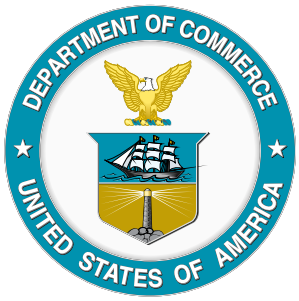
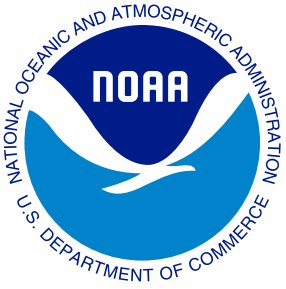
NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION

Education Strategic Plan 2015 - 2035

ADVANCING NOAA'S MISSION THROUGH EDUCATION





ACKNOWLEDGMENTS

The NOAA Education community extends its thanks and appreciation to the many individuals who contributed to the development of this strategic plan. In a truly collaborative fashion, NOAA educators, staff, and leadership combined efforts with the broader education and resource management community, non-governmental organizations, teachers, and interested citizens to produce this blueprint for NOAA's future work in education. In addition to the contributions the NOAA Education Council members, special thanks are extended to the following individuals for their contributions to this document: Bree Turner, Bronwen Rice, Bruce Moravchik, Carla Wallace, Carrie McDougall, Chris Maier, Christopher Nelson, Dan Pisut, Elizabeth McMahon, Eric Hackathorn, Ginger Hinchcliff, Jeannine Montgomery, John Baek, John McLaughlin, Jon Lilley, June Teisan, Kate Thompson, Katya Wowk, Kristen Jabanoski, Leah Henry, Lisa Hiruki-Raring, Lisa Nakamura, LuAnn Dahlman, Maia McGuire, Patrick Drupp, Robert Hansen, Sarah Schoedinger, Seaberry Nachbar, Sepp Haukebo, Stacey Rudolph, and Susan Haynes. Lastly, the following individuals deserve a special acknowledgement and sincere thanks for their pivotal roles in developing this document: Valerie Williams and Steve Stork masterminded the intellectual framework of the plan and Marissa Jones turned the framework into a published document.

IMAGE CONTRIBUTORS

We would like to thank the NOAA offices, programs, employees, partners, and grantees for contributing images for this document. The images represent a sampling of the many activities, audiences, and settings that make up the current educational programs of NOAA and its partners. Individual image credits are listed in the reference section of this document.

LETTER FROM THE DIRECTOR

Dear Partners and Friends of NOAA Education,

We live on a dynamic planet with environments and ecosystems in transition. Communities around the world are becoming more vulnerable to natural disasters and long-term adverse environmental changes. There is growing pressure on our natural resources.

As we face these challenges, we strive to become more resilient to them. NOAA provides timely, reliable, and actionable information—based on sound science—to help the Nation make smart decisions that impact the future of society, the economy, and the environment. At NOAA, we call this "environmental intelligence" and producing it is at the core of our mission.

Making use of environmental intelligence requires the foresight to build a foundation of understanding when the sky is clear and the ocean is calm. For this reason, NOAA invests in education to expand the public's understanding and stewardship of Earth systems. These education efforts take place across the country, supporting NOAA's mission in creative and innovative ways.

Congress recognized the importance of NOAA's education programs with the passage of the America COMPETES Act. The Act gives NOAA broad education authority and directs NOAA to develop an Education Strategic Plan with a 20-year horizon to be updated every five years.

In this update of our strategic plan, we take a fresh look at our programs and priorities to better reflect the broad scope of NOAA Education. We maintain our focus on a science-informed society and workforce development, while highlighting our unique role in safety, preparedness, conservation, and stewardship.

The strategic plan represents an agency-wide effort with significant input from our external partners. Such partnerships are critical to our success, and we work closely with formal and informal educational institutions, businesses, non-governmental organizations, and concerned individuals who dedicate their time to supporting our mission. Through extensive focus and collaboration, we have crafted a strategic plan that guides us and allows us to track our progress.

We thank you for your support for NOAA Education. We look forward to working with you to improve our Nation's ability to protect life and property and build sustainable ecosystems and resilient communities.

Louisa Koch

LOUISA KOCH

Director, NOAA Education

NOAA EDUCATION COUNCIL

The NOAA Education Council members listed below represent education programs across the agency. Through their signatures, each member commits to supporting and enabling the goals and objectives of this strategic plan.

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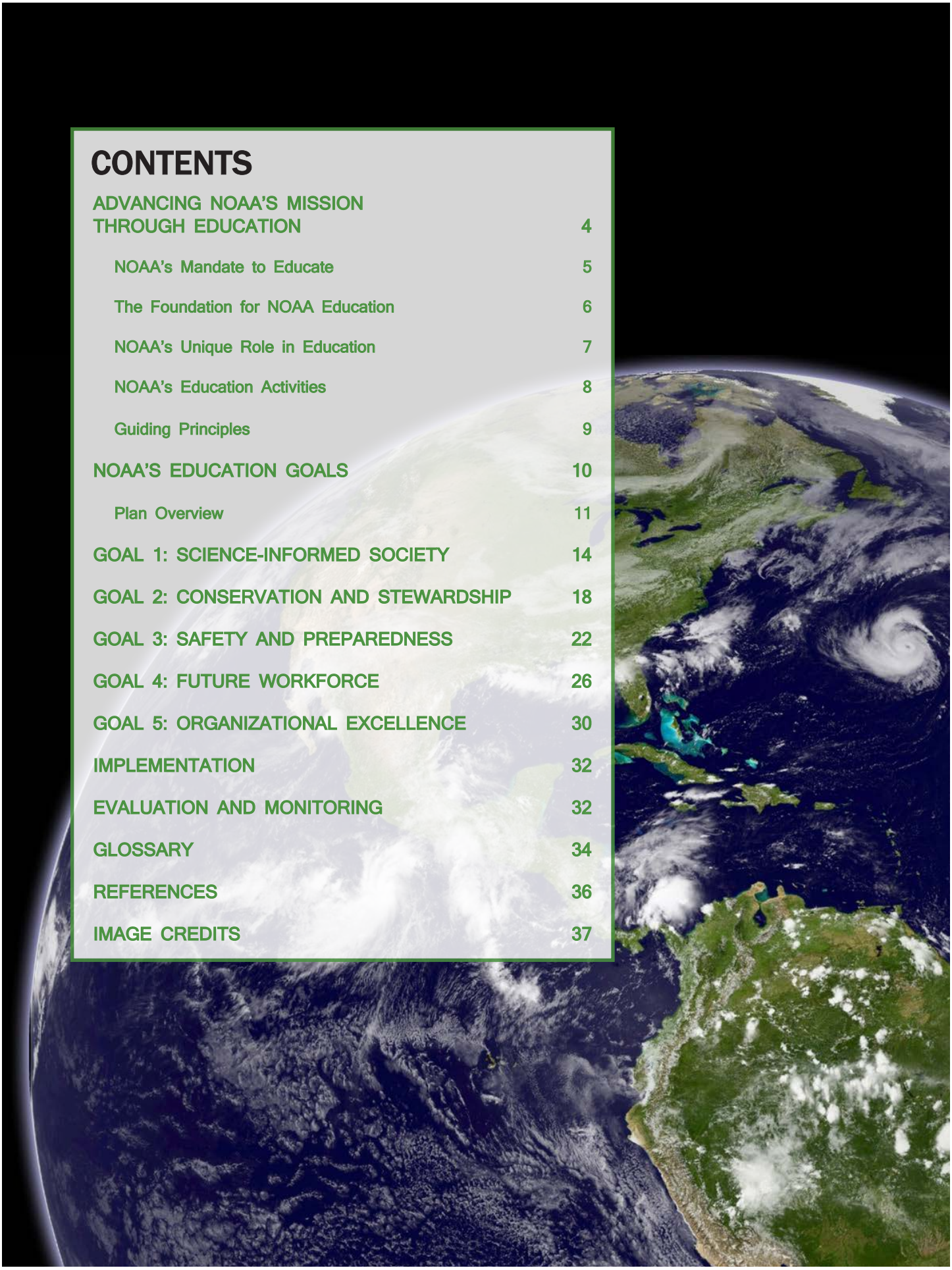


ADVANCING NOAA'S MISSION THROUGH EDUCATION

NOAA'S VISION

Healthy ecosystems, communities, and economies that are resilient in the face of change.

NOAA'S MISSION: SCIENCE, SERVICE, AND STEWARDSHIP

To understand and predict changes in climate, weather, oceans, and coasts,
To share that knowledge and information with others, and
To conserve and manage coastal and marine ecosystems and resources.

NOAA'S EDUCATION VISION

An informed society that uses ocean, coastal, Great Lakes, weather, and climate science to make the best social, economic, and environmental decisions.

