



©MN DNR, C. Iverson

Fish Management

The Minnesota Department of Natural Resources works with people to conserve natural systems and maintain biodiversity while providing for the sustainable use of resources for social and economic purposes.

What Will the Students Learn?

All of us use natural resources and share the responsibility for ensuring a sustainable quality of life in our state. Through roleplaying and problem solving, students learn that the Minnesota DNR works with citizens to manage the state's natural resources. This is a big job, and all of us must play a part in this effort.

Chapter Concepts

The Minnesota DNR mission statement focuses the agency's efforts to manage the state's resources:

“Our mission 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.”

Minnesota citizens must possess the awareness, knowledge, and skills to work with the Minnesota DNR to address and solve resource management issues. Students learn how and by whom Minnesota's fisheries resources are managed, and, by practicing various citizenship skills, they'll learn how they can participate in an informed manner. Students discover the varied perspectives and values of diverse user groups, reflect on their personal values, consider requirements for healthy ecosystems, wrestle with compromise and consensus, and investigate and address some fisheries management issues.

Working Together to Manage Natural Resources

- Lesson 4:1—Fishing Regulations and Sportsmanship**
- Lesson 4:2—Fish Surveys**
- Lesson 4:3—Aquatic Plant Power**
- Lesson 4:4—Town Meeting**
- Lesson 4:5—Fisheries Management and You**

Why are rules and regulations necessary? Why do we manage our natural resources? Population growth and development place increased demands on the environment, encroach upon habitat, and threaten the viability of ecosystems and plant and animal diversity. Many people work together to manage our aquatic and fisheries resources, including citizens, natural resource agencies, businesses, conservation groups, the tourism industry, sportsman's and recreation groups, recreational anglers, commercial fishers, community representatives, legislators, and many others. Sometimes users' needs conflict. There are a variety of tools or methods that

fisheries managers employ to help resolve natural resource issues, including rules and regulations. In determining and applying regulations and other management tools, effective resource management considers the diverse needs of user groups as well as the needs of healthy ecosystems. The goal is to ensure quality of life for Minnesota citizens and to strive for conservation, and sustainable use of the state's natural resources.

Conservation Versus Preservation

- Lesson 4:1—Fishing Regulations and Sportsmanship**
- Lesson 4:2—Fish Surveys**
- Lesson 4:3—Aquatic Plant Power**
- Lesson 4:4—Town Meeting**
- Lesson 4:5—Fisheries Management and You**

It's important to understand that preservation and conservation play different roles in resource management plans. Preservation efforts ensure that resources remain intact, and often allows only minimal human disturbance. Conservation involves the responsible use of renewable resources. Sound science and research based management practices help us safely use natural resources without jeopardizing the continued supply of the resource or the viability of ecosystems.



©MN DNR, C. Iverson

“Individually, each of us can do only a little.
Together, we can save the world.”

—Denis Hayes, Coordinator of the first Earth Day

Fisheries Management Issues

Lesson 4:1—Fishing Regulations and Sportsmanship

Lesson 4:2—Fish Surveys

Lesson 4:3—Aquatic Plant Power

Lesson 4:4—Town Meeting

Lesson 4:5—Fisheries Management and You

As Minnesotans, we enjoy our state’s abundant natural resources—and hold varying views about their use. Students learn how the Minnesota DNR utilizes a combination of public input and scientific management tools to meet the most needs and ensure sustainable use of resources. These are some major issues addressed by Minnesota DNR fisheries managers, Minnesota anglers, and citizens:

Experimental regulations—Biologists maintain that limiting the harvest of some sizes of fish is the most effective way to improve the average size of fish that anglers catch. With sound research, the Minnesota DNR continues to learn which regulations work best for various waters and species.

Bag limits—As they gather research data and input from anglers and others, fisheries managers and researchers examine the biological and social impacts of existing and proposed bag limits. (A bag limit is the number of fish of a particular species an angler may legally possess.)

More pressure, better gear—Fishing pressure has continued to increase since the 1950s, and continual improvements in technology and fishing gear have made anglers more effective at finding and catching fish—yet the number of fishing waters remains constant. Fisheries managers seek ways to address the issue of providing quality fishing opportunities despite increased fishing pressure.

