



Conceptual Framework for

Fishing: Get in the Habitat! MinnAqua Leader's Guide

This section provides an overview of the structure and foundation of the core content for instructors and youth leaders who wish to implement the lessons and activities in the *MinnAqua Leader's Guide*. It's also a blueprint that will guide efforts to increase the effectiveness of the MinnAqua Program's education and outreach efforts.

The Educational Purpose of the MinnAqua Leader's Guide: To Get in the Habitat

The *MinnAqua Leader's Guide* helps build an environmentally literate citizenry by providing necessary awareness, knowledge, skills, and motivation to prevent and solve natural resource issues and to address other management goals of the Minnesota Department of Natural Resources. The skills taught in the *MinnAqua Leader's Guide* support the development of a lifelong stewardship ethic and better prepare the citizenry and local leaders for making informed natural resources decisions.

Minnesota educators will use the *MinnAqua Leader's Guide* for:

- teaching about Minnesota fish, aquatic resources, and resource management
- leading youth groups and students outdoors, providing the background and inspiration for initiating self-sustaining service-learning projects such as volunteer monitoring projects, shoreline restoration, and teaching others to fish
- connecting students to their local aquatic resources through the lifelong recreational activity of angling
- promoting lasting stewardship of Minnesota's aquatic resources

MinnAqua Program Goals for the MinnAqua Leader's Guide

Goal 1: To support the mission of the Minnesota Department of Natural Resources.

“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.*”

—*A Strategic Conservation Agenda 2003–2007: Measuring Progress Toward Mission*,
Minnesota Department of Natural Resources
mndnr.gov/conservationagenda/index.html

The *MinnAqua Leader's Guide* will increase the outreach potential of the Minnesota DNR and the MinnAqua Program by empowering others to effectively teach angling and aquatic education programs throughout Minnesota.

An environmentally literate citizenry will support the Minnesota DNR goal of working with the citizens of Minnesota to conserve, manage, and use our state’s natural resources in a sustainable way.

Goal 1 Objectives

To develop an informed and engaged citizenry that:

- understands the value of fish and aquatic resources as a public trust
- appreciates that conservation and management of fisheries and water resources are essential to sustaining fish, water quality, the outdoor landscape, and the quality of our lives
- understands and actively participates in stewardship and support of natural resources
- understands, accepts, and lawfully participates in fishing and other types of resource-related outdoor recreation
- understands the need for and actively supports funding for fish and wildlife conservation

(These objectives are adapted from the *North American Conservation Education Strategy Vision Statement*, Association of Fish and Wildlife Agencies, March 2005.)

Goal 2: To support the mission of the MinnAqua Program.

“The mission of the MinnAqua Program is to provide lifelong educational programming that will increase people’s knowledge and understanding about aquatic ecosystems, management, and resource issues; help acquire skills related to aquatic recreation, careers, and teaching; and foster a better stewardship of Minnesota’s natural resources.”

—*MinnAqua Program Mission Statement*,
mndnr.gov/minnaqua/index.html

Providing angling and aquatic resources education to the public is a core activity of the MinnAqua Program. The *MinnAqua Leader's Guide* outcomes include partnerships, expanded public participation in fish management activities, increased awareness of natural and altered systems and their management, increased compliance with fisheries regulations, increased access to natural resources information, increased stewardship and environmental literacy, and maintaining or expanding public participation in fishing.

Fishing is often referred to as Minnesota’s pastime. Through angling, the *MinnAqua Leader's Guide* connects students to their local aquatic resources in a way that is relevant to the everyday life of Minnesota youth. It allows students to get outdoors and explore local aquatic habitats.

The *MinnAqua Leader's Guide* encourages expanded use of local aquatic places as the focus of learning *and* as a “connector” of science and environmental literacy for students.

By incorporating the Recreational Boating and Fishing Foundation (RBFF) Best Practice Recruitment-Training-Retention Intervention Model into the design of the *MinnAqua Leader's Guide*, the MinnAqua Program has worked to develop active stewards, and future voters and elected officials who

are environmentally literate and prepared to respond to tomorrow's natural resources challenges.

