



Environmental Education: A Brief Guide for U.S. Grantmakers



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Grantmakers across the globe have set their sights on a future in which people thrive—where they can meet their needs for food, shelter, health, and education, as well as pursue livelihoods with dignity, security, and prosperity. Many are also focused on a future that includes a rich diversity of wildlife and natural places.



What many grantmakers are realizing more than ever is that these goals are deeply intertwined. Securing a prosperous future for humanity requires that people have ready access to clean and plentiful water, fresh air, open spaces, a stable climate, and a rich array of biodiversity. Ensuring that wildlife and natural systems remain intact requires the active support of people at all levels of society. There are no environmental issues that do not involve people, and all people depend on a healthy environment.

Achieving a bright future for people and the planet, though, requires addressing a host of current environmental challenges, while developing strategies and skills to address new ones that can emerge quickly and unpredictably. As grantmakers search for the most effective ways to meet these challenges, many are looking to environmental education as a natural complement to policy and science. Recognizing that environmental education can work in tandem with these other strategies, grantmakers see opportunities to involve individuals and communities through building knowledge, skills, and behavior at local, regional, and even larger scales.

Environmental education is a powerful tool for addressing environmental and social issues—both in the short term and long term. Environmental education can help increase knowledge, build skills, influence attitudes, and promote action to help achieve positive environmental change. When used to address a specific issue, such as water quality or waste reduction, education can help people learn about the issue, care about it, and take action to address it. In the long term, environmental education equips people with skills and motivation to learn more and understand the roles and responsibilities of being an environmentally informed and committed citizen. It acknowledges that, while we must react to challenges today, we can concurrently create a foundation for the future. Environmental education helps people build a stake in their future and provides tools for becoming engaged in environmentally related issues and opportunities as they arise.

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What Is Environmental Education?

Environmental education (EE) equips people with the knowledge, skills, and motivation to be stewards of the environment. EE provides opportunities for people to:

- **learn about the environment**, including a focus on systems thinking and the role that humans play in affecting the environment;
- **examine and clarify their values** about and attitudes toward the environment, including the natural world and the human-built environment;
- **build skills** to address environmental and social issues; and
- **undertake behaviors** that help protect the environment and work toward a more sustainable future.

Individual EE programs may focus on one or all of these broad aspects of EE, and they may focus on local community issues or global challenges. Audiences for EE programs vary, too. Families, for example, might volunteer at a community garden; middle-schoolers might address commuter behavior to improve the quality of life for community members, while also decreasing noise and air pollution around their school; preschoolers might explore a patch of grass to identify the living things that share their school yard; and adults may take an online course to better understand climate change.

Often, environmental education is one part of an overall strategy to address a specific environmental or social problem. A comprehensive project aimed at improving water quality, for example, might include not only technological improvements that prevent the release of industrial pollutants and legislative changes that set pollution limits, but also an EE component that informs community members about health hazards of water pollution and engages them in marking storm drains. Incorporating EE into the overall strategy can contribute to cleaner water over the long term.

But EE is not solely issue-driven. Environmental education also plays an important role in building a foundation of environmental literacy. EE can help people develop an understanding of the natural world, people's role in and responsibility for it, and the complex interactions that comprise social-ecological systems. EE helps people develop action-related skills for addressing critical issues and can prepare people to deal with future environmental problems that we cannot foresee today.



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Environmental Literacy: Knowledge, skills, and motivation

Environmental literacy is not only about reciting facts, but also emphasizes the extent to which a person is concerned about the environment, equipped to make informed decisions about it, and has the skills and motivation to take environmentally responsible actions. Environmental literacy is not an either/or proposition: A person's environmentally related knowledge, attitudes, skills, and behaviors can develop over time, changing his or her level of environmental literacy. The job of environmental educators is to move people along a continuum toward higher levels of environmental literacy. At times, this might mean developing a broad understanding of the big picture; other times, this might translate into a deeper focus on a specific issue.

The good news is that, in addition to directly improving environmental quality and enhancing community wellbeing, environmental education programs have been proven to raise people's environmental literacy.¹ The National Environmental Literacy Assessment (NELA) is one large-scale research effort examining this connection: the NELA study has set out to better understand American youths' environmental literacy. To date, the research indicates that students receiving high-quality, long-term environmental education have higher-than-average levels of environmental literacy. Other studies show that quality environmental education, and resulting environmental literacy, can link with improved academic performance, enhanced critical thinking skills, increased student engagement, and development of cooperative and social skills, in addition to environmentally related outcomes such as more positive environmental attitudes, greater environmental knowledge, and improved environmental behavior.²



“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.”

Belgrade Charter [UNESCO-UNEP] 1976)

The Roots of Environmental Education

For centuries, educators and other mentors have turned to nature to help inspire and educate students.

Dating back to the 1800s, education scholars have emphasized the important role that direct experience in nature plays in bringing about a range of outcomes, including improving the efficacy of education. In the early 1900s, as Europe and North America became increasingly urbanized after the Industrial Revolution, schools adopted nature study as a way to reconnect students to nature.

But in the 1930s and 40s, America's relationship with nature shifted as we learned painful lessons about how many of our practices around the use of natural resources were unsustainable. The Dust Bowl, for example, highlighted something we know so well today: mistreating the land and overusing natural resources has serious impacts on those resources, as well as on human health and wellbeing. Conservation education was born out of this era as a tool and strategy to help protect our nation's natural resources and bring to light the important links between the quality of the natural environment and the quality of human communities.

The late 1960s ushered in another era of environmental education as the nation's environmental challenges grew and became increasingly visible. From the burning of the Cuyahoga River to the publication of Rachel Carson's *Silent Spring*, many people realized that our environment was in trouble. Indeed, even as landmark environmental legislation was being passed in the United States, leaders in both this country and around the world recognized that individual citizens, as well as our leaders, needed better tools to effectively protect the environment and a strategy for creating a more environmentally literate citizenry.

