

Setting the Standard, Measuring Results, Celebrating Successes

A Report to Congress on the Status
of Environmental Education
in the United States

Submitted by
The National Environmental Education Advisory Council

March 2005

Notice

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Executive Summary

This report to Congress, mandated under the National Environmental Education Act of 1990 (P.L. 101-619), describes the status of environmental education in the United States. The report details the standards established, the results measured, and the successes achieved since the Act's passage. The National Environmental Education Advisory Council, the citizens' committee created by the Act, developed this document as part of its mission to assess the status of environmental education and to report on its effects.

“The goal of environmental education is to develop a world population that is aware of, and concerned about, the environment and its associated problems, and which has the knowledge, skills, attitudes, motivations, and commitment to work individually and collectively toward solutions of current problems and the prevention of new ones.”

United Nations Environmental, Scientific, and Cultural Organization (UNESCO). 1975. *The Belgrade Charter*. Adopted at the International Workshop on Environmental Education, 13 to 22 October. Belgrade, Yugoslavia. p. 3.

Fifteen Years of Progress

In December 1996, the National Environmental Education Advisory Council submitted its first report to Congress on environmental education. The report made a number of policy recommendations, including a call for greater resources and support, more professional development, and better access to quality programs and information. The report also noted that important audiences were not being reached and that environmental education needed to become more institutionalized to be a national priority.

The Council finds abundant evidence that every state in the nation has responded to this call for action. Since the National Environmental Education Act was passed in 1990, the overall quality of environmental education has improved measurably across the nation. Professional development programs are flourishing, and high-quality instructional materials (increasingly aligned to state academic standards) are being used in both formal and nonformal settings. Environmental education – with its emphasis on critical thinking, interdisciplinary teaching, and learner achievement – is also helping to meet educational reform goals.

Not only has environmental education achieved national prominence in its development as a profession, but it has also proven to be a viable strategy for enhancing environmental stewardship. The field has reached a juncture where it is positioned to become an equal partner with enforcement as a strategy for environmental management.

The Challenge Ahead

The primary challenge ahead is to raise the level of environmental literacy of the American citizenry as a whole and to ensure the environmental literacy of each successive generation. If the nation can meet this challenge, individuals will be more capable of analyzing environmental issues and making informed decisions as consumers, employees, parents, youth, students, and voters.

The Council has developed eight recommendations to chart a course for the years ahead. Implementing these recommendations will position the profession to set the standard for excellence, measure results, and celebrate successes. By focusing on these carefully chosen, critical areas of need, environmental education will more effectively and equitably fulfill its crucial role in society.

Recommendations for Action

Setting the Standard

1. Update the National Environmental Education Act for the 21st century.
2. Broaden the audience and leadership of the environmental education field.
3. Improve the quality, accessibility, and dissemination of environmental education materials and programs.

Measuring Results

4. Develop a framework and tools for measuring the effectiveness of environmental education.
5. Support and strengthen long-term research initiatives.
6. Establish an outcome-based grant program to enable states, territories, and tribes to deliver environmental education programs and services.

Celebrating Successes

7. Develop assessment-based professional development programs for formal and nonformal educators to improve their ability to teach environmental concepts and skills to learners of all ages.
8. Build public understanding of the value of environmental education and increase the number and diversity of talented young people pursuing environmental careers.

Setting the Standard

Since the passage of the National Environmental Education Act 15 years ago, environmental education has proven to be a viable force for promoting environmental and health protection, economic prosperity, learner achievement, and community engagement. The U.S. Environmental Protection Agency's (EPA) Office of Environmental Education has been integral to these outcomes. The Office of Environmental Education has provided \$30 million in grants to support high-quality environmental education initiatives in every state and territory in the nation. It has provided training and long term support to over 100,000 educators nationwide. It has also strengthened research and measurement initiatives in the field, improved access to quality environmental education information, and encouraged students to pursue environmental careers.

The Council recommends that Congress **update the National Environmental Education Act for the 21st century** to reflect the growth and maturation of the environmental education profession. The mandate of the Office of Environmental Education must be enhanced so that environmental education becomes institutionalized across the country. Enhancing the mandate of the office will only be achieved by new legislation that provides the authority to raise the bar for environmental education nationwide and to establish mechanisms for ensuring that standards are met.

Leadership must be expanded beyond the Office of Environmental Education. Environmental issues affect all people and professions, including transportation, planning, health, labor, agriculture, business, and industry. To bolster the effectiveness of the field, collaboration and synergy among all of these groups are imperative. **The audience and leadership of the environmental education profession must be broadened** by more actively engaging all sectors of society.

Myriad successful environmental education programs are in place and working across the country. A wide and varied body of environmental education resources and information also exists. The Office of Environmental Education has taken many of the initial steps to increase the quality and availability of these materials and programs. It is imperative, however, that all schools and communities have access to the highest level of quality programs and materials. Toward this end, additional steps must be taken to **improve the quality, accessibility, and dissemination of environmental education materials and programs.**

Measuring Results

With so many programs and initiatives under way across the nation, it is essential to know which ones are working – and why. The Council recommends that **a framework be developed and tools created for measuring the effectiveness of environmental education.** In this way, outcomes of individual initiatives can be appropriately measured, and a cumulative body of outcomes can be collected.

In addition to bolstering learner achievement, the ultimate goal of environmental education is to improve environmental literacy. Environmental literacy, in turn, must translate into positive behaviors and actions toward the environment. To ensure that environmental education is achieving these overarching goals, the scope of existing research studies must be broadened, gaps filled, and improvements identified.

The Council recommends that **comprehensive, long-term research initiatives be supported and strengthened** to assess the effectiveness of environmental education in improving environmental literacy and stewardship and in promoting student academic achievement.

Once benchmarks, measurements, and routine evaluations are more fully incorporated into the field, practitioners will require guidance to deliver outcome-based programs and services. As part of the new National Environmental Education Act, the Council recommends that Congress establish **an outcome-based grant program to enable states, territories, and tribes to deliver environmental education programs and services.**

Celebrating Successes

Thousands of environmental education activities are taking place – indoors and outdoors; in classrooms and laboratories; in zoos, environmental education centers, and museums; and in boardrooms, hospitals, and economic development offices – in communities all across the nation. Learners of all ages from all cultures and socioeconomic backgrounds are gathering environmental data, studying habitats and ecosystems, developing sustainable communities, restoring abandoned lands, conserving natural spaces, preventing pollution, creating opportunities for ecotourism and other businesses, discovering their own individual ecological footprints, and much more.

Environmental education programs have proliferated as more educators receive top-quality training to teach environmental concepts. National environmental education guidelines are helping to guide this professional development. These guidelines outline the skills and knowledge needed to effectively foster environmental literacy to ensure effective teaching strategies.

Teacher preparation is being further enhanced through state certification programs, and a national accreditation program is under way. The Council supports the **development of assessment-based professional development programs to improve the ability of educators to effectively teach environmental concepts and skills to learners of all ages.**

The country's future relies on well-educated citizens to be wise stewards of the environment. It is environmental education that can best help individuals make the complex conceptual connections among environmental protection, economic prosperity, benefits to society, and their own well-being. For these reasons, the Council recommends that leaders in the field take additional steps to **build public understanding of the value of environmental education and increase the number and diversity of talented young people pursuing environmental careers.**

Ultimately, the collective wisdom that American people gain through education will be the most compelling and most successful strategy for environmental protection, restoration, and management.



Section 1 – Background

This section of the report provides background information on environmental education, explains its ever-growing importance to society and introduces key terms, organizations, and achievements.

“We are moving beyond a time when we can rely on a cadre of environmental experts to fix our environmental problems. . . . A stronger public understanding of environmental science and related issues is a growing necessity, and comprehensive environmental education is the only answer that makes complete sense.”

Coyle, K. 2004. Understanding Environmental Literacy in America: And Making it a Reality. National Environmental Education and Training Foundation. Washington, DC.

The Changing Nature of Environmental Protection

It is not an exaggeration to say that the world has changed significantly since the National Environmental Education Act was passed in 1990. As the world has changed, so too have the nature and complexity of environmental challenges.

The United States has made significant progress in cleaning up the nation’s air, water, and land. Regulations, enforcement, voluntary efforts, advances in technology, and pollution prevention have all helped business and industry to meet their responsibilities for environmental protection while maintaining healthy bottom lines. The public’s consistent, documented support for a healthy environment¹ has also altered the way that business and industry view environmental protection, which is now more often seen as a smart investment than as a resource burden.

As a result, the nation has experienced significant reductions in “point source” pollution (that is, pollution from a particular, identifiable source such as a power plant or water treatment facility). Now “nonpoint source” pollution (that is, pollution from diffuse sources such as automobile emissions or runoff from parking lots, lawns, and farms) is the major form of pollution in the United States, and this trend is expected to continue. In addition, new challenges – such as stratospheric ozone depletion and indoor air pollution – have come to light as issues requiring attention.

Globally, many developing countries are now experiencing booms in industrialization and urbanization. Both point and nonpoint sources generate significant levels of pollution in these countries, many of which are just beginning to adopt targeted pollution control measures and policies. Additionally, an expanding global population continues to place demands on the world’s natural resources. Some industrialized countries like the United States are also consuming disproportionate amounts of these resources, leading to concerns that overconsumption could eventually lead to resource depletion.

The Need for Citizen Involvement

Many of today’s environmental challenges are complex and intractable, and they cannot be solved by government regulations alone. Addressing these issues will require a citizenry that is informed and environmentally literate – and willing to translate its knowledge into action.