NOAA'S EDUCATION MISSION

To educate and inspire the Nation to use science toward improving ocean and coastal stewardship, increasing safety and resilience to environmental hazards, and preparing a future workforce to support NOAA's mission.

The National Oceanic and Atmospheric Administration (NOAA) is a science-based agency within the United States Department of Commerce. NOAA is charged with engaging society to support informed decisions through an understanding of Earth system sciences.

Education plays a significant role in supporting NOAA's mission. For society to become more resilient, individuals should have the ability to understand scientific processes, consider uncertainty, and reason about the ways that human and natural systems interact. Therefore, it is not enough for NOAA to research Earth systems; NOAA must also empower the Nation to use this information to support healthy ecosystems, communities, and economies.

NOAA'S MANDATE TO EDUCATE

NOAA's role in science education is defined in the America COMPETES Act (P.L. 110-69), which provides broad authority for educational activities. The Act states: "The Administrator of the National Oceanic and Atmospheric Administration shall conduct, develop, support, promote, and coordinate formal and informal educational activities at all levels to enhance public awareness and understanding of ocean, coastal, Great Lakes, and atmospheric science and stewardship by the general public and other coastal stakeholders, including underrepresented groups in ocean and atmospheric science and policy careers. In conducting those activities, the Administrator shall build upon the educational programs and activities of the agency."

The America COMPETES Act directs NOAA to develop a 20-year strategic plan in partnership with ocean and atmospheric scientists, experts in education, and interested members of the public. The NOAA Education community first revised its strategic plan in response to the America COMPETES Act in 2009. In this document, the NOAA Education community shares an updated course of action that now reflects the broad scope of NOAA's education programs and priorities.

The America COMPETES Act complements standing mandates that authorize education in NOAA's programs, such as the National Marine Sanctuaries System, the National Sea Grant College Program, and the National Estuarine Research Reserve System (see the full list below). These statutes acknowledge the importance of education in fulfilling the distinct laws that NOAA executes, while the America COMPETES Act provides a unifying mandate for educational activities across the agency. The philosophy and priorities of this strategic plan are guided by these statutes:

- America COMPETES Act—2007, 2011
- National Sea Grant College Program Act—1966, 1976, 2002
- National Marine Sanctuaries Act—1972, 1980, 1984, 1988, 1992, 1996, 2000
- National Estuarine Research Reserve System, Coastal Zone Management Act—reauthorized or amended eight times since 1972-1996
- Magnuson-Stevens Fishery Conservation and Management Act—1976, 2006
- Ernest F. Hollings Scholarship Program, Consolidated Appropriations Act—2005
- Coral Reef Conservation Act—2000
- Tsunami Warning and Education Act—2006
- Federal Ocean Acidification Research and Monitoring Act—2009
- Ocean Exploration and Research, Omnibus Public Land Management Act—2009

This strategic plan is also shaped by the following documents, which discuss the need for science education reform and the advancement of lifelong learning opportunities in ocean, coastal, Great Lakes, weather, and climate sciences:

- U.S. Global Change Research Program: *National Climate Assessment Report* (2014)
- The Intergovernmental Panel on Climate Change: *5th Assessment Report* (2013)
- The Ocean Research Advisory Panel: *Leveraging Ocean Education Opportunities* (2013)
- Committee on STEM Education, National Science and Technology Council: *Federal Education 5-Year Strategic Plan* (2013)
- *The National Global Change Research Plan 2012-2021: A Strategic Plan for the U.S. Global Change Research Program* (2012)
- National Research Council of the National Academies: *A Framework for K-12 Science Education—Practices, Crosscutting Concepts, and Core Ideas* (2011)
- National Research Council of the National Academies: *NOAA's Education Program, Review and Critique* (2010)
- National Academies Report: *Rising Above the Gathering Storm, Revisited (2010)*
- *NOAA's Next Generation Strategic Plan* (2010)
- National Academies Report: *Rising Above the Gathering Storm* (2005)
- The U.S. Commission on Ocean Policy: *An Ocean Blueprint for the 21st Century* (2004)
- *Discovering Earth's Final Frontier: A U.S. Strategy for Ocean Exploration* (2000)

THE FOUNDATION FOR NOAA EDUCATION

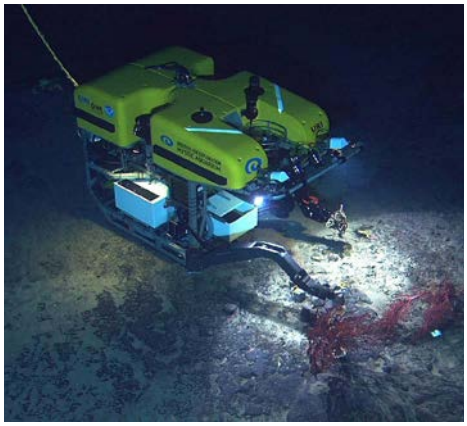
NOAA's scientific work is the foundation for the agency's educational content. NOAA-related sciences include the entire collection of disciplines that NOAA employs. Studying Earth's physical and biological systems requires expertise in science, technology, engineering, and mathematics (STEM). NOAA's work also relies heavily on input from social science, management, policy, and other disciplines. These fields are essential to communicating effectively, managing shared resources, and making decisions that involve the environment.

NOAA's work is inherently interdisciplinary. Earth systems are complex and no single scientific discipline can capture the causes and effects of changes within them. Understanding the causes and implications of changes in coral reef health, for example, involves global climate, hydrology, land use planning, oceanography, fisheries management, and marine resource economics. Likewise, projecting the future climate is a product of computer science, statistics, sociology, meteorology, climatology, and other sciences.

NOAA strives to incorporate authentic research practices into education and inspire the next generation of experts in the entire suite of disciplines that support the agency's mission.

NOAA'S UNIQUE ROLE IN EDUCATION

NOAA's contributions to science education are unique among federal agencies. As the National Research Council observed, NOAA is well positioned to contribute to both environmental literacy and STEM education (National Research Council, 2010). However, NOAA's role in education is broader than these two areas. The agency's niche is defined by its mission and NOAA brings the following resources to this unique space:



NOAA'S TOPICS: NOAA is an international leader in science, service, and stewardship. Topics within NOAA's purview span from the surface of the sun to the depths of the ocean floor. NOAA's service and stewardship functions connect research to applications that benefit the Nation, drawing on advancements in technology and our understanding of society. The agency's mission unites our intellectual drive to understand and explore with our civic duty to protect communities and the environment. NOAA Education can reach and inspire audiences through many points along the spectrum of science, service, and stewardship.

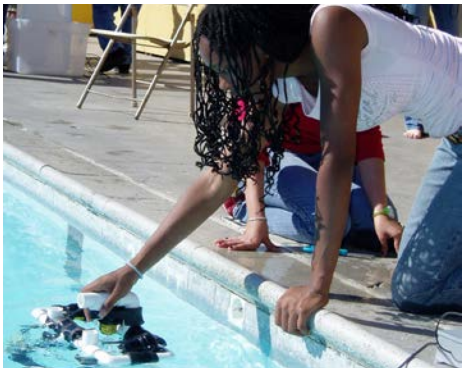
NOAA'S ASSETS: NOAA tackles real-world issues using labs, ships, buoys, and satellites equipped with a myriad of specialized instruments that gather environmental data. From this wealth of information, NOAA creates data products, including widely disseminated weather statements, tide tables, nautical charts, and disaster warnings. NOAA manages special places, such as National Marine Sanctuaries and National Estuarine Research Reserves, both of which connect the public with natural and cultural resources. NOAA's resources also include its people—experts in science, engineering, policy, management, communications, and other disciplines. These diverse assets provide excellent platforms for engaging the public in education.

NOAA'S REACH: NOAA maintains a presence in every U.S. state, as well as Guam, Puerto Rico, and the Pacific Islands. This broad reach allows the agency to connect with constituents in different regions, understand their needs from a local perspective, and deliver regionally relevant products and services. NOAA's numerous locations across the U.S. create many opportunities for the public to interact directly with NOAA experts and resources.

NOAA'S EDUCATION ACTIVITIES

NOAA conducts a wide variety of education activities. Each program has distinct goals but all strive to put scientific information in the hands of the public. Below are some examples of the types of educational work that NOAA undertakes:

- Supporting formal education by educating students, creating classroom materials, providing professional development opportunities for educators, and supporting educator networks.
- Funding scholarships and internships for students, primarily in higher education.
- Partnering with universities, including Minority Serving Institutions.
- Infusing NOAA science content, expertise, and data visualization technologies into zoos, aquariums, museums, science centers, and other informal education institutions.
- Funding partnerships that support NOAA's mission through competitive grants.
- Creating opportunities for individuals to become involved in NOAA research through citizen science, place-based education, hands-on learning, and training.
- Supporting the development of literacy frameworks that outline the fundamental concepts of Earth system science.
- Providing online access to NOAA's educational resources.
- Working with international partners to improve understanding of the Earth system around the world.
- Performing outreach designed to build awareness, develop relationships, promote education products, and inspire the public to pursue more learning opportunities.



