake were added to the network. As DNR considers new, high quality stands, some of the lowest quality stands may be removed from the network. Stakeholders will be consulted if the overall network changes by 10% relative to the 2006 designated acreage.

In 2007, DNR will initiate a process for defining and establishing landscape targets for lowland conifer old-growth (definitions and targets for lowland conifers were not included in DNR's 1994 Old-growth guideline).

## Old Growth Forests



Old-growth forest acres on DNR lands. DNR will maintain a 44,000-acre network of old-growth forest sites.



STEVE SCHNEIDER

This old-growth yellow birch/white cedar forest at Crosby Manitou State Park provides valuable habitat, scientific information, and beauty.

## Learn more about:

- DNR old-growth forests at <http://www.dnr.state.mn.us/forests/oldgrowth/index.html>

# Extended Rotation Forest

Indicator: Percentage of extended rotation forest (ERF) maintained on DNR lands

## Why is this indicator important?

Extended rotation forests (ERF) are DNR timberlands that are maintained beyond traditional harvest ages to provide old forest conditions important for a wide array of forest values, including habitat for plants and wildlife, aesthetics, and sawtimber production. As such, ERF complements DNR old-growth forests as a way to maintain all age classes of forest on Minnesota landscapes.

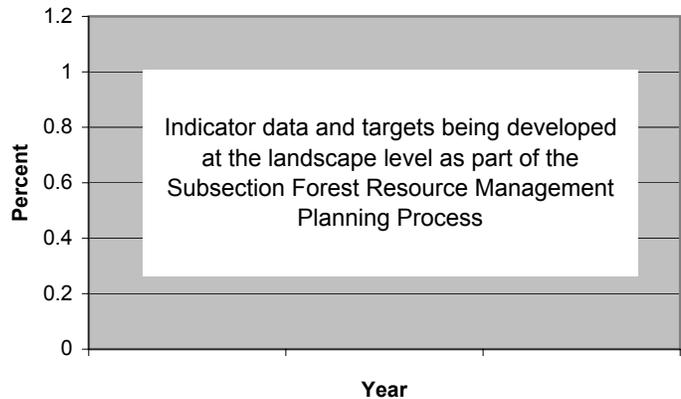
## What is DNR doing?

Recognizing that older forests of some cover types, especially aspen, birch, and jack pine, although currently common, would become increasingly uncommon as timber harvest levels increased in the future, DNR adopted the Extended Rotation Forestry (ERF) Guideline in 1994. Since then, DNR has been identifying the amount and location of DNR timberlands to be managed as ERF through its forest land management planning process. Factors considered in determining the amount of ERF include the desire to balance old and young forest habitat needs, historic levels of old forest in particular landscapes, the effects of ERF on timber production (quality and quantity), and the appropriate placement of ERF within a landscape (e.g., adjacent to or connecting old-growth forest, within riparian areas, along travel corridors).

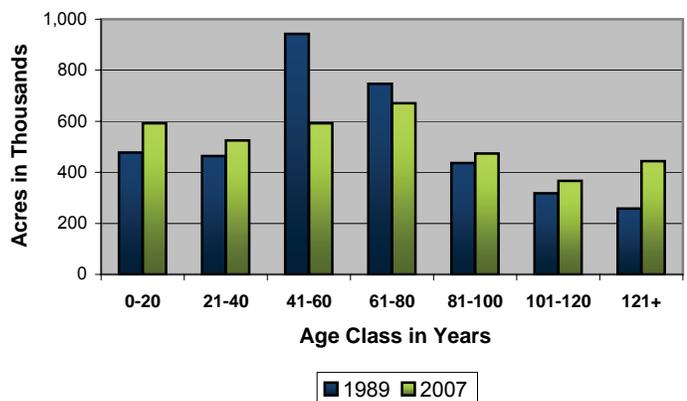
### **Target: Target to be established at the landscape level.**

DNR's ERF Guideline establishes 10 percent as the minimum percent of DNR timberlands within Ecological Classification System subsections that will be managed as ERF. However, the guideline does not establish a maximum percentage of ERF. Interdisciplinary DNR teams have been charged with determining the appropriate level of ERF within each planning subsection as part of the Subsection Forest Resource Management Plan development (SFRMP) development process. Given the varied conditions and characteristics of landscapes, the amount of ERF designated will vary across the state (see Subsection Forest Resource Management Plan indicator). ERF is one of the mitigation strategies recommended in the 1994 Generic Environmental Impact Statement (GEIS). The GEIS analysis assumed that 20% of state and federal timberlands would be managed as ERF. The GEIS did not establish 20% as a target, but rather as a realistic estimate given DNR and U.S. Forest Service policies at the time.

## Extended Rotation Forest



## DNR Forest Land by Age Class



Over the past 18 years, younger age-class forest on DNR lands has increased due primarily to timber harvesting. Older age-class forest has also increased.

## Learn more about

- DNR's Subsection Forest Management Plans at: <http://www.dnr.state.mn.us/forestry/subsection/index.html>

# Early Successional Forest

Indicator: Early successional forest maintained on DNR lands

## Why is this indicator important?

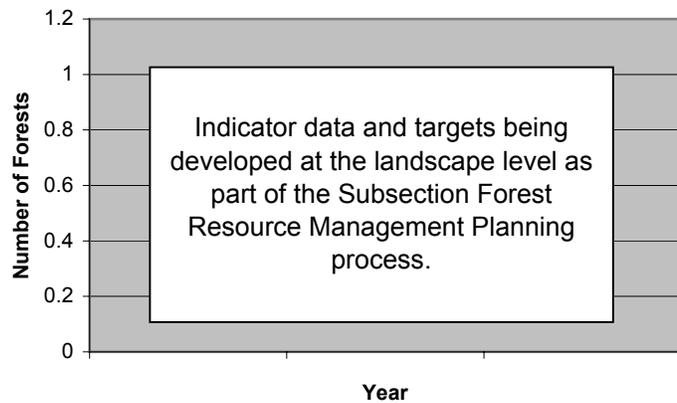
Early successional forests commonly depend on and develop first following disturbance (e.g., fire, timber harvesting, wind storms). They include major forest types such as aspen, jack pine, and birch. Another dimension of early successional forest is how much of the forest is in younger age classes. Early successional forest types and young age classes provide forest conditions important for a wide array of forest values, including habitat for plants and wildlife, wood production (both quantity and quality), forest health, and aesthetics. As such, early successional forests complement DNR old-growth and extended rotation forests in efforts to maintain all forest age classes on Minnesota landscapes.

## What is DNR doing?

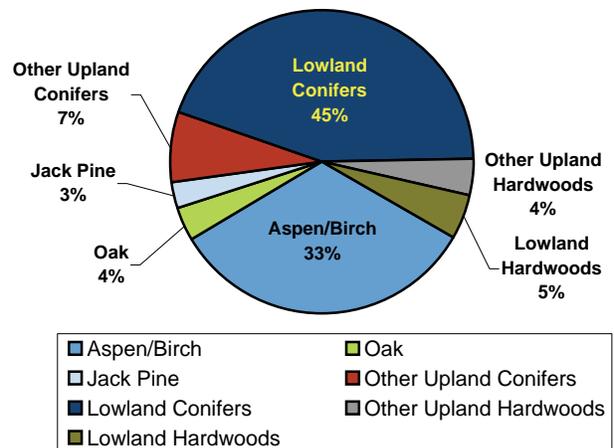
DNR is determining the desired amount of early successional forest on DNR lands through its interdisciplinary Subsection Forest Resource Management Plan (SFRMP) development process. SFRMP teams determine the desired amount of short- and long-term conversion to (and from) early successional types and the amount of these types that will be returned to younger age classes (primarily through timber harvest).

**Target: Target to be established at the landscape level.** SFRMP teams will determine desired levels of early successional forest types (see Subsection Forest Resource Management Plans indicator). Target levels are based on direction from Minnesota Forest Resources Council landscape committees, estimates of historic conditions, landscape capabilities, effects on timber production, and wildlife habitat needs. Achieving landscape targets for maintaining desired levels of younger age-class forests depends on timber harvest and availability of markets for timber (see DNR Timber Sales indicator). Ensuring early successional forests are adequately represented in appropriate landscapes will help meet targets for important wildlife species (see Ruffed Grouse indicator).

## Early Successional Forest



## DNR Forest Composition



Aspen, birch, oak, and jack pine (the primary early successional forest types) currently comprise 40 percent of DNR forest lands. These types make up more than 50 percent of all forest land in Minnesota.

## Learn more about

- DNR's Subsection Forest Management Plans at: <http://www.dnr.state.mn.us/forestry/subsection/index.html>
- Aspen at: <http://www.dnr.state.mn.us/volunteer/sepoct00/aspen.html>
- Jack pine at: [http://www.dnr.state.mn.us/trees\\_shrubs/conifers/jackpine.html](http://www.dnr.state.mn.us/trees_shrubs/conifers/jackpine.html)
- Paper birch at: [http://www.dnr.state.mn.us/trees\\_shrubs/deciduous/paperbirch.html](http://www.dnr.state.mn.us/trees_shrubs/deciduous/paperbirch.html)

# Wood Fiber Productivity

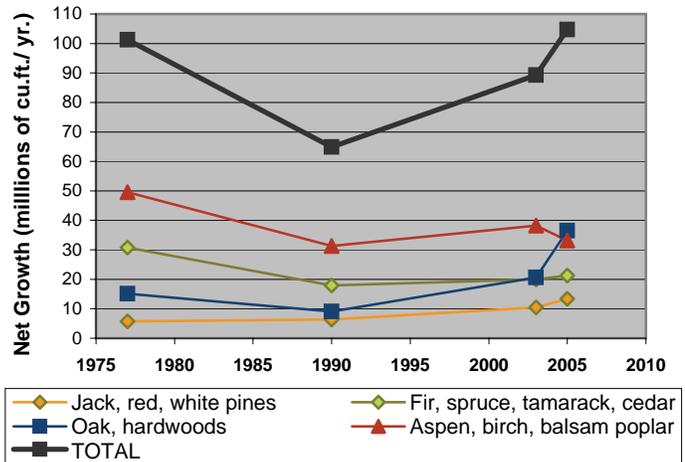
Indicator: Net Annual Growth of growing stock on DNR-administered lands

## Why is this indicator important?

The 1994 Generic Environmental Impact Statement on Timber Harvesting and Forest Management in Minnesota recommended increasing the wood fiber productivity of timberlands to help mitigate the potential effects of current and increased harvest levels. The 2003 Governor's Task Force on the Competitiveness of Minnesota's Primary Forest Products Industry also listed as a priority increasing wood fiber productivity while conserving Minnesota's forest lands.

Managing forests to improve tree growth and wood fiber production can help increase timber supply, build resistance to disease and insects, accelerate the development of old forest characteristics, and reduce fire danger.

## Net Growth of Growing Stock on DNR-Administered Timberlands



While there are a number of ways to assess wood fiber production, one of the more reliable methods is average net annual growth of growing stock.

## What is DNR doing?

DNR increases wood fiber production by regenerating vigorous young forest stands through harvest (see DNR Timber Sales indicator); planting and seeding harvested and damaged sites; thinning overcrowded stands to improve vigor and reduce competition; monitoring and reducing the impact of harmful insects, diseases, and exotic species; and matching tree species and management techniques to individual sites through its Ecological Classification System (see Ecological Classification System indicator). Timber growth rates today are affected by management activities and natural events that occurred long ago, and it may take years for the effects of current actions to become evident.

**Target:** *Significantly improve wood fiber production on DNR forest lands by 2010.* Minnesota Forest Inventory and Analysis (FIA) data will indicate whether growth rates are improving. The FIA updates about 20% of the data each year. As a result, best estimates of net growth as an indicator of productivity will be available every five years beginning in 2003. Useful interim estimates will be available but will be based on a subset of the data and should be interpreted with care. Although FIA data collection and analysis methods have changed over time, statewide net growth data are useful in assessing long-term trends in forest productivity.

## Learn more about:

- The Governor's Advisory Task Force on the Competitiveness of Minnesota's Primary Forest Products Industry report at: <http://www.dnr.state.mn.us/forestry/index.html>
- The 1994 Generic Environmental Impact Statement on Timber Harvesting and Forest Management in Minnesota at: <http://www.frc.state.mn.us/SFRA/GEIS.htm>

# Forest Inventory

Indicator: Acres of DNR forest lands re inventoried

## Why is this indicator important?

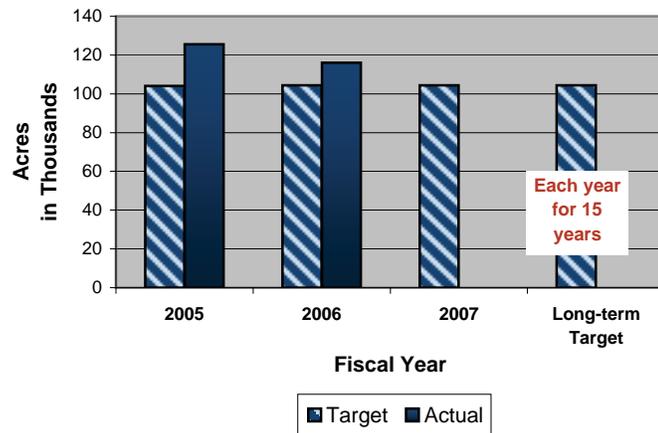
Forests are constantly changing due to growth and aging, succession, fire, windstorms, insects and diseases, and other factors. DNR needs reliable information about the forest lands it manages in order to make the best forest management decisions. It is vitally important that management-level forest information is periodically and regularly updated, primarily through field reinventory.

## What is DNR doing?

The primary source for information about DNR forest lands is the forest inventory module (FIM). The FIM is a stand-level forest inventory that captures essential information about every forest stand on more than 4 million acres of DNR forest land. It is the basic data set from which decisions are made about if, when, where, and in what manner DNR forest stands will be treated. Information gathered includes overstory and understory tree species, stand age, timber volumes, site productivity, shrub and ground species, insects and diseases, and other specific site conditions.