For nearly four decades, polls have consistently shown that the majority of Americans care about a healthy environment.² Most of these individuals, however, lack a basic understanding of environmental issues. Since 1997, the National Environmental Education and Training Foundation (www.neetf.org) has conducted a yearly survey on environmental awareness. In a typical year, Americans can correctly answer fewer than 25 percent of the basic environmental literacy questions asked.³

In addition, many people are misinformed about environmental problems and influenced by environmental myths. The need for enhanced environmental literacy among all citizens is clear.

¹ Coyle, K. 2004. *Understanding Environmental Literacy in America: And Making It a Reality*. National Environmental Education and Training Foundation. Washington, DC. p. 4.

² The Gallup Organization. 2003. *Gallup Poll Social Series: The Environment*. Princeton, NJ.

³ Coyle, K. 2004. *Understanding Environmental Literacy in America: And Making It a Reality*. National Environmental Education and Training Foundation. Washington, DC. p. 16.

The cumulative effects of citizens' daily behavior can have a positive or negative impact on environmental quality and human health. Environmental education, with its emphasis on informed decision-making and responsible behavior, comes to the forefront as the most appropriate tool for achieving the next level of environmental and health protection and economic prosperity.

The Link Between Environmental Education and Environmental Literacy

Effective environmental education can provide individuals with the knowledge, skills, and tools needed to address concerns about our health and environment while also enabling people to integrate this knowledge into sustainable social and economic planning. Two United Nations conferences held in Belgrade, Serbia, and Tbilisi, Republic of Georgia, in the 1970s established definitions, goals, and objectives for the field of environmental education that are still widely accepted. As defined at Tbilisi, environmental education is a learning process that:

- Increases people's knowledge and awareness of the environment and associated challenges.
- Develops the necessary skills and expertise to address the challenges.
- Fosters attitudes, motivations, and commitments to make informed decisions and take responsible action.⁴

Environmental education enhances lifelong learning skills, including critical thinking, problem-solving, collaboration, and decision-making. As a result, individuals are more capable of weighing various sides of an environmental issue to make informed and responsible decisions. The components of environmental education are:

- **Awareness and sensitivity** to the environment and environmental challenges.
- **Knowledge and understanding** of the environment and environmental challenges.
- **Attitudes** of concern for the environment and motivation to improve or maintain environmental quality.
- **Skills** to identify and help resolve environmental challenges.
- **Participation** in activities that lead to the resolution of environmental challenges.⁵

Environmental literacy is the desired outcome of environmental education programs. In 1993, the North American Association for Environmental Education (www.naaee.org), which promotes environmental education and supports the work of educators, began a multiyear project called the

Key Characteristics of Environmental Education

- Relates to an **environmental topic** or issue.
- Makes use of the **outdoors as a learning environment** whenever possible and appropriate.
- Is a **lifelong learning** process.
- Is **interdisciplinary** and draws upon many fields of study and learning.
- Is **relevant** to the needs, interests, and motivations of the learner.
- Is based on **accurate and factual** information.
- Presents information in a **balanced and unbiased** manner.
- Inspires **critical thinking and decision-making**.
- Motivates people to take **responsible action**.
- Improves **learner achievement** and outcomes.

Source: Meredith, J., D. Cantrell, and M. Conner. 2000. *Best Practices for Environmental Education: Guidelines for Success*. Environmental Education Council of Ohio. p. 5.

⁴ United Nations Environmental, Scientific, and Cultural Organization (UNESCO). 1977. *Final Report - Tbilisi*. Paper Presented at the Intergovernmental Conference on Environmental Education, 14 to 26 October. Tbilisi, Republic of Georgia. pp. 26-27.

⁵ Ibid.

National Project for Excellence in Environmental Education. The initiative is addressing environmental literacy and identifying examples of high-quality environmental education practices. As part of this project, a framework has been established to depict four facets of environmental literacy:

- Personal and civic responsibility.
- Knowledge of environmental processes and systems.
- Skills for understanding and addressing environmental issues.
- Questioning and analysis skills.

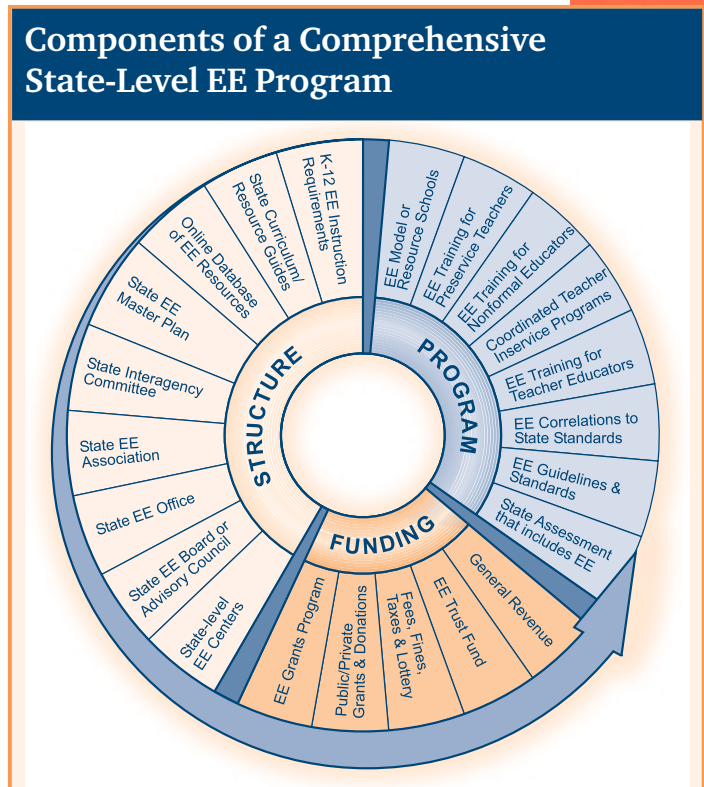
Multiple experiences are needed to help learners develop the combination of knowledge, skills, and attitudes required to be environmentally literate. Given that environmental education is a process, it cannot in itself make immediate improvements in the environment, such as enhancing local air or water quality. Instead, environmental education gives individuals the capability and skills over time to analyze environmental issues, conduct problem-solving, and take action to make improvements happen.

Capacity Building to Deliver Environmental Education

Many activities are under way at the federal, state, and local levels to establish comprehensive environmental education programs to advance environmental literacy. The term “environmental education capacity building” is often used to describe these activities. The National Environmental Education Advancement Project (www.uwsp.edu/cnr/nneap), which supports local and state capacity building efforts, has defined the term as “the development of effective leaders, organizations, networks, plans and evaluation in order to achieve comprehensive environmental education programs at the state and local levels.”⁶

As part of the project, a survey was conducted to help establish the key components of state-level comprehensive environmental education programs.⁷ The “wheel” depicted to the right has been used to illustrate the components that environmental educators identified in the survey as being important for developing strong environmental education programs. These include:

- **Structure:** Components provide support to environmental education through policy, funding, administration, and implementation.



⁶ National Environmental Education Advancement Project. University of Wisconsin-Stevens Point. <http://www.uwsp.edu/cnr/NationalEnvironmentalEducationAct/research/EECapacityBuilding.htm>

⁷ Kirk, M., R. Wilke, and A. Ruskey. 1997. “A Survey of the Status of State-Level Environmental Education in the United States.” *Journal of Environmental Education*. Volume 29, Number 1. pp. 9-16.

- **Program:** Components provide support to environmental education through instructional requirements, teacher resources, training programs, and other elements.
- **Funding:** Components are related to sources, strategies, and training that support both the programming and structural components of environmental education.

The Importance of Educator Preparation

Capacity building efforts are helping to ensure the professional training and development of formal and nonformal educators. Environmental education is a highly complex endeavor requiring knowledge of both natural and human systems and familiarity with the unique instructional strategies used to teach about these systems. Improved preparation of environmental educators is key to (1) increasing both the quantity and quality of environmental education in formal and nonformal education and (2) using environmental education to improve environmental learning by people of all ages and, specifically, student academic achievement.

Formal and Nonformal Education

Formal Education: A societally approved sanctioning system in which participants are required to learn and demonstrate certain competencies. This includes, for example:

- Public and private preschools, elementary schools, middle schools, secondary schools, colleges, and universities.
- Courses, seminars, and workshops for certification or licensing.
- School groups attending environmental education programs or events as part of a school's curriculum.
- School field trips to zoos or museums.

Nonformal Education: Voluntary education in which learners are not officially required to learn. This includes, for example:

- Recreational visits to parks, museums, zoos, and nature centers.
- Noncredit courses, seminars, and workshops.
- Summer camps for youth.
- Elderhostel programs.

Source: Meredith, J., D. Cantrell, and M. Conner. 2000. *Best Practices for Environmental Education: Guidelines for Success*. Environmental Education Council of Ohio. p. 5.

Leading environmental education entities, including EPA's Office of Environmental Education, the North American Association for Environmental Education, and many other state and national partners, have created tools and strategies to better define the complex set of concepts and skills that encompass environmental education as well as the best instructional strategies for implementing them effectively and without bias. These tools include guidelines for what learners of all ages should know and be able to do to address environmental issues, guidelines for the preparation of environmental educators, and guidelines for assessing the effectiveness of materials and programs.

A strong network of environmental education trainers exists through national programs such as Project Food, Land and People; Project Learning Tree; Project WET; and Project WILD.

Individual states have also developed state-specific environmental education programs with strong internal networks of trainers and facilitators. Through these programs, more than 100,000 educators are developing professionally each year.