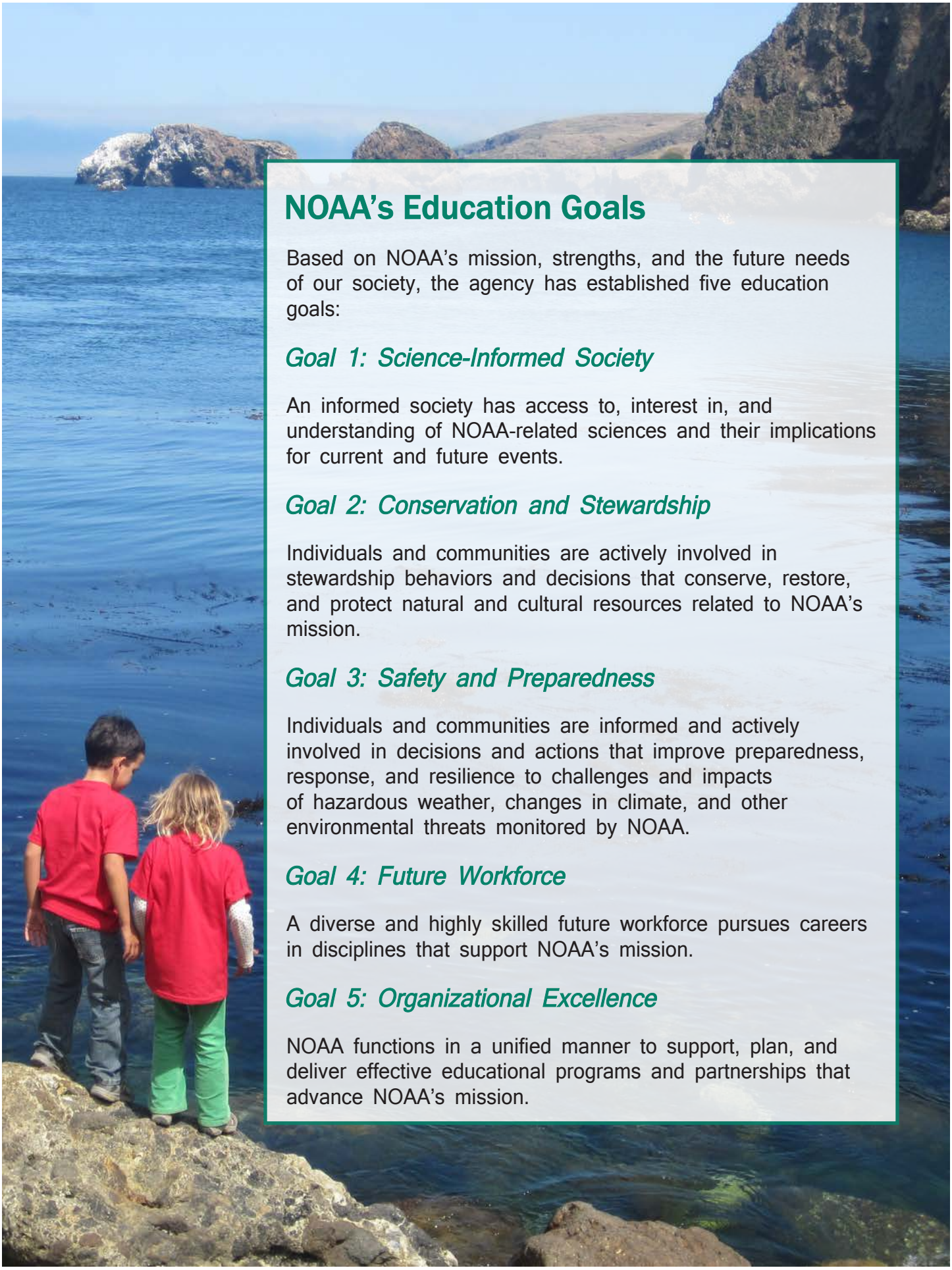


NOAA cannot hope to engage the entire Nation in education and outreach on its own. Partnerships expand NOAA's reach by leveraging expertise and sharing resources (Payne and Baek, 2014). NOAA's partners include museums and aquariums; non-governmental organizations; educational businesses; professional societies; education associations; stakeholder groups and resource users; fishery management councils and commissions; state, local, and tribal governments; state and local school systems; academia; and individuals. NOAA works with partners to advance understanding of Earth system science by participating in planning initiatives, funding agreements and joint research; sharing educational content; and collaborating on projects of common interest.

GUIDING PRINCIPLES

NOAA is committed to developing and supporting education programs and products with high quality standards. NOAA strives to provide education activities that are:

- Aligned with the agency's strategic goals and include measurable objectives;
- Aligned with appropriate national and state education standards;
- Based on the best available science;
- Informed by evidence-based practices;
- Designed to incorporate authentic scientific practices;
- Supportive of literacy principles that are relevant to the agency's scientific mission;
- Responsive to the needs of the participants through engagement and open communication;
- Designed to be consistent in quality and sustainable; and
- Continually evaluated and improved.



NOAA's Education Goals

Based on NOAA's mission, strengths, and the future needs of our society, the agency has established five education goals:

Goal 1: Science-Informed Society

An informed society has access to, interest in, and understanding of NOAA-related sciences and their implications for current and future events.

Goal 2: Conservation and Stewardship

Individuals and communities are actively involved in stewardship behaviors and decisions that conserve, restore, and protect natural and cultural resources related to NOAA's mission.

Goal 3: Safety and Preparedness

Individuals and communities are informed and actively involved in decisions and actions that improve preparedness, response, and resilience to challenges and impacts of hazardous weather, changes in climate, and other environmental threats monitored by NOAA.

Goal 4: Future Workforce

A diverse and highly skilled future workforce pursues careers in disciplines that support NOAA's mission.

Goal 5: Organizational Excellence

NOAA functions in a unified manner to support, plan, and deliver effective educational programs and partnerships that advance NOAA's mission.

PLAN OVERVIEW

The NOAA Education community developed this plan through collaborative discussion, with input from NOAA educators, staff, leadership, and other interested parties. The community designed the plan to build on the strengths of NOAA Education, but also carefully considered areas for growth, including feedback from *NOAA's Education Program: Review and Critique* (National Research Council, 2010). Above all, the plan provides guidance for NOAA Education and a framework for tracking and reporting progress.

The goals are interrelated and each has a different scope and focus. Goal 1 aims to help the Nation understand the science that informs NOAA's work. Goal 1's audience is all members of society, as NOAA Education strives to help everyone take advantage of NOAA's resources. Goal 2 builds on Goal 1 to give individuals and communities the knowledge, skills, and tools they need to conserve and steward ocean and coastal ecosystems. Goal 3 builds on Goal 1 to help individuals and communities access the information they need to stay safe from natural hazards. The audience in Goal 2 and Goal 3 is intentionally different from that of Goal 1. Individuals and communities across the Nation have different needs and opportunities when it comes to conservation and stewardship or safety and preparedness, and may choose to build on Goal 1 in different ways. Goal 4 also builds on Goal 1 to support students and emerging professionals who choose to pursue NOAA-related career pathways and join the NOAA mission workforce. Goal 5 supports all goals by improving internal capacity to ensure that NOAA Education operates efficiently and effectively.

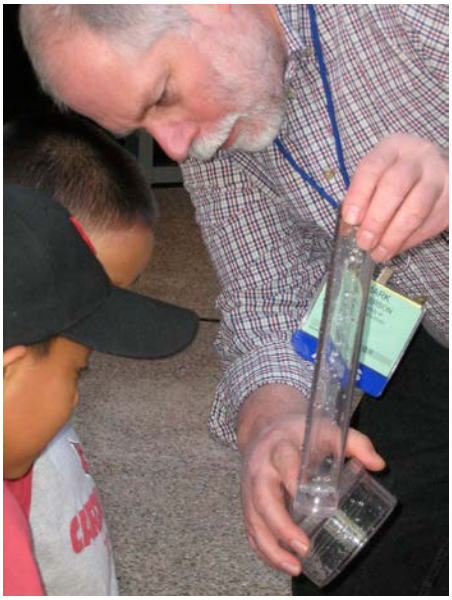
In the pages that follow, the NOAA Education community outlines its approach for achieving these goals. Each goal is accompanied by objectives, strategies, and evidence of progress statements.