Goal 2 Objectives

To develop an effective program that:

- is relevant to the mission of the agency or organization sponsoring the program
- is experiential
- is relevant to the everyday life of the learner
- uses an interdisciplinary approach to help learners develop skills, formulate concepts, and examine issues
- identifies and targets one or more outcomes or skills, beyond the subject matter, that are broadly useful to the learner
- contains organizational mission, education program goals, and instructional objectives aligned to reflect stewardship education
- considers how ethical principles and reasoning support stewardship
- provides opportunities for learners to have positive contact with the outdoors over an extended time period
- encourages long-term stewardship behavior



(The “Effective Program Objectives” are adapted from the 2003 *Best Practices Workbook for Fishing, Boating and Aquatic Resources Stewardship Education*, Recreational Boating and Fishing Foundation which served as an important supporting document for the design, development, and implementation of the *MinnAqua Leader's Guide*. For more information, see www.RBFF.org/educational/bestpractices.cfm or contact RBFF at 601 North Fairfax Street, Suite 140, Alexandria, VA 22314-2054, or by phone at 703-519-0013.



To develop a Minnesota citizenry that will:

- have an awareness of and connection to local aquatic habitats and local environmental issues
- have knowledge about Minnesota fish, Minnesota waters, aquatic habitats and ecosystems, and fisheries management; a systems based understanding of the interconnection of the natural, built and social components of the environment in which we live; and an understanding of the interdependence of all organisms and the need for conserving natural resources
- examine how personal, and cultural attitudes about fishing and aquatic resources impact the quality of life in Minnesota; understand the cause and effect relationship between human attitudes and behavior and the environment; and understand the issues surrounding multiple uses of the environment
- have observation skills, science and inquiry skills, personal decision-making skills, skills to identify and evaluate alternative responses to environmental issues and problems, fishing skills, stewardship and citizenship skills
- engage in the activity of fishing in a way that provides an awareness and appreciation of the need to conserve and sustain our natural resources and with an understanding of the value of our fisheries and aquatic resources as a public trust
- be motivated to participate in the lifelong activity of fishing and share that activity with others
- participate in local communities as informed decision-makers, active stewards of aquatic resources, and engaged citizens able to maintain a sustainable lifestyle

Goal 3: To be a tool that comprehensively illustrates angling and aquatic ecology concepts, guides effective instruction, and emphasizes safety and stewardship for use by educators in nonformal and formal education settings.

Increasing Outreach in Nonformal and Formal Educational Settings

“Angling and aquatic education programs are more effective when the programs reach their audiences from multiple settings, and when programs target audience needs and learning styles. Different audiences have different motivations and constraints

regarding participation. When students are reached in both formal and non-formal settings, connections can be made between what students are learning in school, what they learn in outside activities and programs, and the activity of fishing and stewardship concepts become more relevant to students' daily experience.

'An effective angling and aquatic education program is built on science-based research, a solid plan, well-trained instructors, strong support, and continued program evaluation.'

—*Best Practices Workbook for Boating, Fishing, and Aquatic Resources Stewardship Education*, Recreational Boating and Fishing Foundation, 2003

Goal 3 Objectives

These objectives of Goal 3 were used as guidelines for revising the original 1992 *MinnAqua Leader's Guide* to create this new edition. These guidelines ensure that this edition of the *MinnAqua Leader's Guide* can be used in indoor and outdoor settings and formal (school) or nonformal settings (such as scout groups, 4-H, community groups, retail outlets, and camps). By linking indoor activities to outdoor settings near or in the "backyards," of participants, it provides a "locus of control," or a setting that helps them feel connected to their environment and helps to empower participants with the feeling that they are indeed able to change or conserve that environment.