In addition, the National Council for the Accreditation of Teacher Education (www.ncate.org) has accepted the North American Association for Environmental Education as a partner, which will lead to stronger requirements for environmental education at the initial level of teacher preparation. The National Council for the Accreditation of Teacher Education is a coalition of national organizations that sets standards for colleges and universities and prepares educators and other professional personnel for work in elementary and secondary schools. It uses a performance-based accreditation process to foster

the competency of preservice and in-service teachers and other educators at the preschool through grade 12 levels.

Finally, several states have developed certification programs for formal and nonformal environmental educators based on the national *Guidelines for the Preparation and Professional Development of Environmental Educators*. Though still in their infancy, most of these programs include performance outcomes, coursework, mentoring, codes of ethics, and assessments.

Learner Outcomes and Achievements

As the field of environmental education matures and capacity building increases, the results of all of the activities described on the previous pages must be documented. Top-quality environmental education programs are assessing learner progress and documenting results.

Across the United States, students are gaining an awareness of their own environment as well as the complex, cause-and-effect relationships that underlie and influence environmental conditions. They are also learning how personal and societal actions can have local and global impacts. As a result, educators across the nation are reporting that their students are performing at higher levels, getting better test scores, learning how to think more critically, and building the quality of their character. These reports are backed up by research illustrating that environmental education has become a valuable tool in improving learner achievement.

For example, the State Education and Environment Roundtable⁸ (www.seer.org), which is made up of education agencies in 16 states, conducted a study of 60 schools that used the Environment as an Integrating Context™ system of educational practices developed by the organization. The study found that most students learn more effectively within an environment-based context that is not primarily focused on learning about the environment but that uses a school and the surrounding community as a framework within which students can construct their own learning. Environment-based learning is interdisciplinary, collaborative, student-centered, and hands-on. Not only did the students' performance improve on traditional measures of competence – earning higher grades and scoring better in reading, math, and writing – but their interest and motivation were also enhanced.

Guidelines for Excellence

The National Project for Excellence in Environmental Education (www.naaee.org/npeee) has produced national guidelines for environmental education materials, student learning objectives, educator preparation, and nonformal education programs:

- *Environmental Education Materials: Guidelines for Excellence* provides a set of recommendations for developing and selecting environmental education materials. These guidelines were designed to help developers of instructional materials produce high-quality products and to help educators evaluate the wide array of existing products.
- *Excellence in Environmental Education: Guidelines for Learning (Pre-K-12)* outlines core concepts and skills for environmental literacy, suggests guidelines and performance measures, and demonstrates how environmental education can be used to meet standards.
- *Guidelines for the Preparation and Professional Development of Environmental Educators* outlines the knowledge and skills needed to effectively foster environmental literacy.
- *Nonformal Environmental Education Programs: Guidelines for Excellence* presents a set of recommendations for developing and administering high-quality nonformal environmental education programs. These recommendations provide a tool that can be used to ensure a firm foundation for new programs or to trigger improvements in existing ones.

⁸ Lieberman, G.A., and L.L. Hoody. 1998. *Closing the Achievement Gap: Using the Environment as an Integrating Context for Learning*. State Education and Environment Roundtable. Poway, CA.

The National Environmental Education and Training Foundation examined case studies of schools that use environmental education as the focus for their curriculum and found ample evidence that environmental education improves academic performance across the curriculum.⁹ The study found that:

- Reading and math scores improved.
- Students performed better in science and social studies.
- Students developed the ability to make connections and transfer their knowledge from familiar to unfamiliar contexts.
- Students learned to “do science” rather than just “learn about science.”
- Classroom discipline problems declined.
- Every child had the opportunity to learn at a high level.

⁹ Glenn, J.L. 2000. *Environment-based Education: Creating High Performance Schools and Students*. The National Environmental Education and Training Foundation. Washington, DC.



*Section 2 – Implementation of the National
Environmental Education Act*

This section focuses on the progress made by EPA's Office of Environmental Education in implementing the National Environmental Education Act.

The signing of the National Environmental Education Act in 1990 gave EPA its first mandate to strengthen and expand environmental education as part of its overall mission to protect people's health and the environment. The Act also established the Office of Environmental Education within the Agency to design, implement, and manage its environmental education programs.

Since 1992, when it first received funding under the Act, the Office of Environmental Education has provided leadership and financial support to broaden the reach of environmental education. EPA has done more to advance and institutionalize environmental education than any other organization in the past 15 years. The Agency is the most appropriate leader for environmental education.

Charting the Direction

The vision of the Office of Environmental Education is to develop an environmentally conscious and responsible public and to increase public commitment to environmental stewardship by improving environmental literacy. In 2000, the Office developed a strategic plan to help meet its important mandate and make wise use of government dollars. In 2004, the Office updated the plan to chart a direction for the years 2005 to 2008. The plan is intended to:

- Improve performance.
- Better align program goals, objectives, and performance and efficiency measures with the Agency's strategic planning initiatives.
- Better reflect the needs of the environmental education profession.

The Office invited key stakeholders within EPA, other federal agencies, and the private sector to participate in the planning process and build support for its initiatives. The plan establishes five long-term goals along with associated objectives, outputs, outcomes, and performance and efficiency measures:

Goal 1: Support environmental education in formal and nonformal settings.

Goal 2: Improve organizational and community capacity to develop and deliver coordinated environmental literacy programs across a state or across multiple states.

Goal 3: Develop and implement a national environmental education research strategy to assess the effectiveness of environmental education in improving environmental quality and student achievement.

Advisory Groups

The National Environmental Education Act also mandated the creation of two advisory groups for the U.S. Environmental Protection Agency's Office of Environmental Education:

- The **National Environmental Education Advisory Council** (www.epa.gov/enviroed/neeac.html) assesses the status of environmental education and reports on the effects of the Act. The Council is an 11-member citizen body with diverse representation from across the country. It provides EPA with recommendations for enhancing environmental education in the Agency. In addition, the Council serves as a national voice for environmental education and helps to provide a strategic vision in support of institutionalizing the field.
- The **Federal Task Force on Environmental Education** (www.epa.gov/enviroed/ftfee.html) facilitates communication and collaboration among federal agencies and departments that have common interests in supporting and implementing environmental education programs. Chaired by the Office of Environmental Education, the task force includes the U.S. Departments of Education, Interior, Agriculture, and Energy as well as the National Aeronautics and Space Administration, the National Science Foundation, and the Peace Corps.

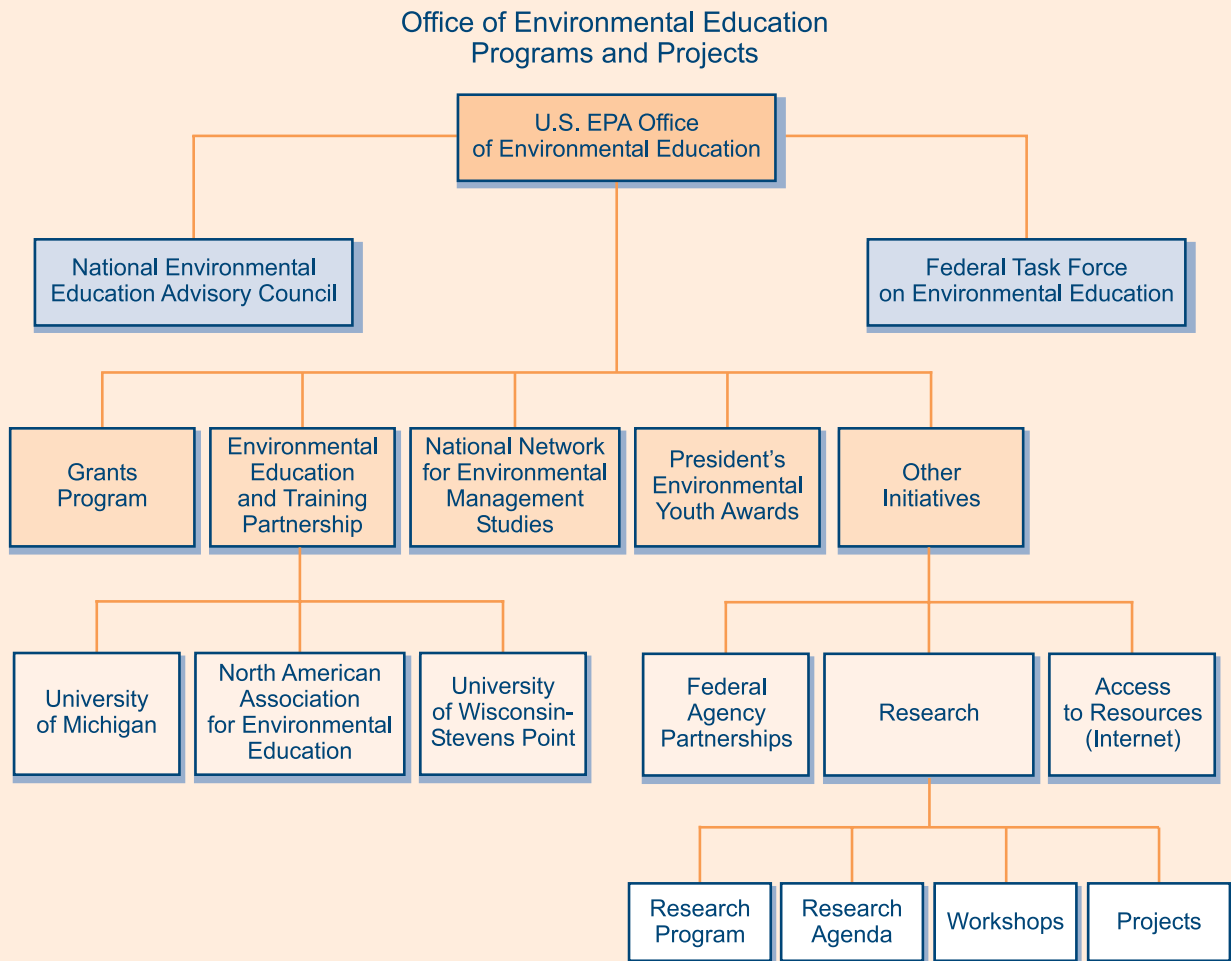
Both of these groups are essential in keeping the Office of Environmental Education connected to other environmental education policymakers, practitioners, providers, and researchers inside and outside the federal government.