**Target: Reinventory 104,000 acres of DNR forest land in FY 2007.** The target is 100 percent of the long-term annual reinventory target determined to be necessary by the DNR to continuously update and improve the FIM inventory. The long-term target is intended to provide a complete reinventory cycle every 15 years.

## Acres of DNR Forest Lands Re inventoried



Acres of DNR forest lands re-inventoried. The target for FY 2007 is 100 percent of the long-term annual re-inventory target.



Good forest management rests on the foundation of accurate and regularly updated forest information.

## Learn more about:

- DNR's Cooperative Stand Assessment inventory at: <http://www.ra.dnr.state.mn.us/forestview> and [http://www.ra.dnr.state.mn.us/forestview/csa\\_doc.html](http://www.ra.dnr.state.mn.us/forestview/csa_doc.html)

# Wildfire

Indicator: Number and acres of wildfires suppressed by DNR

## Why is this indicator important?

DNR is charged by statute with preventing and suppressing wildfires on 45.5 million acres of public and private land in Minnesota. Wildfire control efforts under state authority originated in the early 1900s after a series of devastating wildfires destroyed Hinckley, Baudette, Chisolm, and Cloquet. Expanding residential and seasonal home development in forested areas is increasing the need to protect life, property, and natural resources from wildfires.

## What is DNR doing?

DNR fulfills its charge through three main categories of activities:

- prevention, including education (e.g., Smokey Bear, fire prevention week, school visits); and enforcement of state wildfire and open burning statutes (Minnesota Statutes, Chap.88)
- presuppression, including training firefighters and support personnel; developing and maintaining partnerships with other fire protection agencies; operating the Minnesota Interagency Fire Center; maintaining a national interagency fire equipment cache; contracting for heavy ground and aerial suppression equipment; maintaining a radio communications network; and developing mobilization and dispatch plans
- suppression accomplished by a balanced force of firefighters, support personnel, and aerial and ground equipment
- mitigating wildfire risk via Firewise Structures and Communities' activities (e.g., fuel reduction)

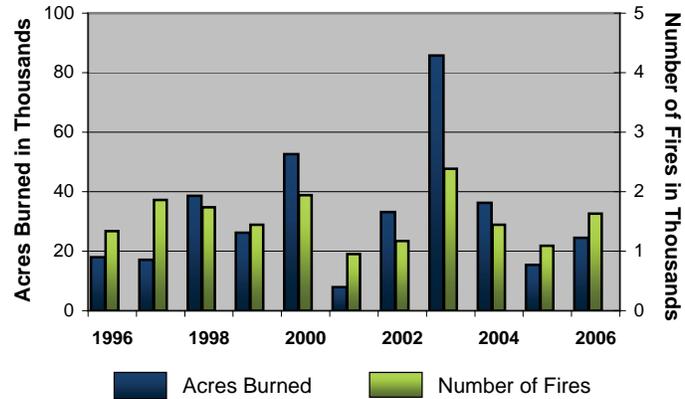
DNR recognizes that forest fuel loads (and wildfire risk) are influenced by the type, amount, and location of forest management practices such as timber harvesting, thinning, and prescribed burning. Related indicators include DNR Timber Sales and Wood Fiber Productivity.

**Target: No target set.** Wildfires are not predictable and vary widely from year to year, primarily due to weather. Because DNR must respond to wildfires regardless of how many occur, wildfire suppression is not suited to target setting. However, the number and severity of wildfires can dramatically affect on DNR's ability to achieve other targets since DNR must divert resources as needed to suppress wildfires.

## Learn more about:

- Wildfire at: <http://www.dnr.state.mn.us/forestry/fire/index.html>
- Prevention at: <http://www.dnr.state.mn.us/firewise/index.html>

## Wildfires Suppressed in Minnesota



The number and severity of wildfires vary considerably from year to year based on ground moisture and weather. DNR must respond to wildfires; the severity of a wildfire season affects DNR's ability to achieve other forest targets.



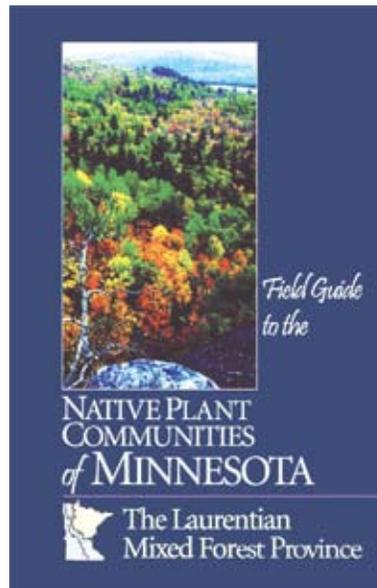
DNR's wildfire prevention and suppression efforts protect public safety, property, and natural resources.

# Ecological Classification System

Indicator: Percent of Forested Native Plant Community Classes with Silvicultural Interpretations

## Why is this indicator important?

An Ecological Classification System (ECS) consists of maps, databases, and field guides that provide a scientific framework for managing natural resources. ECS products help us understand forests' full potential to produce timber and wildlife and protect water and soil. They are essential for interdisciplinary communication and forest resource assessment. They are the link between landscape-level goals and what a forester chooses to do on a 20-acre timber sale. ECS supports other indicators of sustainable forest management. For example, ECS products are required for some third-party forest certification systems (see Forest Certification indicator), and they help match appropriate silvicultural approaches to forest sites to achieve desired outcomes.



Field Guide to one of the ECS provinces

## What is DNR doing?

The DNR recently published field guides to the Native Plant Communities of the state so that field managers can recognize and manage vegetation using ecological principles. These products mark the culmination of nearly 20 years of research and data acquisition by DNR and cooperating agencies. From 2004-2006 DNR provided two days of ECS training to all DNR Forestry field staff and their supervisors. The task now is to interpret how these communities work ecologically and communicate those concepts to foresters, wildlife managers, park managers, and other land managers.

**Target: Produce silvicultural interpretations for at least 10**

**forested Native Plant Community Classes in 2007 and each year until 2012.** By achieving this target all 52 forested classes will have silvicultural interpretations by 2012.

Silvicultural Interpretations in Development for 2007	
Central Rich Dry Pine Woodland	FDc24
Northern Dry-Sand Pine Woodland	FDn12
Northern Mesic Mixed Forest	FDn43
Southern Terrace Forest	FFs59
Central Dry-Mesic Oak-Aspen Forest	MHc26
Northern Mesic Hardwood Forest	MHn35
Northern Wet-Mesic Boreal Hardwood-Conifer Forest	MHn44
Northern Rich Mesic Hardwood Forest	MHn47
Southern Mesic Oak-Basswood Forest	MHs38
Northern Very Wet Ash Swamp	WFn64

In 2006 DNR developed prototype interpretations to guide the integration of ecologically sound silvicultural strategies into our forest management practices. As completed, draft interpretations will be presented on the DNR website so that DNR foresters can access and review them. We aim to have the silvicultural interpretations website available to the entire DNR and the general public in 2008. This site will serve as a forum for sharing management experience and foster the development of interpretations beyond silviculture. These include interpretations for game and nongame wildlife management, soil management, water resources, and conservation needs. In addition, DNR will maintain current ECS training levels of its field staff.

## Learn more about:

- The Ecological Classification System at: <http://www.dnr.state.mn.us/ecs/index.html>

# Subsection Forest Resource Management Plans

Indicator: Number of Subsection Forest Resource Management Plans (SFRMPs) completed

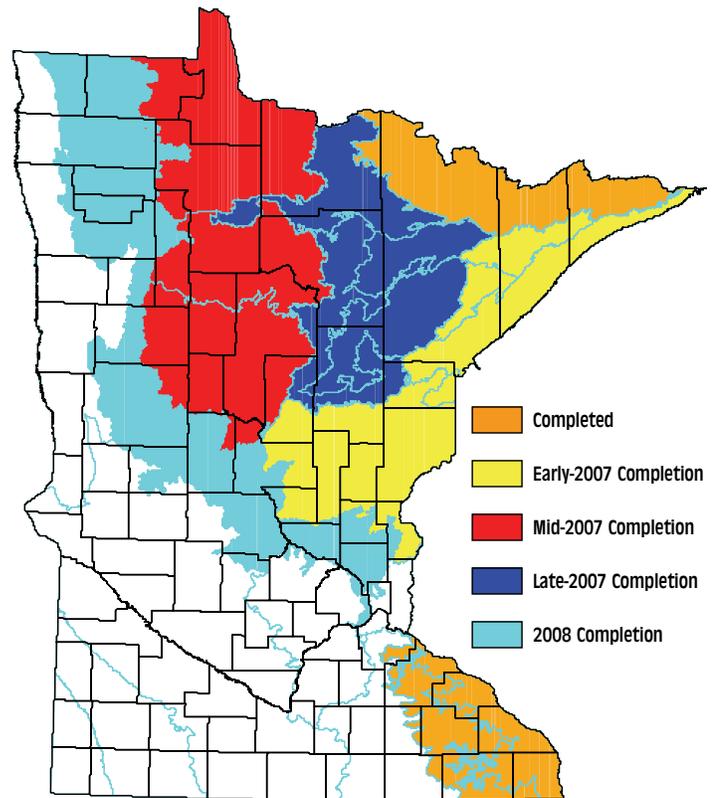
## Why is this indicator important?

DNR manages approximately 4.5 million acres of forest land, about one-quarter of all forest land in the state. DNR plans long-term (50-plus years) and short-term (10-year) vegetation management on these lands through Subsection Forest Resource Management Plans (SFRMPs). SFRMPs, which are based on ecological classification system (ECS) subsections rather than administrative boundaries, are the primary tool for determining the mix of values and products (e.g., wildlife habitat, rare features, timber) that will be provided and sustained through vegetation management on DNR-administered forest lands.

## What is DNR doing?

DNR began preparing SFRMPs in 2000. DNR is preparing SFRMPs for the 17 ECS subsections that are considered forested. To date, two SFRMPs are complete, and another three or four should be completed by the middle of 2007. Local interdisciplinary DNR teams produce the three primary components of the plans: assessment and issues, strategic direction, and a 10-year list of forest stands to be treated. Each component is made available for public review and comment.

**Target: Complete most SFRMPs by 2007, and all by 2008.** DNR will continue to evaluate and revise the SFRMP process to increase the efficiency, consistency, and quality of the resulting plans. DNR aims to be complete or near completion for most subsections with substantial DNR-administered forest lands by the end of 2007; remaining subsections in the transition zone will be complete or near completion by the end of 2008.



Subsection Forest Resource Plan projected completion dates. Forest planning by ecological subsection provides a comprehensive, landscape-level approach to sustaining forest resources.

## Learn more about:

- SFRMPs at: <http://www.dnr.state.mn.us/forestry/subsection/index.html>

# Forest Socioeconomic Studies: Forest Recreation User Satisfaction

Indicator: Satisfaction levels of Minnesota state forest recreation users

## Why is this indicator important?

Minnesota state forests provide multiple benefits for a variety of forest users. Recreation users visit state forests to pursue a diversity of activities including hunting, snowmobiling, OHV riding, nature observation, horseback riding, hiking, mountain biking, fishing, camping, and X-C skiing. Users participate in these activities for such reasons as escaping a hectic lifestyle, experiencing adventure, and being with family and friends. Satisfaction levels of recreation enthusiasts is one important indicator of state forest management.

## What is DNR doing?

DNR uses surveys and other social science methods to better understand people's use and enjoyment of natural resources and how this varies based on such factors as age, race, and income. This information helps DNR improve users' experiences while protecting natural resources. DNR has recently completed the Outdoor Recreation Study of the Foothills Forest Area. It summarizes information about recreation use and user satisfaction for recreationists participating in a diversity of activities. This study was the first of its kind. It helped DNR refine its methodology for conducting state forest recreation studies. DNR also conducts other types of social surveys included in the Conservation Agenda (see Angler, Hunter, and State Park Visitor Satisfaction indicators).

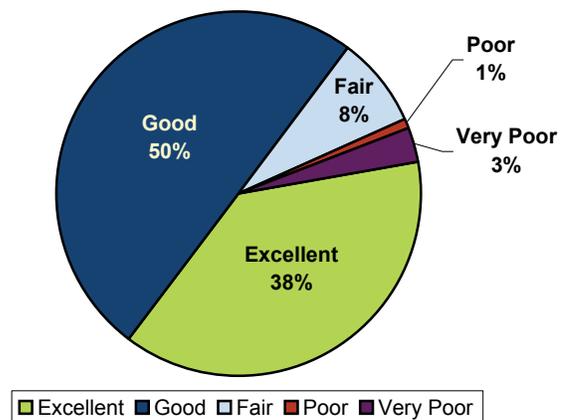
**Target: Complete two additional recreation use studies in Minnesota state forests by 2009.**

Before DNR can set and measure progress towards user satisfaction targets, DNR must first complete recreation use studies in more state forests. Progress will have to be evaluated carefully. For instance, some recreation users may exhibit higher or lower satisfaction levels based on activity or whether they are tourist or local visitors. Average satisfaction levels reported in this indicator may mask these differences. DNR analyzes more detailed measures from its studies to understand these relationships.



People enjoy Minnesota state forests through a variety of recreational activities.

## Quality of Experience Rating in Foot Hills State Forest



Quality of experience rating for users that entered the Foothills State Forest through a public entry. This rating comes from a single 2004 study. User satisfaction levels in state forests can differ by recreational activity as well as other factors.

