

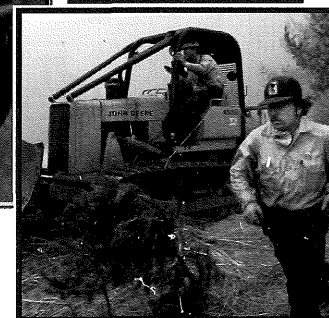
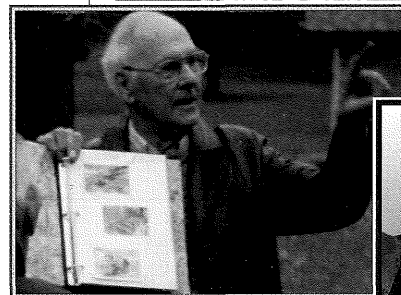
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CORNERSTONES

BUILDING A FRAMEWORK FOR EDUCATION



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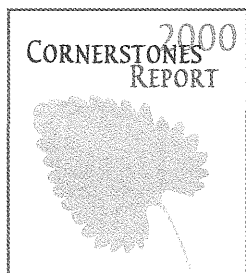
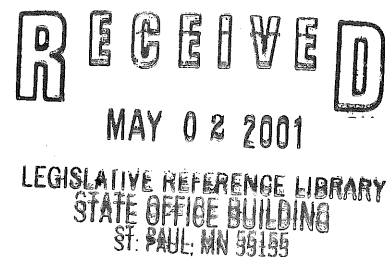


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*Please note: Appendix 4, containing feedback from Regional Management Teams, Natural Resources Education Committee, Information Officers, and focus group meetings, is available as a separate document upon request.
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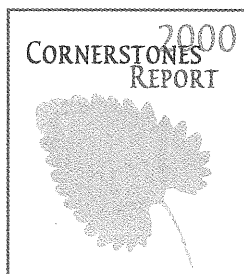
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Chapter 1: INTRODUCTION

The Minnesota Department of Natural Resources' vision, stated in the department's strategic plan, *Directions for Natural Resources* (1997) is "to work with people to manage the state's diverse natural resources for a sustainable quality of life." As the 21st century begins, we are challenged with increasing demands by a growing human population on a diminishing natural resource base. This challenge requires system-wide solutions that must be based on an understanding of ecosystem conditions and trends. Along with this understanding comes the need for citizens to become more actively involved in resource decision-making.

Recently, some Department of Natural Resources (DNR) staff and stakeholders have concluded that the DNR needs to reassess and strengthen its education efforts so that citizens will be better prepared to make informed natural resource decisions, both as individuals and as members of the community. Given the DNR's unique perspective on education and its vision of building partnerships with citizens to achieve sustainability, an important question to be answered is, "What is the most effective educational role for the Department of Natural Resources?" One strategy identified in *Directions* is the establishment of "environmental education as a cornerstone for developing a natural resource stewardship ethic among all Minnesotans."

To that end, the DNR requires a cohesive framework that effectively identifies, links, delivers, supports, and evaluates present and future education efforts.

What is Cornerstones?

The "Cornerstones" work group was formed to clarify the DNR's role in education and to recommend ways to improve its education efforts. Composed of staff from all DNR divisions and educators from outside the DNR, the group explored the question, "What would be required to create a department-wide education program capable of developing a citizenry that understands the issues relating to and affecting resource management?" This report is the summary of that exploration.

Why Education?

A natural resource stewardship ethic is an individual's practical exercise of the knowledge, skills, attitudes, motivations, and commitment to developing and maintaining a healthy environment.

Sustainable development is the ability to meet the needs of the current generation without compromising the ability of future generations to meet their needs.

—Brundtland Commission, 1987

What is Environmental Education?

Minnesota's state plan for environmental education, *A GreenPrint for Minnesota: A State Plan for Environmental Education 1993* (*GreenPrint*), has adopted the U.S. Environmental Protection Agency's 1992 definition of environmental education: "Environmental education is the interdisciplinary process of developing a citizenry that is knowledgeable about the total environment, in its natural and built aspects, and that has the capacity and the commitment to engage in inquiry, problem solving, decision-making and action that will assure environmental quality" (*GreenPrint*, p. 7).

It is important to note the difference between environmental information and environmental education. Environmental information includes facts, research findings, and other data relating to environmental issues. Environmental education is a process that enhances critical thinking, problem solving and decision-making, using environmental information and proven teaching methods.

Regrettably, over time the term "environmental education" has acquired various connotations, some of them negative, due to misuse and an association with environmental extremism. Assuming that the word "stewardship" has neutral or positive connotations to most people, the term "natural resources stewardship education" is generally used in place of environmental education in this report.

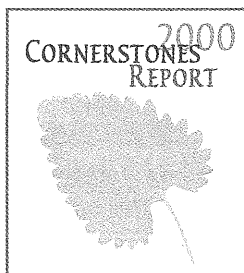
Natural resources stewardship education is a logical niche for the DNR under the broad umbrella of environmental education. Its goal would be to help develop Minnesotans' desire and capacity to participate in decision-making with resource managers. The department's education efforts should be focused on the audiences with the most direct relationship to various resource issues, and should be conducted in cooperation with other environmental education deliverers. Such an effort would be a long-term, integral part of the department's activities, not displacing other important work, but supporting it.

In addition to clarifying the department's educational role, it is also necessary to determine what must be done to achieve a significant effect. For example, what will the effort need, in terms of time and money? What will DNR staff need to do differently? This effort will also need to be evaluated as to how it improves services to audiences and how it will help staff conduct their activities.

Some of these questions are beyond the scope of this report, but the recommendations developed here and the strategies for addressing them map a path toward the solutions.

Environmental information includes facts, research findings, and other data relating to environmental issues.

Environmental education is a process that enhances critical thinking, problem solving and decision-making using environmental information and proven teaching methods.



Chapter 2: ENVIRONMENTAL EDUCATION IN MINNESOTA

The foundation for environmental education was laid in Minnesota and nationally long before the term was popularized in the 1960s. Many organizations and movements were formed decades ago to promote nature study, conservation education and outdoor education. Minnesota's Department of Natural Resources and its precursor, the Department of Conservation, have been among the state's conservation education leaders, taking an active role in developing educational activities and programs in environmental education-related planning, policy-making, administration, and delivery.