To be effective, the *MinnAqua Leader's Guide* will:

- be developmentally appropriate and build on students' prior knowledge
- utilize best practices and research in education practices, environmental education and recreational fishing and aquatic education
- contain extensive background biology and fisheries resources management information in each lesson
- include lessons with well-defined steps and procedures for carrying out the lessons and activities
- be aligned with the Academic Standards and Environmental Literacy Scope and Sequence
- have measurable student learning objectives

- have authentic assessment ideas, scoring rubrics, and student checklists to assess student learning
- accommodate multiple learning styles in lesson activities
- include ideas on how to adapt lessons for use with grades K-2
- address concepts and environmental issues and problems with accuracy and fairness
- feature content that is specifically relevant to Minnesota culture, natural resources, and fisheries management
- make connections to students' everyday lives
- include indoor classroom and outdoor activities
- include self-directed, student-centered learning opportunities
- incorporate individual and group activities
- include interdisciplinary, hands-on, minds-on, and inquiry-based lessons
- clearly address safety and regulations for the purpose of reducing risk and instilling comprehensive awareness of safety and regulations
- provide service-learning ideas and resources
- include lessons that can stand alone or be used as part of a unit
- include engaging and effective graphics and copy pages
- include helpful matrices, a glossary, and supporting resources that instructors can easily use
- include developmentally appropriate student reading lists that correspond to topics in the lessons

Goal 4: To develop participants' interest—and continued participation—in Minnesota angling.

Fishing is educational. It teaches participants about a world of fascinating underwater species. Fishing is a way to explore lakes and streams—and it's fun! It's a pastime that can be enjoyed alone or with friends and family.

In the Land of 10,000 Lakes, angling-based activities provide Minnesotans with millions of hours of outdoor recreation and generate billions of dollars for the state's economy. Minnesotans have abundant opportunities to get outdoors and enjoy the state's rich aquatic resources. Angling is a

lifelong activity that is wholesome, healthy, connects participants to local aquatic environments, and contributes to the state's economy and quality of life.

Goal 4 Objectives

The students will:

- understand, accept and lawfully participate in fishing, wildlife watching, and other types of resource-related outdoor recreation
- understand the value of our fisheries resources as a public trust managed by government agencies
- understand that ownership of land does not convey ownership of wildlife (and fish)
- understand that sustainable use of natural resources depends on the support of an informed and responsible citizenry
- understand that regulations are necessary for natural resources conservation
- appreciate that conservation and management of water resources are essential to sustaining fish, the outdoor landscape, and the quality of our lives
- understand that the health and well-being of fish and humans depends on the quality of their environment
- understand that fish resources provide recreational benefits directly to participants and increase advocacy for conservation
- understand that responsible users of fish and aquatic resources and the outdoors respect the rights and property of others

(These objectives are adapted from *Conservation Education Strategy Core Concepts for Conservation Education*, Association of Fish and Wildlife Agencies, March 2005.)

Goal 5: To Provide teachers and students with the background and information they need to initiate self-sustaining stewardship projects and programs in their communities.

Environmental stewardship involves informed, responsible behaviors and actions undertaken by people on behalf of the environment and future generations.

The *MinnAqua Leader's Guide* includes a Service-

learning Appendix to encourage instructors and students to apply content knowledge, critical thinking, and good judgment to address genuine community needs. Service-learning empowers students with experience and the opportunity to demonstrate goal-setting, commitment, and community engagement, which support the development of a long-term stewardship ethic.

Goal 5 Objectives

The *MinnAqua Leader's Guide* will:

- serve as an effective resource for teaching about Minnesota fish, aquatic resources, resource management, and aquatic stewardship
- lead students outdoors and initiate self-sustaining programs such as volunteer monitoring projects, shoreline restoration, and other service-learning projects
- connect students to their local aquatic resources and engage them in aquatic stewardship through the recreational activity of angling
- promote lasting stewardship of Minnesota's aquatic resources
- promote sustainable use of Minnesota's natural resources

Chapter Framework: Chapter Themes

The chapter themes, combined with the Service-learning Appendix, organize lessons and activities along a developmental continuum of learning from the awareness level to knowledge, attitudes, and skills development to the action level. Students have an opportunity to exercise higher learning skills and develop a sense of empowerment when they apply acquired knowledge and skills and engage in a relevant activity, "real world" problem solving, or address issues in their communities.