In 1977, delegates from 66 countries came together in Tbilisi, Georgia, USSR, and agreed on a common definition, goals, and objectives of environmental education. This United Nations-sponsored meeting, which produced what is now called the Tbilisi Declaration, helped establish the foundations of the current field of environmental education. This document built on the outcomes of several previous international meetings (the Stockholm Declaration in 1972 and the Belgrade Charter [UNESCO-UNEP] 1976) and reinforced the widely accepted goal statement for environmental education: "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." Subsequent international efforts, such as the Brundtland Commission (1987) and Earth Summit in Rio de Janeiro (1992) have reinforced and clarified the definition and application of EE.

The Tbilisi Declaration: EE's founding principles



The **1977 Tbilisi Declaration** laid out for the first time an internationally recognized definition, goals, and objectives for the field of environmental education.³ The 265 delegates from 66 countries agreed that the goals of education should include:

- fostering awareness of the world's economic, social, political, and ecological interdependence;
- helping people acquire the knowledge, values, attitudes, commitment, and skills needed to protect and improve the environment; and
- encouraging society to create new patterns of behavior towards the environment.

The declaration also described the following five key objectives for the field of EE, which are aimed at both individual citizens and social groups:

Awareness: Building awareness of and sensitivity to the environment and its problems

Knowledge: Gaining experience in, and a basic understanding of, the environment and its problems

Attitudes: Developing feelings of concern for the environment and the motivation to take part in environmental improvement

Skills: Building skills for identifying and solving environmental problems

Participation: Becoming actively involved in solving environmental problems

In the 1990s, the North American Association for Environmental Education (NAAEE) spearheaded a major initiative to develop common standards of practice for the field.

The National Project for Excellence in Environmental Education generated “Guidelines for Excellence” that define, for both those inside and outside the field, what high-quality environmental education programs, materials, and professional development look like.⁴ Today, the field continues to highlight the importance of viewing the environment within the context of human influences, including specific attention to economics, culture, development, health, and social equity, often described within a frame of sustainability.⁵

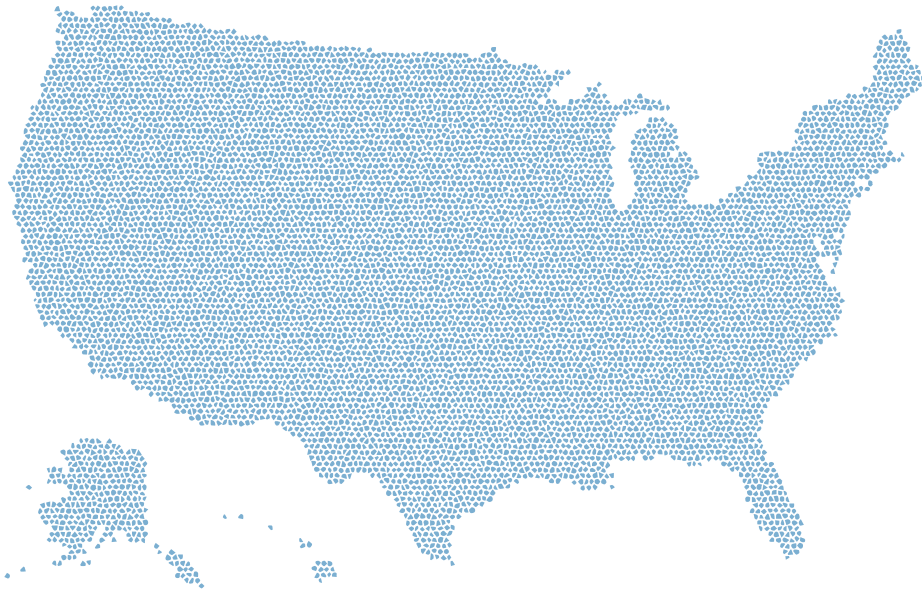
Environmental education has entered the mainstream of American education, with widespread support from many Americans.⁶ In 2011, for example, the Public Policy Institute of California’s statewide poll found that more than 90 percent of respondents thought that environmental education should be taught in public schools.⁷ Although K-12 schools are an important venue for environmental education, accountability efforts in the wake of the federal No Child Left Behind legislation have made environmental education—and other subjects outside of the core reading and mathematics areas—challenging to incorporate. Nevertheless, many schools, responding to research confirming the educational benefits of EE, are working to build EE and a sustainability ethic on their campuses. The Green Schools Movement reflects this new ideal, garnering federal support through the Department of Education’s “Green Ribbon Schools” competition, which recognizes schools that are leaders in reducing environmental impacts, improving health, and offering high-quality environmental education.⁸

In addition, many states either have or are developing state environmental literacy plans. These plans lay out a path for environmental literacy for K-12 students, among other goals. Some of these plans have already been adopted by state legislatures, and more will be taking them up in the coming years. And, for students who continue their education after high school, higher education has made important strides in developing environmental literacy and boosting sustainability on campuses.⁹

Of course, education is a lifelong process, and because most learning takes place outside the classroom, a significant portion of EE is focused on settings outside of schools.¹⁰ Every year, millions of Americans participate in environmental education programs at zoos and aquariums, museums and nature centers, online, at work, and outdoors. In recent years, these institutions have taken a leading role in addressing pressing environmental issues such as climate change, endangered species, ocean literacy, habitat conservation, and others through education programs for a range of audiences.¹¹

Outdoor education, including opportunities to connect youth with the outdoors through formal and informal programs, also has received a recurrent surge in interest in the past decade. This interest has been spurred in part by concerns about increasing urbanization trends, the country’s obesity epidemic, and the publication of Richard Louv’s, *Last Child in the Woods*, which raised awareness of the connections among children’s health, wellbeing, and outdoor play.¹² Many organizations and agencies—from local interest groups to the federal government—are responding with programs to get children and families outside. One of the most influential of these has been the No Child Left Inside (NCLI) Coalition, representing more than 2,000 organizations pushing for schools, school districts, and states to provide more EE resources, train teachers, and develop environmental literacy plans. The NCLI coalition’s combined approach of education and policy endeavors to engage policymakers, communities, families, and schools in a collaborative effort to improve children’s health and wellbeing through environmental and outdoor education initiatives in the formal and informal sectors.¹³

Environmental Education across the Country



Organizations and agencies working to promote and offer EE programs exist across the United States, from urban to rural areas, serving youth and adults alike.