## Learn more about:

- Forest recreation studies and other DNR surveys at: <http://www.dnr.state.mn.us/aboutdnr/reports/index.html>

# Private Forest Stewardship

Indicator: Acres of private forest lands with forest stewardship plans

## Why is this indicator important?

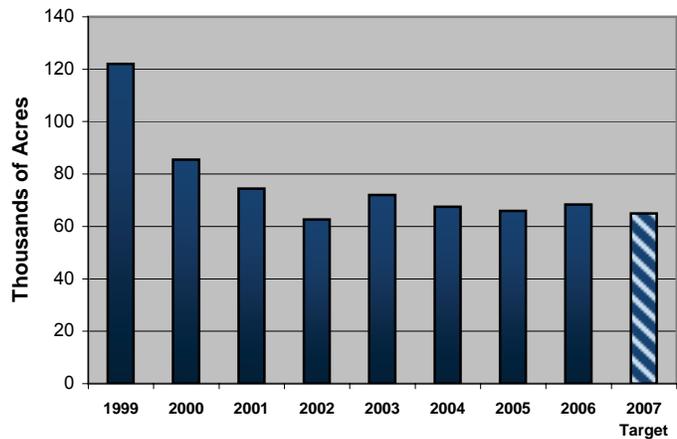
Some 147,000 individuals and organizations (excluding industry) own 40 percent of Minnesota's forest land. This land, much of which is in small woodlots, faces increasing development pressure. The Forest Stewardship Program offers management expertise and cost sharing for tree planting and other activities to private landowners who develop plans for sustainable forest management. Participating landowners pursue sustainable forestry goals, including improving wildlife, maintaining water quality, and applying sustainable timber harvesting.

## What is DNR doing?

Minnesota is a national leader in Forest Stewardship Program enrollment, with the highest percentage of available acreage enrolled among the 20 states in our region. We recently celebrated the enrollment of the millionth acre under a stewardship plan.

**Target: Complete 65,000 acres of forest stewardship plans in FY 2007 with 18,000 acres completed by DNR staff and the remainder by the private sector.** DNR's longer-term target is to have 50 percent (2.5 million acres) of nonindustrial private forest land (with parcels over 20 acres) under stewardship plans. Demand from landowners is higher than the availability of natural resource professionals to prepare plans.

## Forest Stewardship Plans Completed



Forest stewardship plans completed. More than 1.3 million acres have been enrolled in forest stewardship plans.



Stewardship plans promote sustainable management of private forest lands.

## Learn more about:

- Minnesota Forest Stewardship Program at: <http://www.dnr.state.mn.us/grants/forestmgmt/stewardship.html>
- National stewardship programs information: <http://na.fs.fed.us/stewardship/index.shtm>

# Forest Conservation Easements

Indicator: Acres of permanent forest conservation easements

## Why is this indicator important?

Thousands of acres of northern forest lands owned and managed for decades by timber and mining companies are being sold in large chunks to timber investment management organizations (TIMOs). TIMOs and the investors they represent generally see these lands as being worth more in real estate transactions than as a source of trees or wildlife habitat. Nearly 1 million acres of large, mostly undeveloped private tracts of Minnesota forests are at risk of being sold and converted into smaller parcels. This trend threatens wildlife habitat, timber resources, and outdoor recreation.

Conservation easements provide a critical, cost-effective tool to:

- provide long-term conservation of valuable blocks of undeveloped forestland
- maintain forest industry-related jobs
- maintain public recreational access
- preserve ecological functions of forest (e.g., habitat, air quality, water quality)
- keep corridors of undeveloped private forest connected to public forestland.

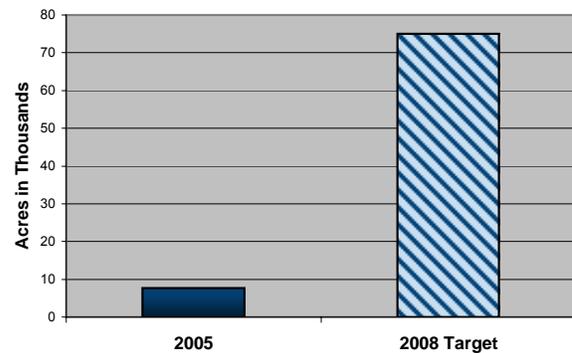
With the rate of development and growing land values in northern Minnesota, this window of opportunity to protect key, large blocks of contiguous undeveloped forest lands will be short-lived.

## What is DNR doing?

As of September 2005, DNR had purchased forest conservation easements on 7,640 acres of nonindustrial private forest lands primarily through the Federal Forest Legacy program. The recent and dramatic trends in the sale of large blocks of industrial forest lands calls for coordinated conservation action. DNR has joined with state, federal, and private partners under the banner of the Minnesota Forest Legacy Partnership to accelerate efforts to acquire forest conservation easements, primarily on large blocks of private forest lands.

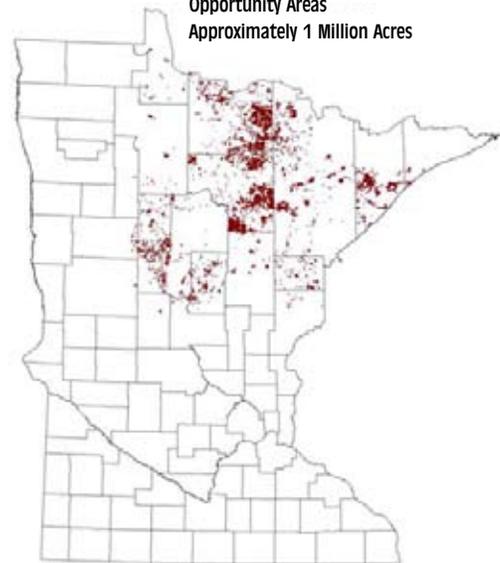
**Target: Help the partnership acquire up to 75,000 acres of permanent forest conservation easements by 2008.** The Forest Legacy Partnership is on schedule to meet this target. DNR and others involved in the partnership have raised nearly \$14 million towards the goal of \$26 million in funding from state, federal, and private sources. State funding is essential for leveraging private and federal monies.

## Forest Conservation Easements



The Minnesota Forest Legacy Partnership will focus attention on the immediate need to acquire permanent conservation easements on large blocks of private forest lands at risk of being sold and developed. The number of acres acquired will depend on land prices and willing sellers.

Large-Scale Forest Conservation Easements Opportunity Areas  
Approximately 1 Million Acres



Learn more about:

# Forests Key Indicator Gaps

## Indicator Gaps:

Although the indicators in this report have data of sufficient quality and coverage to support trend reporting, we recognize gaps in our ability to report on important natural resources trends. The following is a preliminary list of important indicators that require either additional data or new monitoring efforts. When baseline and trend data for new indicators are available, cooperative efforts will be needed to establish conservation targets.

A preliminary list of indicator gaps includes:

Indicator to measure forest productivity trends standardized across forest ownerships
Indicator to measure status and change in the extent, composition, and spatial patterns of forest habitats
Indicators to measure status and trends in type of, extent of, and damage from forest insects and diseases

# Section Five: Outdoor Recreation

## Minnesota Will Have a High-Quality and Diverse Outdoor Recreation System

Outdoor recreation provides countless benefits to both people and natural resources. It improves our health and well-being and enhances our connections to nature. It gives us a chance to connect with each other and with the world around us. It benefits the resort and tourism industry, boosts businesses and communities, and increases worker productivity. It strengthens our environmental ethic, enhances our commitment to protect natural resources, and encourages citizen involvement in conservation issues.

### A Vision for the Future

In the years ahead, we envision Minnesota’s natural resources continuing to provide a variety of **high-quality outdoor recreation opportunities** for our state’s residents and visitors. Outdoor enthusiasts will have access to public lands and waters. Lakes and rivers will be fishable and swimmable, and natural habitats will be conserved.

We envision an environment in which natural resources support a **diverse, sustainable range** of outdoor recreation opportunities. Our recreation landscapes will span the spectrum from primitive areas to heavily used trails and spaces in and near urban areas. Whatever the setting, recreation will not compromise the long-term health of the resource base. Natural features, vistas, and recreational waterways will be identified and protected. Populations of fish, wildlife, and plants will be conserved.

We envision a comprehensive outdoor recreation system that serves all Minnesotans. People of all abilities, backgrounds, cultures, and interests will have access to recreation opportunities and to the information and assistance needed to take advantage of and appreciate them. Motorized and nonmotorized recreation enthusiasts will all have high-quality recreation opportunities. Outdoor recreation will be available near population centers as well as less populated parts of the state. Opportunities will be coordinated across ownerships.

### DNR – What We Do

Manage an outdoor recreation system established by the Minnesota Legislature:

- state parks
- state recreation areas
- state trails
- state scientific and natural areas
- state wilderness areas
- state forests
- state wild and scenic rivers
- state water access sites
- state wildlife management areas
- state aquatic management areas
- other units, including small craft harbors



Gooseberry Falls State Park, on Lake Superior, is known for its spectacular waterfalls and scenic views, north woods wildlife, and historic Civilian Conservation Corps structures. The visitor center is a popular attraction year round.

We envision people enjoying outdoor recreation in a safe way. Educational programs will promote appropriate behaviors.

Facilities and recreation settings will be maintained for high-quality visitor experiences. Displays, programs, signage, and other resources will help users understand and enjoy natural resources, and be aware of and satisfied with the outdoor recreation opportunities we provide.

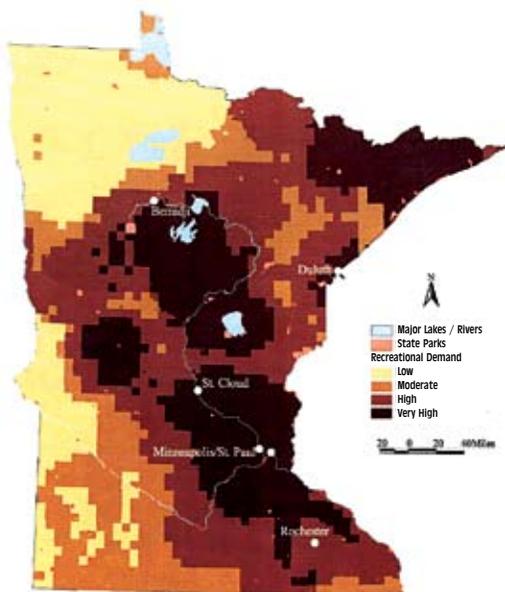
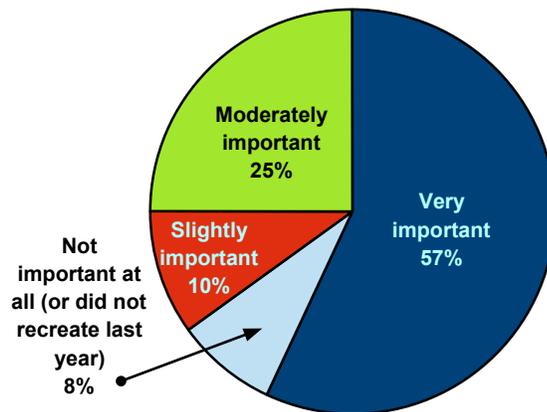
## Critical Trends

Outdoor recreation today is experiencing a number of trends that will affect our ability to turn this vision into reality.

First is a **change in participation** in certain traditional activities. The percentage of Minnesotans who participated in fishing, hunting, and wildlife watching declined between 1991 and 2001, particularly among young and urban residents. Participation in fishing and hunting continued to decline between 2000 and 2005. The percentage of Minnesotans between the ages of 16 and 44 who hunted declined by 14%. The percentage who fished declined by 11%. However, expenditures by people participating in fishing, hunting, and wildlife watching have grown. For example, expenditures in bird watching, wildlife tourism, bird feeding, and wildlife photography in Minnesota grew 36.6 percent from 1996 to 2001. Boat registration increased 16 percent per year in the 1990s—the same rate of increase as that for population age 16 and older.

**Emerging types of recreational uses** will also affect future needs and the strategies we develop to manage them. For example, all-terrain vehicle (ATV) use is growing, with 12,235 ATVs registered in 1984 and 240,614 registered in 2006.

## Personal Importance in Regards to Outdoor Recreation



Source: Minnesota State Park System Land Study, DNR Division of Parks & recreation, 2000, p. 29

Projected outdoor recreation demand for 2025. As demand grows and diversifies, so must DNR efforts to provide recreational opportunities while conserving the quality of Minnesota's lands and waters.

DNR works with partners to develop recreation opportunities throughout all regions of the state. For example, new "birding trails" are being promoted in areas with historically low recreational demand.

Note: This map is based on population projections and citizen surveys on recreation destinations.

As demand for various recreational opportunities changes and diversifies, so must DNR efforts to provide recreational opportunities while conserving the quality of Minnesota's lands and water. Through our various planning efforts we aim to proactively provide the recreational opportunities Minnesotans seek while ensuring that their activities sustain and enhance the natural resources that support them.