- **GOALS** are the desired, long-term outcome for society.
- **OBJECTIVES** describe the desired state NOAA's target audiences within each of the goals.
- **STRATEGIES** indicate what NOAA will do to achieve the objectives. Given the complexity of this strategic plan, the NOAA Education community chose to develop strategies that highlight high-priority, representative activities under each goal. As a result, one or more strategies may be employed to achieve the objectives.
- **EVIDENCE OF PROGRESS STATEMENTS** describe the measurable results the community is working to achieve over the next five years. The evidence of progress statements correspond to the numerical objectives; for instance, Evidence of Progress 1.1.a indicates what progress will look like for Objective 1.1.

GOAL 1:

Science-Informed Society

An informed society has access to, interest in, and understanding of NOAA-related sciences and their implications for current and future events.



Goal 1: Science-Informed Society

An informed society has access to, interest in, and understanding of NOAA-related sciences and their implications for current and future events.

Resilient communities depend upon a scientifically informed and engaged public. Leaders in Earth system science education echo the need for an informed society, stating that public understanding of Earth's interconnected systems is crucial to our ability to apply knowledge and problem-solving skills to real-world issues (Hoffman and Barstow, 2007).

The ocean, coastal, Great Lakes, weather, and climate systems that NOAA studies affect people of all backgrounds, regardless of age, socioeconomic status, or education level. As such, NOAA works with partners in education to reach a diverse range of audiences. NOAA contributes scientific expertise, laboratories, field sites, monitoring systems, environmental satellites, weather radar, world class data centers, and more to these partnerships. NOAA's assets can be incorporated into education programs that engage youth and adults from all backgrounds in locally and globally relevant, inquiry-based learning opportunities that are applicable to their daily lives.

NOAA is committed to building capacity for developing science-informed citizens through our Nation's formal education system. NOAA collaborates with local, state, and national education decision makers and curriculum developers to establish education materials and professional development programs that support education in NOAA-related topic areas. The formal education system also provides an excellent opportunity to engage young people in NOAA-related science, service, and stewardship and inspire the next generation of environmental leaders. This commitment extends to higher education through extensive partnerships with colleges and universities.

Informal education is uniquely positioned to connect the public with current research and plays a critical role in delivering unbiased, robust, and timely information to aid decision making (Field and Powell, 2001). Indeed, most Americans learn the majority of their scientific information outside of the classroom in free-choice learning environments (Falk and Dierking, 2010). Research shows that the public trusts the information they receive from informal science centers, making these institutions ideal conduits for NOAA's science-based information (The Ocean Project, 2014). NOAA collaborates with informal education institutions and organizations to showcase and interpret NOAA-related science, data, and discoveries. NOAA also provides and supports citizen science opportunities that involve individuals in collecting data for research and resource management.

NOAA supports a variety of activities that allow NOAA staff to share their expertise, communicate one-on-one with the public, and stimulate further interest in NOAA-related issues. NOAA supports environmental literacy by contributing to resources, such as the ocean and climate literacy frameworks. NOAA experts serve as judges at science and career fairs, meet with groups of students and professionals, visit classrooms, lead engineering challenges, and more. The agency participates in outreach at industry events, professional education network meetings, and other venues. All of these activities facilitate open communication with the public to create opportunities for education, engagement, and input from society.

NOAA Education Goal 1 aims to increase the public's ability to access, understand, and use the science and services that NOAA provides. The agency's actions—such as issuing severe weather warnings, providing reliable climate science and data, maintaining safe and productive fisheries, protecting endangered marine species, and collecting environmental data—protect people's lives and livelihoods. Likewise, the resources NOAA manages are impacted by the choices that individuals and communities make. Goal 1 lays the groundwork to support society in making sound environmental decisions and being responsible stewards of the natural resources that NOAA manages.

OBJECTIVES

1.1. Youth and adults from all backgrounds improve their understanding of NOAA-related sciences by participating in education and outreach opportunities.

1.2. Formal and informal educators integrate NOAA-related sciences into their curricula, practices, and programs.

1.3. Formal and informal education organizations integrate NOAA-related science content and collaborate with NOAA scientists on the development of exhibits, media, materials, and programs that support NOAA's mission.

STRATEGIES

1.A. Collaborate with education decision makers and curriculum developers to establish regionally relevant education materials and professional development programs that support the implementation of education standards.

1.B. Partner with informal education institutions and organizations to showcase and interpret NOAA-related science, data, and discoveries.

1.C. Develop and support local, regional, and national educator networks to promote and facilitate the teaching of NOAA-related content.

1.D. Promote and coordinate citizen science opportunities.

1.E. Develop and support collaborative learning opportunities for educators, students, and the public to interact directly with experts via face-to-face and distance learning venues.

1.F. Develop and support the creation and distribution of tools, exhibits, and learning materials.

EVIDENCE OF PROGRESS

As evidence of advancing this goal and supporting objectives in the next five years, NOAA will have:

1.1.a. Developed more education and outreach opportunities for youth and adults from all backgrounds.

1.2.a. Increased integration of NOAA resources and topics by educators into their curricula, practices, and programs.

1.3.a. Expanded partnerships that lead to deeper integration of NOAA resources into the development of exhibits, media, materials, and programs.

GOAL 2:

Conservation and Stewardship

Individuals and communities are actively involved in stewardship behaviors and decisions that conserve, restore, and protect natural and cultural resources related to NOAA's mission.

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Individuals and communities are actively involved in stewardship behaviors and decisions that conserve, restore, and protect natural and cultural resources related to NOAA's mission.

NOAA is responsible for fulfilling conservation laws that protect ecosystems, conserve marine species, and promote sustainable use of living marine resources. Human actions have had a profound impact on natural systems and these laws have been enacted to conserve resources for generations to come. At NOAA, stewardship education aims to improve public understanding of NOAA's role in management and the science behind it. Stewardship education provides opportunities for participants to connect with local ecosystems and tools that can help them understand how individual behavior impacts the environment. These activities give people an active voice in managing and protecting resources that affect them on both a local and global scale.

NOAA embraces educational methods and practices that promote environmental problem-solving and stewardship behaviors and build appreciation of the connections between people and the environment. NOAA promotes hands-on scientific inquiry, which results in increased knowledge of important environmental concepts and stronger environmental stewardship behavior (Zint et al., 2014; Penuel et al., 2005). Providing environmental education opportunities for children has been shown to have a positive influence on adult conservation behavior (Damerell et al., 2013). Expanding awareness, building confidence, and providing support for these experiential teaching methods are part of NOAA's strategy in addressing the need for a science-informed society that bases conservation and stewardship decisions on sound science.

NOAA's stewardship and conservation programs are often located in the coastal areas that NOAA manages. Place-based education immerses the learner in local heritage, culture, landscapes, and experiences. These opportunities form a foundation for studying STEM, language arts, social studies, history, and other subjects. This interdisciplinary approach encourages participants to use the schoolyard, community, public lands, and other special places as resources, turning communities into classrooms. The National Marine Sanctuary System, National Estuarine Research Reserve System, and living coastlines that NOAA manages provide real-world contexts for educational opportunities. These concepts are also applicable to inland communities and those who live in upstream watersheds. NOAA's grants, distance learning opportunities, and educational partnerships extend the agency's ability to positively impact communities around the Nation.

Education programs and products can provide unique cultural contexts. Stewardship education is an important component of co-managing natural resources with Native groups. Native science, or ways of knowing, and NOAA-related science can come together to develop a mutually inclusive learning experience (Maryboy et al., 2012) where science builds on Native ways of knowing, and indigenous knowledge provides a way to better understand the complexity and interrelationships of the systems that NOAA studies.

Decision making related to sustainable fisheries management, endangered species conservation, and other NOAA-related topics has been a source of controversy between resource managers, the public, and industry. Stewardship education is intended to help navigate conflicts by engaging the public early and often in decisions and actions that affect the resources they use and care about. Indeed, several of NOAA's legislative mandates have built public engagement into the process of resource management, ensuring that the public has a voice in marine affairs. Understanding the principles of sustainable management can also help the public support local industries and take appropriate action when concerned about environmental issues, such as overfishing, habitat loss, invasive species, watershed degradation, and waterfront development and access. Conservation and stewardship education promotes environmental solutions, civic engagement, and sound choices, fostering an educated public with an improved capacity to make scientifically informed decisions.

OBJECTIVES

2.1. Youth and adults from all backgrounds are knowledgeable about conservation and stewardship practices and skilled in applying them to address local, regional, national, and global issues related to NOAA's mission.

2.2. Formal and informal educators integrate NOAA-related conservation and stewardship concepts and activities into their curricula, practices, and programs.

2.3. Formal and informal education organizations establish guidance and provide support toward increasing participation of education audiences in conservation and stewardship activities related to NOAA's mission.