Certain areas of the country have been recognized as “hotbeds” of EE for different reasons. For example, the Midwest has a number of universities with EE undergraduate and graduate programs, such as the University of Wisconsin at Stevens Point, the University of Michigan, The Ohio State University, and Southern Illinois University, which have traditionally had a cohort of faculty focused on environmental education, interpretation, and conservation behavior and, therefore, have helped form the research basis of the field. California has been famous for its network of outdoor education schools—some county-owned and others run and operated by private nonprofits—which have provided hundreds of thousands of youth with direct experiences with nature at critical times in their lives.¹⁴ Other areas have worked regionally to advance environmental and outdoor education experiences for youth through public-private partnerships, such as that exemplified by the Chesapeake Bay Program’s seven-state commitment to providing every student with “Meaningful Watershed Educational Experiences.”¹⁵

Some alliances of EE associations, such as the Midwestern and the New England EE Alliances, have been in existence for decades, working to

support the practice of EE professionals. They hold regional conferences that draw together EE practitioners and researchers from across state boundaries. In this vein, more recently, collaboratives of nonprofits, EE providers, agencies, scientists, and others interested in engaging a range of stakeholders in conservation issues have formed, creating powerful alliances of committed individuals and organizations. For example, Chicago Wilderness, the San Francisco Bay Area’s EE Collaborative, and E3 Washington all emphasize environmental education as an opportunity to involve a range of stakeholders in creating a healthier, more sustainable environment for all.¹⁶

As the national-scale professional association, NAAEE plays a critical role in being an umbrella organization and a convener in the field. NAAEE’s Affiliates Network, which represents 54 state- and regional-level organizations, as well as international affiliates in Canada and Mexico, is a critical collective for environmental education capacity building in the field. The affiliates, along with the national partner, NAAEE, work to create a more unified voice for EE by promoting professional development, innovative programming, and resource development.¹⁷

Environmental Education in Action

The road to environmental literacy involves many intertwining paths.

People can learn about the environment, develop skills, and become motivated to take action in many different ways, as research studies in a range of fields—such as education, psychology, sociology, geography, political science, and urban planning, among others—have documented. We are always learning and societal issues are always changing. In addition, there are multiple portals and places for learning—at home, at work, at school, in communities, and at play. So EE provides opportunities for learning throughout a person’s lifetime, and providers strive to make sure programming is based on sound theory and practice and meets people where they are. Effective EE programs also focus on what we know works in education: making learning relevant, sparking interest, challenging ideas, nurturing curiosity, honing skills, inspiring action, and helping people “**learn how to learn.**”

Of course, no single program, setting, or provider can do everything. As a result, the field of environmental education involves multiple approaches for success. The chart—A Snapshot of Environmental Education Approaches and Outcomes—is designed to provide a high-level overview of the field, describing examples of some common providers, audiences, activities, and outcomes in environmental education. Each can be combined differently to take advantage of different settings, leverage organizational strengths, and achieve desired outcomes.

Engaging People through Social Strategies



Addressing environmental challenges requires a toolkit of strategies. These include using the best available science, as well as developing sound policies. But solving environmental challenges also involves working with people, and it is important that any environmental or conservation professional who is trying to achieve change understands the people-centered strategies that can help ensure success. In recent years, a number of conservation and education professionals have focused on people-centered strategies as a way to achieve and sustain project goals.¹⁸ These “social strategies,” as they are called, include environmental education, capacity building, communications, advocacy, and social marketing.¹⁹ Social strategies can help address not only environmental challenges, but also economic development, health, and education, recognizing that environmental and social goals are tightly linked. As a result, social strategies are

used to address a range of societal goals at the same time, including community wellbeing, environmental justice, gender equity and gender norms, and respecting and incorporating local knowledge, among others.

As the chart included here indicates, environmental education strategies can sometimes overlap with other social strategies, especially communications and social marketing. Many environmental education programs, for example, use social marketing techniques when they have a specific environmental behavior target, like encouraging people to adjust their home thermostats as part of an overall program on residential energy efficiency. By thinking about these strategies as a toolbox of opportunities, conservation professionals, including educators, can use the combination of strategies that will best help achieve the desired goals and outcomes from a program.

A Snapshot of Environmental Education Approaches and Outcomes*

Providers

Preschools
K-12 schools
Colleges and universities
Nature centers
Residential EE facilities
and camps
Parks and protected areas
Zoos
Aquariums
Botanical gardens
School gardens/farms
Natural history museums
Science museums
Nonprofit organizations
Government agencies
Youth organizations
Corporations

Activities

Curriculum materials
and coursework
Outings
Extended (multi-day
outdoor experiences)
Interpretive tours
Community action projects
Green teams
Lectures
Workshops
Exhibits
Printed material (e.g., books,
pamphlets, posters, reports)
Radio programs
Television/video programs
Films
Websites
Online forums
Social media campaigns
Mobile apps
Professional development
School and community gardens

Audiences

Preschoolers
Early childhood educators
K-12 students
K-12 educators
University students
University faculty
Families
Retirees
Afterschool programs
Employees and employers
Community groups
Religious groups
Online communities
Clubs

Outcomes

Environmental literacy
Environmental knowledge
Science knowledge
Environmental attitudes
Ecological worldview
Issue analysis skills
Citizenship skills
Problem solving skills
Environmental behaviors
Self-confidence and
personal development
Academic improvement
Improved environmental quality
Environmental justice
Social equity
Community wellbeing
Sustainable communities

*These lists are not intended to be exhaustive, but rather suggestive of the range and diversity of providers, settings, activities, and outcomes that engage in environmental education efforts.



The National EE Landscape

Although many environmental education efforts take place in communities, national and international organizations provide resources and professional development, along with networking opportunities, guidelines and standards, advocacy on behalf of the field, research, and more. **The EECapacity Project**, led by Cornell University, for example, is a consortium of organizations working together to bring new voices and greater diversity to the environmental education field. **Project WILD**, **Project Learning Tree**, and **Project WET** are national leaders that provide curriculum and professional development for formal and nonformal educators, while taking innovative approaches to community engagement, service learning, and green schools.

