Executive Summary

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, nongovernmental 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, Marissa Jones, Patrick Drupp, Robert Hansen, Sarah Schoedinger, Seaberry Nachbar, Sepp Haukebo, Stacey Rudolph, Steve Storck, and Susan Haynes.

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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 National Oceanic and Atmospheric Administration (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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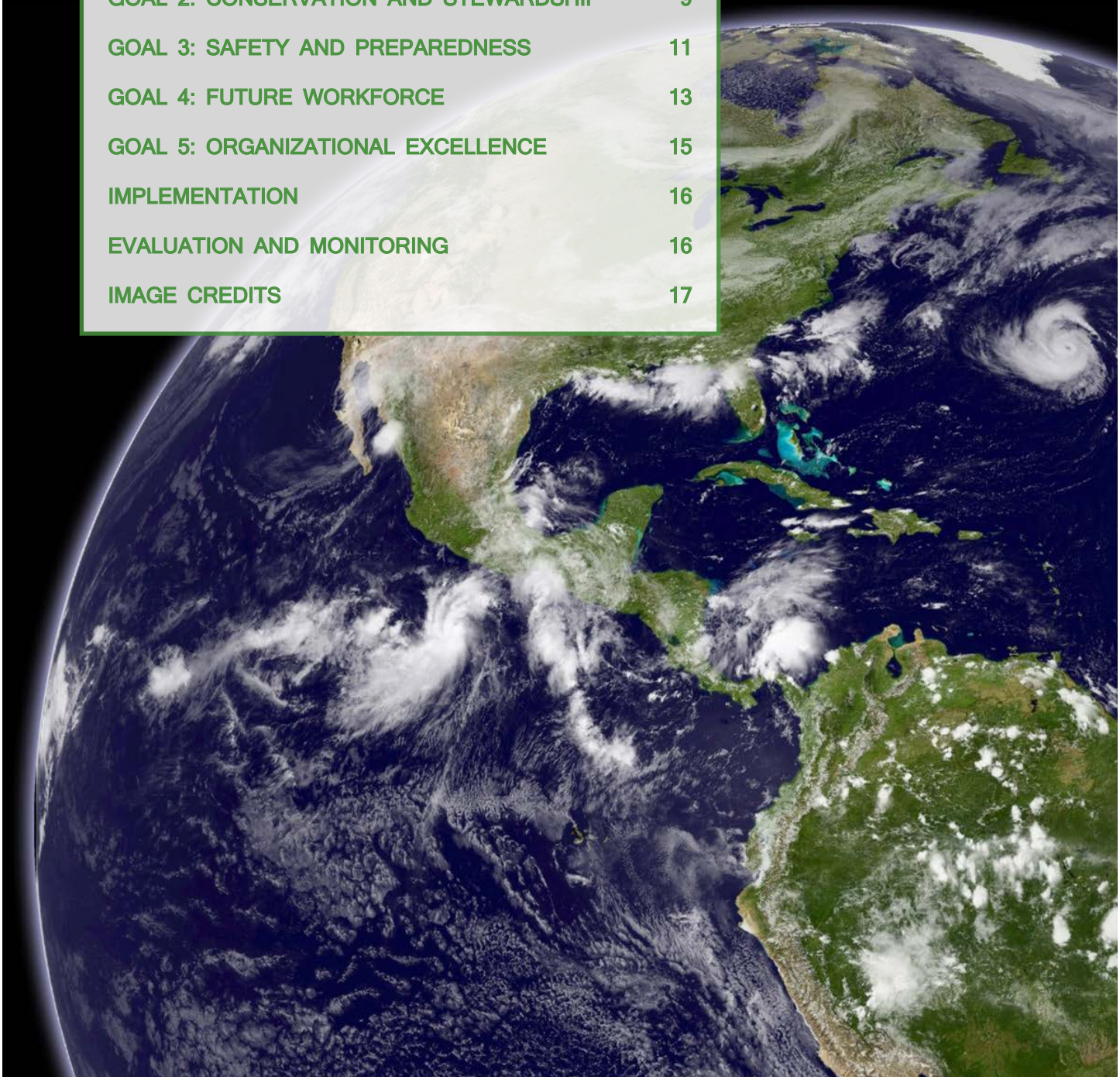