# Outdoor Recreation Indicators & Targets

Indicator	Target	
<b>Trails</b>		
		<b>Page</b>
Number of state forests officially reclassified with signed road/trail designation orders	The evaluation of a number of state forests is currently underway, with thirteen forests complete and many more nearly finished or about to begin (Fig. 1). All 58 state forests must be completed by December 31, 2008	96
Acres of natural vegetation restored and managed within trail rights-of-way	Maintain existing restorations through appropriate management (e.g., prescribed burns, invasive species control)	97
Number of state trail miles acquired; number of state trail miles developed	Acquire 130 new state trail miles by the end of FY 2009; develop 87.5 miles of state trails by the end of FY 2009	98
<b>Water access</b>		
		<b>Page</b>
Number of access points acquired and/or developed along high-priority lakes and rivers	Acquire 6 new access sites in FY 2007, and 15 new access sites statewide in FY 2008-09	99
Number of small-craft harbors and protected accesses developed along Lake Superior	Develop one new site by fall 2007	100
Number of sites developed and maintained on lakes and rivers in partnership with local units of government	In FY 2007 DNR will work with partners to develop five new sites and maintain existing facilities to provide future access on Minnesota's lakes and rivers	101
Development of reliable information enhancing water trail opportunity, safety, and satisfaction	In FY 2007, activate and interpret three new automated river level gauges. Provide recreational flow interpretation on 50 percent of existing canoe routes as part of a long term strategy to provide automated flow data on all canoe and boating routes.	102
<b>Recreation enforcement</b>		
		<b>Page</b>
Number of students completing safety training classes; number of fatalities per 100,000 registrations (watercraft, ATV, snowmobile)	Annually train 24,000 students in the firearm safety/hunter education program; 3,000 students in the adult hunter education program, 3,500 in the ATV program; and 14,900 in the snowmobile safety program; and 5,300 in the boating safety program	103

# Outdoor Recreation Indicators & Targets

Indicator	Target	Page
<b>State Parks</b>		
Percentage satisfied with visit to a Minnesota state park	Maintain a 95 percent or higher satisfaction rating	104
Acres of natural vegetation actively maintained or restored in the state park system	Have 5,400 acres in active restoration and carry out prescribed burns on 3,000 acres each year	105
Maintenance and restoration of historic buildings, structures, and districts within state parks	Direct 10 percent of overall capital maintenance projects for state parks in each biennium to National Register buildings, structures, and districts within state parks and state recreation areas	106
For parks education indicator see section on Natural Resources Stewardship Education		108

# State Forest Classification and Route Designation

Indicator: Number of state forests officially reclassified with signed road/trail designation orders

## Why is this indicator important?

Motorized use of state lands has grown substantially in recent years. In addition to highway-licensed vehicles, more than 250,000 ATVs, off-highway motorcycles (OHMs), and off-road vehicles (ORVs) now registered in Minnesota regularly use state forest roads and trails. This has resulted in overuse and resource damage in some areas. The challenge facing the DNR is to accommodate off-highway vehicle use on state forest lands safely, responsibly, and without displacing non-motorized forest users.

## What is DNR doing?

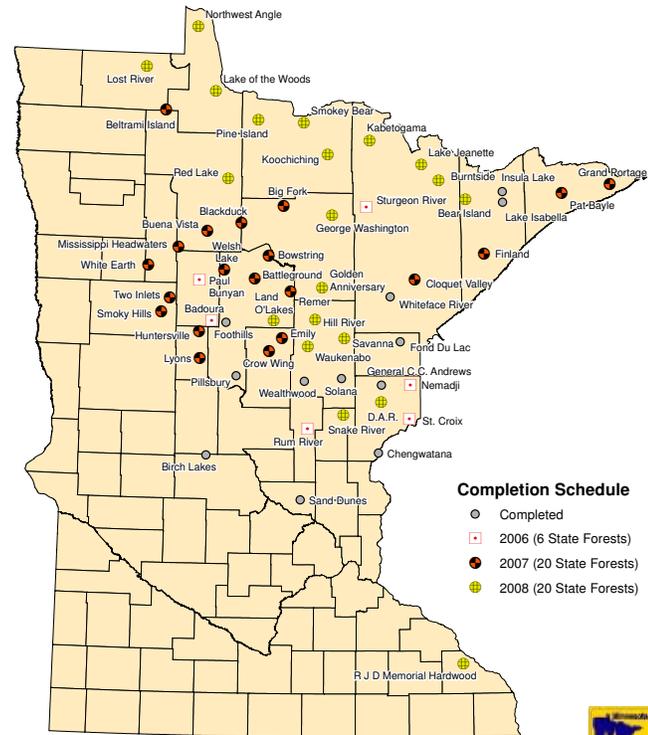
In 2003, the Legislature enacted legislation calling for a “forest-by-forest” review of Minnesota state forests with regard to motor vehicle use. Modified in 2005, this legislation directs the DNR to reclassify state forests south of U.S. Highway 2 as either “limited” or “closed” to motor vehicle use. North of U.S. Highway 2, forests are to retain their current “managed” status unless modified as a result of the evaluation process.

Building upon a recently completed inventory of existing access routes, this process examines both motorized and non-motorized routes, then recommends designating or decommissioning specific roads and trails for motorized and non-motorized use. This determination is based in part upon newly collected forest access inventory information. It is also shaped by public participation in this process. The resulting forest road and trail recommendations are formalized in orders signed by the commissioner. Forest reclassification and route designation is to be completed by December 31, 2008.

**Target:** *The evaluation of a number of state forests is currently underway, with thirteen forests complete and many more nearly finished or about to begin (see map). All 58 state forests must be completed by December 31, 2008.*

## Minnesota State Forests

Forest Classification and Road/Trail Designation Schedule



Map created 1/22/06 TAWCO DAL forestcompletion.mxd



DNR completed its comprehensive statewide forest road and trail inventory in 2004. DNR is currently conducting a forest-by-forest review of Minnesota State Forests to determine their appropriate classification with regard to Off-Highway Vehicle (OHV) use, and to evaluate overall motorized road and trail access to state forest lands.

## Learn more about:

- OHV riding at: <http://www.dnr.state.mn.us/ohv/index.html>
- Forest classification and motor route designation at: <http://www.dnr.state.mn.us/input/mgmtplans/ohv/designation/index.html>

# Trail Natural Community Restoration and Management

Indicator: Acres of natural vegetation restored and managed within state trail rights-of-way

## Why is this indicator important?

Minnesota statutes mandate that state trails be managed with minimum disturbance of the natural environment. Trails can enhance the ecological value of land by allowing us to restore natural plant communities along the right-of-way; protect and manage native plant communities along the right-of-way; partner with adjacent land managers on natural communities management; and educate users about natural resources.

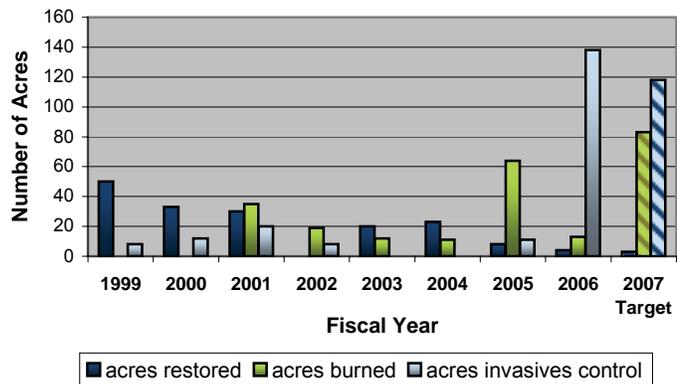
## What is DNR doing?

With the help of a 1999 Legislative Commission on Minnesota Resources (LCMR) grant, DNR began restoring sites acquired or donated in conjunction with various trail projects. The statewide management and restoration guidelines were updated in 2004 to help field staff understand the importance of natural landscape integrity and to assist with project implementation. DNR has completed identification and quality rating of native plant communities on six rail trails totaling 519 miles. This information is useful in crafting future work plans and management priorities.

Since 1998, all new trail development has begun with an assessment of natural plant communities followed by appropriate restoration efforts. In 2004 and 2005, DNR mapped invasive species on 290 miles of rail trails to help set priorities for control and management. DNR will continue to restore new sites when possible and monitor and manage established sites. DNR will also continue educating field staff in natural vegetation management.

**Target: Maintain existing restorations through appropriate management (e.g., prescribed burns, invasive species control).** DNR currently works on the Blufflands, Heartland, Central Lakes and Gateway state trails in southeastern and central Minnesota as resources are available. DNR aims to increase native species diversity, diminish the occurrence of invasive exotic species, and develop new trail alignments that are consistent with regional landscape management goals. DNR will continue to develop natural vegetation management priorities for each trail and cultivate partnerships with adjacent public and private land managers.

## Number of Acres Restored and Managed Within Trail Right-of-ways



Number of acres restored and managed within trail-rights-of-way. Successful restorations require periodic maintenance through prescribed burns and invasive species control.



Wet prairie remnant along Paul Bunyan State Trail

## Learn more about:

- Minnesota's state trails at: [http://www.dnr.state.mn.us/state\\_trails/index.html](http://www.dnr.state.mn.us/state_trails/index.html)
- The statewide management guide at: [http://www.dnr.state.mn.us/trails\\_plantcommunities/index.html](http://www.dnr.state.mn.us/trails_plantcommunities/index.html)

# State Trail Acquisition and Development

Indicators: Number of state trail miles acquired; number of state trail miles developed

## Why is this indicator important?

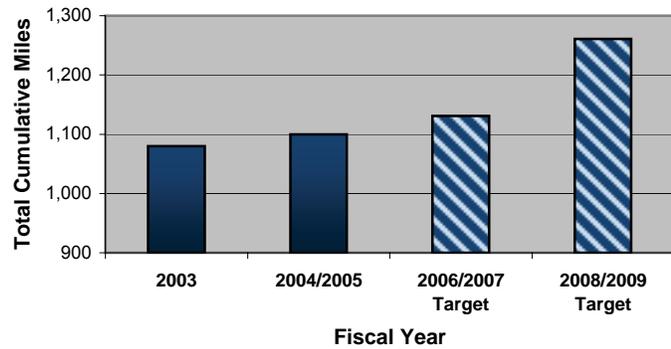
State trails provide numerous and diverse benefits. They offer recreation opportunities for bicyclists, hikers, in-line skaters, horseback riders, cross-country skiers, and snowmobilers. State trails are located throughout Minnesota in urban and rural areas. They are a key element to improving the health of Minnesotans because they provide convenient and inexpensive places to exercise. They provide economic benefits to communities and enhance tourism. They serve as transportation corridors. Trails can yield environmental benefits too—for example, providing a buffer adjacent to streams.

## What is DNR doing?

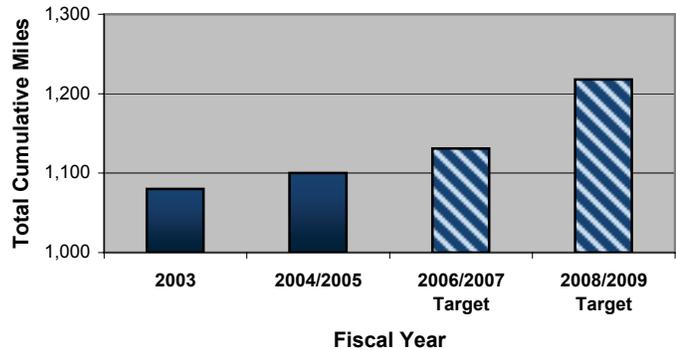
DNR works with local trail associations, trail user groups, and communities to plan, acquire, develop, and manage the state trail system. Some trails in the system have an asphalt surface for bicycling and in-line skating. Other trails have a natural surface and are used predominately for snowmobiling in the winter and hiking in the summer. Some trails have a parallel treadway for other uses such as horseback riding.

**Target: Acquire 130 new state trail miles by the end of FY 2009; develop 87.5 miles of state trails by the end of FY 2009.** These targets will be adjusted as new opportunities arise for trail acquisition and development. Trail stakeholders are currently working to secure funds for acquisition and development of state trails. In addition, DNR is 1) restructuring its trail tracking system for improved planning and management; and 2) integrating the state trail rehabilitation indicator, included in previous updates of the Conservation Agenda, into this indicator.

## Number of State Trail Miles Acquired



## Number of State Trail Miles Developed



DNR works with partners to acquire and develop state trails.

## Learn more about:

- State trails at: [http://www.dnr.state.mn.us/state\\_trails/index.html](http://www.dnr.state.mn.us/state_trails/index.html)

# Public Access to Lakes and Rivers

Indicator: Number of access points acquired and/or developed along high-priority lakes and rivers

## Why is this indicator important?

Minnesota ranks fourth in the nation in number of licensed boats (853,000) and first in boats per capita, with one for every six people. Several hundred lakes and rivers in the state have no access or inadequate public access. Public accesses are increasingly becoming essential for lakeshore owners and resort users in addition to traditional users due to the increased size of boats and motors over the past decade.

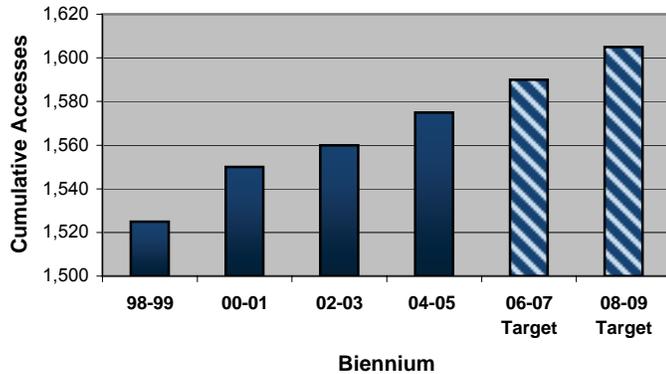
Public accesses also make it possible for anglers and boaters to use public waterways. This is important because the cost of lake property is escalating rapidly and opportunities to purchase land are becoming rarer.

## What is DNR doing?

DNR is increasing its emphasis on acquiring access sites and continuously improving environmentally sustainable development. Throughout the state, DNR field managers are actively seeking to acquire land. They are making contacts with realtors, lake associations, angling clubs, government bodies, and others with the intent of purchasing new access sites.

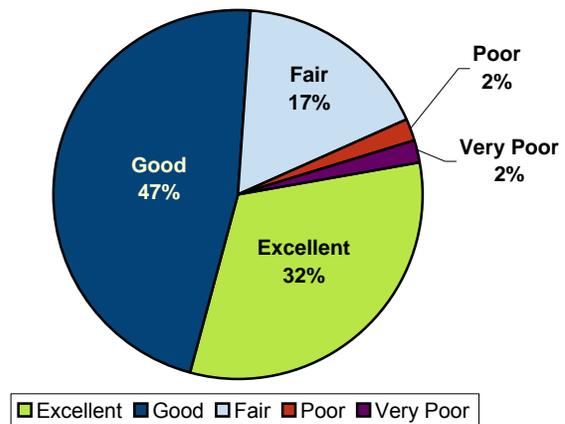
**Target: Acquire 6 new access sites in FY 2007 and 15 new access sites statewide in FY 2008-09, with special emphasis on the Mississippi River and lakes larger than 5,000 acres.** In FY 2006 DNR acquired 10 new Public Water Access Sites, including sites on Leech Lake, Mille Lacs Lake and Lake Vermilion. DNR also completed significant rehabilitation of 13 Public Water Access sites and constructed 3 new facilities, including Cooperative Projects with the Cities of Prior Lake and Shakopee, Carlton County, Hennepin County and Meeker County.