Environmental education as it is popularized today emerged with the environmental awakening of the late 1960s and 1970s. It emphasized the consequences of human interaction with the environment in every aspect of life. The federal government, responding to Americans' concern about the environment, passed a number of environmental laws and funded some state programs in environmental education.

Minnesota responded with its own environmental laws and pioneering efforts in environmental education. From the beginning, the DNR was a key player in both the development and delivery of environmental education programs and materials. The very first environmental education bill passed in Minnesota (1969) created a position in the Department of Natural Resources and a corresponding one in the Department of Education to jointly produce a state curriculum for environmental education. The first effort produced a series of environmental education activity kits that teachers could use with their students. Department of Natural Resources and Department of Education staff conducted workshops for teachers around the state on the use of these curricula. For the next two years, selected DNR staff devoted 10% of their time to these workshops.

In 1970, the Legislature created the Minnesota Environmental Education Board (MEEB), of which the DNR was an ex-officio member. In 1971, MEEB published the first state plan for environmental education. The plan created a system of 13 regional volunteer councils to promote environmental education in both formal and nonformal settings. Department of Natural Resources personnel were key players in these regional councils and the programs they initiated. In 1979, the Legislature moved MEEB and its councils from the

DNR TIMELINE

1940

The Department of Conservation established a Bureau of Information to consolidate the department's educational efforts. The bureau's name was changed to Information and Education in 1969.

1941

The Bell Museum and Minnesota State Parks began naturalist programs at Itasca.

1956

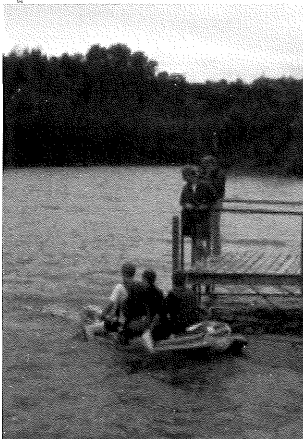
Enforcement's Firearms Safety Training Program began.

1969

The Minnesota Legislature authorized the DNR and the Department of Education to jointly create environmental education curriculum resources. A position was funded in each agency to facilitate this.

1975

The DNR's Boat and Water Safety Training Program began.



State Planning Agency to the DNR, where they were housed for ten years.

The Minnesota Environmental Education Board and its regional councils, the Environmental Learning Centers (ELCs), State Park Naturalists, the Minnesota Naturalist Association, and a few others worked quietly throughout the 1970s to promote environmental awareness. Institutional support for these efforts was limited and fluctuated constantly. Still, these early efforts, combined with other efforts on a national level, paid off, building a critical mass of awareness.

What followed in the 1980s was an explosion of environmental education in the private, non-profit, and government sectors. Hundreds of organizations and agencies became active in environmental education, but with few common goals and little coordination. The roles of traditional environmental education organizations, such as the ELCs, which had been serving as generalized information sources, changed as organizations with specialized environmental education missions (e.g., specific topics like water or particular wildlife species) sprang up. No single organization could give answers to all environmental questions. The Department of Natural Resources added education programs within divisions focusing on particular resources, such as State Park Naturalists, Project Learning Tree, Project Wild, Project Wet, MinnAqua and several others. (See Appendix 3, p. 24.) All this effort may well have contributed to the environmental awareness of the DNR's clientele and their desire to take part in environmental discussions and decision-making.

In the late 1980s and early 1990s the Legislative Commission on Minnesota Resources (LCMR) struggled to prioritize an ever growing number of environmental education-related proposals. In 1990, at the request of the LCMR, the Minnesota Legislature funded development of a new state plan for environmental education. The old environmental education act was dropped, eliminating MEEB and its regional councils. In its place, a new Environmental Education Advisory Board was established in the Department of Education.

Using the input of 1,500 contributors, including many DNR personnel, the new board produced *A GreenPrint for Minnesota: A State Plan for Environmental Education* (1993). *GreenPrint* identified target audiences and laid out environmental education policy, goals, and strategies by which effective environmental education might be achieved, relying on the continuing activity of all the environmental education providers. *GreenPrint* is the State of Minnesota's current statement of guidelines on education about the environment.

Since the completion of *GreenPrint*, much work has gone into building an infrastructure that will support and guide its implementation. To address teachers' need to better integrate environmental education with the curriculum, the *Addendum to the GreenPrint: A Guide to Integrating Environmental Education* was created by eight school districts while the new state plan was being developed. This was also funded by the Legislature, as recommended by the LCMR.

Shortly after *GreenPrint* was published, the Environmental Education Advisory Board was moved from the Department of Education to the Department of Natural Resources, where it was administered from 1994–1996.

At about this time, education reform began on a large scale with the development of the *Graduation Standards*. A committee of the Environmental Education Advisory Board was able to persuade the *Graduation Standards* committee to include environmental education in many content areas, and to create a separate environmental systems standard. For the first time, environmental education was institutionally recognized as an integral part of pre-K–12 education. These standards provided the support that allowed environmental education to become part of mainstream education, and also provided the opportunity to define environmental literacy for all citizens.

The *Graduation Standards* offered both an opportunity and a challenge for environmental education providers: the opportunity to connect directly with schools by providing support for the standards relating to natural resource topics and issues, and the challenge of finding ways to make this happen efficiently and effectively. As a result of all these developments, Minnesota now has a system to implement the state plan for environmental education. Many education providers are contributing to the environmental literacy of the state's citizens. These providers are linked formally and informally through such entities as the Environmental Education Advisory Board, the GreenPrint Council, the Minnesota Association for Environmental Education, and the Sharing Environmental Education Knowledge (SEEK) Web site.

DNR's Current Education Programs and Activities

The DNR's current education programs and activities address a wide variety of subject matter and are carried out in settings ranging from pre-K–university classrooms to adult workshops to one-on-one encounters with DNR clientele. It is helpful to view the efforts of the department from two perspectives, the programmatic and the non-programmatic. The Cornerstones work group believes that the DNR needs to strengthen its education efforts in both areas.

Programmatic efforts are organized, staffed, and funded to deliver education programs to specific audiences (for example, Project Learning Tree, Project Wild, MinnAqua serve pre-K–12 audiences; some programs, such as Ecosystem Education and state park interpretive services, also include adults).

Non-programmatic efforts are not organized, staffed, or funded through formal DNR activities or educational programs; instead, they encompass the myriad “teachable moments” that occur in the normal course of everyday work. Non-programmatic educational efforts include presentations given to citizens groups, organizations and schools; tours; one-on-one conversations with people who own and/or use natural resources; and community programs. Many place-based community coordinators, such as watershed or landscape project managers, employ education as a major component of their work.