ADVANCING NOAA'S MISSION THROUGH EDUCATION

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

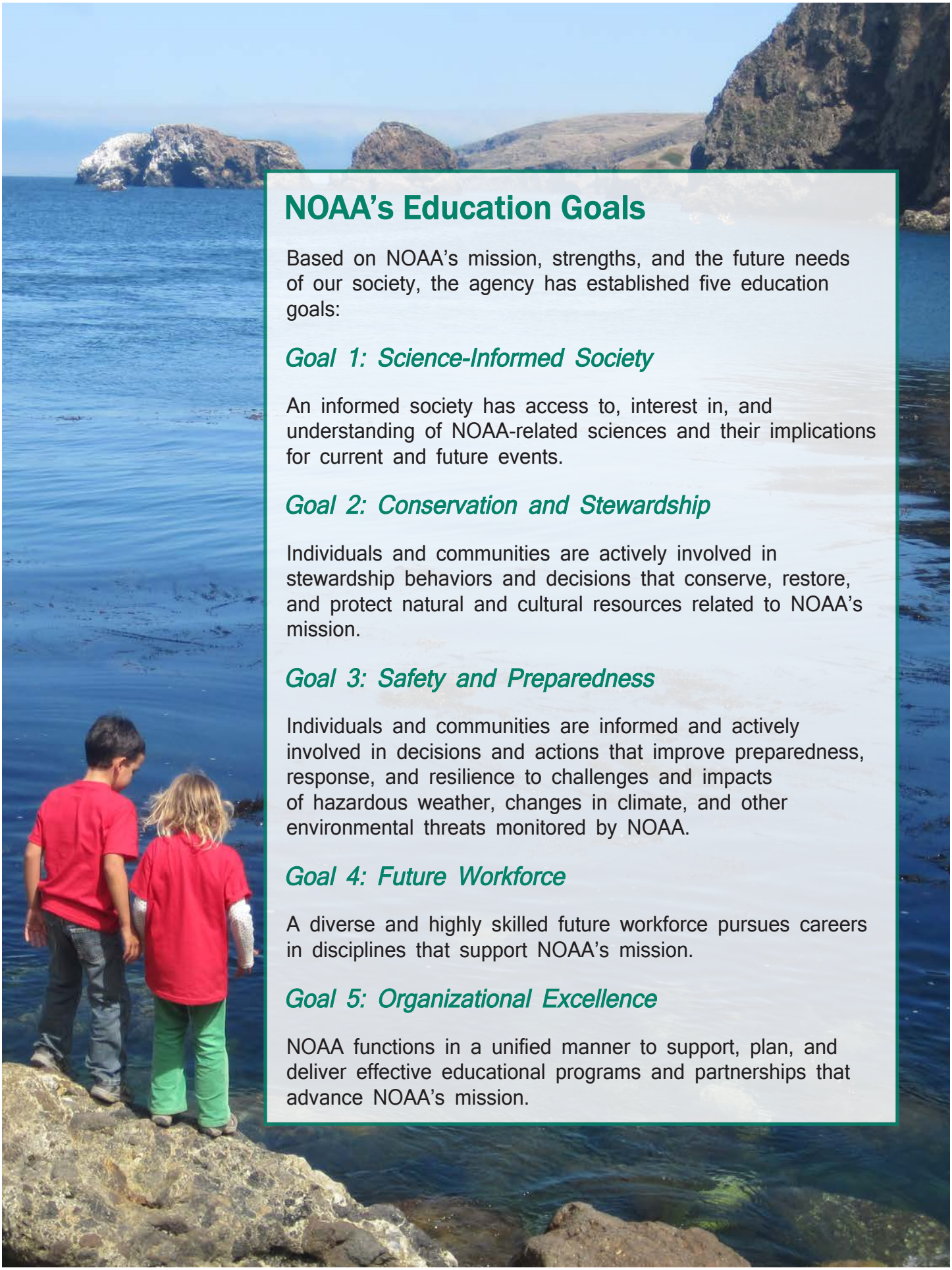
An informed society that uses ocean, coastal, Great Lakes, weather, and climate science to make the best social, economic, and environmental decisions.

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.

In the pages that follow, the NOAA Education community outlines its approach for achieving its 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.



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

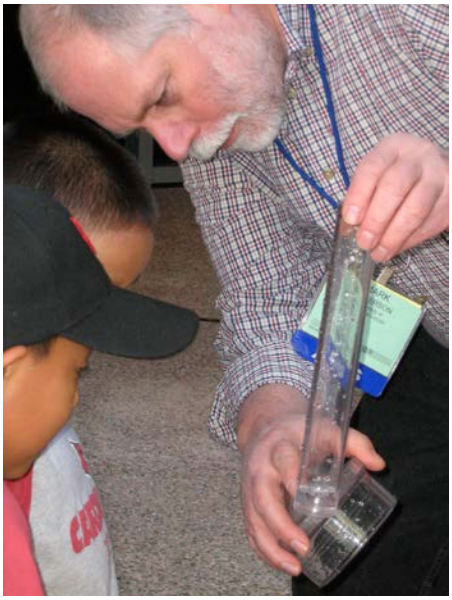
Individuals and communities are informed and actively involved in decisions and actions that improve preparedness, response, and resilience to challenges and impacts of hazardous weather, changes in climate, and other environmental threats monitored by NOAA.