STRATEGIES

2.A. Participate in and coordinate with local, state, and national environmental education initiatives that support NOAA's mission.

2.B. Develop and support opportunities for youth and adults to understand conservation policies and engage in stewardship actions.

2.C. Partner on education initiatives with organizations that share NOAA's conservation and stewardship goals.

2.D. Deliver and support hands-on science education programs that explore the influences of human activity on ocean and coastal ecosystems.

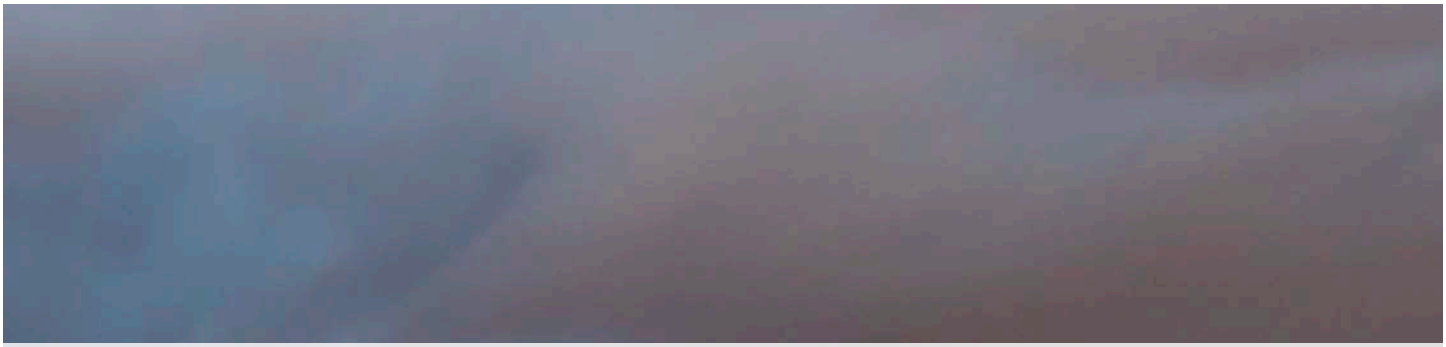
EVIDENCE OF PROGRESS

As evidence of advancing this goal and supporting objectives in the next five years, NOAA will have:

2.1.a. Increased participation of youth and adults from all backgrounds in education programs that promote conservation and stewardship.

2.2.a. Increased integration of NOAA-related conservation and stewardship information by educators into their curricula, practices, and programs.

2.3.a. Expanded partnerships that lead to increased participation of youth and adults in conservation and stewardship activities.



GOAL 3:

Safety and Preparedness

Individuals and communities are informed and actively involved in decisions and actions that improve preparedness, response, and resilience to challenges and impacts of hazardous weather, changes in climate, and other environmental threats monitored by NOAA.


NATIONAL SEVERE STORMS LABORATORY


HURRICANE
EVACUATION
ROUTE


FORECAST OFFICE
HYDROLOGY


FRESH SEAFOOD DAILY


FLOODED

Goal 3: Safety and Preparedness

Individuals and communities are informed and actively involved in decisions and actions that improve preparedness, response, and resilience to challenges and impacts of hazardous weather, changes in climate, and other environmental threats monitored by NOAA.

NOAA is responsible for the science behind understanding, forecasting, and responding to threats that involve weather, water, climate, and the marine and coastal environment. NOAA issues forecasts, watches, and warnings based on observations of the natural world from weather radar, ground observations, ships, satellites, and sophisticated models of environmental systems. Since individuals and communities take action based on this guidance, it is important that NOAA's constituents understand when and how to respond to hazards. Education is a key component of a safe and prepared country and directly supports NOAA's Weather-Ready Nation initiative.

Safety and preparedness decisions not only protect lives and property, but also maintain safe access to recreational opportunities and support vibrant economies on land and sea. Awareness can help communities make the best choices to plan for long-term resiliency. Yet despite NOAA's best efforts to produce the most accurate science and products, NOAA's warnings and alerts do not always lead to effective responses. NOAA is increasingly aware that human responses to a threat are as diverse as people themselves. Social science, risk communication, and education all contribute to a safe and prepared nation. NOAA recognizes that, while the agency will continue to improve our ability to understand and predict hazards, it is also imperative for NOAA to understand the society it serves.

NOAA strives to make science content accessible, understandable, and engaging to all members of society. To reach audiences from all backgrounds, safety and preparedness education is conducted in formal and informal educational settings and outreach events. Federal and non-federal partners—such as Weather-Ready Nation Ambassadors, industry partners, state and tribal organizations, and disaster response and relief organizations—are important to extending NOAA's reach in these critical areas.

Safety and preparedness education is an example of integrated STEM education, which emphasizes connections between disciplines and relevance to daily life (National Academy of Engineering Research Council, 2011). When anticipating, preparing for, and responding to a single event, such as an oil spill, tsunami, or hurricane, NOAA draws from a wide array of expertise, including meteorology, hydrology, fisheries, nautical charting, oceanography, communication, and social science. These topics are also highly relevant to individuals and communities. Infusing NOAA's science content into the classroom exposes children to integrated STEM topics that not only matter in their daily lives, but might even help save lives. Students often relay this information to their families (Duvall and Zint, 2007), which is particularly useful for gaining access to underserved communities, especially those in which English is not the primary language.

People use NOAA's educational resources on environmental threats because they trust the information NOAA provides. NOAA's managers and scientists must be creative and flexible in understanding where people get information they trust and ensuring that NOAA's information is accessible through these sources. Education helps ensure that messages reach a broader audience. Safety and preparedness education infuses practical knowledge of potential environmental threats and how to respond to them into science exhibits, media, materials, and programs. To this end, NOAA also partners with emergency management organizations and the private sector to reach diverse audiences and achieve a consistent and integrated approach to responding to and preparing for environmental hazards.

OBJECTIVES

3.1. Youth and adults from all backgrounds are aware of, prepare for, and appropriately respond to environmental hazards that impact health, safety, and the economy in their communities.

3.2. Formal and informal educators use and produce education materials and programs that integrate and promote consistent science-based messaging on hazards, impacts, and societal challenges related to water, weather, and climate.

3.3. Formal and informal education institutions integrate water, weather, and climate hazard awareness, preparedness, and response information into curricula, exhibits, and programs that create learning opportunities for youth and adults.

STRATEGIES

3.A. Collaborate and coordinate with partners on national risk awareness and response education campaigns to integrate science content and expertise.

3.B. Build and partner on education products and programs focused on improving economic and health conditions in response to weather, water, climate, and other environmental threats.

3.C. Engage youth and adults directly and through partners in multi-generational learning activities to improve community awareness and involvement in preparedness and response efforts.

EVIDENCE OF PROGRESS

As evidence of advancing this goal and supporting objectives in the next five years, NOAA will have:

3.1.a. Increased awareness of environmental hazards, their impacts, and preparedness actions by youth and adults from all backgrounds.

3.2.a. Increased integration of safety and preparedness information by educators in their formal and informal education and professional development programs.

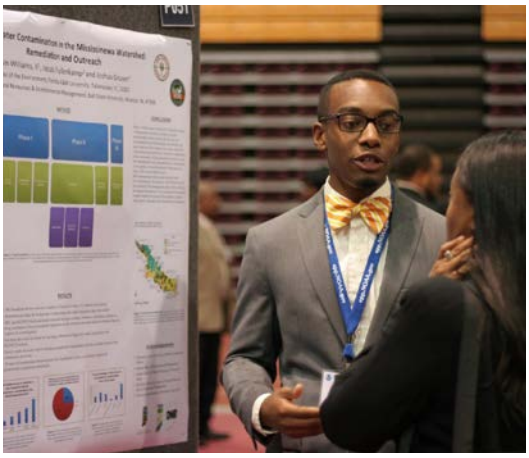
3.3.a. Expanded partnerships that lead to increased integration of safety and preparedness information into curricula, exhibits, and programs.

GOAL 4:

Future Workforce

A diverse and highly skilled future workforce pursues careers in disciplines that support NOAA's mission.


RESEARCH



Goal 4: Future Workforce

A diverse and highly skilled future workforce pursues careers in disciplines that support NOAA's mission.

NOAA relies on a world-class workforce with the scientific and technical skills needed to address the environmental challenges confronting our Nation and the planet. *Rising Above the Gathering Storm, Revisited* (National Academy of Sciences, 2010), states that building a workforce literate in STEM is crucial to maintaining America's competitiveness in a rapidly changing global economy. As the global population increases, there is greater demand on the Earth's natural systems; this creates a greater need for education and research to understand the complexities of human impacts and develop strategies for sustainable solutions.