For example, fisheries biologists explain to shoreland owners the many functions of aquatic vegetation and the impact of land use activities on this vegetation; wildlife biologists and foresters explain the functions of



1976

The DNR's
Hunter
Education
Program
began.

1978

MEEB was transferred from the State Planning Agency to the DNR.

1980

The Minnesota Legislature authorized the nongame wildlife checkoff. Public comment favored using some of the funds for education.



various aspects of the forest ecosystem and the recommended best management practices (BMPs) to private landowners, who then decide whether and how to harvest timber off their land. Non-programmatic education occurs during discussions when area hydrologists and/or fisheries managers discuss protected waters and aquatic plant management regulations with private landowners. The extent of the educational component of these discussions varies among individual staff and with the circumstances of each discussion. When the purpose of these discussions is to implement regulations, typically the opportunity for constructive learning is more limited.

These informal educational efforts, and countless others, can be difficult to quantify, but they are ongoing and they occur frequently. It is clear that without some attempt to identify, coordinate, support and assess these activities, we cannot estimate their educational value. The Department of Natural Resources needs to take steps to analyze and evaluate these non-programmatic efforts along with programmatic education.

Target Audiences for Natural Resources Stewardship Education

GreenPrint identified 10 critical audiences for environmental education, chosen for their impact on natural resource decision-making. In the context of the agency's natural resource management priorities, the Cornerstones group chose five. These five audiences have the most direct relationship to the tasks of the DNR, and the issues with which the department becomes involved. It should be noted, however, that these target audiences need to be reevaluated periodically as issues change and educational progress is made. The five audiences include:

1. Producers/landowners of both forested and agricultural land
2. Local government officials and boards
3. Recreational users
4. The business community
5. Pre-K–12 students and teachers

Taking Advantage of the Opportunities

The Department of Natural Resources can take advantage of several windows of opportunity to help Minnesota's citizens become more environmentally literate:

1. Education reform: Even if the *Graduation Standards* were repealed tomorrow, enough

groundwork has been laid in the pre-K–12 system that environmental literacy will still be accepted as a legitimate goal.

2. Citizens' interest: Ever-greater numbers of Minnesotans wish to take part in decision-making on environmental issues.
3. The limitations of rules and laws: State administrators and citizens realize that legislation and regulation by themselves cannot accomplish the task of ensuring sustainable resources. An informed citizenry capable of making sound environmental decisions, and living more sustainably, is a necessity.

1984

The Nongame Wildlife Program introduced Project WILD to Minnesota with support from MEEB and the Department of Education.

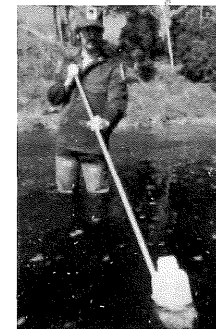


1989

Project Learning Tree moved to the Division of Forestry.

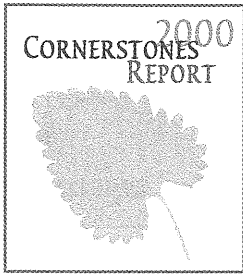
1989

DNR's Fisheries Section initiated the MinnAqua Program.



1991 The DNR's strategic planning process identified environmental education as one of the agency's top 10 priorities.





Chapter 3: CORNERSTONES RECOMMENDATIONS

Having determined the most appropriate audiences, educational content, and opportunities for delivering that content to those audiences, Cornerstones made the following six recommendations for the Department of Natural Resources to improve its ability to provide natural resources stewardship education.

Recommendation 1: Build an effective, coordinated, DNR natural resources stewardship education effort with consistent messages and measurable outcomes.

Recommendation 2: Enhance DNR's investment of time, money, and priorities in natural resources stewardship education to take advantage of internal and external demands and opportunities.

Recommendation 3: Expand DNR's working relationships with pre-K–12 audiences and providers.

Recommendation 4: Strengthen current relationships with critical audiences—producers/landowners, the business community, local government officials and boards, and recreational users.

Recommendation 5: Collaborate with other natural resource agencies and organizations to provide natural resources stewardship education.

Recommendation 6: The DNR's commitment to sustainability should be reflected in its day-to-day practices and policies.

1991 1992

DNR educators began meeting informally to exchange information and formed the Natural Resources Education Committee.

The DNR published results of a comprehensive two-year study of the status and future of environmental education centers in Minnesota.

1994

Enforcement's Adopt-a-School Program began.

1995

The DNR established the Ecosystem-based Management Education Program, later shortened to Ecosystem Education Program.

1995

DNR Waters began introducing Minnesota teachers to Project WET (Water Education for Teachers).



The DNR has made clear and positive efforts to develop and deliver educational programs. (See Appendix 3 for a list of DNR Natural Resources Stewardship Education programs.) However, the individual educational efforts of many DNR field, regional and central office staff have lacked a unifying mission, goal, and message within the department.

Because there is no common set of DNR education goals and strategies, there is no baseline information to use as we begin to measure our efforts. The limitations of staff and the expanding demands for the DNR's involvement in education make it crucial that the agency should have a means to evaluate educational efforts.


Recommendation 1: Build an effective, coordinated, DNR natural resources stewardship education effort with consistent messages and measurable outcomes.

- ◆ Strategy 1: Articulate a clear, unified message on stewardship and sustainability.
 - *Objective A: Define basic concepts and skills that are important for achieving informed decision-making in priority audiences (in other words, define what people should know and be able to do).*
 - *Objective B: Periodically review and reevaluate these basic concepts and skills.*
- ◆ Strategy 2: Develop measurable/quantitative assessments to see if we're reaching audiences with the key concepts and skills.
 - *Objective A: Survey and inventory the natural resources stewardship education component in all existing DNR efforts.*
 - *Objective B: Identify measurable outcomes for DNR natural resources stewardship education efforts to ensure that audiences are able to make informed natural resource decisions.*
 - *Objective C: Devise assessment tools and processes in cooperation with others with similar missions.*
 - *Objective D: Choose education objectives by comparing the DNR's capacity to deliver with the size of the task.*
 - *Objective E: Create a mechanism to refer natural resources stewardship education requests to others as appropriate.*
- ◆ Strategy 3: Examine existing programs to determine if messages are consistent with the goals appropriate for the intended audience(s).
- ◆ Strategy 4: Design and fund educational efforts as appropriate for priority audiences.