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.



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.

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.

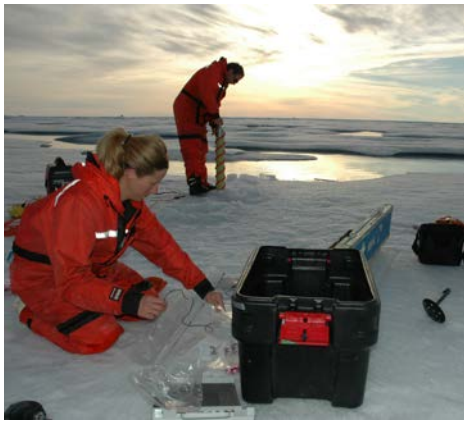
EVIDENCE OF PROGRESS

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.

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.

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.

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

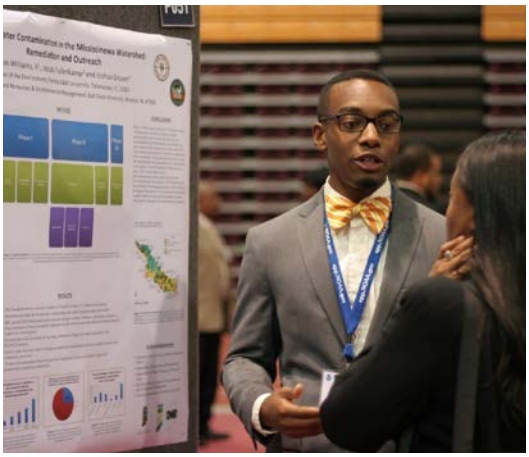
As evidence of advancing this goal and supporting objectives in the next five years, NOAA will have:

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.

RESEARCH



Goal 4: Future Workforce

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

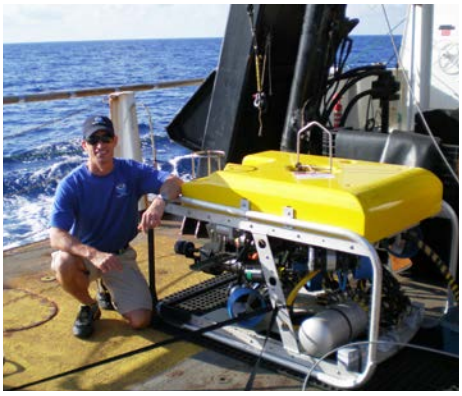
As evidence of advancing this goal and supporting objectives in the next five years, NOAA will have:

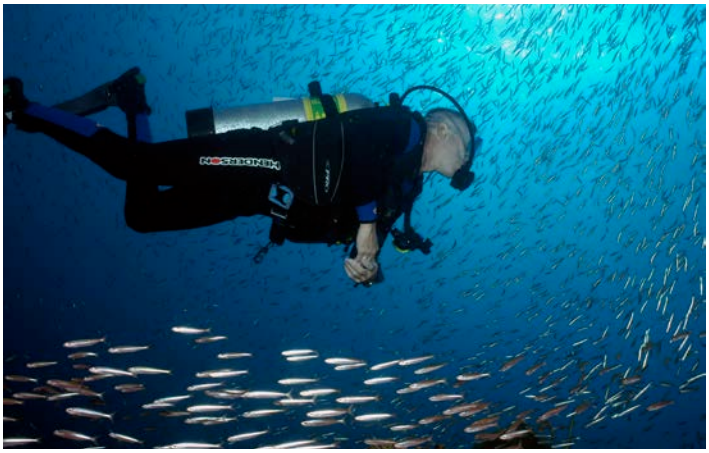
4.1.a. Increased integration of college and career information into education programs.