## Number of Accesses Acquired or Developed Along Lakes or Rivers



Number of accesses acquired or developed along lakes and rivers. DNR acquires, develops, and maintains public accesses. Six new access sites will be acquired on lakes and rivers statewide with special emphasis on the Mississippi River and lakes over 5,000 acres.

## Minnesota Boater Satisfaction Levels with Water Access Facilities



Minnesota boater satisfaction levels with public access facilities. DNR uses periodic surveys to measure satisfaction levels with facilities and services. Data reported here are pooled from surveys addressing Minnesota's west central lakes region (2005), Lake Minnetonka (2004), Mississippi River pools 4 to 9 (2003), Lake Superior (2002), central lakes region (2001), and north central lakes region (1998).

## Learn more about:

- Public water access at: [http://www.dnr.state.mn.us/water\\_access/index.html](http://www.dnr.state.mn.us/water_access/index.html)

# Lake Superior Small Craft Harbors and Protected Accesses

Indicator: Number of small-craft harbors and protected accesses developed along Lake Superior

## Why is this indicator important?

Increased interest in boating and fishing Lake Superior has inspired communities and DNR to provide new and better boat access to the lake. Because the lake is so large, sudden storms can occur and boaters need a safe harbor for shelter and as a place to retrieve their boats safely. DNR has operational responsibility for small craft harbors, marinas, and boat accesses. The U.S. Army Corps of Engineers constructs small craft harbors in cooperation with DNR and local communities. The DNR cooperates with communities that recognize the benefits of providing lake-oriented facilities such as safe harbors and marinas.

## What is DNR doing?

Legislation passed in the 1990s identified five locations for safe harbors, marinas, and boat accesses. In addition DNR identified several protected boat access locations that would provide safe launch and retrieval for boats but have no marina facilities. Currently DNR operates Knife River Harbor and Marina, and Silver Bay Harbor and Marina in cooperation with the city of Silver Bay. DNR also operates several protected accesses at Twin Points, Taconite Harbor, and Horseshoe Bay. DNR is working with local groups and communities to plan future safe harbors and accesses at Knife River, Two Harbors, Grand Marais, and Grand Portage. The U.S. Army Corps of Engineers is a valuable partner in these planning and construction processes.

**Target: Develop one new site by fall 2007.** The McQuade Road safe harbor at the Duluth city limits will be opened in the fall of 2007. This safe harbor is being constructed in cooperation with the U.S. Army Corps of Engineers, and with the assistance of our partners: Duluth and Lakewood townships, St. Louis County and the City of Duluth. This site will provide shore fishing and lake viewing opportunities in addition to a quality boat launching facility.



DNR works with local units of government to develop small craft harbors and protected accesses according to the North Shore Harbors Plan of 1991. The target is to develop one new site along Lake Superior by fall 2007.

## Learn more about:

- Lake Superior small craft harbors and protected accesses at:  
[http://www.dnr.state.mn.us/water\\_access/safeharbors/index.html](http://www.dnr.state.mn.us/water_access/safeharbors/index.html)

# Fishing Piers and Shore Fishing Sites

Indicator: Number of sites developed and maintained on lakes and rivers in partnership with local units of government

## Why is this indicator important?

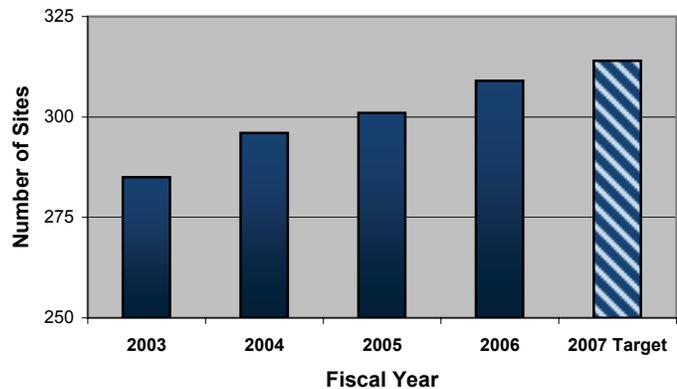
Fishing piers expand angling opportunities for all people, including special populations such as persons with disabilities, the elderly, and children. Fishing is one of the top activities enjoyed by Minnesotans, yet many water bodies lack shore-fishing facilities for the general public. DNR works with communities across the state to provide the public with access to shore-fishing and fishing pier sites on lakes and rivers. This will help to ensure that future generations can experience our outdoor fishing heritage.

## What is DNR doing?

There are 309 fishing pier/shore-fishing sites in Minnesota and more than 50 applications requesting funding for new sites. DNR is cooperating with local units of government to capitalize on available public land. DNR provides funding and technical expertise on the site location, fishing potential, and facility installation. The local unit of government often provides partial funding, land, and maintenance.

**Target:** *In FY 2007 DNR will work with partners to develop five new sites and maintain existing facilities to provide future access on Minnesota's lakes and rivers.* Four shore-fishing sites and one fishing pier will be constructed by the end of FY 2007. DNR and partners completed the installation of a total of five new fishing piers and three new shorefishing facilities in FY 2006.

### Number of Fishing Piers and Shore Fishing Sites in MN



More than 300 fishing pier/shore-fishing sites have been developed. There is demand for new sites.



DNR partners with local units of government to provide fishing opportunities for the public.

## Learn more about:

- Statewide fishing pier map at [http://www.dnr.state.mn.us/water\\_access/index.html](http://www.dnr.state.mn.us/water_access/index.html)

# Water Trails

Indicator: Development of reliable information enhancing water trail opportunity, safety, and satisfaction

## Why is this indicator important?

Recreational boating is one of the largest outdoor activities in Minnesota, and there are more than 172,000 registered canoes and kayaks in the state. Together the Canoe and Boating Route system and the Lake Superior Water Trail include more than 3,600 miles of routes. These trails are the backbone of a system of rivers and Lake Superior shoreline offering unparalleled canoeing and kayaking opportunities. These water trails attract state, national, and international visitors. Maintaining high visitor satisfaction benefits visitors, communities, and local economies. Developing and providing reliable river level information helps boaters stay safe and enjoy the state's Canoe and Boating Route system.



## What is DNR doing?

DNR will improve the accuracy, timeliness, and accessibility of the river level reporting system on water trails by installing and interpreting automated river gauges. The DNR will also develop new maps for recently designated water trails and improve existing maps by noting GPS coordinates of recreation sites.

**Target:** *In FY 2007, activate and interpret three new automated river level gauges. Provide recreational flow interpretation on 50 percent of existing canoe routes as part of a long term strategy to provide automated flow data on all canoe and boating routes.* Other targets include: Develop maps for the Otter Tail River and the Sauk River. Add certain GPS coordinates on the Root River and Lake Superior Water Trail maps.

## Learn more about:

- Canoe and kayak trails at: [http://www.dnr.state.mn.us/water\\_rec/index.html](http://www.dnr.state.mn.us/water_rec/index.html)

# Recreational Safety and Enforcement

Indicators: Number of students completing safety training classes; number of fatalities per 100,000 registrations (watercraft, ATV, snowmobile)

## Why is this indicator important?

Recreational use of Minnesota's natural resources must be safe and responsible if we are to continue to offer opportunities for future generations. Government has a role in ensuring public health and safety, as well as protecting property.

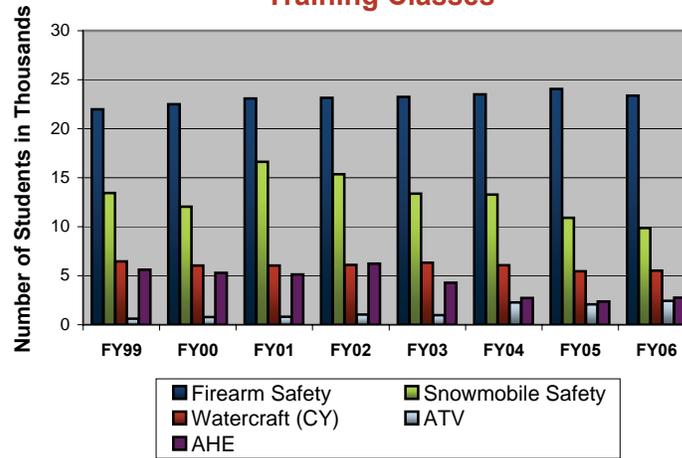
## What is DNR doing?

DNR is encouraging the safe use of Minnesota's natural resources by providing educational programs and law enforcement services for the protection of resources, property, and public safety. These programs and services are designed to introduce new and existing users to recreational opportunities and to limit or prevent personal injury accidents and fatalities while encouraging the safe and responsible use of Minnesota's resources.

**Target: Annually train 24,000 students in the firearm safety/hunter education program; 3,000 in the adult hunter education program; 3,500 in the all-terrain vehicle (ATV) program; 14,900 in the snowmobile safety program; and 5,300 in the boating safety program.** Though factors

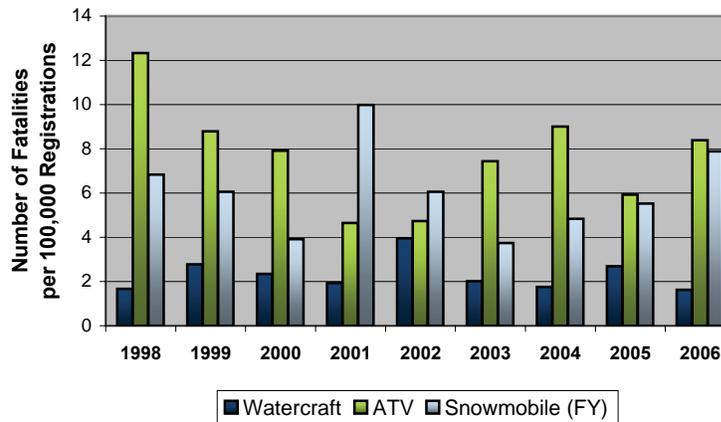
such as weather and personal behavior greatly influence accidents, through educational programs and law enforcement efforts, DNR will work to reduce fatal accident rates below the long-term annual average in the following areas: snowmobiling (7.53/100,000 registered snowmobiles); ATV use (8.26/100,000 registered ATVs); and boating (2.43/100,000 registered watercraft).

## Number of Students Completing Safety Training Classes



Number of students completing safety training classes.

## Recreational Fatalities per 100,000 Registrations



Recreational fatalities per 100,000 registrations.

## Learn more about:

- Enforcement at: <http://www.dnr.state.mn.us/enforcement/index.html>
- Hunter safety at: <http://www.dnr.state.mn.us/safety/index.html>
- Boat and water safety at: <http://www.dnr.state.mn.us/safety/boatwater/index.html>
- Recreational vehicle safety at: <http://www.dnr.state.mn.us/safety/vehicle/index.html>

# State Park Visitor Satisfaction

Indicator: Percentage satisfied with a visit to a Minnesota state park

## Why is this indicator important?

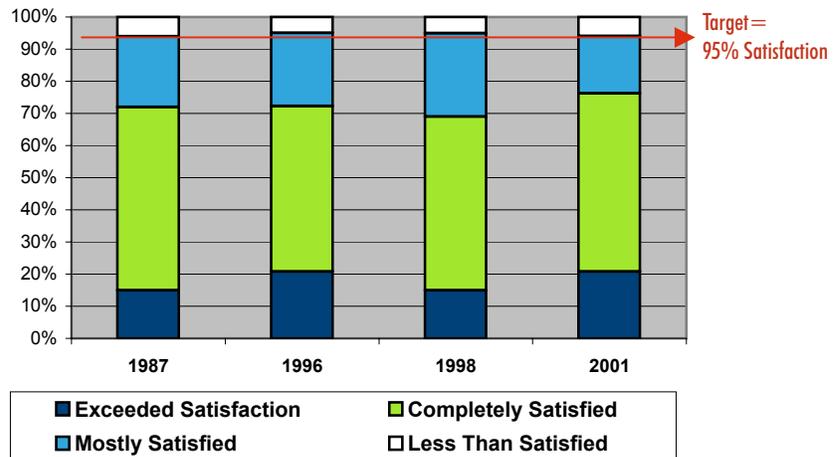
State parks are an integral part of Minnesota's high quality of life. They are key to the state's tourism industry, attracting state, national, and international visitors. State park visitors enjoy unique natural and cultural resource treasures and unparalleled nature-based recreational opportunities. Each year more than 8 million visitors enjoy Minnesota's 67 state parks and 6 recreation areas. State park visitors spend \$200 million annually during their visits. Out-of-state visitors to state parks generate \$25 million in income for Minnesota residents. Maintaining high visitor satisfaction benefits visitors, communities, and economies.

## What is DNR doing?

The state parks mission is to "work with the people of Minnesota to provide a state park system which preserves and manages Minnesota's natural, scenic, and cultural resources for present and future generations while providing appropriate recreational and educational opportunities." This requires managing unique natural and cultural resources, acquiring lands, providing educational and interpretive services, supporting diverse recreation activities, keeping parks and services open to the public, maintaining facilities, and providing a friendly and comfortable atmosphere for visitors. For example, state parks maintain picnic sites, campsites, trails, public accesses, fishing piers, historic landmarks, and visitor centers. Periodic surveys monitor customer expectations and satisfaction.

**Target: Maintain a 95 percent or higher satisfaction rating.** Park visitors consistently express high satisfaction with Minnesota state parks; in recent years, 95 percent of park visitors have expressed positive satisfaction ratings. DNR will continue to work to maintain at least a 95 percent satisfaction rate for park visitors. In 2007 DNR will conduct another survey to track park visitor satisfaction levels and document which features promote and detract from high satisfaction.