The **National Environmental Education Foundation (NEEF)** and the **North American Association for Environmental Education (NAAEE)** also offer national leadership for the field. NEEF focuses on demonstrating the power of EE through model programs based on relationships with “trusted change makers” such as broadcast meteorologists, and health care providers that, in turn, influence large, new audiences. As part of their work, they collaborate with a number of federal agencies and corporations to sponsor wide-reaching initiatives such as National Public Lands Day and National Environmental Education Week. And NAAEE convenes leaders and learners at the largest environmental education conference in North America each year, hosts an annual research symposium to link research and practice, publishes the National Guidelines for Excellence in Environmental Education, sponsors signature programming, advocates on behalf of the field, and partners with individuals, organizations, corporations, government, and funders to advance environmental literacy and move the field forward.

Conservation organizations such as the **National Wildlife Federation**, the **Sierra Club**, the **Nature Conservancy**, and **National Audubon Society** also support the environmental education field. These and other organizations, together with federal agencies such as the **US Forest Service**, the **Environmental Protection Agency**, the **US Park Service**, and the **US Fish and Wildlife Service**, provide vital resources, training, and services that support on-the-ground work of environmental education throughout the United States.



Funding Environmental Education

EE programs in the United States receive their funding from foundations, government agencies, corporations, individual donors, and earned income. Although EE represents a very small portion of overall environmental and educational philanthropic giving (see Figure 1 and Table 1), funding for EE has increased, and interest in EE among funders is building.²⁰

Tracking EE Funding: Tracking funding in EE is challenging. Many agencies and organizations that classify how, when, and where funds are granted find it difficult to categorize EE because of the different audiences and providers.²¹ Also, EE is sometimes included as part of larger issue-based initiatives, and the percentage of funds dedicated to EE within these broader strategies often is not reported. In particular, the areas of climate, health, waste, and water often include environmental education components, which are not always tracked. As a result, it is difficult to report exact figures related to EE giving, but based on reliable data gathered over the past decade, some trends are emerging.

Foundation Giving: Research by the Environmental Grantmakers Association (EGA) and others has found that funding in environmental education has been and remains at only 4 to 5 percent of overall environmental funding (see Figure 1). Like most environmental and conservation funding, EE experienced a dramatic increase in support between 2003 and 2007.²² Researchers estimate that EE funding increased by nearly 70 percent during this time, and that more than 2,000 foundations awarded grants in EE in 2007. It is important to note, however, that a large percentage of the \$92 million awarded annually during that period went to universities and infrastructure projects rather than direct funding for EE.²³

Federal Funding: The U.S. Environmental Protection Agency (EPA) is the most-recognized EE grantmaker in the governmental sector. From 1992 to 2011, the EPA awarded over \$54 million in EE grants.²⁴ While the agency provides significant funding to EE, compared to other funding sectors, the proportion of funds to EE is small: In 2011, for example, the EPA granted \$2.1 million through its EE grants program, which represents only a tiny fraction of the agency's total grants of \$1.8 billion,²⁵ and future funding through this program is uncertain. The National Environmental Education Act, which funds EPA's environmental education grants program, has never been fully funded, and funding for the Act was not included in the federal government's 2013 budget; it is unclear whether components of the Act, including support for grants, will be funded. Other federal agencies, such as NOAA, the U.S. Fish and Wildlife Service, and the U.S. Forest Service, also provide limited funding for EE under a variety of programs and issue areas, but these funds are difficult to identify and track, often because they are issue-specific, offered only once, or tied to very specific strategies, partnerships, programs, or geographic locations. Thus, the bottom line with federal funding for EE is that the news is mixed: there does indeed appear to be a rise in interest and awareness of EE within this sector, yet the funds continue to be fragmented, issue-specific, and difficult to secure, particularly for smaller providers or less-experienced grant seekers.²⁶

Corporate Giving: From 2003 to 2007, corporate giving to environmental education increased substantially. In 2007, corporate grants for the environment valued about \$104 million, and nearly 11 percent of those grants (\$11.4 million) went to environmental education. In the past five years, interest in EE from the corporate sector has been on the rise, with some notable corporate donations being specifically earmarked for environmental education.²⁷

Funders' Forum: The most encouraging news is that funders' interest in environmental education is on the rise. In October 2012, for example, more than 100 private donors as well as representatives from community, private, government, and corporate foundations gathered for an EE Funders' Forum sponsored by NAAEE and several funders in the San Francisco Bay area. The Forum, which took place at NAAEE's annual conference, suggests that there is a growing interest in working collaboratively to increase overall collective impact in supporting the field of environmental education. Even more encouraging is that a core group of funders have helped build on the momentum by planning a second gathering of the newly minted "Blue Sky Funders Forum" taking place at the NAAEE conference in Baltimore, Maryland in October 2013.

Figure 1 Foundation Giving to Environment Subcategory, 2007
 (from sample of 1,339 largest U.S. foundations)²⁸

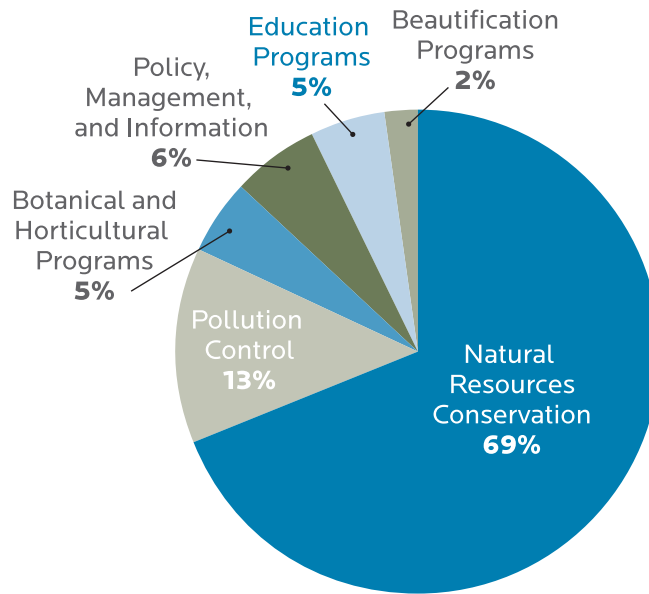


Table 1: Foundation Giving to Environment, 2007
 (in thousands of dollars)