The burdens of existing workloads and mandates, along with the limited number of staff assigned or available to design and deliver educational programs, force many staff to decline requests. The complexity of issues requires us to work with audiences in which we have not traditionally invested sufficiently, such as local governments, community groups, and producers/landowners.

Recommendation 2: Enhance DNR's investment of time, money, and priorities in natural resources stewardship education to take advantage of internal and external demands and opportunities.

- ◆ Strategy 1: Define and strengthen DNR organizational structure for natural resources stewardship education.
 - *Objective A: The Commissioner's office should provide leadership and assist in articulating a vision for education in the DNR via communication with staff.*
 - *Objective B: Internal coordination between divisions at all levels should be increased so that resources are effectively shared and duplication of effort is avoided.*
 - *Objective C: Fund a DNR natural resources stewardship education coordinator position at the senior manager level to make connections and serve as the conduit between the field, the central office, and the Department of Children, Families and Learning, and to increase the visibility of education, clarify roles, and represent education in policy-level discussions in the Department of Natural Resources.*
 - *Objective D: Fund field positions to coordinate natural resources stewardship education efforts regionally and locally.*
- ◆ Strategy 2: Empower employees to support DNR's educational goals, and reward them for doing so.
 - *Objective A: Remove the barriers of time management policies to allow employees greater flexibility to participate in educational activities.*
 - *Objective B: Provide opportunities for cross training between divisions and agencies*
 - *Objective C: Challenge all DNR divisions to identify people with an interest and ability in environmental education, and include natural resources stewardship education responsibilities and expectations in their position description updates.*
 - *Objective D: Provide staff training to build their knowledge and abilities in natural resources stewardship education.*
 - *Objective E: Include education knowledge, skills, and abilities in hiring criteria and position descriptions.*

- 
- ◆ Strategy 3: Look for opportunities to apply an educational component to high profile issues (such as deer feeding, treaty rights, and fish stocking).
 - *Objective A: Develop an annual departmental education plan that addresses high profile issues and allows for rapid response to critical issues.*
 - ◆ Strategy 4: Take advantage of the educational opportunities within communities, programs, and other facilities to deliver natural resources stewardship education to priority audiences in cooperation with other education providers.
 - *Objective A: Look for opportunities to collaborate with other education providers on delivering our messages on stewardship and sustainability.*
 - ◆ Strategy 5: Identify and secure dedicated funding sources for natural resources stewardship education.
 - ◆ Strategy 6: Model successful examples of natural resources stewardship education in the department.

Demands on DNR staff to provide information and education services are increasing as education reform evolves. This creates an opportunity for the DNR to cooperate with pre-K–12 educators, an important audience, and benefit from their interest in environmental and community issues.

Recommendation 3: Expand DNR’s working relationships with pre-K–12 audiences and providers.

- ◆ Strategy 1: Establish and fund an agency-level system to prioritize and respond to the needs of our pre-K–12 customers (including school districts, administrators, teachers, and students) for natural resources stewardship education.
 - *Objective A: Contract with an external partner to assess the effectiveness of DNR educational efforts in meeting schools’ needs for natural resources stewardship education.*
 - *Objective B: Learn about schools’ needs, using ongoing assessment processes such as questionnaires and mentoring.*
 - *Objective C: Address the needs of special areas/populations such as urban schools and ethnic minorities.*
- ◆ Strategy 2: Define and deliver basic concepts and skills that we believe are important for natural resources stewardship.
 - *Objective A: Participate in the development of a scope and sequence for major natural resources stewardship themes for pre-K–12 audiences.*
 - *Objective B: Integrate the skills and concepts of natural resources stewardship into pre-K–12 education programs.*
- ◆ Strategy 3: Develop systematic and ongoing relationships with other deliverers of pre-K–12 education.
 - *Objective A: Develop effective partnerships with the Department of Children, Families & Learning and other environmental agencies, so as to provide natural resources stewardship education support services to the pre-K–12 community.*
 - *Objective B: Engage existing networks (e.g., interested DNR educational/field staff and teachers, museums, Environmental Learning Centers, the Minnesota Association for Environmental Education, and others).*
 - *Objective C: In cooperation with school districts and schools, develop an ongoing program of access to our resources, data, staff, and natural features (e.g., parks, SNAs).*
 - *Objective D: Ask teachers what data they need from us and provide it in an accessible form.*

Lifestyle choices, increasing population size, and increasing numbers of outdoor recreation users and use of new technologies all create competition for and conflicts over limited resources. This issue affects nearly all of the DNR's natural resource management activities. These new technologies and conflicts force the DNR to respond to critical management concerns in a reactive manner. Education, by its methods and design, seeks to be proactive.

Market and consumer demands affect the DNR's ability to manage for sustainability. These economic forces drive the decisions that landowners and producers make to use or alter natural resources. As much as we seek to educate people about sustainability and resource stewardship, these changing demands alter the needs of our audiences and the priorities of the DNR—sometimes more quickly than we are able to respond.

Stewardship of natural resources and public attitudes toward stewardship are also shaped by personal, spiritual, cultural, and community values. If DNR staff focus strictly on the natural resource component of this values-based aspect of stewardship and sustainability, it will limit our ability to connect with audiences that have an interest in the future of Minnesota's natural resource management. Our capacity and willingness to understand the relationship between natural resources stewardship behavior and cultural values (spiritual, consumer, corporate, etc.) directly affects our ability to achieve sustainability.

Recommendation 4: Strengthen current relationships with critical audiences—producers/landowners, the business community, local government officials and boards, and recreational users.