Workforce considerations begin by inspiring students to consider careers in disciplines that support NOAA's mission early in their education. A 2011 study found that 78 percent of STEM college students had decided to major in STEM fields by the time they were in high school; 21 percent had discovered their interest in STEM in middle school or earlier (Harris Interactive, 2011). Youth who expected to have a career in science (i.e., who identified an interest in science in middle school or earlier) were more likely to graduate from college with a science degree, thus emphasizing the importance of early engagement (Tai et al., 2006). For these reasons, NOAA provides opportunities for career exploration at all grade levels.

It is important to maintain continuity in workforce development so that youth who are excited about disciplines that support NOAA's mission have opportunities to build research skills and experience real-world applications over time. NOAA provides unique access to ships, laboratories, data, and other resources that can be incorporated into students' experiences, augmenting their education and providing hands-on work experience. To this end, NOAA partners with academic communities, providing grants, internships, fellowships, and other experiential activities to students, educators, researchers, policy makers, managers, and institutions.

Workforce shortages are anticipated in disciplines that support NOAA's mission, including quantitative ecology and economics (U.S. Dept. of Commerce and U.S. Dept. of Education, 2008). The number of jobs in atmospheric sciences is anticipated to grow by 10 percent from 2012 to 2022, keeping pace with the national average job growth rate. Positions for environmental scientists and geoscientists are expected to grow by 15 to 16 percent. Workforce considerations extend beyond NOAA's immediate needs to the entire network of researchers, analysts, educators, and others who collaborate with NOAA. NOAA partners extensively with academic researchers, educators, informal education institutions, and nonprofit organizations to reach a broad array of students and emerging professionals.

To maintain a pipeline of innovative talent, NOAA strives to cultivate a workforce that reflects the diversity of the Nation. According to the U.S. Census Bureau, minorities constituted 37 percent of the U.S. population in 2013, and this proportion is growing rapidly. In 2013, underrepresented minorities (based on race and ethnicity) constituted 17 percent of NOAA's federal workforce and 9.5 percent of those in leadership positions (at or above GS-13). NOAA Cooperative Science Centers, Minority Serving Institutions, and national technical, professional, and industrial organizations that serve underrepresented groups are all essential to inspiring students to consider career paths related to NOAA. These partnerships provide concrete examples of success and a template for other institutions and agencies to follow (Robinson et al. 2007). NOAA's established best practices include promoting partnerships among students and professionals, allowing students to conduct research prior to graduate school, and providing mentorship opportunities (Huntoon and Lane, 2007).

Diversity brings a wider variety of perspectives and approaches to leadership, policy, strategic planning, problem solving, and decision making (Forbes, 2011). As communities become more vulnerable to natural disasters and pressures on our natural resources intensify, we need the best and brightest from all backgrounds to develop solutions to complex environmental challenges. Additionally, recruiting students from diverse backgrounds—including communities that historically have not had access to NOAA's resources—can improve NOAA's ability to reach and engage all members of society. As the demographics of the country shift, adapting NOAA's products and services for use by diverse communities will be increasingly important. NOAA is committed to strengthening the pool of candidates from underrepresented groups who are trained and graduate with degrees in disciplines that support NOAA mission.

OBJECTIVES

4.1. Students, particularly from underrepresented groups, consider education and career pathways in disciplines that support NOAA's mission.

4.2. NOAA and partner institutions leverage federally funded assets to provide students, particularly those from underrepresented groups, with experiential learning, research, and scholarship opportunities.

4.3. Postsecondary students, particularly from underrepresented groups, pursue and complete degrees in disciplines critical to NOAA's mission.

4.4. Graduates completing NOAA-supported student opportunities continue education, enter the workforce, and advance in careers that support NOAA's mission.

STRATEGIES

4.A. Support local, regional, and national career exploration programs and education resources that target youth and young adults, particularly those from underrepresented communities.

4.B. Provide scholarships, fellowships, internships, and student training opportunities that promote experiential learning.

4.C. Establish and maintain partnerships with Minority Serving Institutions, professional associations, and other organizations to improve graduation rates of underrepresented students.

4.D. Collaborate with academic partners to align student preparation with NOAA's scientific and workforce needs.

4.E. Strengthen the links between education initiatives and career pathways at NOAA and related organizations with emphasis on high-need career fields and underrepresented groups.

EVIDENCE OF PROGRESS

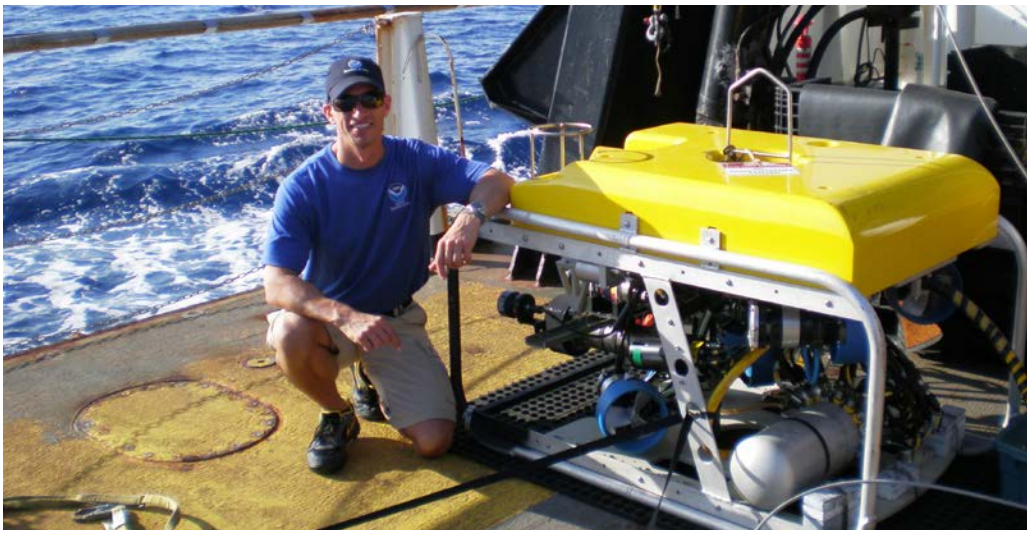
As evidence of advancing this goal and supporting objectives in the next five years, NOAA will have:

4.1.a. Increased integration of college and career information into education programs.

4.2.a. Increased the number of students, particularly from underrepresented groups, who participate in experiential learning, research, and scholarship opportunities.

4.3.a. Increased the proportion of trained students from underrepresented groups pursuing careers in disciplines critical to NOAA's mission.

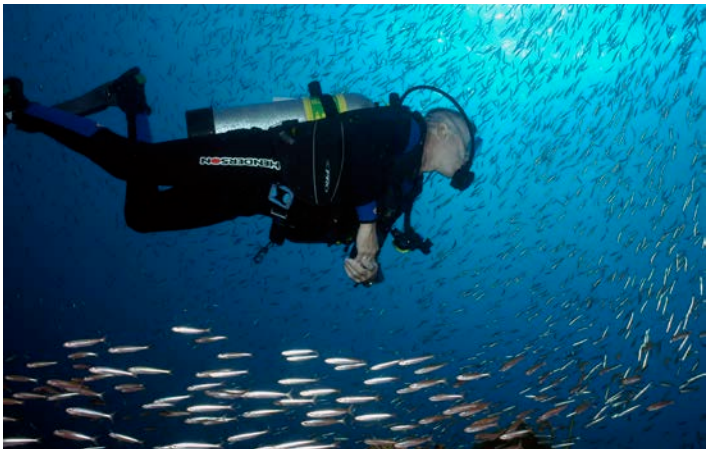
4.4.a. Improved understanding of the trajectories of NOAA-supported students along their education and career pathways.



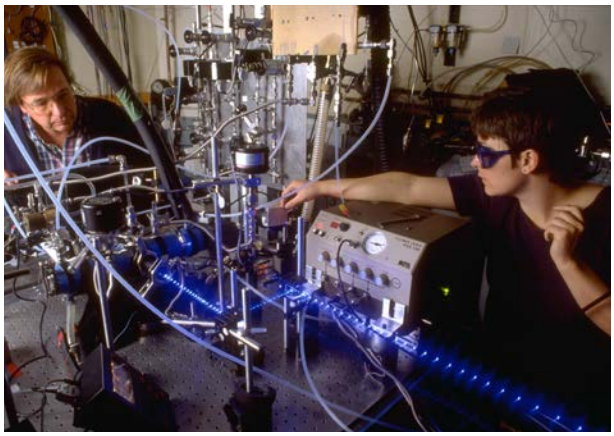
GOAL 5:

Organizational Excellence

NOAA functions in a unified manner to support, plan, and deliver effective educational programs and partnerships that advance NOAA's mission.




Fair Winds & Following Seas
NOFA is Proud of our NOAA Fleet
NOAA Officers' Family Association



Goal 5: Organizational Excellence

NOAA functions in a unified manner to support, plan, and deliver effective educational programs and partnerships that advance NOAA's mission.