Policy, Management, & Information	\$78,223	6.35%
Natural Resources Conservation	\$844,456	68.56%
Pollution Control	\$159,995	12.99%
Botanical & Horticultural Programs	\$54,649	4.44%
Education Programs	\$63,797	5.18%
Beautification Programs	\$29,770	2.42%
Other	\$820	0.07%
TOTAL ENVIRONMENT	\$1,231,710	100.00%

Regional Initiatives to Support Environmental Education

Across the country, more EE providers are working together with a common agenda and the intention of creating collective impact on a regional scale. These efforts derive from the growing awareness of the need to coordinate efforts across organizations to strengthen conservation and educational outcomes in communities and throughout regions. In the San Francisco Bay Area, for example, the EE Collaborative is working with practitioners, academics, and funders on a common agenda to help EE become more fully embraced as an essential element of formal and informal educational settings. Working across nine institutions, the Collaborative is incorporating evidence-based practices into program design and delivery, developing consistent messaging, and building intra-organizational pathways of EE experiences. Ultimately, the Collaborative aims to ensure that every generation is inspired with environmental know-how to create healthy communities and a healthy planet.

Randi Fisher, co-founder and trustee of the **Pisces Foundation** in San Francisco, describes her vision for the EE Collaborative by saying, “All around us we see evidence of the need to rekindle a sense of urgency and the skills and knowledge necessary to protect the environment. Working together, nonprofits, researchers and funders can create high-quality environmental learning opportunities that equip young people with the skills to meet these challenges while enriching their lives.”

The Future of Environmental Education

EE researchers and practitioners have outlined a number of key trends and potential areas of opportunity for strengthening environmental education, including:

Developing EE infrastructure: As the field continues to evolve, it is critical to invest in initiatives at the national level that strengthen the field overall by sharing best practices, speaking with a strong and unified voice, providing networking opportunities, and building infrastructure that “floats all boats.” Such strategies include technology platforms; professional development for formal and nonformal educators; EE certification programs; and unified communication strategies; among others. The primary facilitator of these kinds of efforts at the national level is the North American Association for Environmental Education (NAAEE), which includes a membership of thousands of EE professionals and a network of 54 state, regional, and provincial affiliates across the United States, Mexico, and Canada.²⁹ Regional alliances—such as E3 Washington³⁰ and the EE Collaborative, in the San Francisco Bay Area³¹—are also undertaking efforts to enhance the collective impact of the EE field by starting at the local and regional scales.

Building the research base: Addressing environmental challenges requires robust theoretical underpinnings for the field and an understanding of what makes programs effective, for whom, under what conditions, and to what ends. Research that can help identify, explore, and explain these effective practices is urgently needed. This work will likely require developing more coordinated research efforts, ongoing monitoring of environmental literacy, and longer-term studies of educational impacts on conservation.³²

Measuring outcomes: One area of particular research interest is identifying how various program designs—including settings, audiences, content, and theoretical frames—influence desired outcomes. As is noted in Table 1, the outcomes of interest in environmental education vary widely—from academic to behavioral, from individual to collective. Particular areas of focus have included studies to quantify actual improvement in environmental quality and to tease apart academic impacts related to environmental education efforts. Another area that has been—and remains—of great interest to researchers, practitioners, policymakers, and funders relates to the links among environmental education and environmental behavior. For those programs aiming for behavior change, researchers and practitioners are striving to understand more about the conservation psychology that drives environmental behavior and how this might affect the design and outcomes of environmental education.³³

Connecting research to practice: In addition to building the field's research base, sharing that knowledge with funders, educators, and practitioners in the field is equally important. Moving information out of academic journals and into the hands of practitioners requires open dialogue among researchers and practitioners. A number of initiatives to bridge this gap are already underway, including for example, the Environmental Education Research Bulletins, produced bi-annually by NatureBridge and Stanford University. The bulletins update educators and other EE professionals about current research in an accessible, easy-to-use format.³⁴ It is also critical that researchers work in tandem with funders and practitioners to better understand what pressing, field-based questions might help inform future directions of research studies.

Community Gardens Support Intertwined Goals

What makes a community healthy? The answer to this question varies from person to person, but most would agree that it depends on a mix of social, economic, and environmental factors. In recent years, community gardens have become increasingly popular among environmental, health, and social groups because of their ability to address a range of community-development goals at once. Gardens offer a holistic strategy that can provide access to healthy food, reduce food costs, bring community members together, create public green spaces, offer educational opportunities, and more.

In Denver, Colorado, the Colorado School of Public Health and Denver Urban Gardens are collaborating on a research initiative to better understand the impact of community gardens. Called the “Gardens for Growing Healthy Communities” project, they find that people involved in their community garden project are motivated by the opportunity to spend time outside in nature and “get their hands dirty.”³⁵ The researchers found that the community gardeners in their study were more likely to engage in social activities and have stronger neighborhood ties, think of their neighborhood as being beautiful, and take on volunteer and leadership roles. From a health perspective, they found that the community gardeners were twice as likely to meet national guidelines for daily intake of fruits and vegetables than were non-gardeners.³⁶

Dr. Jill Litt, a public health expert who’s a lead researcher in the study, explains that, for her, public health is about putting systems in place that keep people healthy. “Such systems,” she explains, “ensure clean water, clean air, waste management, safe working conditions as well as neighborhood environments that are walkable, safe, provide basic services and amenities for residents, and that support the social fabric of neighborhoods.”