- ◆ Strategy 1: Identify priority audiences within DNR area teams, regional management teams, divisional work units, and others.
 - *Objective A: Prioritize these audiences based on which ones would be the most effective to work with, in terms of current and anticipated issues, work loads, and others.*
- ◆ Strategy 2: Support constructive working relationships with priority audiences.
 - *Objective A: Conduct staff training and workshops on topics such as building trust; the difference between education, information, and advocacy; defining sustainability; developing a constructive working relationship with a priority audience, etc.*
(Note: This effort would need to be "customized" to the region and/or issue, and would involve creative thinking and action, especially in the case of topics such as how to reach or seek out those not affiliated with an organized group, etc.)
 - *Objective B: Develop and implement an action plan for working with specific groups; these actions would include both formal and informal interactions with the group, various types of outreach and/or media tools, etc .*

- ◆ Strategy 3: Provide training to better understand the “culture” of local units of government, associations, and other groups, and the constraints under which they make decisions.
- ◆ Strategy 4: Deliver natural resources stewardship education in appropriate cultural context.
- ◆ Strategy 5: Identify and take advantage of “teachable moments” to explain how decisions affect ecosystems and sustainability in the long term.
 - *Objective A: Identify places where DNR customers gather and develop educational strategies for reaching them in those settings: bait shops, resorts, parks, motels, schools, tourist information centers, clubs or associations serving hunters, farmers, politicians, loggers, anglers, land and lakeshore owners, bankers, developers and realtors.*
 - *Objective B: Develop fact sheets with answers to frequently asked questions that all staff can use as a reference in order to meet the information needs of DNR customers and constituents.*
 - *Objective C: Increase the natural resources stewardship education content of existing training, such as Boat and Water Safety, firearms safety training, etc.*
 - *Objective D: Promote efforts to recognize natural resources stewardship.*
- ◆ Strategy 6: Recruit interest group volunteers to educate their peers much as firearms safety training volunteers do now.

Other organizations have similar interests in educating various audiences on natural resources stewardship and sustainability. These interests are difficult to explore until the DNR has a more definitive natural resources stewardship education program and staff.

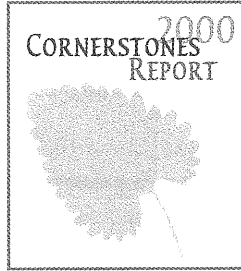
Recommendation 5: Collaborate with other natural resource agencies and organizations to provide natural resources stewardship education.

- ◆ Strategy 1: Organize and coordinate internal efforts in order to effectively work with other environmental education providers.
 - *Objective A: Develop and publish a comprehensive listing of DNR environmental education programs, presenters, and resources that could be used as a reference tool (a "DNR Yellow Pages"), which utilizes keywords and indexes for cross-referencing subject/topic information.*
 - *Objective B: Continue to use and support the Natural Resources Education Committee (NREC) to coordinate messages, efforts, and information within the DNR.*
 - *Objective C: Expand and promote use of the DNR Intranet, the DNR Review and other internal information sources for sharing environmental education information.*
 - *Objective D: Recognize and promote the educational aspect of each DNR employee's role as a basic part of customer service.*
- ◆ Strategy 2: Maintain existing links with other environmental education providers.
 - *Objective A: Improve current connections with organizations through formal DNR representation on various environmental education-related committees or workgroups.*
 - *Objective B: Acknowledge existing "informal" networks DNR staff have established, and allow staff time to attend meetings, participate in workshops, etc., that enhance these efforts.*
 - *Objective C: Maintain current information sources such as SEEK and the DNR Internet sites to promote and coordinate programs with other agencies and organizations.*
 - *Objective D: Utilize existing DNR publications such as the Minnesota Conservation Volunteer to promote educational and partnership opportunities.*
- ◆ Strategy 3: Establish new links with environmental education deliverers outside the DNR.
 - *Objective A: Actively pursue partnerships with other organizations that address similar resource or stewardship education issues (for example, the Extension Service, Environmental Learning Centers) to coordinate messages.*
 - *Objective B: Promote the DNR's natural resources stewardship education resources by sponsoring educational opportunities that target specific organizations that are audiences as well as educators (for example, fish hatchery facility tours could be offered to the Izaak Walton League).*
 - *Objective C: Provide Internet links to other appropriate websites (Example: Great Lakes education resource inventory could be linked to DNR fisheries site.)*

As we seek to deliver an educational message about natural resources stewardship and sustainability, it is increasingly important that our own resource management efforts should be measured against these same criteria.

Recommendation 6: The DNR's commitment to sustainability should be reflected in its day-to-day practices and policies.

- ◆ Strategy 1: Form a group to make recommendations about more sustainable ways of operating for the DNR.
 - * *Objective A: Evaluate and improve policies and operations in these areas:*
 - Transportation/vehicles (kinds, number, fuel efficiency), car pooling and staff commuting patterns*
 - Meetings versus video and telephone conferencing, etc.*
 - Use of environmentally sound products and equipment (cleaning products, paper, furniture, etc.)*
 - Building/office management (heating, cooling, lighting, mowing, landscaping, recycling, water use, etc.)*
 - DNR land management practices*
 - Computer management (network issues, upgrades, use and disposal of obsolete machines, etc.)*
 - Flexible work places and hours—telecommuting*
- ◆ Strategy 2: Provide opportunities for training and dialogue among DNR staff on the personal and organizational aspects of sustainability.
 - * *Objective A: Pursue the above through e-mail surveys, brown bag lunches, and forums where people can share ideas about how to live and work more sustainably.*



Appendix 1: THE PLANNING PROCESS

Formation of Cornerstones Group

The Cornerstones Group was formed as an outcome of the DNR Strategic Planning process.

Committee chairs: John Linc Stine, Waters; and Wayne Edgerton, Commissioners Office

Members: Craig Mitchell, Trails and Waterways, Region 5; Tom Conroy, Information and Education, Region 4; Jeff Thielen, Enforcement; Amy Loiselle, Waters, Region 2; Cynthia Osmundson, Regional Administration, Region 5; Paul Purman, Minerals; Sam Christenson, Forestry, Region 1; Ray Norgaard, Wildlife; Kathy Dummer, Parks, Region 3; Pam Landers, Information and Education; Nalani McCutcheon, School Nature Area Project; Keith Leiseth, pre-K–12 Educator.

Support provided by: Bob Bystrom, Information and Education; Joel Stedman, Parks; Linda Erickson-Eastwood, Fisheries; Jan Wolff, Ecological Services; Laurie Young, Trails and Waterways.

Information Gathering

The Cornerstones work group spent time identifying what education efforts were going on in the Department of Natural Resources and in the state, and learning the historical context for environmental education.