NOAA strives to use taxpayer dollars efficiently and effectively. Given the magnitude of the challenges facing the Nation and the increasing role that NOAA science plays in maintaining resilient ecosystems, communities, and economies, NOAA's education efforts must be coordinated, monitored, and continually improved.

NOAA's people are the driving force behind organizational excellence. NOAA Education is made possible by the work of passionate educators, scientists, and other individuals—all of whom work in their respective roles to keep NOAA Education moving forward. The America COMPETES Act provides a mandate for all of NOAA to participate in education. NOAA leadership has embraced this call, establishing a policy that encourages employee participation in NOAA programs, projects, events, and activities that seek employee volunteers to engage, educate, or inspire audiences (NOAA Administrative Order, 2013).

The NOAA Education Council is the coordination body that promotes organizational excellence among NOAA's education programs. The scope of the Education Council has become more representative and inclusive of NOAA's education activities, evolving from an early focus on education policy to its current focus on connecting with, learning from, and supporting the NOAA Education community. The Education Council helps facilitate cross-agency work, increases capacity for NOAA educators, and provides a forum for discussion and improvement with the aim of helping NOAA's education programs to achieve more collectively than they could alone. The Education Council also supports efforts to highlight the value of NOAA Education to audiences both internal and external to NOAA.

NOAA Education programs are more relevant and effective when they are responsive to constituent's needs. For example, identifying topics to include in professional development programs for external educators or ensuring that NOAA products are compatible with current environmental education initiatives and national science education standards allows NOAA to better serve its audiences. NOAA must understand and respond to the needs of its educational partners and constituents when developing educational products and services. Collaboration and partnerships within and outside of NOAA are essential to maximizing the agency's effectiveness and broadening its reach in education projects.

In a time of increased scrutiny of federal investments, NOAA must be able to report progress toward goals and objectives and demonstrate the value of its activities. Therefore, evaluating this strategic plan is one of the NOAA Education community's top priorities. The evidence of progress statements, for instance, will allow NOAA Education programs across the agency and the Nation to report shared accomplishments toward the objectives.

Underserved communities are often most vulnerable to the environmental hazards within NOAA's purview, indicating a growing need to develop culturally relevant materials. To meet these needs, the NOAA Education community aims to produce a coordinated portfolio of educational products, programs, and services targeting underserved audiences. This aspect of Goal 5 complements Goal 4, which focuses specifically on workforce development, by increasing communication and coordination within and beyond NOAA to maximize the reach and impact of NOAA's education programs.

OBJECTIVES

5.1. Leaders internal and external to NOAA recognize and support education investments as a way to achieve agency mandates, mission, and goals.

5.2. The NOAA Education community develops implementation plans and establishes agency education priorities informed by stakeholder needs and national initiatives.

5.3. NOAA educators and partners collaborate at local, regional, and national levels to coordinate efforts, build capacity, and better serve educational audiences.

5.4. NOAA and partner organizations use effective evaluation, performance monitoring, and evidence-based approaches in the design and management of educational programs, products, and services.

5.5. NOAA develops and supports a coordinated portfolio of products, programs, and partnerships that improves education opportunities in NOAA-related content areas for underserved audiences.

STRATEGIES

5.A. Collect and present to key decision makers the best available evidence to demonstrate the connection between NOAA's education investments and the agency's mission.

5.B. Collaborate with federal and non-federal partners to leverage expertise and funding.

5.C. Establish and support NOAA educator networks with emphasis on cross-agency communication, coordination, and professional development.

5.D. Develop consistent and coordinated educational approaches across NOAA for high priority educational topics.

5.E. Create and adopt common performance measures and evaluation practices in NOAA-funded education programs.

EVIDENCE OF PROGRESS

As evidence of advancing this goal and supporting objectives in the next five years, NOAA will have:

5.1.a. Increased recognition by leaders of the importance of education in achieving NOAA's mission.

5.2.a. Implemented systematic approaches for collecting data about constituent needs to inform NOAA's education priorities.

5.3.a. Expanded opportunities for communication and learning within the NOAA Education community.

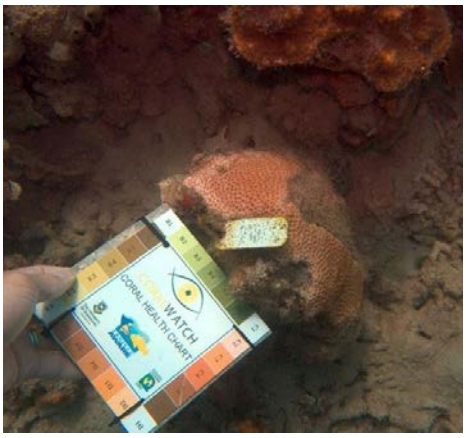
5.4.a. Improved the practice of evaluation by educators to inform the improvement and management of NOAA Education programs.

5.5.a. Developed a coordinated portfolio of products, programs, and partnerships that target underserved audiences.

Implementation

The America COMPETES Act not only requires NOAA to develop education goals, but also calls for the development of actions to carry out the strategic plan.

The NOAA Education community actively participated in developing this document. As a result, it is aligned with the agency's various education mandates and priorities and NOAA Education programs have an improved line-of-sight between their work and this strategic plan. The goals, objectives, and strategies provide a framework to focus and coordinate NOAA Education. This guidance builds on the existing capabilities of NOAA Education programs and partnerships to accomplish this work. The NOAA Education community will develop shorter-term implementation plans that consider immediate needs, opportunities, and resources.



Evaluation and Monitoring

This strategic plan provides the foundation for the NOAA Education performance measurement system. NOAA is committed to strengthening the monitoring and evaluation capabilities of its education programs and using data to improve program delivery. The NOAA Education Council oversees NOAA-wide efforts to improve the measurement and evaluation of education programs.

The evaluation plan for this strategic plan will monitor NOAA's progress toward the long-term goals, objectives, and evidence of progress statements. The plan includes a review process that leverages existing data collection and reporting processes and draws on the best available evidence on an annual basis. To assess progress, the NOAA Education community will review data from its own programs, projects, and products as well as contributions from partners. Each annual review of the strategic plan will include the results, findings, and conclusions of individual evaluations from within the portfolio. These results will be used to make adjustments in implementation. This evaluation strategy meets accountability requirements and takes a comprehensive view across the entire NOAA Education portfolio to assess progress across the NOAA Education community.

The NOAA Education community will collect and use the following evidence to inform implementation and effectiveness:

- **COMMON MEASURES:** A shared and consistent set of definitions developed with input from the NOAA Education Council that enables NOAA Education programs to report consistent outputs and outcomes. Members of the Education Council implement, collect, and report findings. The NOAA Education community will continue to develop new measures to address gaps in evidence of outcomes and impacts.
- **PROGRAM EVALUATIONS:** Individual programs, units, and offices are responsible for evaluating and improving their own programs. Evidence from these studies will be included in the annual review as results become available.
- **ANNUAL ACCOMPLISHMENTS:** Qualitative evidence told in a narrative format that includes the points of relevance, response, and results. Accomplishments tell the impact of a program in context, providing a richer picture than can be shown with quantitative data alone, and are presented in the NOAA Education Annual Accomplishment Reports.
- **WORKING GROUP MILESTONES:** Working groups are the main avenue for organizing collaborative efforts at the Education Council. Evidence of progress cannot rely only on outcomes, but also needs to monitor the activities undertaken to reach those outcomes. Milestones are major tasks that have been completed, or performance thresholds that have been exceeded.
- **WEB ANALYTICS:** Websites are an important part of reaching the Nation and disseminating information and products. Web analytics are powerful tools for tracking the success of efforts that use the Web as part of their programs.
- **NATIONAL STATISTICS:** Data from government agencies, research studies, and nonprofit organizations can be used to provide a picture of relevant characteristics of target populations. Statistics also provide context to the scope of issues being addressed by programs as they work to achieve outcomes within these target populations.

GLOSSARY

ADULTS. Individuals, 18 years and older, who engage in lifelong learning activities with the aim of enhancing their own knowledge, skills, and competencies from a personal, civic, social, or employment-related perspective.

CITIZEN SCIENCE. An approach in which volunteers partner with scientists to answer real-world questions. (Source: Citizen Science Central, http://citizenscience.org)

DISCIPLINES THAT SUPPORT NOAA'S MISSION. The entire suite of professional disciplines that support NOAA. This includes all NOAA-related sciences, as well as engineering, vessel and airplane operation, nautical charting, policy, graphic design, illustration, communications, law, management, uniformed services, and marine observer programs.