Chapter 1: Aquatic Habitats

The lessons in this chapter provide students with opportunities to begin to explore their local aquatic habitat, discover what lives in and near the water, compare their own habitat needs with the those of fish, and learn how fish survive in lake, river, or stream habitats. Students will be immersed in their

local aquatic habitat and begin to gain a greater awareness of their environment, develop the ability to understand natural systems (which are sets of interactions), and discover their place within those systems. In order for students to gain an awareness of their environment and begin to understand and appreciate relationships between themselves and the living and non-living parts of the natural environment and their communities, they must spend time becoming *connected*—experiencing and exploring their local environment.

Chapter 2: Minnesota Fish

Children have a natural curiosity about the world and its inhabitants. They're eager to dive in and discover the different types of fish—and other wonders—that inhabit Minnesota's lakes and streams. Chapter 2 builds increased awareness, knowledge, understanding, and appreciation for the diversity of fish species in Minnesota. These lessons explore the exterior parts of fish (structure and function), fish senses, adaptations, behaviors, habitat requirements, life cycles, interactions with other species, and environmental challenges and limitations, as well as fish identification and classification. Students compare different types of fish, and explore differences and similarities between fish and themselves. Fish tales help students gain an understanding of how attitudes and ideas about the natural world are created and reinforced. Increased knowledge of fish biology and behavior also increases angling success. For an angler or observer, knowing the characteristics of various fish species provides information that reveals where, how, and when to fish for particular species. Knowing how to identify fish helps anglers follow fishing regulations. There is a world of information to learn about fish!

Chapter 3: Water Stewardship

Minnesota has 11,842 lakes that are larger than ten acres and 6,564 natural rivers and streams containing 69,200 miles of moving water. All water is continually in motion, traveling and changing states in the water cycle, a fundamental system that connects all living things. Chapter 3 increases awareness and knowledge of the critical ideas that all plants and animals need water, we all use water,

and that each of us lives in a watershed. These lessons also develop observation and critical thinking skills. Fresh, clean water contributes to a healthful quality of life for all living things. Things that happen on the land within a watershed eventually are reflected in the water quality of lakes and rivers. Students also investigate personal attitudes and values; and the viewpoints, attitudes and values of other. Our choices and actions in the watershed impact water quality—they can benefit or harm plants and animals, including fish and people. The lessons in this chapter help students identify and develop their own attitudes and values concerning water, and help them gain an appreciation for Minnesota's abundant water resources.

As students acquire increased awareness, comprehensive information, and improved analytical skills they gain abilities to make informed decisions and address environmental problems. If people feel connected to their local aquatic habitats, are well informed, consider their own attitudes and diverse sets of values of others, understand ecosystems and multiple uses of resources, and critically analyze problems, they will know how to use natural resources in a sustainable manner and become effective stewards.

Chapter 4: Fish Management

Chapter 4 lessons develop students' understanding of the roles of the Minnesota DNR and citizens in managing fisheries. The mission statement of the Minnesota DNR focuses its efforts on managing the state's resources. The DNR strives to work with the state's citizens to manages resources, conserve natural systems and maintain biodiversity while providing for sustainable use of the resources for social and economic purposes. We all use natural resources and share the responsibility of ensuring a sustainable quality of life in our state. Students learn that this is a big job, and that we all must do our part. They will begin to practice and develop skills enabling them to consider personal values, varied points of view and perspectives, rules, regulations, responsibility, the importance of informed choices and decisions. They will begin learning how to critically analyze environmental issues.