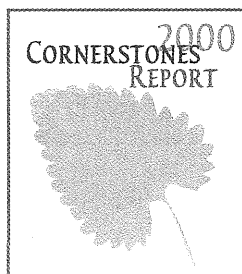
Charting the Path to Achievement of Outcomes

The group:

- identified desired outcomes for the project, and clarified the purpose of the group;
- clarified the connection between the work of the Cornerstones work group and *Directions*;
- articulated the DNR's niche in environmental education;
- drafted a challenge statement and wrote a goal statement for the group; and
- developed a definition of stewardship activities
- listed actions that would achieve identified outcomes; and
- detached those actions from the outcomes, and identified common themes.
- identified the audiences that the DNR serves, using GreenPrint definitions.
- linked those audiences to the DNR's resource priorities as defined in *Directions*, using the environmental indicators model (human behavior affects the resource condition; affecting or changing behavior affects the resource condition)
- articulated issues to be addressed;
- selected a planning framework; and
- developed strategies and objectives.

- The Natural Resources Education Committee, the Regional Management Teams and the Information Officers prioritized and gave feedback on the issues. A series of meetings was held in four field locations to identify strategies, objectives and actions. *(This feedback is available as Appendix 4 upon request. Contact: Laurie Young, Trails and Waterways, (651) 296-6690, or e-mail: laurie.young@dnr.state.mn.us)*
- DNR Intranet and e-mail used to get broader staff input.

The 2000 Cornerstones Report was prepared for distribution.



Appendix 2

CHRONOLOGY OF EVENTS

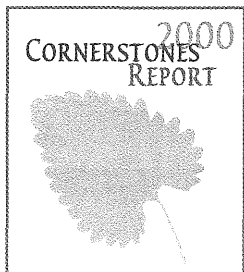
The events in non-italicized type involved the Department of Natural Resources

- The Department of Conservation established a Bureau of Information on July 1, 1940. The bureau's purpose was to consolidate the department's educational efforts. Functions at the inception included: motion picture production, a film loan library, lecture service, press releases, preparation and distribution of publications (including The Conservation Volunteer magazine), an outdoor safety program and the sponsoring of radio programs. The bureau's name was changed to Information and Education in 1969.
- In 1941, the Bell Museum and Minnesota State Parks began naturalist programs at Itasca. Today naturalist programs, visitor centers, exhibits, and self-guided trails are an integral part of each state park's operations.
- Enforcement's Firearms Safety Training Program began in 1956.
- *Golden Valley School District 275 received a major grant from the U.S. Department of Health, Education and Welfare to establish an environmental science center to develop curriculum, design outdoor classrooms and provide teacher in-service training (1967). The center later became a nonprofit corporation, the Minnesota Environmental Sciences Foundation, Inc. (1969).*
- The Minnesota Legislature authorized the DNR and the Department of Education to jointly create environmental education curriculum resources in 1969. A position was funded in each agency to facilitate this.
- *The Minnesota Legislature created the Environmental Conservation Library (ECOL) which was housed in the Minneapolis Public Library (1971). The collection included curriculum and ECOL provided a number of environmental education services to schools. Funding for ECOL declined in the 1980s and ended in 1993.*
- *Gov. Wendell Anderson's executive order established the Minnesota Environmental Education Council (MEEC) and a \$40,000 grant from U.S. HEW funded a study that resulted in a state plan for environmental education (1971).*
- *The first state plan was published after a year of meetings and public discussion. The plan proposed program delivery via a regional system of volunteers and a small paid staff (1972).*
- *The Minnesota Legislature created and funded the regional structure (13 regions) proposed in the state plan. The program was attached to the Department of Education and was to serve people of all ages in formal and informal education settings (1973).*

- *The Minnesota Legislature formed the Energy Agency in 1974.*
- The DNR's Boat and Water Safety Training Program began in 1975.
- *The Minnesota Environmental Education Council and its staff (four coordinators and a director) was transferred from the Department of Education to the State Planning Agency (1976). The council was renamed the Minnesota Environmental Education Board (MEEB) in 1976.*
- *MEEB and the Department of Education sponsored a curriculum planning project providing small grants and free consulting to 30 school districts wishing to plan and implement environmental education programs. (1975-78)*
- The DNR's Hunter Education Program began in 1976.
- The Bureau of Information and Education shifted its emphasis from environmental education to "outdoor education" and hunter education (1977).
- *The Energy Agency and the Department of Education collaborated in the development of energy education materials. Funding came mostly from federal sources (1977)*
- MEEB was transferred from the State Planning Agency to the DNR (1978).
- *Project Learning Tree (PLT), a supplementary environmental education curriculum subsidized by the American Forest Institute, was introduced by the Department of Education. Most statewide distribution was provided by MEEB (1978).*
- *The Minnesota Association for Environmental and Outdoor Education (MAEOE) was established as a statewide forum for environmental/outdoor education professionals (1980). The association dissolved a few years later.*
- The Minnesota Legislature authorized the nongame wildlife checkoff. Public comment favored using some the funds for education (1980).
- The Minnesota Legislature required the DNR, PCA and Department of Health to study and report on the status of acid rain in Minnesota. MEEB was required to provide a program of public education on the subject, but no funds were allocated (1980).
- *MEEB's budget was cut 50 percent (1981).*
- *The Waste Management Board was established to site a hazardous waste disposal facility (1981).*
- *The Governor's Council on Rural Development funded a soil conservation curriculum for elementary students known as Ag-Stravaganza (1983).*
- The Nongame Wildlife Program introduced Project WILD to Minnesota in 1984 with support from MEEB and the Department of Education.

- *The State Board of Education revised its Elementary Education Rule and included an environmental education requirement (1984).*
- *The Waste Management Board formed a Waste Education Roundtable to advise the state about waste education needs (1985).*
- *Environmental education became a priority of the Environmental Quality Board and was reinforced by participants in EQB's Environmental Congress (1986).*
- *The Waste Management Board, Pollution Control Agency and MEEB prepared and circulated learning materials about household hazardous waste (1987).*
- *The Waste Management Board established a Waste Education Coalition and developed a Waste Education Clearinghouse and waste education materials for grades K-6 (1987).*
- *Voters approved a constitutional amendment permitting creation of an Environment and Natural Resources Trust Fund (1988).*
- *The Minnesota Legislature reduced funding for MEEB by 73 percent and transferred the program to the State Planning Agency (1989).*
- Project Learning Tree moved to the Division of Forestry in 1989.
- DNR's Fisheries Section initiated the MinnAqua Program in 1989.
- *The Minnesota Legislature abolished MEEB and established an Office of Environmental Education and an Environmental Education Advisory Board in the State Planning Agency (1990).*
- *Participants in a 1990 statewide environmental education conference urged all state environmental agencies to establish environmental education committees.*
- DNR educators began meeting informally to exchange information and formed the Natural Resources Education Committee (NREC) in Feb. 1991.
- *The Minnesota Legislature allocated money for several environmental education projects from the Environment and Natural Resources Trust Fund including the development of a new state plan for environmental education and a study of the state's day use and residential environmental learning centers (1991).*
- The DNR's 1991 strategic planning process identified environmental education as one of the agency's top 10 priorities.
- *The Minnesota Legislature abolished the State Planning Agency and transferred the Office of Environmental Education and the Environmental Education Advisory Board to the Department of Education (1992).*
- In 1992, the DNR published results of a comprehensive two-year study of the status and future of environmental learning centers in Minnesota.