Invasive species—Harmful aquatic plant and animal species, such as the zebra mussel, round goby,

spiny water flea, ruffe, and Asian carp, increasingly threaten permanent harm to Minnesota’s fish populations and fishing. These invasive species and others can displace native fish species and alter the food chain that supports game fish. Everyone shares responsibility for reducing these risks by limiting the spread of invasive species.

Stocking Up

In 2003, the Minnesota DNR stocked 165,000 pounds of walleye fingerlings and yearlings, surpassing that year’s goal of 130,000 pounds. Those fish began to reach keeper size (about fourteen inches long) in 2006. Approximately 900 Minnesota lakes are stocked with walleye, but 86 percent of the state’s annual walleye harvest comes from naturally-reproduced fish.

Fisheries Management: Tools of the Trade

Lesson 4:1—Fishing Regulations and Sportsmanship

Lesson 4:2—Fish Surveys

Lesson 4:3—Aquatic Plant Power

Lesson 4:4—Town Meeting

Lesson 4:5—Fisheries Management and You

Students play roles, discover the environmental consequences of some everyday choices and decisions, simulate public meetings and fisheries management techniques, and conduct experiments. They learn that—through public input, surveys, and data collection—fisheries biologists and managers determine the best management tools for meeting demands placed on aquatic resources by land use practices, development, wide-ranging public interests, and diverse user groups. Prevalent fisheries resource management tools include:

Gathering information—This is accomplished through direct observation and comprehensive



lake and stream surveys of fish populations, fish habitat, and fishing activities. Information from lake and stream surveys forms the foundation of every Minnesota DNR fisheries management activity.

Restoring and conserving habitat—Lakes and streams with the best fishing usually have the healthiest fish habitat. Each year, the Minnesota DNR teams up with a growing number of fishing clubs and lake associations to improve and conserve fish habitat on dozens of lakes and streams statewide. Restoring natural vegetation can cut maintenance costs, deter unwanted pests (such as Canada geese), attract butterflies and songbirds, and improve fish habitat in shallow water. Plants help prevent eroding shorelines from sending sediment into the water, where it smothers fish eggs and the underwater insects that fish eat. Plants also filter runoff, stabilize banks, and impact water temperature.

Stocking fish—On each lake, fisheries managers must balance the cost and the benefits of stocking, calculate the likely effects on other fish populations, and evaluate the results of previous stockings. Only then can they recommend the stocking of a lake.

Adjusting regulations—On 90 lakes and 25 streams and rivers, the Minnesota DNR has established experimental fishing regulations to protect certain sizes of various fish species. These regulations are called experimental because researchers are studying their effects on fish populations and angler harvest. In time, the researchers will determine which regulations work best for improving fishing for certain species on certain lakes. The goal is to eventually establish a range of regulations that local fisheries managers can offer to anglers seeking to improve fishing on local lakes and streams.

Informing and educating—Providing information and educating Minnesotans, including anglers, lakeshore owners, and children, is among the most important work that the Minnesota DNR does.

Anglers are particularly interested in Minnesota DNR fisheries information. The Minnesota DNR website gets more than 60,000 daily “page hits,” mostly from people checking lake survey reports. In spring, the Minnesota DNR Information Center gets hundreds of phone calls and email requests daily—mostly from anglers. Local fisheries managers meet regularly with many of the more than 300 fishing groups and 600 lake associations throughout the state. They listen to concerns, present lake survey information, propose experimental regulations, and discuss the state of local lakes and streams. Fisheries managers also give presentations to school and civic groups, speak regularly on radio programs, provide information to reporters, and field questions from visiting anglers and real estate agents. Fisheries managers also appear at fairs and other large events.

“In every deliberation, we must consider the impact of our decisions on the next seven generations.”

—Great Law of the Iroquois Confederacy,
eighteenth century



“If we can’t work together, we can’t make it work.”