EARTH SYSTEM SCIENCE. An integrated approach to the study of the Earth that stresses investigations of the interactions among the Earth's components in order to explain Earth dynamics, evolution, and global change. (Source: NASA's Earth Observatory Glossary, http://earthobservatory.nasa.gov/Glossary/)

EDUCATION. The process by which individuals develop their knowledge, values, and skills. Education encompasses both teaching and learning. (Source: adapted from The Definitions Project, http://www.definitionsproject.com/definitions/index.cfm)

ENGAGEMENT. A two-way relationship between a service provider and society. It implies a commitment of service to society through a partnership based on reciprocity and sharing of goals, objectives, and resources, e.g., between NOAA and the society it serves. Implicit to engagement is a respect for each partner that involves listening, dialogue, understanding, and mutual support.

ENVIRONMENTAL LITERACY. An environmentally literate person is someone who, both individually and together with others, makes informed decisions concerning the environment; is willing to act on these decisions to improve the well-being of other individuals, societies, and the global environment; and participates in civic life. Those who are environmentally literate possess, to varying degrees: the knowledge and understanding of a wide range of environmental concepts, problems, and issues; a set of cognitive and affective dispositions; a set of cognitive skills and abilities; and the appropriate behavioral strategies to apply such knowledge and understanding in order to make sound and effective decisions in a range of environmental contexts. (Source: Hollweg et al. 2011)

ENVIRONMENTAL STEWARDSHIP. The responsible use and protection of the natural environment through conservation and sustainable practices to enhance ecosystem resilience and human well-being. (Source: Chapin et al, 2011)

EXPERIENTIAL LEARNING. Experiential education programs engage learners in constructing meaning by immersing them in direct and meaningful hands-on experiences. This approach incorporates learning using real-world problems and interaction with natural phenomena. (Source: Association for Experiential Education, http://www.aee.org/)

FORMAL EDUCATION. Learning within a structured education system in which children or adults are required to demonstrate proficiency.

FREE-CHOICE LEARNING. Self-directed, voluntary education guided by an individual's needs and interests.

INDIGENOUS KNOWLEDGE. The traditions, culture, and belief systems of people whose ancestors inhabited a place or country when persons from another culture or ethnic background arrived on the scene.

INFORMAL EDUCATION. Learning outside the established formal system that meets clearly defined objectives through organized education activities.

LIFELONG LEARNING. All learning activity, formal and informal, undertaken throughout life, with the aim of enhancing knowledge, skills, and competencies from a personal, civic, social, or employment-related perspective.

LITERACY PRINCIPLES. Essential knowledge validated by a community of researchers, educators, and policy makers that is needed to fully understand a specific content area and apply it in daily decision making. The determination and refinement of literacy principles is a dynamic, ongoing process.

MINORITY SERVING INSTITUTIONS. Colleges and universities, including state colleges, private schools, religiously affiliated colleges, liberal arts colleges, and community colleges, that have a special focus on serving the needs of a minority audience. These universities have a historical tradition or mandate to serve a specific demographic of student, but often serve non-minority students as well. The term "minority institution" means an institution of higher education whose enrollment of a single minority or a combination of minorities exceeds 50 percent of the total enrollment. (Source: U.S. Department of Education, 20 U.S.C. § 1067k(3))

NATIVE SCIENCE. The knowledge held by indigenous people around the world that has been gathered, adapted, refined, and transmitted following precise protocols, traditions, and values maintained since before written history. The core of Native science is interdependencies and relationships that make up the whole. (Source: adapted from the Native Science Academy definition, http://www.silverbuffalo.org/NSA-NativeScience.html)

NOAA EDUCATION. Education efforts undertaken by NOAA-supported programs.

NOAA EDUCATION COMMUNITY. Individuals who engage in education activities on behalf of NOAA.

NOAA-RELATED SCIENCE. The collection of scientific disciplines that NOAA employs in its investigations, monitoring, evaluating, and forecasting of conditions and trends in the ocean, coasts, Great Lakes, weather, and climate and in building understanding of these natural systems and their relationship with human activities.

OUTREACH. Opportunities designed to build awareness, develop relationships, and inspire action (e.g., pursuit of further learning opportunities, behavioral change). Involves information exchange between provider and target audience. Frequently designed to reach diverse audiences, but can be personal and interactive, designed to identify and appeal to an individual's personal interest or motivation for information. Outreach for education activities are designed to build awareness, develop relationships, promote education products, and inspire educators, students, and the public to pursue further learning opportunities.

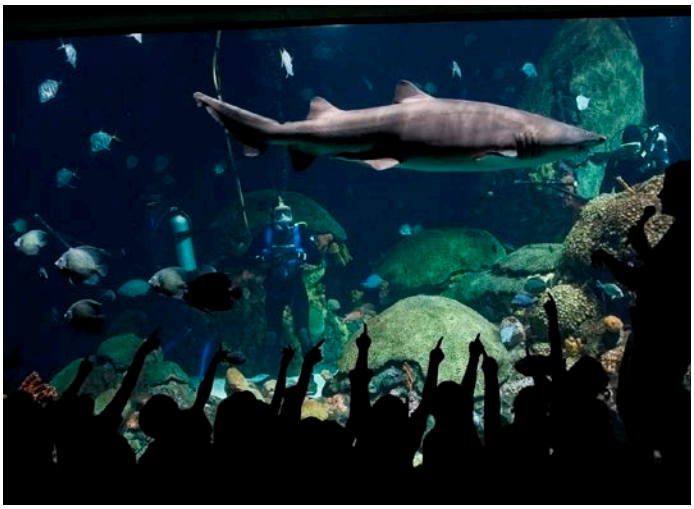
PLACE-BASED EDUCATION. This method of instruction encourages participants to use the schoolyard, community, public lands, and other special places as resources, turning communities into classrooms. (Source: adapted from the Place-based Education Evaluation Collaborative definition, http://www.peecworks.org/PEEC/Benefits_of_PBE-PEEC_2008_web.pdf)

RESILIENCE. The ability to adapt to changing conditions and withstand and rapidly recover from disruption due to emergencies. (Source: Presidential Policy Directive 8: National Preparedness, http://www.dhs.gov/presidential-policy-directive-8-national-preparedness)

SOCIAL SCIENCE. Academic disciplines concerned with the study of the social life of human groups, and individuals, including anthropology, economics, communications, geography, philosophy, psychology, history, education, outreach, political science, and sociology.

SERVICE LEARNING. A method under which participants learn and develop through active participation in thoughtfully organized service that is conducted in and meets the needs of a community; is coordinated with an elementary school, secondary school, institution of higher education, or community service program, and with the community; and helps foster civic responsibility; and that is integrated into and enhances the academic curriculum of the students, or the educational components of the community service program in which the participants are enrolled; and provides structured time for the students or participants to reflect on the service experience. (Source: The Community Service Act of 1990)

STEM. An acronym for science, technology, engineering, and mathematics—disciplines that are crucial to maintaining America's competitiveness in a rapidly changing global society. (Source: National Academies, 2005)



STEWARDSHIP EDUCATION. Programs and activities specifically designed to educate participants about environmental issues and the connection between human actions and environmental impacts; and that facilitate learning how to practice stewardship behaviors and decisions.

STEWARDSHIP BEHAVIORS. Protection, restoration, and conservation actions, sustainable practices, and civic engagement activities that help prevent or mitigate environmental threats.

STUDENT OPPORTUNITIES. Internships, grants, scholarships, fellowships, and educational programs provided to students on a competitive basis for introducing them to careers and to support their pursuit of higher education in mission-critical disciplines.

TRAINING. A process of transferring knowledge and skills using standardized instructional methods and techniques to targeted professional audiences for the purpose of developing and enhancing professional competencies.

UNDERSERVED AUDIENCES. Individuals and groups who have traditionally not had access to environmental education or interpretive programs, activities, or experiences. (Source: adapted from the National Association for Interpretation)

UNDERREPRESENTED AUDIENCES. Demographic groups that have disproportionately less representation in specific workforce occupations than in the general populace.

WORKFORCE DEVELOPMENT. Education, employment, and job training systems designed to provide the skilled workers that employers need to succeed and the education and training that individuals need to succeed in today's labor market. (Source: National Governors Association, 2008)

YOUTH. Individuals, younger than 18 years old, who engage in lifelong learning activities with the aim of enhancing their own knowledge, skills, and competencies from a personal, civic, social, or employment-related perspective.

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IMAGE CREDITS

B = bottom, BC = second from bottom, C = center (vertical), M = middle (horizontal), T = top, TC = second from top.

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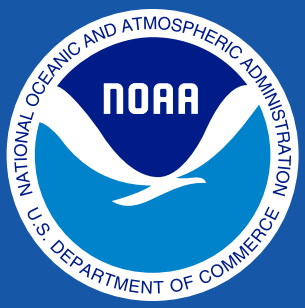

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