- *The Office of Environmental Education and its advisory board published A GreenPrint For Minnesota: A State Plan for Environmental Education (1993).*
- *The Minnesota Legislature approved \$7.5 million in bonds for capital improvements at several environmental learning centers. That amount was matched by the Blandin Foundation (1994).*
- *St. Olaf College launched the School Nature Program (SNAP) with support from the Blandin Foundation (1994).*
- *The Blandin Foundation funded the GreenPrint Council to coordinate and strengthen the work of the state's environmental learning centers (1994).*
- Enforcement's Adopt-a-School Program began in 1994.
- DNR established an Ecosystem Education program in 1995 to accelerate the understanding and implementation of an ecosystem-based approach to sustainability.
- DNR Waters began introducing Minnesota teachers to Project WET (Water Education for Teachers) in 1995.
- *The Legislature funded development of some GreenPrint priorities, including a computer-based environmental education resource center and an environmental education preparation program for teachers coordinated by 12 universities (1995).*
- *Work began to integrate environmental education into the state's emerging Graduation Standards (1995).*
- *The Legislature transferred the Office of Environmental Education and the Environmental Education Advisory Board to the Office of Environmental Assistance in 1996.*
- *The Office of Environmental Assistance launched a computer-based environmental education resource center known as SEEK (Sharing Environmental Education Knowledge) (1996).*
- The DNR's 1997 strategic plan, *Directions*, called for "establishing environmental education as a cornerstone for developing a natural resource stewardship ethic among all Minnesotans."
- In January 1998, the Operations Managers Group, assisted by NREC, organized a work group (Cornerstones) to recommend ways to improve the DNR's education efforts.

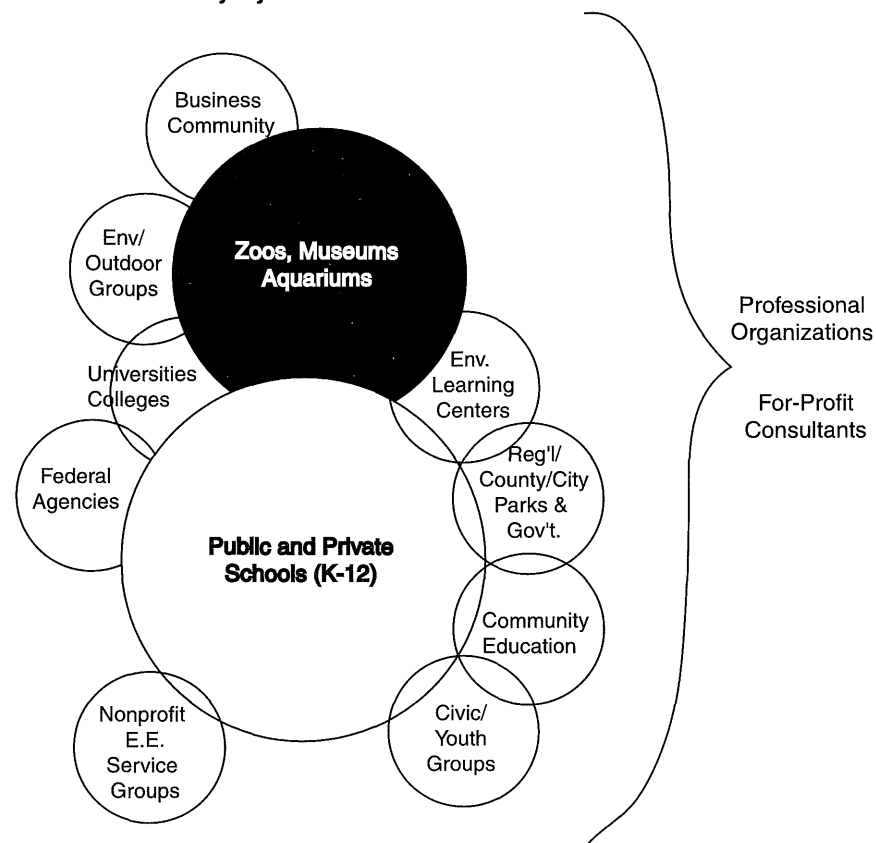


Appendix 3: DNR EDUCATION PROGRAMS AND ACTIVITIES

Education efforts in the DNR have been generally expanding and evolving since the 1940s along with our knowledge of the relationships between human and natural systems. The tables on pages 24–30 outline existing DNR education efforts. However, they do not include the non-programmatic education efforts that are part of most DNR staff's daily work. Nor do they include the time and effort that staff spend in a variety of other educational activities. Both job-related and volunteer efforts reflect the passion and conviction of most DNR staff, their appreciation of Minnesota's natural resources and their belief that if citizens understand those resources, they will develop a greater appreciation of them. This, in turn, can influence the land use and other resource-related decisions that, consciously or unconsciously, citizens and staff make every day.