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

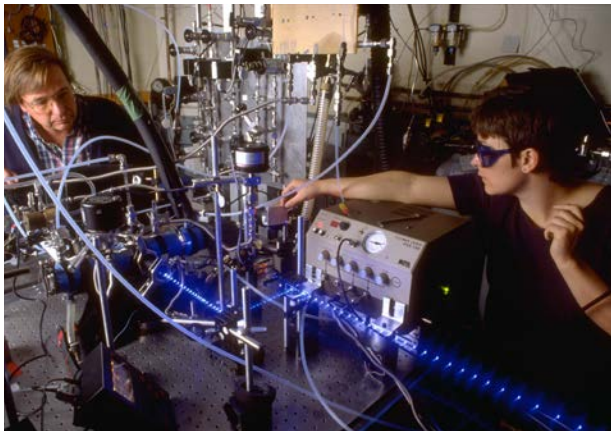
4.3.a. Increased the proportion of trained students from underrepresented groups pursuing careers in disciplines critical to NOAA's mission.

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





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.

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.

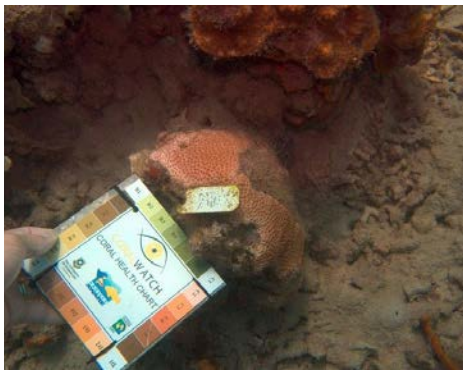
5.4.a. Improved the practice of evaluation by educators to inform the improvement and management of NOAA Education programs.

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 this 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.

IMAGE CREDITS

B = bottom, BC = second from bottom, C = center (vertical), M = middle (horizontal), T = top, TC = second from top.
Ball Aerospace and Technologies Corp., Arlington, VA (12 TCR)
Community Collaborative Rain, Hail, and Snow Network (6 TCL)
Federal Emergency Management Agency (10 BL)
Gulf of Mexico Foundation, Carrie Robertson (8 BR)
Hawai'i Sea Grant (Cover BM)
Lockheed Martin, Bethesda, MD (13 BL)
Louise McLaughlin (11 TR)
Miami Science Museum, Miami, FL, Juan Manuel Garcia Studio (Cover TR)
Museum of Science and Industry, Chicago, IL (7 T)
National Aeronautics and Space Administration (6 BCM)
National Aquarium, Baltimore, MD, G. Grall (4)
National Sea Grant Law Center (10 BCR)
NOAA (3, 7 BM, 7 BL, 8 CL, 8 TCL, 10 BM, 10 BR, 11 B, 11 TM, 12 TL, 15 T, 16 TR, 16 BR)
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NOAA, Educational Partnership Program (12 BL, 12 BR, 13 T, 13 BM); Kristen Lycett (12 BCL)
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NOAA, Marine Debris Program (8 BCR, 8 BL)
NOAA, National Estuarine Research Reserve System (Cover TL, 7 BR, 8 BM, 8 TR, 16 TM)
NOAA, National Marine Fisheries Service (12 TR)
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NOAA, Office of National Marine Sanctuaries, Claire Fackler (6 TCR, 6 TR, 8 TL, 9 BM, 16 BL)
NOAA, Office of Response and Restoration (10 TCM); Doug Helton (11 TL)
NOAA, Storm Prediction Center, Stephen Corfidi (14 TCM)
NOAA, Teacher at Sea, Jamie Morris (15 B); John Bilotta (13 BR); Liz Harrington (10 BCL); Sepp Haukebo (14 TCR); Stephen Tomasett (6 BL); Steven Wilkie (9 BR), Sue Cullumber (6 TCM)
Ohio Sea Grant (9 BL); Lisa Bircher (16 TL)
Puerto Rico Sea Grant, Oliver Bencosme Palmer (6 TL)
Rhode Island Sea Grant, Meredith Haas (14 CL)
Seven Tepees, San Francisco, CA (17)
Shutterstock, Tad Denson (10 TCR)
Sir Francis Drake High School, San Anselmo, CA, Michael Wing (8 BCL)
Stephen Johnson (14 BR)
Tennessee Aquarium, Chattanooga, TN, Heidi Chapin (16 BM)
Texas Sea Grant, Camp SeaPort (12 TCL, 14 BM)
U.S. Air Force, 403rd Public Affairs (10 TL)
U.S. Department of Agriculture, Scott Bauer (14 BL)
Virginia Sea Grant, Janet Krenn (6 BCL); Stephanie Smallegan (12 TCM)
Washington Sea Grant (Cover TM, 14 TL)

FOR MORE INFORMATION PLEASE VISIT EDUCATION.NOAA.GOV

The NOAA Education Portal provides links to all the major education programs from across the agency. It serves as a gateway to educational resources, student opportunities, grant funding announcements, professional development activities, and more.