Goal 4: Improve the quality, accessibility, and coordination of environmental education information, resources, and programs.

Goal 5: Promote and support environmental careers.

As directed by the National Environmental Education Act, the Office of Environmental Education has established a number of programs and partnerships to support these goals, as illustrated in the chart below and detailed in the following sections.

Organization of EPA’s Office of Environmental Education



Grant Program

Supports Strategic Plan Goals 1, 2, 3, 4, 5
www.epa.gov/enviroed/grants.html

The Office of Environmental Education’s grant program supports environmental education projects that enhance the public’s awareness, knowledge, and skills so that people can make informed decisions that affect environmental quality. Through the grant program, the Office seeks to (1) strengthen existing formal and nonformal environmental education efforts and (2) sustain high-quality programs and projects. Training, education reform, and state and local capacity building are three of the most important priorities

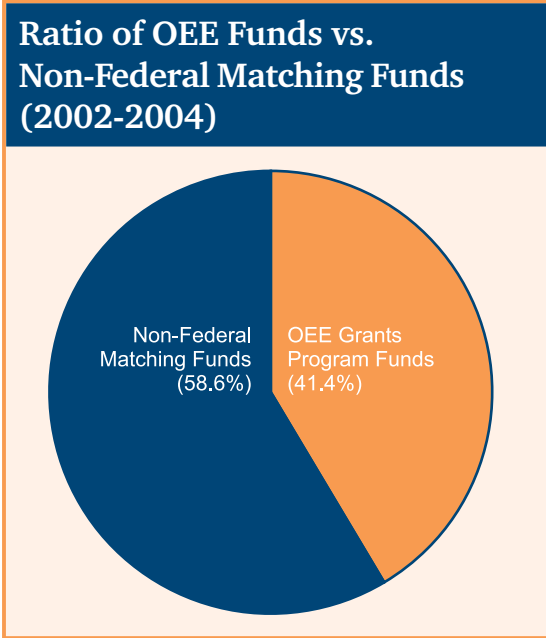
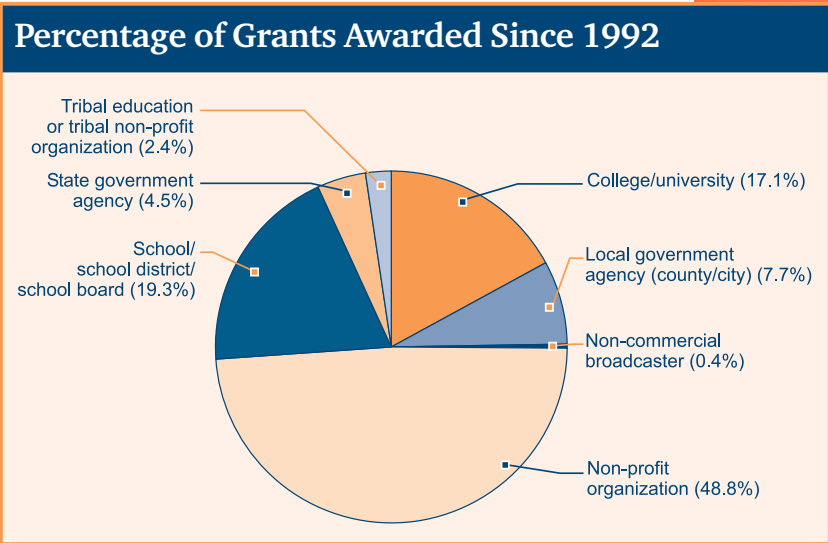
of the grant program, and grants funded in these topic areas have reached hundreds of thousands of people, improving their knowledge of the environment.

Since 1992, the Office of Environmental Education has awarded more than 2,750 grants providing a total of approximately \$30 million in federal funding. Public and private schools, environmental education centers, museums, nature centers, grassroots organizations, community groups, Native American tribes, Alaska Native villages, and state and local governments have all received grants. In addition, every state and U.S. territory has received at least one grant.

More than 1,000 proposals are received from across the nation each year, and the competition for the grants is intense. The Office of Environmental Education has a well-established process for soliciting, receiving, and reviewing grant applications, and the grant program has served as a model for other programs within EPA.

Available funding allows EPA’s Headquarters Office to award 10 to 12 grants a year – approximately 5 percent of the proposals received. Each of the Agency’s 10 regional offices funds approximately 20 grants, or about 30 percent of the proposals received. A budget of \$2 million to \$3 million is used to fund these 200+ grants; by law, 25 percent of all the grants awarded must be for \$5,000 or less.

The grant program has also successfully leveraged nonfederal matching funds. Because federal funds cannot exceed 75 percent of the total funding for a project, each grant recipient is required to provide a matching contribution from its organization or a partner organization with a value of at least \$1 for every \$3 provided by the Agency. The total matching funds leveraged nationwide each year have often exceeded the required amount and surpassed the total funding provided by the Agency. For example, in fiscal year 2002, Congress appropriated almost \$2.8 million for the grant program, which leveraged more than \$5.2 million in matching funds.



Grants Awarded Since 1992



Grants in Action

Highlighted on these two pages are just a few examples of the thousands of environmental education grants awarded by EPA's Office of Environmental Education. Educational priorities for the grants have included projects that build state-wide capacity to deliver environmental education, advance state education reform goals, educate the public about health threats from pollution, improve teaching skills, encourage environmental careers, educate low-income and culturally diverse audiences, and educate the public through community-based organizations.

Multidisciplinary Approach Enriches Learning

Environmental education draws upon many fields of study and provides abundant learning opportunities in math, science, language arts, and other subjects. The multidisciplinary approach that is inherent to environmental education supports development of lifelong learning skills and makes learning more relevant to students' lives.

Green Schools Program

Philadelphia, Pennsylvania

"Energy" is the integrating theme for learning at 20 Philadelphia schools that participate in the Green Schools Program. Under the program, students in the city's elementary, middle, and high schools have performed energy audits, created energy patrols, distributed flyers with energy-saving tips, and even constructed architectural models of "green" buildings. The students sharpen their skills in math, social science, language arts, and other subjects while learning valuable teamwork and community involvement skills.

The national Green Schools Program is sponsored by the Alliance to Save Energy, a nonprofit coalition of business, government, environmental, and consumer leaders. The program encourages students to engage in energy-saving activities in their schools, homes, and communities. The Alliance supports each

participating school by conducting meetings and planning sessions and by providing educational materials.

Collaboration Leading to Environmental Awareness in Rockford (CLEAR)

Rockford, Illinois

Students in a Rockford school district are literally rolling up their sleeves and getting their hands dirty as part of a multidisciplinary environmental education program. The Collaboration Leading to Environmental Awareness in Rockford (CLEAR) program teaches middle school students about water resource issues with emphasis on social science, math, English, and communications.

CLEAR begins with a teacher training workshop that is facilitated by educational staff from the Burpee Museum of Natural Science and local conservation and ecology experts. The teachers then develop lesson plans that incorporate both classroom and field components. Lessons focus on the health of a local river, and students get an opportunity to collect and test river water samples. In the process, the students also learn how to handle scientific equipment, test hypotheses, conduct experiments, and solve problems.

Promoting Environmental Stewardship in Communities

Environmental education is an essential tool for raising people's awareness, changing their behavior, and empowering them to help develop a sustainable society. Many diverse groups are working in partnership to promote and strengthen environmental education in their communities.

Blacklick Environmental Education Center

Johnstown, PA

The goal of the Opportunities for Educational and Wildlife Enhancement Program and the Vintondale Wetlands Project is to improve the quality of life for communities in Pennsylvania. The project involves reclamation of 35 acres of abandoned coal mine lands—many of which have been scarred by mine tunnels or polluted by acid mine drainage—to turn them into thriving wetlands. The wetlands will become a "living classroom" for students in area schools and local community members and will provide diverse educational and recreational opportunities.

International Sonoran Desert Alliance

Ajo, Arizona

U.S., Mexican, and Native American residents are working together to protect and sustain their Sonoran Desert communities. Members of the International Sonoran Desert Alliance are creating habitat projects, green spaces, and ecologically friendly parks. In addition, bilingual teacher training and curriculum materials are helping educators to teach their students about the unique cultural and biological heritage of the region. Through the collaboration of the various residents, the Alliance hopes to address the complex economic and environmental challenges facing border communities in the area.

Denver Zoological Foundation

Denver, CO

Students and community members in the Denver metropolitan area are working together to implement environmental improvement projects. The Wonders in Nature – Wonders in Neighborhoods (WIN – WIN) program encourages elementary school students to work with parents, businesses, and local agencies to define issues of importance in their communities as well as to apply the knowledge that they have gained from environmental education classes. The program strives to foster appreciation of wildlife and conservation, especially among children and families who have limited access to natural places.