## Satisfaction with Visit to a State Park



Satisfaction with visit to a state park. In recent years 95 percent of visitors have expressed satisfaction with Minnesota state parks.



Ten of the top 35 Minnesota tourism attractions are in state parks.

## Learn more about:

- Minnesota state parks at: [http://www.dnr.state.mn.us/state\\_parks/index.html](http://www.dnr.state.mn.us/state_parks/index.html)
- State park facts at: [http://www.dnr.state.mn.us/state\\_parks/facts.html](http://www.dnr.state.mn.us/state_parks/facts.html)
- How state park fees are spent at: [http://www.dnr.state.mn.us/state\\_parks/budget.html](http://www.dnr.state.mn.us/state_parks/budget.html)

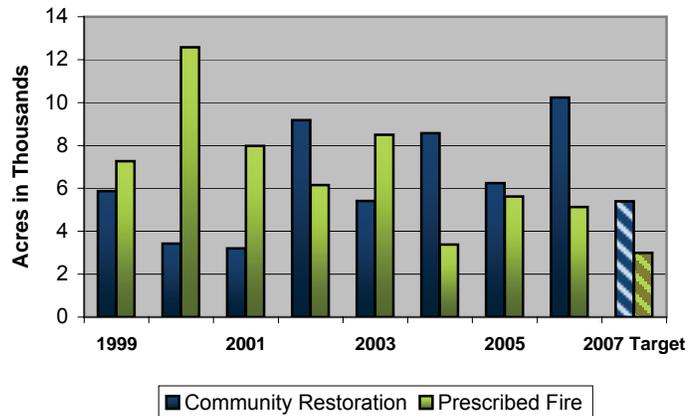
# Natural Vegetation in State Parks

Indicator: Acres of natural vegetation actively maintained or restored in the state park system

## Why is this indicator important?

State law mandates that state parks managers protect and manage presettlement natural features; protect and manage other significant natural, scenic, scientific, or historic features; and reestablish missing plants and animals. This ensures that state parks help protect the state's biodiversity. More than 280 federal or state endangered, threatened, or special concern species occur at more than 1,500 locations in state parks. More than 30 percent of all protected old-growth forests on DNR lands and more than 80 types of important native plant communities are in state parks. A 2001 visitor survey found that the experiences most important to our visitors included enjoyment of natural scenery and the smells and sounds of nature.

Acres of Habitat with Prescribed Fire and Active Restoration in the State Park System



Acres of habitat with prescribed fire and active restoration in the state park system. DNR aims to have 5,400 acres in active restoration and carry out prescribed burns on 3,000 acres each year.

## What is DNR doing?

State parks use planting, prescribed burning, control of invasive plant species, seed collection, and other activities to preserve and restore prairies, savannas, forests, and wetlands. The process can take years, even decades. State parks also conducts 24 interpretive programs annually dealing with natural resource management, some of which provide “hands-on” learning opportunities.

**Target: Have 5,400 acres in active restoration and carry out prescribed burns on 3,000 acres each year.**

DNR's long-term goal is to restore to natural communities all areas in the state park system not developed, planned for development, or managed for cultural resource significance. Ideally, our long-term indicator for this goal will be the number of natural community acres in the park system of good ecological quality.



A prescribed burn helps restore pine forest at Lake Bemidji State Park.

## Learn more about:

- Minnesota state parks at: [http://www.dnr.state.mn.us/state\\_parks/index.html](http://www.dnr.state.mn.us/state_parks/index.html)

# State Parks Historic Features

Indicator: Maintenance and restoration of historic buildings, structures, and districts within state parks

## Why is this indicator important?

State parks contain 620 designated historic buildings, structures, and objects; 34 National Register Historic Districts; and five National Historic Landmarks. Many are rustic-style log and stone structures built by the Civilian Conservation Corps and Works Progress Administration and treasured by visitors. Historic features require extensive maintenance and in some cases significant restoration to preserve them and to keep them safe for public use and enjoyment.

DNR has a statutory responsibility to protect historic properties listed on the national register and state register. State law requires state parks to preserve, perpetuate and interpret historic features, such as historic state park buildings, structures, and districts.



Douglas Lodge, Itasca State Park. Minnesota state parks preserve, perpetuate, and interpret historic features. Successful historic building restorations have been completed in recent years at St. Croix State Park, Itasca State Park, Scenic State Park, and Tettegouche State Park.

## What is DNR doing?

DNR regularly reviews the condition of state park buildings and structures to make sure they are safe. DNR consults frequently with the State Historic Preservation Office of the Minnesota Historical Society to ensure proper treatment of historic buildings and structures. Successful historic building restorations have been completed in recent years at St. Croix State Park, Itasca State Park, Scenic State Park, and Tettegouche State Park. At least 24 interpretive programs are provided to visitors each year emphasizing the value of historic features and building public support for their continued care.

**Target: Direct 10 percent of the overall capital maintenance projects for state parks in each biennium to National Register buildings, structures, and districts within state parks and state recreation areas.** To meet its goal for preservation and effective use of historic buildings, structures, and districts in state parks, DNR will require strong support for 1) continued assessment of the condition of historic buildings and structures; 2) enhanced effort for maintaining the large number of historic buildings, structures, and districts; and 3) restoration of selected historic buildings, structures, and districts.

## Learn more about:

- Minnesota state parks at: [http://www.dnr.state.mn.us/state\\_parks/index.html](http://www.dnr.state.mn.us/state_parks/index.html)
- State park history at: [http://www.dnr.state.mn.us/state\\_parks/logstonebook.html](http://www.dnr.state.mn.us/state_parks/logstonebook.html)

# Outdoor Recreation Key Indicator Gaps

## Indicator Gaps:

Although the indicators in this report have data of sufficient quality and coverage to support trend reporting, we recognize gaps in our ability to report on important natural resource and outdoor recreation trends. The following is a preliminary list of important indicators that require either additional data or new monitoring efforts. When baseline and trend data for new indicators are available, cooperative efforts will be needed to establish conservation targets.

A preliminary list of indicator gaps include:

Indicator to track diversity in trail users
Indicators to measure satisfaction of recreation user (surveys)
Indicators to measure trail density and distribution in state forests
Indicators to track trends in new forms of recreation and tourism
Indicator to measure recruitment and retention for multiple forms of recreation

# Section Six: Natural Resources Stewardship Education

## Citizens Will Have High-Quality Natural Resources Stewardship Education

No matter what you call it—conservation education, environmental education, or simply outdoor education—we are talking about enhancing the understanding, appreciation, participation, and sense of stewardship for our natural resources.

State law requires natural resources and environmental education. DNR education and outreach programs support state goals, such as those outlined in this agenda and the GreenPrint for Minnesota education plan. Natural resources education is interdisciplinary and can also support K–12 academic goals for science, language arts, and social studies. DNR provides materials and teaches educators, students, and others about Minnesota’s natural resources heritage, management, and long-term stewardship.

DNR education programs are broad, covering topics from wildlife, fishing, rocks and minerals, trees and water, archery, snowmobiling, and ATV and hunter safety to supporting landowner and local government natural resource management. Support to landowners and communities includes prairie restorations, forest plans, and shoreland management.

DNR education activities also include making the most of the myriad teachable moments that occur in our everyday encounters with the public at state parks and forests and through other venues. DNR seeks to provide Minnesotans with the knowledge they need to be good stewards of our state’s natural resources.

### A vision for the future

When we look to the future we see Minnesotans developing a **lifelong stewardship ethic**. Natural resources education programs support this stewardship ethic.

We see natural resources education and **safety and stewardship** training opportunities growing.

We envision a future in which **natural resources education** is part of every student’s curriculum as well as being available outside of the school. For all subject areas, real-life natural resources related examples, as well as hands-on outdoor lessons are very effective and engaging for students. We see teacher training to share new research and best management practices as a means to improve delivery and effectiveness of education programs.

We envision **collaborative partnerships** to efficiently deliver effective natural resources education programs.

### DNR – What We Do

- Annually reach 1,400 educators of more than 42,000 students with Project WET, Project WILD, and Project Learning Tree
- Annually reach 1,150 teachers and 24,000 students at 100 schools with School Forest (outdoor classroom) programs
- Annually reach 1.5 million people with state park educational services
- Annually reach more than 70,000 people with safety education programs (hunter, recreational vehicle, boat, and water)
- Annually deliver 25,000 hours of contact time to 25,000 MinnAqua participants
- Annually work with more than 30,000 volunteers who donate more than 420,000 hours
- Annually assist 202,000 people through the DNR Information Center
- Annually reach 145,000 subscribers and nearly 500,000 readers with *Minnesota Conservation Volunteer* magazine
- Annually register more than 50 million visits to DNR Web pages

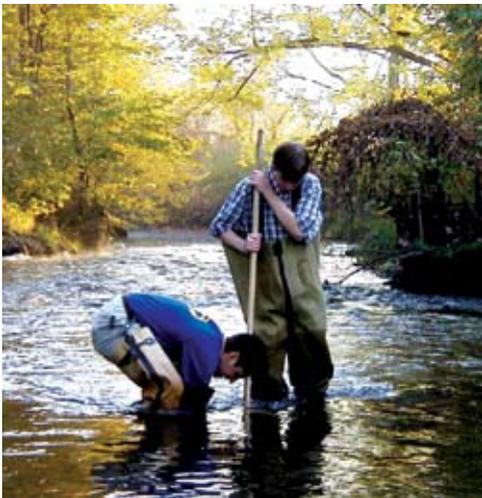
We see **DNR and informed citizens and local leaders working together** to care for Minnesota’s natural resources. Citizens and local leaders are better prepared to make **informed natural resources decisions**, thanks to proactive efforts to spread the message of why and how we must care for Minnesota’s resources.

We see a future in which **DNR provides natural resources stewardship education within the broader picture** of environmental education in Minnesota. We will invest in natural resources education and coordinate and collaborate with other educators—public, private, formal, and nonformal. We will strengthen education links with all constituents, such as educators, students, landowners, business people, local government officials, and recreation users.

### Critical trends

As we work to achieve this desired future, we do so within the context of a number of trends that affect natural resources stewardship education, such as more indoor activities that compete for people’s time.

A key trend is the growing **physical disconnect** between people and natural resources. Currently 75 percent of Minnesotans live in metropolitan areas, while only 5 percent of natural resources are found there. This growing disconnect demands increasing emphasis



These Hastings High School students are monitoring the quality of the Vermillion River and learning about trout streams.

on education so citizens learn to appreciate and care for resources they might not encounter every day, and understand how their decisions and actions affect natural resources.

Growth in Minnesota’s **cultural diversity** and demographic changes demand from us an increasingly diverse approach to outreach and education. There is a growing **need to involve all Minnesotans** in natural resources stewardship.

An encouraging trend is the **growth in natural resources education** by nonprofit organizations. This provides abundant opportunities for collaboration. It also creates a need to help ensure that conservation messages are balanced and accurate.

Minnesotans are strong supporters of environmental education; 90% of adults support providing environmental education in schools. At the national level there is growing support for planning and funding conservation education efforts.

More than anything, these trends point out the powerful need for good, effective natural resources education. The indicators and targets that follow are playing an important role in our efforts to provide that much-needed education so that our vision of a bright future for Minnesota’s natural resources might be realized.

Because stewardship is woven through all aspects of DNR’s work, education and outreach components are also found throughout this document (see also: Natural Lands, Fisheries and Wildlife, Waters and Watersheds, Forests, and Outdoor Recreation).

### Target audiences for natural resources stewardship education:

- Producers / landowners of both forested and agricultural land
- Local government officials and boards
- Recreational users
- The business community
- PreK-12 students and teachers
- Other Greenprint for Minnesota audiences

# Natural Resources Stewardship Education

## Indicators & Targets

Indicator	Target	Page
<b>Participation in DNR natural resources education programs</b>		
Number of participants involved in MinnAqua fisheries aquatic and angling education program	Deliver 25,000 hours of education contact time to 25,000 MinnAqua program participants in FY 2007	111
Number of participants reached by the Minnesota Project WET Water Education Program	Train a minimum of 300 formal and nonformal educators and reach a minimum of 2,500 students at water festivals annually	112
Number of individuals educated about river and stream systems	Continue outreach to key audiences and increase understanding of river systems	113
Public involvement in DNR forestry education programs	Maintain involvement in DNR forestry education initiatives to ensure a knowledgeable public	114
Percentage of park visitors participating in outdoor education activities	Maintain at least 18 percent participation level of park visitors in outdoor education and interpretive opportunities	115
Number of local officials and citizens attending educational presentations about land use and natural resource conservation	Maintain or increase the number of people attending land-use and natural resource conservation education presentations	116
Number of master naturalist volunteers participating in program; hours of volunteer work completed	Train more than 1,000 Master Naturalist volunteers by 2009	117
<b>Modeling practices that promote energy and environmental performance</b>		
Energy conservation measures employed by DNR	Reduce DNR transportation petroleum consumption 25% by 2011 and 50% by 2015; reduce DNR facilities energy use 15% by 2011 and 25% by 2025	118

### Note:

Efforts in natural resources stewardship education are a cornerstone for achieving DNR’s mission for natural lands, fisheries and wildlife, waters and watersheds, forests, and outdoor recreation. Thus, education and stewardship-related indicators are also described throughout these other sections in the conservation agenda.

DNR educational efforts are targeted toward multiple and varied audiences. Education frameworks, including Greenprint for Minnesota and DNR’s 2000 Cornerstones report, identify critical audiences for resource decision making (see textbox p. 109). For example, DNR efforts may focus on students and teachers (see indicators on aquatic and forestry education); recreational users (see indicator on outdoor education); or local government officials and resources professionals (see indicators on natural resource-based land-use planning and river ecology and management).