–Source unknown

MinnAqua Program—To increase public-knowledge of lakes, streams, and fisheries, the Minnesota DNR developed the MinnAqua aquatic education program. Its primary goal is to teach fishing skills and provide basic instruction on lake and stream ecology, fisheries management, stewardship, and angling sportsmanship. MinnAqua is a statewide program. The education staff develops many partnerships and works with schools, scout groups, 4-H groups, parks and recreation departments, community education programs, camps, state parks, nature centers, immigrant groups, parent and child groups, senior citizen groups, special needs groups, festivals, fairs, Environmental Education field days, sport shows, and other concerns to promote angling and aquatic education.

Providing increased access—If anglers can’t get to the water, it doesn’t matter how good the fishing may be. To provide anglers with access to Minnesota public lakes and rivers, the Minnesota DNR works with communities throughout the state on projects that include installing and maintaining fishing piers and constructing fishing platforms and boat ramps on public lakes and rivers. To provide access to trout streams, which are also public waters, fisheries managers buy easements from willing sellers.

Fishing in the Neighborhood Program (FiN)—FiN provides great fishing opportunities for residents and visitors in the Minneapolis-St. Paul metropolitan area. Since 2001, this urban fishing program has been working to expand Twin Cities fishing opportunities. With local partners, FiN stocks fish, installs fishing piers and platforms, restores shoreline habitat, and sponsors MinnAqua education programs.

Conducting research—Researchers assist fisheries managers in understanding and determining scientific solutions for improving fishing and effectively managing aquatic resources.

Multiple Use, Consensus, and Compromise

Lesson 4:1—Fishing Regulations and Sportsmanship

Lesson 4:2—Fish Surveys

Lesson 4:3—Aquatic Plant Power

Lesson 4:4—Town Meeting

Lesson 4:5—Fisheries Management and You

Integrated Resource Management means that the Minnesota DNR works to achieve mission results through partnerships and communication with other agencies, organizations, and community members. A critical balance must be achieved in considering multiple values and needs for resource use. This requires interdisciplinary coordination, ecosystem-based approaches, and sustainability considerations. Students practice the skills of identifying multiple users of an aquatic or fisheries resource, working out compromises, and reaching consensus in addressing environmental issues at the local level.

Citizenship and Personal Responsibility

Lesson 4:1—Fishing Regulations and Sportsmanship

Lesson 4:3—Aquatic Plant Power

Lesson 4:4—Town Meeting

Lesson 4:5—Fisheries Management and You

All of us use natural resources and share responsibility for using them in a sustainable manner. Minnesota needs environmentally literate and engaged stewards who will work to ensure that present and future generations will enjoy a rich natural heritage and a healthy environment. As human populations grow, demands on our natural resources increase. This makes it even more important for everyone to make informed, sustainable stewardship choices and decisions.

Fisheries Careers

Lesson 4:1—Fishing Regulations and Sportsmanship

Lesson 4:2—Fish Surveys

Lesson 4:3—Aquatic Plant Power

Lesson 4:5—Fish Management and You

Students that enjoy fish and wildlife, the outdoors, learning about nature and ecosystems, and are passionate about working to ensure a healthy environment may be suited to a career in fisheries management. There are many fisheries professions to explore. A strong background in science and social studies is recommended for those who aspire to fisheries positions, but experience in aquatic environments (wetlands, lakes, rivers, and streams) through fishing, observing plants and wildlife, and comparing different habitats, can give students an impression of what it's like to work in a fisheries-related field.

The lessons and activities in this chapter give students some primary insight into many different types of fisheries management professions, including: fisheries biologists, research scientists, fisheries managers and program coordinators, engineers, botanists and aquatic plant specialists, habitat environmental planners, entomologists, educators, and conservation officers.

Stewardship: A Call to Action

Service-learning Appendix

All of us use natural resources. And we're all fisheries resource managers, too, in a way. Fish are a significant natural resource in Minnesota in terms of food, economics, and recreation. Fish are also critical components of healthy aquatic ecosystems.

What can students do to help conserve and manage Minnesota's water and fisheries resources? Can one person make a difference? Using their knowledge and skills related to water, aquatic habitat, and fisheries management, students can become involved in their communities, actively addressing and solving environmental issues and participating in service activities. Service-learning provides students with a framework for this involvement. They identify a local water habitat or fisheries issue, seek community partners, and design a project that addresses an issue. The completion of a service-learning project empowers students and helps them become active citizens and stewards of fisheries resources.