Building Capacity to Deliver Environmental Education

Building Capacity with a Master Plan

Lincoln, Nebraska

The Nebraska Alliance for Conservation and Environmental Education is developing a master plan to lay a strong foundation for environmental education in the state. The target audiences for the plan include environmental education leaders; nonformal and formal educators; legislators; state and federal agencies; business and industry; and urban, rural, and agricultural groups. The plan will build on environmental education components that are already in place in Nebraska, including coordinated, statewide, in-service teacher training and state-supported grants.

Advancing State Education Reform Goals

Lessons Keep Pace with Reform Goals

Anchorage, Alaska

A hands-on project in Alaska is providing students with broad-based learning opportunities in conformance with state standards and educational reform objectives. The project integrates science-based tools into middle school curricula for both math and science. As part of the project, students collect water samples from local creeks, analyze the samples, and enter the results into an Internet database shared by classes across the state. The students learn how natural systems are interconnected, how human activities affect watersheds, and how changes in human behavior can improve water quality.

The project was initiated by the University of Alaska Anchorage's Environment and Natural Resources Institute, which also provided training for teachers and support for participating schools.

Encouraging Environmental Careers

EnviroVan Steers Students to Careers

Tampa, Florida

Tomorrow's environment lies in the hands of today's youth. To educate high school students about careers in environmental studies, the University of South Florida brings a high-tech science laboratory to their doorsteps—literally. The “EnviroVan,” which

is equipped with instruments for field testing, sample analysis, research, and hands-on training, visits schools to engage students in environmental and public health studies through participation in applied science experiments. Students also gain access to advanced laboratory equipment that is not available in a typical classroom. The project's ultimate goal is to give students a first-hand look at different environmental and health career paths. Students can learn about the public health field, for example, by testing drinking water for safety after a hurricane. Discovering that science is relevant to their own lives rather than just a subject in school encourages the students to take what they learn in the laboratory and make contributions to their communities.

Educating the Public about Human Health

A Community-Based Approach to Health Education

Providence, Rhode Island

Environmental education can help people understand the relationship between where they live and how they feel. Since 1998, the Environmental Health Action Project in Providence has offered a community-based workshop series to help asthmatics understand and control their condition. Brown University students enlist participants for each workshop series, help to prepare for and conduct the workshops, and perform follow-up visits and interviews. The process enables the students to gain valuable health education experience while offering potentially life-saving information to the community.

The project is a joint effort of the Providence Community Health Centers, Providence Community HealthCorps, and Swearer Center for Public Service. Workshops are tailored to the languages, literacy levels, and health needs of the individual participants, which include both children and adults.

Environmental Education for Adult Learners

Adult Learners Become Resource-Efficient

Chalmette, Louisiana

Environmental education is for learners of all ages. At Nunez Community College in southeastern Louisiana, homeowners and business proprietors are learning how to use resources more efficiently. Through the Resource Efficiency for the Millennium project, adult learners are learning about energy efficiency, water conservation, tree and lawn planting, and efficient automotive fuels. Experts from local power plants, water departments, and agricultural organizations lead the project workshops, which challenge the participants to think about the environment when making decisions regarding their homes or offices. The ultimate goal of the project is to help people become better informed about environmental issues in order to reduce pollution and increase environmental stewardship.

Environmental Education and Training Partnership

Supports Strategic Plan Goals 1, 2, 3, 4

www.eetap.org

www.epa.gov/enviroed/eetap.html

The Office of Environmental Education awards a multiyear cooperative agreement with a consortium of universities and nonprofit organizations to deliver training and related support to education professionals. Since 1992, three cooperative agreements have been signed with the University of Michigan (1992-1994), the North American Association for Environmental Education (1995-1999), and the University of Wisconsin-Stevens Point (2000-2005).

What started as a modest program has matured into a focused effort that has brought together partners who are leading environmental education practitioners, policymakers, and providers in ways that have responded to the needs of environmental educators, leveraged resources, reduced duplication of efforts, and created cost-effective programs. Enabling states to sustain environmental education over the long term has become a clear theme, as has improving the quality of environmental education through development of national environmental education guidelines that are linked to state and national education standards.

Under the current program, partner training and support activities are organized around three goals. These goals are presented below along with highlights of the many achievements that have been accomplished.

1. Capacity Building – Strengthen the capacity of organizations at the state level to strategically plan and coordinate their educator training programs statewide.

- Educator training initiatives have been supported in eight states: Arizona, California, Illinois, Missouri, Ohio, Oklahoma, Utah, and Washington.
- A survey is under way to assess progress made by all 50 states over the past 10 years in establishing comprehensive environmental education programs.

2. Professional Development – Assist educators in using environmental education as a tool for improving student achievement.

- More than 75,000 teachers and other educators have been trained in scientifically accurate and effective environmental education.
- Up-to-date national guidelines have been produced for environmental education materials, student learning objectives, educator preparation, and nonformal education programs.
- Two online educator training courses have been developed for teachers and nonformal educators.
- Four pilot states (Kentucky, Georgia, Utah, and Texas) have received assistance to develop environmental education certification programs to improve the quality of environmental education instruction. Other states have long-established certification programs, and as the profession advances, these states are now developing a second generation of advanced environmental education certification programs.

- Resources have been developed to assist educators in understanding and using environmental education, including *Advancing Education Through Environmental Literacy and Meeting Standards Naturally*, which demonstrates how environmental education can be used to support education reform efforts.

3. Quality Assurance – Promote quality environmental education that is scientifically accurate, educationally sound, and responsive to community needs.

- A Web site (www.eelink.net) has been established to serve as a central access point for environmental education resources, information, and services and professional development opportunities.
- A sustainable and rigorous process for reviewing the quality of environmental education materials is in development.

National Network for Environmental Management Studies Fellowship Program

Supports Strategic Plan Goals 1, 3, 5

www.epa.gov/enviroed/students.html

The National Network for Environmental Management Studies Fellowship Program has enabled 1,300 postsecondary students interested in pursuing environmental careers to gain valuable work experience in the field, and the program continues to be named “One of America’s Top 109 Internships” by the *Princeton Review*. The fellowships provide students with practical research opportunities and experiences in offices and laboratories within EPA. The program also helps to defray the costs associated with the students’ pursuit of academic programs.

The Office of Environmental Education awards 35 to 40 fellowships each year in five areas: (1) environmental policy, regulation, and law; (2) environmental management and administration; (3) environmental science; (4) public relations and communications; and (5) computer programming and development. The Office works with 300 representatives of colleges and universities to promote the program on campuses nationwide.

In 2003, the Office of Environmental Education experienced an overwhelming response to the program – evidence of growing student interest in the environmental field. More than 470 applications were received, representing a nearly 400 percent increase in a single year. The Office awarded 37 fellowships in 2003 that provided a total of nearly \$620,000 in funding.

The Office of Environmental Education also sponsors graduate students conducting research projects in environmental education. Twelve studies have been completed or are in progress. Most of these studies are documented in doctoral theses and have contributed to quantifying the success of environmental education in supporting student academic achievement and in reaching environmental protection goals. For example, one study examined the extent to which environmental education increases critical thinking skills among students in grades 6 to 8; another study evaluated the success rate of an inquiry-based model curriculum called Investigating and Evaluating Environmental Issues and Actions.

President's Environmental Youth Awards Program

Supports Strategic Plan Goals 1, 5

www.epa.gov/enviroed/awards.html

Tens of thousands of students have participated in the President's Environmental Youth Awards Program in the past 30 years, creating innovative environmental projects in local communities. EPA has sponsored the awards program since 1971, and the Office of Environmental Education has managed the program since 1992. The program recognizes young people in grades kindergarten through 12 across America for projects that demonstrate their commitment to the environment in their local communities. Individuals, school classes, summer camps, public interest groups, and other youth organizations in all the states and U.S. territories have participated. One outstanding project from each of the Agency's 10 regional offices is selected for national recognition each year.

Young Leader Inspires Learning in Southwest

An artist, a teacher, a birder, and a conservationist, Andrew was one of ten recipients of the President's Environmental Youth Awards for 2003. The 17-year-old Andrew was recognized for advancing the field of avian ecology in the Southwest United States and for translating his knowledge into inspiring learning experiences for others.

After participating in several bird surveys in his home state of New Mexico, Andrew decided to develop an environmental education curriculum that focused on the study of migratory birds. In partnership with an educator at a school in his community, Andrew taught fourth-grade students about the ecological diversity of the Southwest and the environmental issues facing birds that breed in New Mexico and winter south of the Mexican border. The students gained

an appreciation of the different bird species and their habitat requirements and learned about ecological networks, biodiversity, and conservation.

To enhance the students' understanding of migratory birds and to give the students an opportunity to share their knowledge with others, Andrew added an artwork component to the class. The students' artwork was ultimately exhibited at a state park. Andrew's young students felt empowered by their capacity to educate their community and were inspired by their ability to make a difference by enhancing environmental understanding. Andrew is a remarkable example of a young person who integrates scientific study, hands-on learning, and promotion of public awareness in a way that maximizes his contribution to environmental education.



Teaching has been one of my most rewarding experiences. As much as you can inspire these kids, they inspire you more.

Andrew, as quoted in ABQ Journal. 2004. Albuquerque, New Mexico. July 13.

Other Initiatives

In addition to the programs specifically mandated by the National Environmental Education Act, the Office of Environmental Education has developed and sponsors several other initiatives to further support and institutionalize the environmental education field. Each initiative supports one or more of the Office's strategic objectives. The efforts include:

- Federal agency partnerships.
- Environmental education research.
- Environmental education on the Internet.