Natural resources stewardship education is a dynamic process to help build citizen awareness, knowledge, skills, and motivation needed to prevent and solve pressing natural resource problems and meet management goals throughout DNR.

# Angling Participation and Education

Indicator: Number of participants involved in MinnAqua fisheries aquatic and angling education program

## Why is this indicator important?

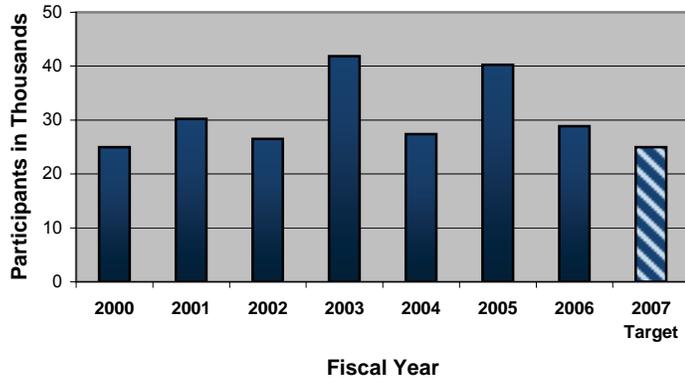
Minnesotans must all work to maintain, enhance, or restore the health of Minnesota's ecosystems so they can continue to serve recreational, environmental, social, and economic purposes. However, not all citizens know how they can be effective stewards, or have had the opportunity to enjoy fishing in Minnesota. MinnAqua programs help create a citizenry that is aware of and active in natural resource conservation.

## What is DNR doing?

DNR designs educational materials and implements structured angling and aquatic education programs, trainings, and seminars for a diverse clientele. MinnAqua programs help people better understand aquatic ecosystems, fish management, laws and regulations, diverse values and cultural views of sport fishing, and their role in maintaining quality fishing and aquatic habitat. Providing training and materials for educators, staff, and volunteers helps to meet state and national environmental education goals and academic standards in schools. While teaching participants angling skills and stewardship principles we help to minimize barriers to angling and aid in overall recruitment and retention of our Minnesota angling population.

**Target: Deliver 25,000 hours of education contact time to 25,000 MinnAqua program participants in FY 2007.** Since the 2006 update of the Conservation Agenda, DNR has redefined "participant" to better represent the active learning experiences in the MinnAqua program. DNR's new target for this indicator reflects the narrower definition of participant.

## Number of Participants Involved in Aquatic Education Programs



Number of participants involved in aquatic education programs. The FY 2007 target is to deliver 25,000 hours of education contact time to 25,000 MinnAqua program participants.



MinnAqua programs provide a fun, active, hands-on fishing experience. Participants also learn about stewardship of aquatic ecosystems. These programs are popular with many kinds of youth and adult groups.

## Learn more about:

- MinnAqua at: <http://www.dnr.state.mn.us/minnaqua/index.html>
- Fisheries information and education at: <http://www.dnr.state.mn.us/fisheries/management/inform.html>
- Other DNR natural resources education programs at: <http://www.dnr.state.mn.us/education/index.html>

# Water Education

Indicator: Number of participants reached by the Minnesota Project WET Water Education Program

## Why is this indicator important?

In Minnesota, citizens view healthy waters as an important quality-of-life indicator. Yet not all Minnesotans know how to be effective stewards of water resources. DNR offers Project WET, an education program, to help create a citizenry that is aware of and active in water conservation.

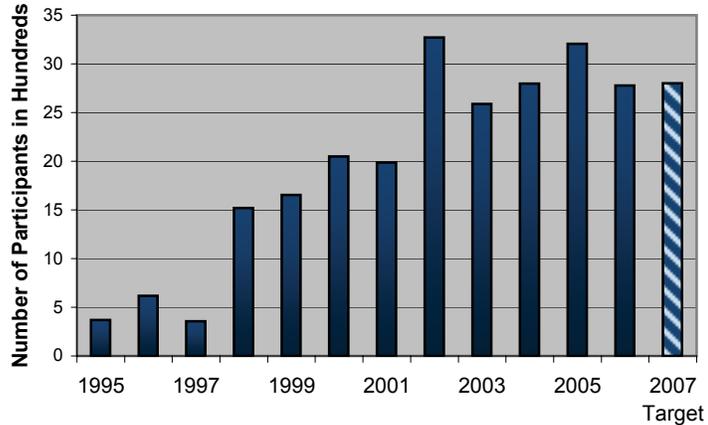
## What is DNR doing?

As a way to reach future decision makers, DNR offers a K–12 water education program. Minnesota Project WET (Water Education for Teachers) trains K–12 educators in hands-on, interactive lessons that encourage critical thinking. By providing training, materials, and support to these educators and water festival events for students, Minnesota Project WET improves understanding of water resources. In the past decade, Minnesota Project WET has trained more than 4,600 educators and through them reached an estimated 300,000 students. In the past nine years, Minnesota Project WET also has reached 18,350 students directly through its annual water festivals.

Minnesota Project WET collaborates with other water education initiatives. By working with groups such as the Governor’s Clean Water Initiative and the Metro WaterShed Partners, Minnesota Project WET reaches even more citizens. Minnesota Project WET complements other DNR education efforts, such as the MinnAqua program (see Angling Participation and Education and River Ecology and Management indicators). Together, all of these initiatives help Minnesotans understand the importance of aquatic stewardship.

**Target:** Train a minimum of 300 formal and nonformal educators and reach a minimum of 2,500 students at water festivals annually.

Number of Participants Involved in Project WET Water Education Program



Number of participants involved in Minnesota Project WET Education Programs. The target is to maintain at least 2,800 (2,500 students and 300 teachers) per year.



Teachers learned how to stream gauge at a Project WET summer workshop in Ely.

## Learn more about:

- Project WET at: <http://www.dnr.state.mn.us/projectwet>
- Water management at: <http://www.dnr.state.mn.us/waters/index.html>

# River Ecology and Management

Indicator: Number of individuals educated about river and stream systems

## Why is this indicator important?

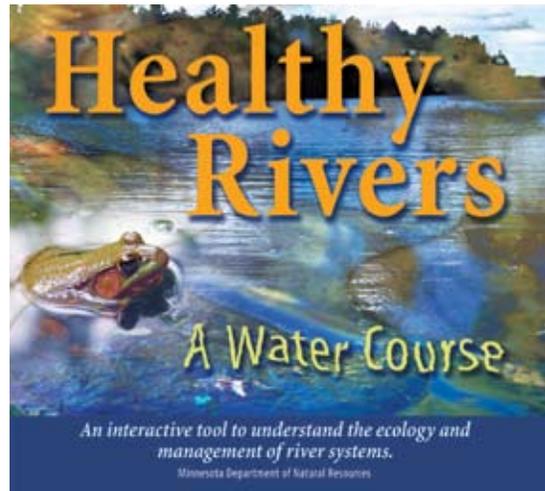
The science of managing rivers and streams in ways that maintain their natural ecological structure and function is not widely understood. DNR professionals are international leaders in stream ecology and restoration, and have developed a framework for understanding the science behind their work. All streams and rivers can be characterized by an interplay of five components: hydrology, geomorphology, connectivity, water quality, and biology. Past management of rivers without consideration of all five components has resulted in diminished resources. Use of this framework forms the basis for effective natural resource management, land-use planning, and policy development. It also informs day-to-day lifestyle choices and activities by an educated citizenry, whose cumulative actions impact watershed condition.

## What is DNR doing?

We are developing a GIS-based watershed assessment tool (WAT) designed to: 1) provide managers with a robust, comprehensive view of watershed ecological status; 2) assess watershed health based on five resource components: hydrology, geomorphology, connectivity, water quality, and biology; and 3) monitor watershed health based on long-term tracking of these resource components. A successful WAT will enable natural resource managers to fully understand and effectively use important watershed information in their decision-making process.

DNR is also teaching river ecology to technical and nontechnical audiences in formal and nonformal settings. The Stream Habitat Program continues to offer the three-part series of technical workshops for natural resource professionals. It covers fluvial geomorphology and stream classification, stream assessment and monitoring, and stream restoration. Since 1998, approximately 480 professionals have participated in the workshops. In addition, the interactive CD-ROM *Healthy Rivers: A Water Course* continues to be distributed.

**Target: Continue outreach to key audiences and increase understanding of river systems.** To achieve this target DNR will: 1) complete development of Phase 1 of the watershed assessment tool and publish it on DNR's web site by 2008; 2) continue offering the series of technical workshops for professionals; and 3) continue delivering key messages of river ecology and management at upcoming conferences.



DNR delivers the science of river ecology to nontechnical audiences with a popular interactive CD-ROM entitled *Healthy Rivers: A Water Course*.



DNR professionals are international leaders in stream ecology and restoration. They offer technical workshops to help others understand the science behind this work. About 480 resource professionals have already participated in these workshops.

## Learn more about:

- *Healthy Rivers: A Water Course* CD-ROM at: <http://www.dnr.state.mn.us/healthyrivers>
- Stream health and restoration workshops for professionals at: [http://www.dnr.state.mn.us/ecological\\_services/streamhab/index.html](http://www.dnr.state.mn.us/ecological_services/streamhab/index.html)

# Forestry Education

Indicator: Public involvement in DNR forestry education programs

## Why is this indicator important?

Many DNR forestry programs rely on public cooperation and participation. DNR provides education and information to help ensure that Minnesotans who provide input to forestry programs understand natural resources and resource management. Forestry education efforts are focused to support core DNR priorities.

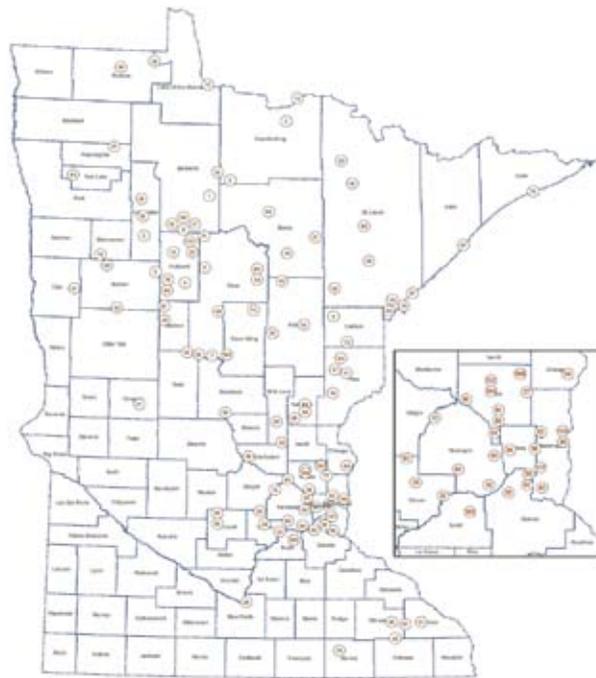
## What is DNR doing?

DNR promotes objective public education and information-sharing programs. Forestry education programs extend from preschool through high school and include various nonformal learning opportunities.

DNR provides forest management advice, educational curriculum support, and forestry information to 100 school forest sites. These sites, which comprise roughly 7,150 acres, are used as outdoor classrooms in which students can explore and learn about the natural world. The School Forest Program provides natural resources education to approximately 1,150 schoolteachers and 24,000 K–12 students annually.

Since 1978, DNR has supported Project Learning Tree (PLT), which provides forestry and natural resource information for educators. PLT workshops reach at least 300 educators annually on average; each PLT-trained educator in turn shares forestry information with 30 to 50 students each year. PLT reaches educators, students (ages 3 to 80), and scout and forestry groups in formal classrooms, at School Forest sites, environmental learning centers, and other settings.

**Target: Maintain involvement in DNR forestry education initiatives to ensure a knowledgeable public.** The School Forest Program will maintain its 100 sites and 7,000 acres of land and work to increase the number of participating schools. Minnesota PLT will train at least 300 educators annually.



Location of Minnesota's School Forest Sites



School Forest Sites are used as outdoor classrooms where students can explore and learn about the natural world.

## Learn more about:

- School forest sites at: <http://www.dnr.state.mn.us/schoolforests>
- Project Learning Tree at: <http://www.dnr.state.mn.us/plt>
- Other DNR natural resources education at: <http://www.dnr.state.mn.us/education/index.html>

# Outdoor Education

Indicator: Percentage of park visitors participating in outdoor education activities

## Why is this indicator important?

Minnesota law mandates that Minnesota state parks provide educational programs interpreting Minnesota's natural and cultural resources for the public. Outdoor education creates a sense of stewardship for Minnesota's natural and cultural heritage. It promotes recreation through experiential programs on camping, hiking, biking, canoeing, cross-country skiing, snowshoeing, fishing, wildlife watching, hunter education, and snowmobile safety. Park education programs offer a low-key enforcement tool that helps us manage visitors. They also promote understanding of and support for DNR's programs, key messages, and management decisions, resulting in reduced management costs and more effective outcomes.

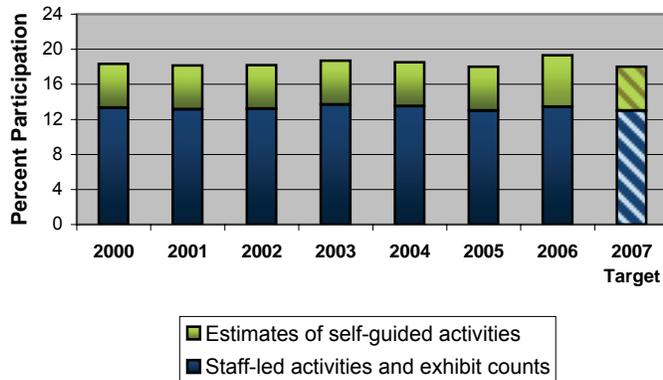
## What is DNR doing?

Educational programs have been integral to DNR's mission for more than 60 years. State parks offer more than \$200 million in interpretive facilities and offer hands-on educational experiences for 8.5 million visitors each year.