Experience + Exploration of Local Environment = Engagement

Minnesota’s citizens must have the awareness, knowledge, and attitudes and skills to work together—and with the Minnesota DNR—to address and solve resource management problems and issues. Students will learn how Minnesota’s fisheries resources are managed, and who performs this work. They’ll practice a variety of citizenship skills to learn how they can participate as informed citizens within communities. Students will discover the diverse perspectives and values of varied user groups, reflect on their reflect on their personal values and attitudes, consider requirements for healthy ecosystems, wrestle with compromise and consensus, and investigate some fisheries management issues and techniques.

Chapter 5: Fishing Equipment & Skills

Fishing is a tradition deeply embedded in Minnesota’s history and culture. Approximately one-third of Minnesota’s more than five million residents engage in fishing, and anglers come to Minnesota from many other places, too. More than two million anglers fish in Minnesota waters each year.

Chapter 5 lessons help students learn skills that will help them become self-sufficient anglers, including: knot-tying, making their own fishing rigs, and casting a closed-faced (spin-casting) rod and reel. They’ll be able to select the correct bait, lures, and fishing locations for target species’ habitat and food preferences. Students exposed to fishing can learn patience, gain self-esteem, take time to reflect, learn problem-solving skills, and develop an appreciation for the outdoors and our natural resources.

Fishing is a lifelong activity that that gets people outdoors, connects them to their aquatic resources, and provides an opportunity to develop awareness, knowledge, and enjoyment of ponds, lakes, rivers, and streams. Fishing can bring family members together, build friendships, and strengthen bonds between people through shared experiences and special memories.

Anyone can fish. This chapter’s information on skills and equipment, combined with the concepts learned in each of the previous chapters, helps bring

added success to anglers of every experience level. Above all, you can ignite enthusiasm for the sport of fishing and aquatic stewardship, provide relevance to learning across disciplines, and engage students in their learning while empowering them with basic skills for successful angling. These lessons will leave a lasting impression.

Chapter 6: Safety & the Fishing Trip

Chapter 6 lessons help students learn how to fish and how to plan and participate in fishing trips. Students will learn that planning goes a long way to ensure a safe, successful fishing trip. And students will be “empowered by doing” with these active, hands-on lessons.

This chapter engages students in developing competency in fishing techniques and skills and demonstrating responsible and safe fishing practices. They’ll experiment with various baits to discover how to best attract fish. They’ll find out what to do when a fish takes their bait. Students learn to practice the safe, responsible handling that helps ensure the survival of fish that will be released. They’ll learn how to safely store, fillet, cook, and enjoy the nutritional benefits of the fish they

choose to keep. When students have a safe and fun fishing experience, they just might develop

a fishing habit that gets them outdoors more often, connecting them to their habitat. With knowledge of the resource and how it is managed, an understanding of responsible stewardship practices, and practical fishing and safety skills, students will be empowered to pursue fishing as a lifelong recreational, educational, reflective, and inspiring outdoor activity. And they’ll be able to share their new knowledge and skills with their family, friends, and community.

Service-learning Appendix

Service-learning focuses on citizenship. It shares a common commitment with natural resources and stewardship education to make education relevant to the students’ lives beyond the classroom walls. Stewardship education and service-learning empower students with the knowledge, skills, and experience to take responsibility for the environment and quality of life in the communities around them.

Engagement + Action = Empowerment

Incorporating a service-learning experience as a central component of learning reinforces and brings to life the concepts and skills learned from the lessons and activities. The practical application of this learning provides students with the opportunity to further develop skills for identifying and analyzing a problem, learn how their actions can impact their communities, practice communicating with others, create partnerships with others, work as individuals and as members of teams, and develop citizenship skills. Students inevitably reach higher levels of learning, have a richer learning experience and, in school settings, exhibit greater engagement in their studies, which results in greater academic achievement.

The lessons and activities, especially from chapters 3, 4, 5, and 6, prepare students to engage in service-learning experiences. The action component of service-learning then transfers learning to real life, providing a relevant, authentic, and empowering experience. Reflection throughout the experience involves personal evaluation, and assessment of the experience helps students understand how their actions have impacted their communities and themselves. Finally, recognition reinforces the students' effort and achievement, encouraging lifelong learning and stewardship.