Federal Agency Partnerships

The Office of Environmental Education works with program offices within EPA to help them design environmental education initiatives and materials about specific environmental topics. The Office has collaborated with all the major program offices in the Agency, including the Office of Air and Radiation; the Office of Water; the Office of Prevention, Pesticides and Toxic Substances; and the Office of Solid Waste and Emergency Response. The Office of Environmental Education provides program assessment, product and material review, and training in the use of the national environmental education guidelines.

The Office of Environmental Education also works with other federal agencies pursuing environmental education activities. Since 1992, the Office has managed more than 40 collaborative projects worth approximately \$13 million through interagency agreements with dozens of federal agencies. The Office of Environmental Education has contributed about \$5.7 million to these projects; other federal agencies and their state and local partners have provided approximately \$7.5 million. A complete list of the joint agency projects is available at www.epa.gov/enviroed/iag.html.

These efforts are helping to coordinate programs, eliminate duplication of effort, and leverage resources. Working in partnership with others involved in environmental education and related fields is a cost-effective use of government resources.

Environmental Education Research

One of the most important ways to improve the quality of environmental education is with a body of empirical research that identifies strengths, weaknesses, and gaps in all aspects of the field. Investment in research is essential for:

- Showing the connection between environmental education and improved student achievement.
- Showing the connection between environmental education and achieving environmental and health protection goals.
- Understanding ways to improve environmental education.
- Increasing the environmental literacy of the public.

In addition to the National Network for Environmental Management Studies Fellowship Program, the Office of Environmental Education has funded many initiatives in support of research. In conjunction with the North American Association for Environmental Education and the National Environmental Education and Training Foundation, the Office of Environmental Education developed a national research agenda for environmental education in 1998. Leading practitioners, providers, policymakers, and researchers in environmental education came together to develop a research road map that could be used to further the field. These individuals identified six research areas as crucial to understanding and improving environmental education and environmental literacy:

- What is the status of environmental literacy in the United States in terms of knowledge, attitudes, thinking skills, and behaviors across age groups and populations?

¹⁰ Dietz, T. 2002. *New Tools for Environmental Protection: Education, Information and Voluntary Measures*. National Academies Press. pp. 107-144.

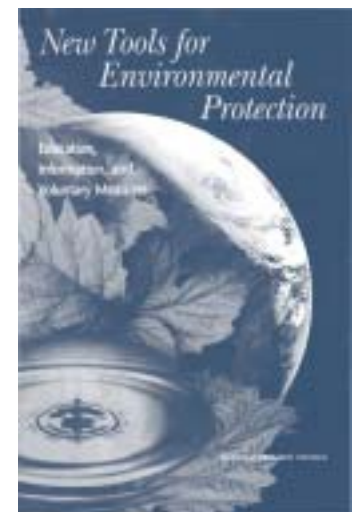
- What impact does environmental education in the United States have on improving student academic performance?
- What is the status of preservice and in-service environmental education training for formal and nonformal educators?
- How effective are environmental education materials, programs, instructional strategies, and models in improving environmental literacy and in achieving broad educational goals in schools and in nonformal education settings?
- What is the status of environmental education in the United States?
- How effective is environmental education in the United States in helping to meet environmental protection goals?

National Environmental Education and Training Foundation

Under the National Environmental Education Act, Congress established the National Environmental Education and Training Foundation to develop policies, grantmaking approaches, and direct programming to advance environmental literacy in America. The foundation is a private, nonprofit organization dedicated to advancing environmental education in its many forms. It awards \$5,000 to \$40,000 in challenge grants annually. Its members also initiate programs in environmental health, business and the environment, volunteerism in natural resource management, and educational achievement.

In 2000, the Office of Environmental Education collaborated with the National Academy of Sciences/National Research Council Committee on the Human Dimensions of Global Change to conduct a workshop exploring the impact of education, information, and voluntary compliance programs on environmental protection. More than 100 environmental protection and educational professionals in the public and private sectors presented research papers, and their findings have been published.¹⁰

As described earlier, the Office of Environmental Education also has supported graduate research studies as part of the National Network for Environmental Management Studies Fellowship Program. This research has addressed two broad topic areas: (1) the effectiveness of environmental education in achieving environmental protection goals and (2) the extent to which environmental education improves student academic performance when integrated within various core subjects.



Environmental Education on the Internet

www.epa.gov/kids
www.epa.gov/students
www.epa.gov/highschool
www.epa.gov/teachers

Although many high-quality materials and curricula for environmental education are available, accessing these materials continues to be a problem, especially for educators and schools in rural, low-population, and low-income areas. Since its inception, the Office of Environmental Education has recognized the need for a strong presence on the Internet to help improve the quality and accessibility of environmental education information, programs, and materials.

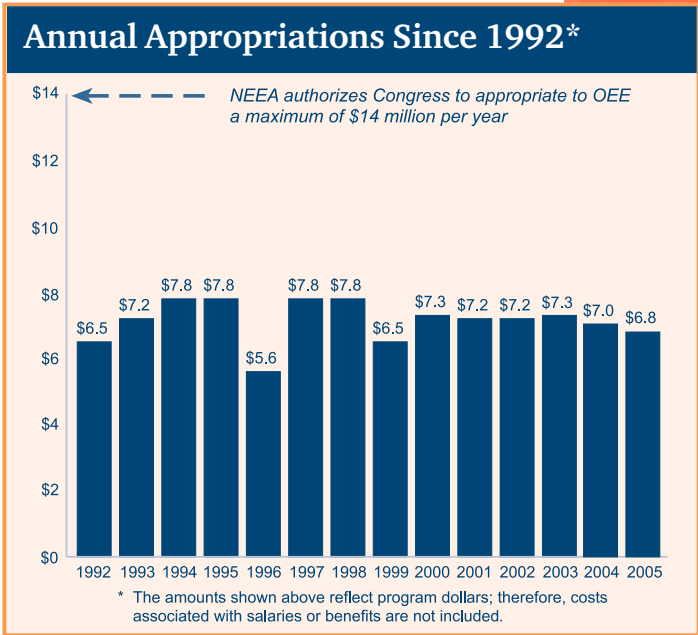
Funding from the Office of Environmental Education has leveraged the production of state environmental education Web sites and supported the development of EE-Link (www.eelink.net), which provides access to a wealth of environmental education resources and services.

The Office of Environmental Education has substantially improved access to environmental education information and resources within EPA with the development of a dynamic, searchable Intranet site for Agency staff. The Office also has provided the public with easy access to its programs, materials, and information.

The Agency’s main Web page provides four education-related sites: the Environmental Explorers’ Club (grades kindergarten through 4), the Student Center (grades 5 through 8), the High School Environmental Center (grades 9 through 12), and the Teachers’ Page. The Office of Environmental Education participates in an Agency workgroup that evaluates all the materials on these sites for their educational content, age appropriateness, and suitability for the Web. These sites are among the most popular on the Agency’s Web site, receiving hundreds of thousands of “hits” each month.

Staffing and Allocation of Funds

The National Environmental Education Act establishes the allocation of funds for all of the Office of Environmental Education’s programs and activities as well as its staffing. As stipulated by the Act, the staffing should include a director, a Headquarters staff of not less than six and not more than 10 full-time employees, and one full-time employee in each of the Agency’s 10 regional offices. The Office of Environmental Education has never been staffed by the full number of Headquarters employees mentioned in the Act but has always had a representative in each regional office. Currently, the Office has six full-time Headquarters staff, including the director.



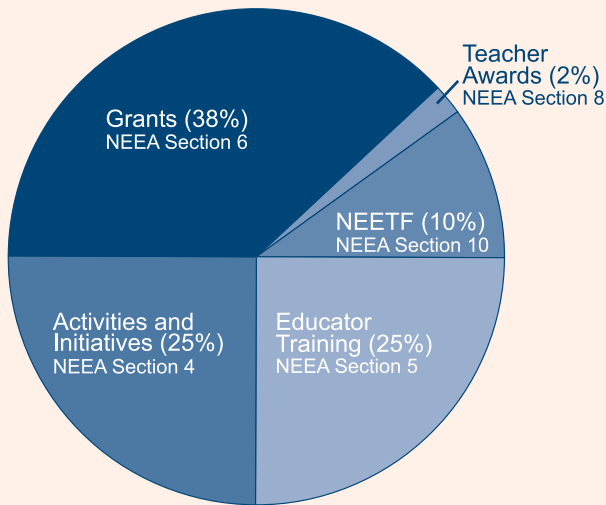
Leveraging Funds for Maximum Impact

The Office of Environmental Education has consistently leveraged the limited federal funds appropriated for environmental education into impressive gains for the field. For example:

- The grant program has secured at least \$1 in nonfederal matching funds for every \$3 awarded.
- The National Environmental Education Training Foundation has provided matching funds of \$2 for every \$3 contributed by grantees and has realized an estimated \$58 million “business impact.”
- Since 1995, the Environmental Education Training and Partnership Program has leveraged its \$14.2 million in federal funding with \$8 million in partner contributions.

Since 1990, Congress has appropriated approximately \$80 million for the implementation of the National Environmental Education Act – the largest single funding source for the field of environmental education. Although the Act authorizes up to \$14 million each year for the Office of Environmental Education, the largest amount that has ever been appropriated is \$7.8 million.

Allocation of OEE Funding as Prescribed by NEEA



Under the Act, the Office of Environmental Education is required to implement specific environmental education programs that are funded with designated percentages of the appropriated funding. The Office of General Counsel within EPA has defined these resource allocations as both a floor and ceiling, meaning that no less and no more than the prescribed percentage can be used for each program.