•••••
 • The tables on pages 24-30 show the diversity and
 • wide distribution of DNR education resources and
 • activities. Despite this substantial investment in
 • education, the DNR lacks the means to coordinate
 • these activities or to identify and address the
 • educational needs of the department as a whole.
 •••••

Overview of Minnesota's Environmental Education Delivery System



Partial Inventory of DNR
Education Programs,
Resources and Activities
as of March 1999

DISCIPLINE	PROGRAM/RESOURCE	AUDIENCE	PROVIDERS/PARTNERS
Bureau of Information and Education	Information Center	Citizens visiting and calling the Center, DNR Staff	Info Center Staff
	Video Loan Library	Teachers, Nature Centers, Citizens, DNR Staff	Info Center Staff, Various DNR Disciplines
	Slide Library	DNR Staff and Public	Info Center Staff
	Conservation Volunteer Magazine	Libraries, Schools, Readers of all ages (Young Naturalists Section targets youth)	DNR Staff and Guest Writers
	Becoming an Outdoors Woman	Women of all Ages	Various Sporting Groups, Retail Stores, Volunteers
	Boat and Water Safety Training Program	Boaters, Youth and Adult	Boating Safety and Enforcement Staff, Local Water Patrol. Some training is self-directed.
Enforcement	Adopt-a-School	Students Grades 4-6	Enforcement and Other DNR Staff, Safari Club
	Bowhunter and Advanced Hunter Education Program	Youth and Adult Hunters	Enforcement Staff, Volunteers, Hunter Education Association, Friends Organization
	Eddie the Eagle	Elementary School Students	Enforcement Staff, Schools
	Wetland Education Trunk	Students Grades K-12	Enforcement Staff, Teachers
	Firearms Safety Training	Youth	Enforcement Staff, Volunteers, Hunter Education Association
	Snowmobile, ATV, OHV User Training	Recreational Vehicle Users	Enforcement Staff, Volunteers
Fisheries	MinnAqua Program	Scouts, Urban Youth, 4- H, Social Service/Day Care/Civic Organizations	Fisheries Staff, Volunteers, Fishing Tackle Companies, Fishing Organizations
	Tour Packets and Supplemental Materials	4th - 6th Grade Teachers	Fisheries Staff, Teachers, Volunteers

Partial Inventory of DNR
Education Programs,
Resources and Activities
as of March 1999 (cont'd)

DISCIPLINE	PROGRAM/RESOURCE	AUDIENCE	PROVIDERS/PARTNERS
Forestry	Project Learning Tree	K - 12 Teachers	Forestry Staff, Volunteer Facilitators, National PLT Office, MAEE, DCFL
	Arbor Month	K - 9 Teachers, Communities	Forestry Staff, Community Groups, Teachers, Arbor Day Foundation, Other Agencies
	School Forest Program	K - 12 Schools	Forestry Staff, Industry, Other Agencies, Community Groups
	Forest Stewardship	Landowners	Forestry Staff, Soil and Water Conservation Districts
	Logger Education Program	Loggers, Timber Industry	DNR Staff, University of Minnesota, Minnesota Extension
	Minnesota Conservation Corps (MCC) adult, summer, and YINR (service learning) programs	Youth, Young Adults, Minority Youth	MCC and other DNR Staff, Other Agencies
	Wildfire Prevention	K - 6 Teachers and Students	Teachers, Forestry Staff, Volunteers
	Fire Wardens	Landowners	Wardens, Forestry Staff
Trails and Waterways	Adopt-a-River (Service Learning)	Students, Recreationists, Service Groups, Grades 3 through Adults	Trails & Waterways Staff, Teachers, Volunteers, Watershed Districts, Solid Waste Coordinators
Minerals	Minerals Education Program	K-12 Teachers	Minerals Staff, Teachers, Industry Organizations, Other Agencies
Wildlife	Project WILD; Aquatic WILD	K-12 Teachers	Wildlife Staff, Teachers, Volunteer Facilitators
Wildlife/Ecological Services	Exotic Species Programs	Boaters and Other Outdoor Recreation Users	Ecological Services Staff, Interns
	Aquatic Plant Management Program	Landowners, Lake Association Members	Various DNR Staff

Partial Inventory of DNR
Education Programs,
Resources and Activities
as of March 1999 (cont'd)

DISCIPLINE	PROGRAM/RESOURCE	AUDIENCE	PROVIDERS/PARTNERS
Interdisciplin- ary	Ecosystem Education Program	DNR Staff, local government, community groups, citizens	Program coordinator, various DNR disciplines, universities, local government, and many other agencies and organizations
	Informal presentations to community, sporting and recreation, and school groups	Citizens of all ages in various settings: field days, tours, classes, meetings, workshops, one-on-one consultations, etc.	DNR Staff in all divisions, especially conservation officers
	Joint workshops	Teachers	DNR Staff: Parks, Waters, Fisheries, Forestry, etc.
	Special Seminars on various natural resource topics	Natural resource professionals, lakeshore and landowners, sports groups, realtors, etc.	Professional Societies and organizations, Extension, universities, local government
	Internships	College and High School Students	Bureau of Human Resources, other DNR units
	Landscape and watershed project coordinator	Various community interest groups and individuals	DNR and other local, state, and federal agency staff

Allocation of Resources for
Environmental Education
Programs and Activities
(cont'd)

DISCIPLINE	PROGRAM	FULL TIME EQUIVALENT (FTE - not able to determine with accuracy)	FUNDING SOURCE
Bureau of Information & Education	Becoming an Outdoor Woman	.5 FTE	
	Boat and Water Safety	.3 FTE	
	Information Center	9 FTE	
	Information Officers	6 FTE % of staff time	
Human Resources	Staff Development and Training		
Minerals	Minnesota Minerals Education	Volunteers	Donations In-kind
Fish & Wildlife	Aquatic Plant Management	4 FTE % of staff time	
	Becoming an Outdoor Woman	.5 FTE	
	Ecosystem Education	1 FTE	
	Environmental Review	6 FTE % of staff time	
	Exotic Inspectors	2 FTE	
	Project Wild and Aquatic Wild	1 FTE	
	MinnAqua	4 FTE's 10 Internships 35 Staff Liaisons (5% PD)	75% Game & Fish 5% General Fund 15% RIM 5% Donations

Allocation of Resources for
Environmental Education
Programs and Activities
(cont'd)

DISCIPLINE	PROGRAM	FULL TIME EQUIVALENT (FTE - not able to determine with accuracy)	FUNDING SOURCE
Parks and Recreation	Interpretive Program Junior Park Naturalist Program	37 FTE 16 - 20 Interns	60% General Fund 30% Revenue 10% Donations, etc.
Regions	Landscape Coordinator		
	Environmental Review	% of all staff time	
	Watershed Coordinator		
Waters	Lake Level Data		
	Project WET	1 FTE	
Enforcement	Adopt-a-school	1 FTE	Game & Fish
	Bowhunter and Advanced Hunter Ed.	2.4 FTE	Game & Fish
	Firearm Safety	4.8 FTE	Game & Fish
	Snowmobile, ATV, & OHV courses	2.4 FTE Snowmobile	Dedicated funds