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Fostering community connections and focusing on social learning: People are deeply connected to others in their social networks—both online and offline—and what a person knows, how he or she feels, and what he or she does is intertwined with the beliefs, values, knowledge, and actions of the people in his or her life. For this reason, the field is increasingly accounting for people's social contexts and recognizing the importance of working with communities as well as individuals. Neighborhood coalitions, faith-based organizations, cultural groups, and others are becoming increasingly important audiences, and programs such as community gardens highlight the ways that people can work and learn together. The National Council of Churches, for example, conducts a range of environmentally themed programs with its 100,000 member churches—and, by extension, those churches' members—through its Eco-Justice Program.³⁷

Urban communities, in particular, are increasingly important to engage through environmental education as more of the world's population now lives in urban areas than rural areas, a tipping point reached in 2008. In the San Francisco Bay Area, for example, The Watershed Project offers a range of programs to connect city dwellers with their watershed—a concept that can help make visible the links between people's homes and the larger-scale environment on which our daily actions have an impact. Through watershed-focused initiatives like the Watershed Project, community groups and schools, as well as youth participating in weekend and after-school programs, visit and restore urban waterways.³⁸ And curriculum guides and workbooks with an emphasis on service learning, such as the New York Restoration Project's *What's Good in My Hood?*,³⁹ can help urban residents take stock of neighborhood assets and challenges, inspiring action based on what they learn.⁴⁰

Building diversity: America is becoming increasingly diverse, but the environmental field has not kept pace. To remain effective, environmental education must address issues related to diversity and inclusion and reflect genuine community needs, staying relevant across a range of audiences and settings. The EECapacity project, for example, offers professional development, networking opportunities, and other services to EE educators working in urban areas and with underserved communities. Developing and enhancing partnerships with community-based organizations concerned with health, youth development, faith, job creation, and other social issues will help ensure that EE does not occur in isolation but, rather, is a strategy that embraces the notion of sustainability's triple bottom line: economics, equity, and the environment.⁴¹



Environmental Education and Youth Development

EE helps people envision a bright future and develop the knowledge, motivation, and skills to work toward that future. As such, EE blends naturally with youth development programs, which share similar goals of helping young people reach their highest potential. When combined, EE and youth development programs can help young people develop academic skills, self-confidence, connections to the places where they live, and more.⁴² These kinds of partnerships are especially important in low-income communities, where students can face many challenges to academic performance and pressing environmental issues.

In New Haven, Connecticut, for example, the nonprofit organization Solar Youth helps local youth explore their community, identify environmental issues, take action, and share their results. Youth in the program have cleaned up litter, planted trees, conducted traffic safety studies, removed graffiti, cleared hiking trails, promoted recycling, and more. In the process, New Haven's youth not only help improve their neighborhoods, but they also gain skills and confidence for a lifetime. As one community member observed, "You know the old saying 'it takes a village to raise a child?' Well in Westville Manor, the children are raising the village!"⁴³

Focusing on early childhood: The environmental education field has always emphasized lifelong learning, and now more than ever, increased attention is being paid to the critical role of early childhood in developing strong, positive connections to the natural world. Organizations such as the Children and Nature Network are emphasizing the benefits of connecting children to nature at an early age. Nature-based preschools such as The Audubon Nature Preschool are growing in number and reflect parents' increasing acceptance of the benefits of nature experiences in children's development. New curriculum guides such as Project Wild's *Growing Up WILD* and Project Learning Tree's *Environmental Experiences for Early Childhood* are providing parents, caregivers, and educators with more tools for early childhood nature education. And NAAEE has taken on several new initiatives to support early childhood EE, including launching an international research journal on early childhood EE, creating a new alliance on early childhood and environmental education called the NaturalStart (naturalstart.org), and publishing *Guidelines for Excellence* related to early childhood EE.⁴⁴

Expanding the use of technology: Although connecting audiences to nature through direct experience will always be a vital part of EE, digital tools are playing a growing role in environmental education. The field is likely to expand the use of technology in areas such as digital textbooks, mobile internet and software, social media, and other digital frontiers. Conducting research on how technology can best meet EE providers' goals and objectives—and when this is appropriate—is critical if we are to embrace the digital age and leverage opportunities provided by these new pathways to learning. Other opportunities exist in designing EE programs that bring technology into the outdoors. In the wake of the Gulf of Mexico oil spill, for example, thousands of citizen scientists used new crowdsourcing technology to report impacts from the spill in real time. The information not only helped scientists, but also provided people with a meaningful way to participate in the response to the disaster.⁴⁵

Many other trends and opportunities exist within environmental education—from collaborating with the corporate sector on sustainability training to further greening of higher education. Through these, and other innovative efforts in research and practice, environmental education will continue to build environmental literacy among youth and adults alike, to contribute to diverse, thriving communities poised to address current issues and future challenges for the betterment of the environment and humanity.



Although connecting audiences to nature through direct experience will always be a vital part of EE, digital tools are playing a growing role in environmental education.

Endnotes

- ¹ For a discussion of the NELA study, see McBeth, W. and Volk, T. 2009. The National Environmental Literacy Project: A baseline study of middle grade students in the United States. *Journal of Environmental Education* 41(1): 55–67.
- ² Studies focusing on academic, student engagement, and character-related outcomes include: Lieberman, G. and Hoody, L. 1998. *Executive Summary: Closing the achievement gap: Using the environment as an integrating context for learning*. San Diego, CA: State Education and Environment Roundtable; Bartosh, O., Tudor, M., Ferguson, L., and Taylor, C. 2010. Impact of Environment-Based Teaching on Student Achievement: A study of Washington State middle schools. In D. Hough (ed.). *Research Supporting Middle Grades Practice* (pp. 157–172). Charlotte, NC: IAP; American Institutes of Research. 2005. *Effects of Outdoor Childhood Education Programs for Children in California*. Palo Alto, CA; Ernst, J. and Monroe, M. 2004. The Effect of Environment-Based Education on Students' Critical Thinking Skills and Disposition Toward Critical Thinking. *Environmental Education Research* 10(4): 507–522; Barnett, M. et al. 2006. Using the Urban Environment to Engage Youths in Urban Ecology Field Studies. *Journal of Environmental Education* 37(2): 3–11; and Cheak, M. and Volk, T. 2003. The Effects of an Environmental Education Program on Students, Parents, and Community. *Journal of Environmental Education* 34(4): 12–25.
- ³ Original text of the Tbilisi Declaration is available through the UNESCO website at: unesdoc.unesco.org/images/0003/000327/032763eo.pdf.
- ⁴ The National Project for Excellence in Environmental Education (NPEEE) has produced *Guidelines for Excellence* related to professional development, K-12 learners, nonformal settings, early childhood, and materials/curriculum. The guidelines, in addition to a range of accompanying resources including those for Guidelines trainers, are available at: eelinked.naaee.net/n/guidelines.
- ⁵ See, for example, the emphasis in the UN's Decade of Education for Sustainable Development on education as a tool to address “sustainable development issues” such as climate change, biodiversity loss, poverty reduction, and sustainable consumption: www.unesco.org/new/en/education/themes/leading-the-international-agenda/education-for-sustainable-development/.
- ⁶ Coyle, Kevin. 2005. *Environmental Literacy in America What Ten Years of NEETF/Roper Research and Related Studies Say About Environmental Literacy in the U.S.* The National Environmental Education and Training Foundation: Washington, D.C.
- ⁷ This support of EE was relatively consistent across political parties, demographic groups, and regions of the state. More details from the PPIC study can be found here: http://www.ppic.org/content/pubs/survey/S_711MBS.pdf.
- ⁸ For more on the U.S. Department of Education's Green Ribbon Schools initiative, see: www2.ed.gov/programs/green-ribbon-schools/index.html.
- ⁹ The NCLI website provides a state-by-state overview of Environmental Literacy Plans and related legislation: www.cbf.org/ncli/action/environmental-literacy-plans-by-state.
- ¹⁰ For a discussion of the pedagogy and principles behind learning science in informal settings, much of which is applicable to environmental education, see the 2009 National Academy of Sciences publication, *Learning Science in Informal Environments: People, places, and pursuits*: www.nap.edu/catalog.php?record_id=12190. *Free-Choice Learning and the Environment* (Falk, Heimlich, and Foutz, eds., 2009, AltaMira Press) also discusses audiences and pedagogical approaches for free-choice learning settings, but because of its emphasis on environmental learning, it includes chapters on wildlife, ocean literacy, conservation organizations, and environmental behavior, among other relevant topics.