Specifically, 38 percent of the funding is spent on grants to education agencies and nonprofit organizations, 25 percent is used for training and otherwise supporting environmental educators, 25 percent is spent for the Office's activities and initiatives, 10 percent is allocated to the National Environmental Education and Training Foundation for challenge grants to education agencies and nonprofit organizations, and 2 percent of the appropriated funding is used to support teacher awards given by the Council for Environmental Quality.

The allocation of funds for the Office of Environmental Education's activities and initiatives includes funds for the National Network for Environmental Management Studies Fellowship Program and the President's Environmental Youth Awards Program, interagency agreements with other federal agencies, cooperative agreements and contracts with nonprofit organizations, and support of the National Environmental Education Advisory Council. Only one-third of the 25 percent allocation for the Office's activities (8 percent of the total allocation) is spent on the support of the Office itself.



Section 3 – Recommendations for Action

This section of the report presents the eight recommendations made by the National Environmental Education Advisory Council to enable the profession to set the standard for excellence, measure results, and celebrate successes.

“Ordinary people can do a lot to help the environment, and when people work together, they can do anything.”

Lee, 7th Grade, Mechanicsburg Middle School, Pennsylvania

Over the past 15 years, through the innovative work of EPA’s Office of Environmental Education and its numerous partners across the nation, a set of impressive goals has been accomplished. Although significant progress has been made to bring the field to its current level, several additional steps must now be taken for environmental education to reach its full potential. The National Environmental Education Advisory Council offers the following eight recommendations and associated action items to serve as strategies for taking those next steps.

Recommendations for Action

Setting the Standard

1. Update the National Environmental Education Act for the 21st century.
2. Broaden the audience and leadership of the environmental education field.
3. Improve the quality, accessibility, and dissemination of environmental education materials and programs.

Measuring Results

4. Develop a framework and tools for measuring the effectiveness of environmental education.
5. Support and strengthen long-term research initiatives.
6. Establish an outcome-based grant program to enable states, territories, and tribes to deliver environmental education programs and services.

Celebrating Successes

7. Develop assessment-based professional development programs for formal and nonformal educators to improve their ability to teach environmental concepts and skills to learners of all ages.
8. Build public understanding of the value of environmental education and increase the number and diversity of talented young people pursuing environmental careers.

Setting the Standard

Recommendation No. 1

Update the National Environmental Education Act for the 21st century.

Since the passage of the Act, environmental education has proven to be a viable force for environmental and health protection, student achievement, economic prosperity, and community engagement. The Office of Environmental Education has been integral to these outcomes.

The Council recommends that the mandate of the Office of Environmental Education be enhanced so that environmental education becomes institutionalized across the country. Enhancing the mandate of the Office can only be achieved by new legislation that addresses the great public demand for quality environmental education. New legislation must also reflect the current state of the field of environmental education, the focus on evaluation of learner achievement, and the advances in technology and information transfer.

The field of environmental education is a rapidly growing profession with programs and materials that are content- and process-driven, coordinated, and focused. New legislation must be passed to sustain momentum in the field of environmental education today and in the future.

Action Items

- Build the new act around the remaining recommendations in this report.
- Increase the authorized and appropriated monies to support (1) the administration of programs and other initiatives that support the field of environmental education (as detailed in the following action items) and (2) the management and administration of the Office of Environmental Education.

Recommendation No. 2

Broaden the audience and leadership of the environmental education field.

Environmental issues directly impact many sectors of society, including transportation, construction, planning, health, labor, agriculture, business, and industry. As a result, many businesses and other organizations have embarked upon their own environmental education initiatives or are involved in “technical assistance” efforts in which environmental education could be incorporated. In addition, these stakeholders are often in a unique position to engage adult audiences. For example, many professions are affiliated with trade associations and membership organizations that have the ability and resources to effectively reach large numbers of constituents as well as members of the public.

Technical Assistance

Technical assistance is training for the regulated professional community (for example, engineers, developers, contractors, and homebuilders), often conducted by a regulatory agency, to demonstrate how to meet the requirements of environmental rules and regulations.

To bolster the effectiveness of the environmental education field, collaboration and synergy among practitioners, providers, policymakers, and researchers are imperative. Joint leadership among the many people involved in environmental education can facilitate information exchange and expand the impact of environmental education initiatives while reducing duplication of effort.

Action Items

- Empower the National Environmental Education Advisory Council with more staff and capacity and broaden the constituency of the Council. With a broader base, environmental education leadership will flourish.
- Encourage collaboration among individuals and groups by encouraging the submission of environmental education grant applications that involve partnerships.
- Establish an emerging leaders program to recognize and inspire a new generation of achievers. The program would provide cross-disciplinary training, mentoring, and advancement opportunities.
- Use available research to ensure that the best means are used to reach key constituents.

Recommendation No. 3

Improve the quality, accessibility, and dissemination of environmental education materials and programs.

A large and varied body of environmental information and education materials currently exists in this country. Across this spectrum of curricula, programs, and other materials are some gaps and some duplication. This is evidence of a thriving and energetic field, but one that could benefit from improved communication and shared resources.

The Office of Environmental Education, working with partners across the country, has taken many of the initial steps to help coordinate development of materials, establish quality control that would benefit the field, and strategically disseminate the materials. These accomplishments have been achieved in several ways:

- By creating guidelines that define excellence for environmental education content and instruction.
- By creating Web sites that provide quick and easy, one-stop shopping for high-quality materials.
- By using grants strategically to begin filling gaps and avoiding duplication.
- By providing funding to existing networks to implement high-quality environmental education among formal and nonformal educators.

Within the existing body of environmental education resources, there also is a need to define the difference between information, which is used to provide facts about a specific topic, and education, which prepares people to critically analyze information and make their own informed decisions.

Environmental Education vs. Environmental Information

What passes for environmental education in America is usually environmental information. One might compare the situation to the difference between a full-course meal and a quick snack. True education nourishes a deeper understanding and an all-important ability to apply knowledge, whereas information simply makes one aware of a topic and stops there.¹¹

¹¹ Coyle, K. 2004. *Understanding Environmental Literacy in America: And Making It a Reality*. National Environmental Education and Training Foundation. Washington, DC. p. 4.

Action Items

- Encourage and prepare environmental educators across the country to use the Environmental Education Materials: Guidelines for Excellence to evaluate environmental education materials for quality and balance.
- Using Environmental Education Materials: Guidelines for Excellence, identify existing high-quality materials. Through needs assessments and literature reviews, identify gaps and major areas of duplication. Use this information to help make decisions about which environmental education projects to fund.
- Disseminate examples of the best environmental education materials nationally using EPA's Web site and provide links to the Web sites of federal, state, tribal, local, and private partners. Include Web sites that offer pertinent and accurate information on environmental issues.

Measuring Results

Recommendation No. 4

Develop a framework and tools for measuring the effectiveness of environmental education.

Quality environmental education initiatives are well understood to have catalyzed changes in individuals' environmental knowledge, skills, attitudes, and behaviors. Assessment is needed to document these outcomes. These outcomes, in turn, point to which programs, products, and services are working – and why.

The long-term goals of environmental education are to raise the level of environmental literacy among Americans today and to ensure the environmental literacy of each successive generation in order to improve environmental and health protection and economic prosperity. Although it is unrealistic to expect any single environmental education program to achieve these long-term goals, it is possible to measure the short-term outcomes of a program (such as skill development, knowledge gains, attitude changes, and the intent to change behavior) as well as the intermediate outcomes (such as actual changes in behavior related to practices, decisions, policies, and social actions).

Evaluation guidelines must be developed and tools must be disseminated to ensure that measurement takes place and is conducted consistently. In this way, outcomes of individual initiatives can be appropriately measured and can contribute to a cumulative body of results that point to the long-term goals of environmental education – environmental literacy and quality of life.

Comprehensive, long-term evaluation should include both quantitative and qualitative assessment strategies to provide an in-depth understanding of the effectiveness of environmental education programs for adults as well as for youth.

Action Items

- Support collaboration between the Office of Environmental Education and other evaluation leaders in the field to develop the measurement framework and guidelines. Conduct research on what to evaluate, how to evaluate, and which evaluation tools are most appropriate.
- Ensure that the measurement framework and guidelines; existing, proven assessment tools; and new tools (as they are developed and tested) are accessible to users and easy to find.
- Ensure that environmental education grants funded by the Office of Environmental Education include a strong evaluation component and an appropriate amount of funding to support project evaluation.

Recommendation No. 5

Support and strengthen long-term research initiatives.

A significant body of research exists on various aspects of environmental education, including:

- Changes in environmental knowledge, skills, attitudes, and behaviors.
- The effectiveness of instructional materials and strategies.
- The impact of professional development on formal and nonformal educators.
- The effectiveness of environmental education in improving student achievement and meeting education reform goals.
- The impact of environmental education on meeting environmental protection goals.
- The overall status of the field.

The scope of this research, however, tends to be limited (particularly in terms of focus, methodology, geography, and populations), leaving gaps in what is truly known about the field. Also, assessments of environmental literacy must be broadened beyond simple metrics (such as attitudes, current event awareness, and knowledge of facts) to include measurements of lifelong skill sets (such as problem solving and critical thinking) and understanding of complex natural and human systems. Comprehensive, long-term research initiatives are imperative to address these issues.