**Target: Maintain at least 18 percent participation level of park visitors in outdoor education and interpretive opportunities.**

Educational services in Minnesota state parks reach 1.5 million visitors annually. We will attempt to reach our target through the strategic delivery of educational resources and by documenting participation in interpretive services.

## Percent Participation in Parks Education and Interpretive Activities



Percent participation in parks education and interpretive activities. Each year, outdoor education activities in Minnesota state parks reach more than 1 million visitors. An estimated 500,000 additional visitors use self-guided educational opportunities.



Outdoor education in Minnesota state parks seeks to create a sense of stewardship for Minnesota's natural and cultural heritage.

## Learn more about:

- Naturalist programs at: [http://www.dnr.state.mn.us/state\\_parks/kids.html](http://www.dnr.state.mn.us/state_parks/kids.html)
- State parks at: [http://www.dnr.state.mn.us/state\\_parks/index.html](http://www.dnr.state.mn.us/state_parks/index.html)
- Other DNR natural resources education programs at: <http://www.dnr.state.mn.us/education/index.html>

# Natural Resource–Based Land-Use Planning Education and Assistance

Indicator: Number of local officials and citizens attending educational presentations about land use and natural resource conservation

## Why is this indicator important?

To preserve our state’s natural heritage, natural resources must be conserved through wise land-use decisions at the local level. Planning, when done well, is among the most powerful tools available to communities. By identifying natural resources at the beginning of the planning process, communities can determine where development is most appropriate. This way, communities can avoid unintended consequences, such as open space becoming the “leftover” pieces, water resources being degraded, and community character being compromised.



DNR staff work with the local community to identify priorities for land conservation.

## What is DNR doing?

DNR is providing information and guidance to local officials using a number of tools, including the new *Guide to Using Natural Resource Information in Local Decision Making*. This practical guide describes how Minnesota communities can use natural resources information to provide long-term protection of their community’s vital assets. It is just one example of DNR’s community assistance activities.

Statewide, DNR staff engage local officials and citizens through planning meetings, presentations, training sessions, and local conservation activities. For example, in FY 2004–05, community assistance staff in DNR’s southern and central regions played a key role in at least 75 natural resources and planning meetings that reached about 3,000 people. These included planning meetings with city councils, county boards, and watershed districts, and educational events focused on resource topics, such as storm-water management and shallow lakes.

These numbers do not, however, adequately reflect the variety and scope of DNR’s community education and assistance activities, which are difficult to measure. DNR is starting to track participation in community assistance activities, but the more “intangible” results—related to increased awareness in planning and decision making—are harder to quantify. Indicators related to land-use planning education and assistance will need to be further developed.

**Target:** *Maintain or increase the number of people attending land-use and natural resource conservation education presentations.* The long-term goal is to raise awareness and capacity among local officials to make informed land-use decisions.

## Learn More About:

- A guide to using natural resource–based information in local decision making at: <http://www.dnr.state.mn.us/nrig/index.html>
- The national NEMO Network at: <http://nemonet.uconn.edu>
- *Growth Pressures on Sensitive Natural Areas in DNR’s Central Region* report at: [http://www.dnr.state.mn.us/nrplanning/community/ameregis\\_report/index.html](http://www.dnr.state.mn.us/nrplanning/community/ameregis_report/index.html)

# Master Naturalist Volunteers

Indicators: Number of master naturalist volunteers participating in program; hours of volunteer work completed

## Why is this indicator important?

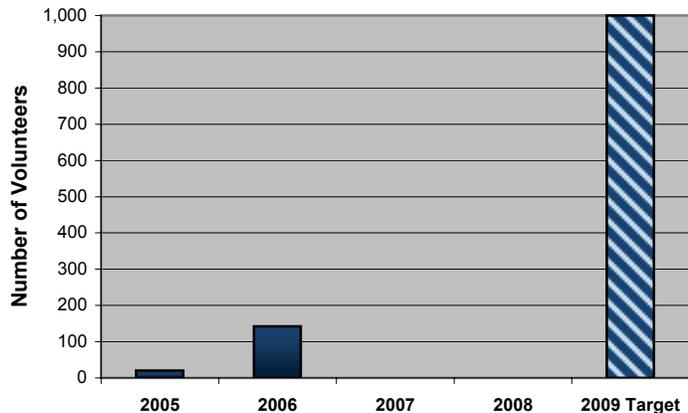
The Master Naturalist Program is a community-based natural resource volunteer program that supports education and conservation efforts in Minnesota. It trains interested adults about natural resources, teaches how to educate others, and provides opportunities to do conservation projects. Master naturalist volunteers make up a network of skilled volunteers who engage in outreach and increase Minnesotans' understanding and appreciation of the natural world. Volunteers also make it possible to run low-cost programs and save taxpayer dollars.

## What is DNR doing?

DNR is working with the University of Minnesota Extension Service to develop and conduct the Master Naturalist Program. The program will offer three courses that correspond to Minnesota's three major biomes—the deciduous forest, prairie, and coniferous forest. To be certified as a master naturalist volunteer, volunteers must initially complete 40 hours of training and 40 hours of volunteer service on a supervised project. To maintain certification, they must complete eight hours of advanced training and 40 hours of volunteer service annually. Following training, these conservationists will assist DNR, the extension service, and other partners with public outreach and management of the state's natural resources.

**Target: Train more than 1,000 master naturalist volunteers by 2009.** To achieve this target, DNR and the University of Minnesota Extension Service will develop and conduct two main components: courses for volunteer certification and instructor training for resource professionals and professional naturalists to teach volunteer courses. The first course, Big Woods, Big Rivers, began in fall 2005. Prairies and Potholes began field testing in 2006, and Northwoods, Great Lakes is scheduled to begin in 2008.

Number of Master Naturalist Volunteers



Master naturalist volunteers complete a 40-hour hands-on course. They study natural history, environmental interpretation, and conservation stewardship. This program is open to any adult who enjoys the outdoors.

## Learn more about:

- Becoming a master naturalist volunteer at: <http://www.minnesotamasternaturalist.org>
- Other DNR natural resources education programs at: <http://www.dnr.state.mn.us/education/index.html>

# DNR Energy and Environmental Performance

Indicators: Energy conservation measures employed by DNR

## Why is this indicator important?

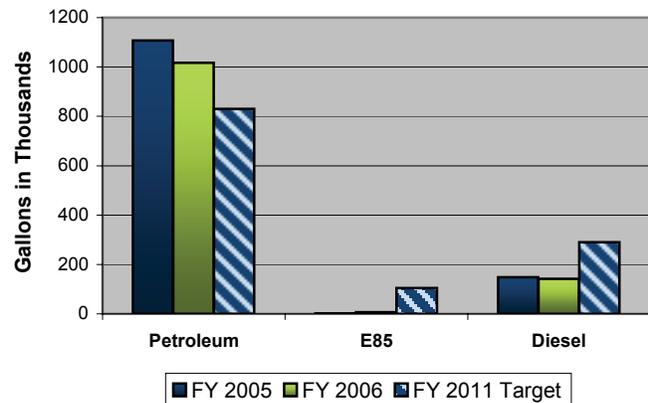
Natural resource stewardship includes conservation of energy resources as well as careful consideration of the environmental impact of all DNR business activities. The department's objective is to model environmental performance and neutralize our own carbon loading activities.

## What is DNR doing?

DNR is developing a comprehensive energy plan that will guide department business operations to achieve specific environmental goals. DNR will target energy use reductions in fleet and facility operations. In addition, DNR will consider business impacts on environmental quality and economic performance. This could include adopting carbon sequestration strategies at operating sites to mitigate the environmental impacts of business activities. The energy plan also will include the development of demonstration areas that model best energy practices for fleet and facility operations.

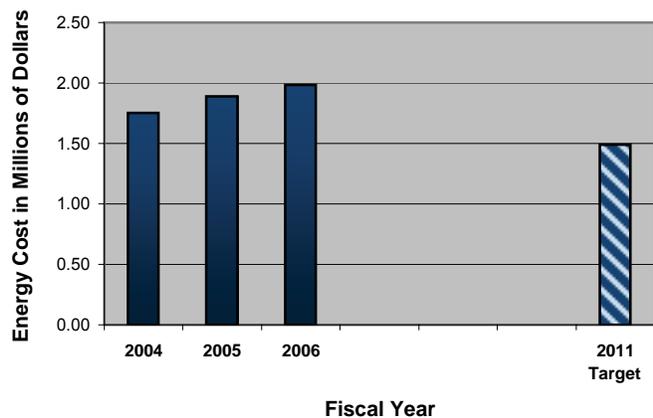
**Targets: Reduce DNR transportation petroleum consumption 25% by 2011 and 50% by 2015; reduce DNR facilities energy use 15% by 2011 and 25% by 2025.** Additional transportation and facility-related targets include: ensure that 25% of DNR's vehicles are alternative fuel capable by 2015; ensure that 25% of all DNR facilities energy use is either eliminated or renewable by 2025; landscape 25% of DNR's administrative sites to sequester carbon by 2015 and 50% of sites by 2025. DNR is exploring a variety of strategies to reach these targets and will be adapting strategies as new technologies become available.

## Petroleum, E85, and Diesel Fuel Consumption by DNR Road Vehicles



Petroleum, E85, and diesel fuel consumption by DNR road vehicles. DNR's target is to reduce its transportation petroleum consumption 25% by 2011.

## Annual Energy Costs for DNR Facilities



Annual energy costs for operating DNR facilities. DNR is developing strategies to reduce facilities energy use 15% by 2011. Energy cost is a temporary measure until we develop more accurate measures of energy use.

## Learn More About:

Minnesota Energy Statistics: [http://www.eere.energy.gov/states/state\\_specific\\_statistics.cfm/state=MN](http://www.eere.energy.gov/states/state_specific_statistics.cfm/state=MN)

# Natural Resources Stewardship Education

## Key Indicator Gaps

### Indicator Gaps:

Although the indicators in this report have data of sufficient quality and coverage to support trend reporting, we recognize gaps in our ability to report on important education and natural resources trends. The following is a preliminary list of important indicators that require either additional data or new monitoring efforts. When baseline and trend data for new indicators are available, cooperative efforts will be needed to establish conservation targets.

A preliminary list of indicator gaps include:

Indicators that measure change in stewardship behavior resulting from DNR education programs.
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Indicators that measure natural resource improvements resulting from DNR education programs (e.g., measures of lake improvements as a result of aquatic education programs).
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# The Task Ahead

Natural resource conservation constantly faces new challenges and new opportunities. Increasingly, our natural resources are influenced by global forces: global economics, global climate change, and unprecedented global social mobility.

As a natural resource organization, DNR must continually develop more effective tools to anticipate and respond to changing conditions that will influence the future health of natural resources. This report serves as a template for communicating through measurable indicators and targets how DNR programs are achieving mission results. It records things we are doing well to sustain our natural resources. It also records trends that pose troubling challenges for the future.

## Indicators and Targets as Information Tools

Information is key to sound natural resource management. Indicators help us simplify and summarize complex data into concise measures. Good indicators are sensitive to natural resources change. They reflect public values. They are easily understood. They can be tracked over time.

Targets help us measure progress against specific benchmarks, to document accountability to real conservation results. Good targets are both short and long term, allowing us to demonstrate how programs progress toward both annual and extended goals. They clarify expectations with citizens and stakeholders. They help promote innovation and partnerships in achieving results.

## Continuous Improvement

This report uses indicators to help clarify and document natural resource trends and targets to document progress. Our goal is to more effectively tie performance to budgeting and planning and continuously improve management.

DNR is committed to being a leader in the use of performance indicators. We must enhance the effective use of indicators and targets in two major ways:

- 1) DNR and partners need to cooperatively develop new indicators that gauge changes in natural resource conditions more accurately than existing indicators. We will need to foster partnerships to share the costs of natural resource monitoring.
- 2) DNR needs to work closely with stakeholders to develop both short- and long-term targets that focus attention on the most important conservation results.

Conservation of natural resources is the responsibility of all citizens. Good information is a foundation for natural resources stewardship. DNR welcomes broad participation in our efforts to improve our ability to measure progress toward our conservation mission.

# Appendix

## Index of Indicators Used in This Report

### Natural Lands Indicators

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#### DNR-administered lands

- Number of acres protected in Wildlife Management Areas (WMAs) - 4
- Number of shoreline miles protected in Aquatic Management Areas - 5
- Number of acres protected annually within statutory park boundaries - 6
- Number of sites protected in Scientific and Natural Areas (SNAs) - 7
- Number of DNR land management units mapped for terrestrial invasive plants; acres of control efforts - 8
- Completion of an updated land records system - 9
- Number of school trust land parcels meeting fiduciary responsibilities - 10
- Income from state mineral leases - 11

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- Acres in conservation land retirement programs under state and federal farmland programs - 12
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- Pounds of walleye fingerlings stocked; walleye population levels - 27
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- Number of unsafe or unsound dams removed or modified - 65
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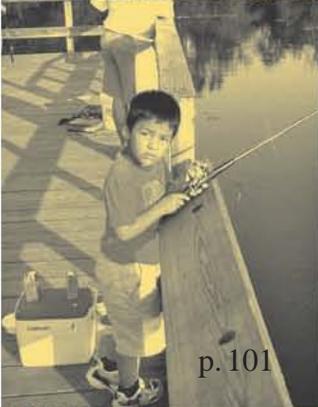
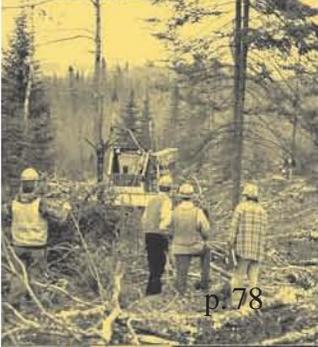
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- Hunter recruitment– page 44
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- Forest certification– page 78
- Fishing piers– page 101
- Angling participation and education– page 111

as well as  
86 other  
indicators  
measuring  
DNR’s  
progress  
toward  
mission.