- ¹¹ Funding initiatives through agencies, such as NSF and NOAA, as well as private foundations have focused on specific issues, such as climate change and ocean literacy; these grant programs have supported individual nonprofits and coalitions. For example, NSF's Climate Change Education Partnership Program includes two phases and supports consortia that must include: communities, climate scientists, learning scientists, and informal/formal educators: http://www.nsf.gov/funding/pgm_summ.jsp?pims_id=503465.
- ¹² Louv and colleagues have started the Children and Nature Network to build on this momentum. The organization's mission is to connect children and families with nature through conducting and disseminating research, developing programs, and creating and advocating for national-scale strategies: www.childrenandnature.org.
- ¹³ For more on the NCLI coalition, see: www.cbf.org/ncli.
- ¹⁴ California's education code stipulates that all students should have the opportunity to participate in outdoor school experiences. Within this section of the code, counties/districts are also encouraged and allowed to operate their own outdoor schools: <http://www.leginfo.ca.gov/cgi-bin/displaycode?section=edc&group=08001-09000&file=8760-8774>. Thus, many counties and districts offer their own day or residential experiences to students and/or partner with private nonprofit providers. However, as with elsewhere, in times of scarce funding and pressure related to NCLB and other standards-related discussions, environmental and outdoor education experiences have also been increasingly under pressure in California.
- ¹⁵ More on "meaningful watershed educational experiences" can be found here: www.bayeducation.net/MBE.pdf. The Chesapeake Bay Partnership program is described here: www.chesapeakebay.net.
- ¹⁶ For more on Chicago Wilderness, see: www.chicagowilderness.org. E3 Washington (www.e3washington.org) and the Environmental Education Collaborative (www.eecollaborative.org) are described in notes 30 and 31.
- ¹⁷ For more on the NAAEE Affiliates Network, see: www.naaee.net/us/affiliates.
- ¹⁸ For a literature review and empirical study of the role of education and social strategies in achieving conservation outcomes, see: Ardoin, N.M. and Heimlich, J.E. 2013. Views from the Field: Conservation educators' and practitioners' perceptions of education as a strategy for achieving conservation outcomes. *Journal of Environmental Education*, 44(2): 97–115.
- ¹⁹ For a discussion of social strategies and practical tips for applying them within a conservation context, see the *Tools of Engagement* toolkit and website, developed by the National Audubon Society, EETAP (U.S. EPA), and the U.S. Fish and Wildlife Service: web4.audubon.org/educate/toolkit/.
- ²⁰ See the Environmental Grantmakers Association (EGA) funders' brief, *Environmental Education: A Strategy for the Future*, for further discussion of the portion of funding dedicated to environmental education. Also discusses trends in giving to environmental education focusing on the period from 2003 to 2007. Available free to EGA members through the EGA website (www.ega.org) or by request.
- ²¹ See the EGA funders' brief (note 20), which discusses in further detail the challenges of categorizing EE grants. See also Ardoin, N.M. and Bowers, A.W. 2012. Trends in Philanthropic Support: Foundation giving in environmental education. *Journal of Environmental Education*, 43(4): 259–273.
- ²² Ardoin, N.M. and Bowers, A.W. 2012. Trends in Philanthropic Support: Foundation giving in environmental education. *Journal of Environmental Education*, 43(4): 259–273.
- ²³ The EGA brief, *Environmental Education: A Strategy for the Future*, includes a discussion of the categories of EE grants as well as a listing of the largest grants classified as EE between the years of 2003 and 2007.
- ²⁴ For information on EPA's Environmental Education Grants Program, including criteria, recipients, and past grant amounts, see www.epa.gov/education/grants/index.html#grants=4.
- ²⁵ See U.S. EPA's *Budget in Brief 2011* for further discussion of EPA's budgetary breakdown into spending categories, including support toward their five main goals of clean air and global climate change; clean and safe water; land preservation and restoration; healthy communities and ecosystems; and compliance and environmental stewardship. Report available online at: nepis.epa.gov/Adobe/PDF/P10069PG.PDF.