Action Items

- Identify quality environmental education research studies to immediately inform the field. Promote these studies among formal and nonformal educators. Identify both “proven” and “promising” programs and practices as well as research gaps.
- Fund long-term, comprehensive research to investigate why and how “proven” and “promising” programs and practices work. Provide mechanisms for disseminating the findings.
- Conduct a national assessment of environmental literacy among youth and adults to establish baseline data for evaluation of future progress.
- Develop and widely distribute comprehensive research-based instruments to enable environmental educators to assess environmental literacy at the local, state, or regional level and to compare their progress with data generated by the national assessment.

Recommendation No. 6

Establish an outcome-based grant program to enable states, territories, and tribes to deliver environmental education programs and services.

Each state, tribe, and territory in the nation is ecologically, economically, and educationally unique. Each one is also at a different stage in building the capacity to develop programs and services to help its residents become environmentally literate. Common elements exist among the states that are closest to reaching full environmental education capacity. These include:

- A comprehensive, statewide plan for assessing and improving environmental education.
- A centralized resource for information about state programs, personnel, facilities, and materials that support environmental education as well as Web links for other state and national resources.
- A strategy for significantly improving the preparation of all those who teach about the environment, including the possible creation of certification programs for formal and nonformal educators.
- A strong and active environmental education professional association.

Because states, territories, and tribes are at different points on the road to full environmental education capacity, the programs must be managed by people who know what systemic improvements must occur in their specific geographic or cultural areas.

Action Items

- With funding under the National Environmental Education Act, create a performance-based grant program that provides flexible funding to states, territories, and tribes to develop and deliver outcome-based environmental education programs in both formal and nonformal settings.
- Create guidelines and accountability to ensure that the grants meet their objectives.
- Establish a network of schools that are conducting high-quality environmental education to serve as models for others.

Celebrating Successes

Recommendation No. 7

Develop assessment-based professional development programs for formal and nonformal educators to improve their ability to teach environmental concepts and skills to learners of all ages.

Research and practice have demonstrated that educator preparation programs are key to offering top-quality environmental education. Environmental educator preparation programs must be based on proven strategies, including:

- The ability to present multiple perspectives on environmental issues without advocating a particular viewpoint.
- An emphasis on informed decision-making and responsible action.
- Knowledge of methods proven to be most effective in teaching about the environment.
- An ability to use assessment to inform and improve practice.

- Creation of partnerships between formal and nonformal educators.
- An understanding of the connection between environmental education and the broader education reform movement.

Many tools have been developed to enhance educators' knowledge and skills to teach environmental concepts, including guidelines for the preparation of environmental educators and guidelines to assess the effectiveness of materials and programs. Several states have also developed certification programs for educators working in formal and nonformal settings.

Action Items

- Continue to support national and state efforts to include environmental education in teacher preparation programs.
- Increase support to those states developing model programs for the preparation and certification of nonformal environmental educators.
- Disseminate information about the model programs to other states and promote replication of proven programs along with other innovative approaches.

National Guidelines

With funding from the Office of Environmental Education, the North American Association for Environmental Education has published four sets of guidelines to assist educators in fostering environmental literacy: (1) *Environmental Education Materials: Guidelines for Excellence*, (2) *Excellence in Environmental Education: Guidelines for Learning (Pre-K-12)*, (3) *Guidelines for the Preparation and Professional Development of Environmental Educators*, and (4) *Nonformal Environmental Education Programs: Guidelines for Excellence*.

Recommendation No. 8

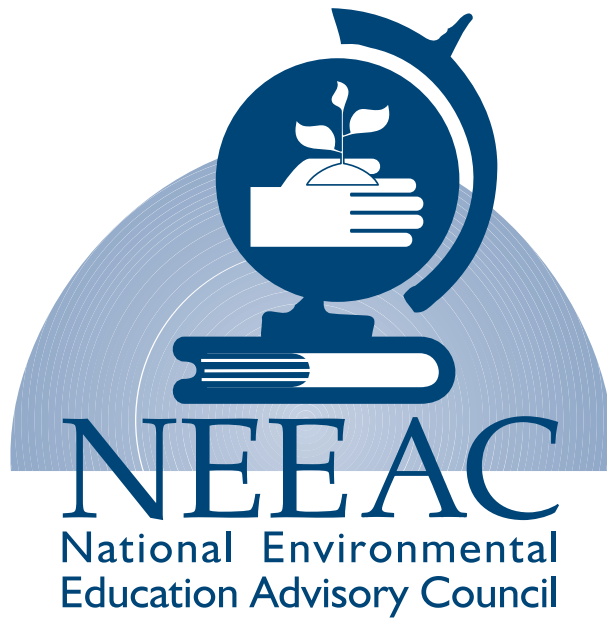
Build public understanding of the value of environmental education and increase the number and diversity of talented young people pursuing environmental careers.

For nearly 40 years, polls have consistently shown that most Americans support environmental protection. An overwhelming majority of parents also support the teaching of environmental education in schools. At the same time, however, most people lack a basic understanding of environmental issues.

Skilled leaders will be critical to solving the increasingly complex and multifaceted problems that are already beginning to characterize health and environmental protection efforts both domestically and globally. Effort should be focused on recruiting and retaining high-quality students (particularly from minorities that are currently underrepresented) for the environmental field to strategically plan for the next generation of leadership.

Action Items

- Build interest and investment in the field of environmental education through a multifaceted public awareness campaign that promotes positive behaviors toward the environment.
- Work with environmental organizations to research and document personnel needs in particular areas of the environmental field. Focus recruitment efforts on those areas where shortages appear to be greatest.
- Further institutionalize environmental education in colleges and universities (in schools of education and other disciplines) and encourage accreditation of their environmental education programs.
- Promote opportunities in the field of environmental education among students of all ages through print and electronic media.



Appendices



Summary of National Environmental Education Act of 1990 (P.L.101-619)

On November 16, 1990, the National Environmental Education Act (P.L. 101-619) was signed into law. The goal of the Act is to increase public understanding of the environment and to advance and develop environmental education and training. It provides for the U.S. Environmental Protection Agency (EPA) to play a leadership role among federal agencies in implementing the new law and encourages partnerships among federal government agencies, state agencies, local educational institutions, nonprofit educational and environmental organizations, and the private sector.

The mandates and authorizations under the Act are as follows:

Section 1 – Title – National Environmental Education Act

Section 2 – Findings

Includes a Congressional finding that environmental challenges present a significant threat to human health and environmental quality and that current federal efforts to educate the public and train a professional work force about environmental challenges and effective responses are not adequate. The Act states that it is the policy of the United States to establish and support a program of education on the environment.

Section 3 – Definitions

Includes various definitions for terms used in the Act.

Section 4 – Office of Environmental Education

Requires the establishment of an Office of Environmental Education at EPA. The staff shall be headed by a Director who is a member of the Senior Executive Service and shall include a headquarters staff of not less than six and not more than ten full-time equivalent employees. The regional support staff shall include one full-time equivalent employee per region.

Section 5 – Environmental Education and Training Program

Requires the establishment and operation of an Environmental Education and Training Program. On an annual basis, the EPA Administrator shall award a grant or cooperative agreement to an institution of higher education, a nonprofit institution, or a consortium of such institutions to establish and operate an Environmental Education and Training Program. The purpose of the program is to train education professionals to develop and deliver environmental education programs. The Act requires the program to include teacher and education professional exchanges between the United States, Mexico, and Canada.

Section 6 – Environmental Education Grants

Authorizes EPA to award grants to educational institutions, state and local agencies, and nonprofit organizations to support environmental education projects. The Act requires publication of regulations addressing solicitation, selection, and supervision of projects as well as evaluation and dissemination of results of projects. Grants may not exceed \$250,000. Twenty-five percent of grant dollars shall be awarded as grants of \$5,000 or less. The Act authorizes grants that foster international cooperation between the United States, Mexico, and Canada.

Appendix A

Section 7 – Internships and Fellowships

Requires EPA to facilitate internships for college students and fellowships for in-service teachers with agencies of the federal government. To the extent practicable, there shall be 250 internships and 50 fellowships per year.

Section 8 – Awards Programs

Requires EPA to provide for national awards recognizing outstanding contributions to environmental education. Awards shall be given to commemorate Theodore Roosevelt, Henry David Thoreau, Rachel Carson, and Gifford Pinchot. The Act also authorizes “President’s Environmental Youth Awards” recognizing young people (K-12) for outstanding local environmental awareness projects.

Section 9 – Federal Task Force and National Environmental Education Advisory Council

Requires the establishment of a Federal Task Force and a National Environmental Education Advisory Council to advise, consult with, and make recommendations to the EPA Administrator regarding the Agency’s implementation of the Act. The Federal Task Force shall include members of various federal agencies under the leadership of EPA. The National Environmental Education Advisory Council shall be composed of 11 members who represent primary and secondary education, colleges and universities, nonprofit organizations, state agencies, business and industry, and senior Americans.

Section 10 – National Environmental Education and Training Foundation

Requires the establishment of a National Environmental Education and Training Foundation that will encourage private gifts for the benefit of the environmental education activities of EPA; participate with foreign governments to further environmental education and training worldwide, and further the development of environmental awareness.

Section 11 – Authorization of Funds

Authorizes funds to implement the Act as follows: \$12 million in fiscal year (FY) 1992; \$12 million in FY 1993, \$13 million in FY 1994, \$14 million in FY 1995, and \$14 million in FY 1996. Note: Congress actually appropriated less than was originally authorized under the Act as follows: \$6.5 million in FY 1992, \$7.2 million in FY 1993, \$7.8 million in FY 1994, \$7.8 million in FY 1995, \$5.6 million in FY 1996, and \$7.8 million in FY 1997.

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