- ²⁶ For a helpful discussion of and periodic updates on government funding of EE efforts, see the Campaign for Environmental Literacy's blog: fundee.typepad.com. The Campaign also maintains a website with useful resources related to funding in EE: www.fundee.org/facts.
- ²⁷ The National Environmental Education Foundation's Business and the Environment program provides resources, conducts research, and tracks trends related to corporate engagement with and support of the environment: www.neefusa.org/business/index.htm. One example of a corporate/nonprofit partnership is the TogetherGreen program of the National Audubon Society and Toyota: www.togethergreen.org.
- ²⁸ Figure from Lawrence, S., Mukai, R., and Atienza, J. 2009. *Foundation Giving Trends: Update on funding priorities*. New York, NY: Foundation Center, p. 10, as cited in Ardoin and Bowers, 2012.
- ²⁹ NAAEE, the EE field's professional membership association, fulfills its mission of strengthening EE through a number of initiatives including professional development, setting guidelines for the field, disseminating best practices, and making strategic investments in key areas such as early childhood education, climate change education, and E-STEM. NAAEE holds an annual conference that draws more than 1,000 environmental education practitioners and researchers. For more information: www.naaee.net.
- ³⁰ E3 Washington focuses on "Education for Sustainable Communities" through education, environment, and economy: www.e3washington.org.
- ³¹ The Environmental Education Collaborative, which focuses on the 12-county San Francisco and Monterey Bay areas, works to "support and advance the cohesiveness, effectiveness, and prominence of the environmental education field": www.eecollaborative.org.
- ³² In addition to the peer-reviewed journals, environmental education researchers gather in various venues to discuss trends in the field, share findings, and explore collaborative opportunities. These gatherings are often related to professional conferences and associations and include, for example, the NAAEE Research Commission (and associated Research Symposium, held concurrently with each NAAEE Annual Conference) and the American Education Research Association's (AERA) Ecological and Environmental Education Special Interest Group (EE SIG).
- ³³ For discussion of what affects environmental behavior, particularly within a programmatic context and related to environmental and conservation education, see *Influencing Conservation Action: What research says about environmental literacy, behavior, and conservation results* in the *Tools of Engagement* toolkit. This module is available at: web4.audubon.org/educate/toolkit/.
- ³⁴ The *EE Research Bulletins* are available on the NatureBridge website at: www.naturebridge.org/resources. See also the *Relating Research to Practice in Informal Learning Environments* initiative in the informal science education field, which offers an interesting model from a closely related area: research2practice.info.
- ³⁵ For more on the Denver Urban Gardening project, visit: dug.org/gghc. The journal article discussing the findings is: Hale, J., Knapp, C., Bardwell, L., Buchenau, M., Marshall, J.A., Sancar, F., Litt, J.S. Connecting food environments and health through the relational nature of aesthetics: Gaining insight through the community gardening experience. *Social Science and Medicine*. 72 (2011) 1853-1863.
- ³⁶ For more on the context of this project and study, see: articles.latimes.com/2011/aug/05/news/la-heb-community-gardens-health-20110805. The journal article citing these findings is: Litt, J.S., Soobader, M., Turbin, M.S., Hale, J., Buchenau, M., Marshall, J.A. The influences of social involvement, neighborhood aesthetics and community garden participation on fruit and vegetable consumption. *The American Journal of Public Health*, 101 (2011) 1466-1473.
- ³⁷ For more information on the NCC's Eco-Justice Program, visit: ncecojustice.org.
- ³⁸ For more information on the Watershed Project, see: www.thewatershedproject.org.
- ³⁹ The New York Restoration Project's neighborhood assessment tools and workbooks can be downloaded from: www.nyrp.org.

⁴⁰ For more on environmental education within an urban context, see: Krasny, M. and Tidball, K. 2012. Civic Ecology: A pathway for Earth Stewardship in cities. *Frontiers in Ecology and the Environment* 10: 267–273. <http://dx.doi.org/10.1890/110230>. For more on trends in environmental education research, including a discussion of the focus on the urban context, see Ardoin, N.M., Clark, C.R., and Kelsey, E. 2012. An Exploration of Future Trends in Environmental Education Research. *Environmental Education Research*. DOI: 10.1080/13504622.2012.709823.

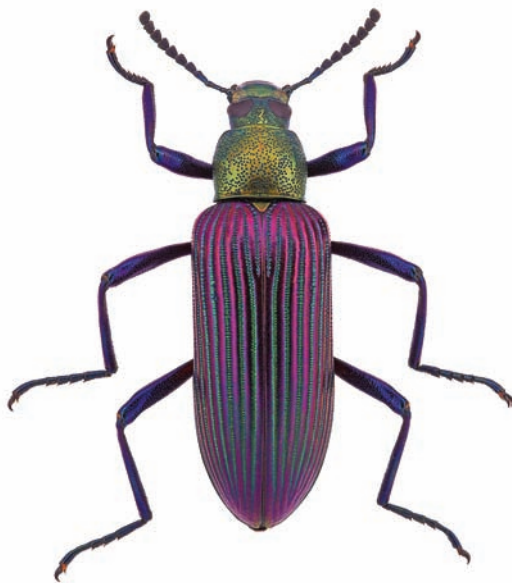
⁴¹ Many organizations and researchers are working to address diversity and inclusion related to environmental education. Other organizations that provide resources and services in this area include Diversity Matters: www.diversity-matters.org; Center for Diversity and the Environment: www.environmentaldiversity.org; and NAAEE's Inclusivity Network: eelinked.naaee.net/n/inclusivity. The EECapacity project can be found online at www.eecapacity.net.

⁴² The Foundation for Youth Investment, for example, is interested in this suite of outcomes and, thus, directs its giving to organizations focused on youth development, with a particular emphasis on underserved audiences: www.fyifoundation.org.

⁴³ For more on Solar Youth's context, audiences, and work, see www.solaryouth.org.

⁴⁴ Information about NAAEE's resources related to early childhood education, including the *International Journal of Early Childhood Environmental Education* (2012); the *Early Childhood Environmental Education Rating Scale* (2011, authored by Y. Bhagwanji); and the *Early Childhood Education Guidelines for Excellence* (2010) are available at www.naaee.net/publications. The Children and Nature Network is an organization whose mission is to connect children and families with nature through conducting and disseminating research, developing programs, and creating and advocating for national-scale strategies: www.childrenandnature.org. Information about Project WILD's *Growing Up WILD* curriculum is available online at www.projectwild.org/GrowingUpWILD.htm.

⁴⁵ McCormick, S. 2012. After the Cap: risk assessment, citizen science, and disaster recovery. *Ecology and Society* 17(4): 31.



Environmental education helps people build a stake in their future and provides tools for becoming engaged in environmentally related issues and opportunities as they arise.

