



**National Oceanic and  
Atmospheric Administration**

U.S. Department of Commerce

# NOAA EDUCATION IMPLEMENTATION PLAN

*FISCAL YEAR 2021*



ADVANCING NOAA'S MISSION THROUGH EDUCATION

# Contents

NOAA Education Council .....	2
Overview .....	3
NOAA Education Program Strategies .....	4
Goal 1: Science-Informed Society .....	5
Goal 2: Conservation and Stewardship .....	14
Goal 3: Ready, Responsive, Resilient .....	18
Goal 4: Future Workforce .....	22
Goal 5: Organizational Excellence .....	27

## NOAA Education Council

The Education Council is a forum of representatives from NOAA's major education programs. Council members represent NOAA Line Offices, Staff Offices, and programs with education activities authorized by statute. The Council is chaired by the Director of NOAA Education and supported by the Office of Education. The following Council members contributed to this implementation plan:

- National Environmental Satellite, Data and Information Service
  - National Environmental Satellite, Data and Information Service Education (NESDIS)
- National Marine Fisheries Service
  - National Marine Fisheries Service Education (NMFS)
  - Teacher at Sea Program (TAS)
- National Ocean Service
  - National Ocean Service Education (NOS)
  - Office for Coastal Management & National Estuarine Research Reserve System (OCM/NERRS)
  - Office of National Marine Sanctuaries (ONMS)
  - Marine Debris Program (MDP)
- National Weather Service
  - National Weather Service Education (NWS)
  - Warning Coordination Meteorologists (WCM)
- Office of Oceanic and Atmospheric Research
  - Oceanic and Atmospheric Research Education (OAR)
  - Climate Program Office, Communication, Education, & Engagement (CPO)
  - National Sea Grant College Program (SG)
  - Office of Ocean Exploration and Research (OER)
- Office of Education
  - Environmental Literacy Program & K-12 and Informal Education (ELP/OED)
  - Higher Education and Hollings Scholarship Program (EPP/H)
  - Bay Watershed Education and Training Program (B-WET)

## Overview

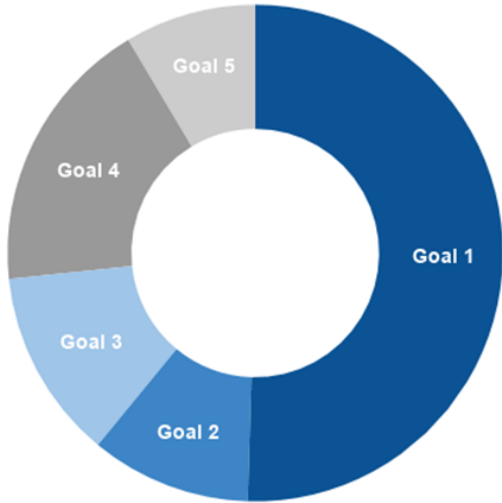
The *FY 2021 NOAA Education Implementation Plan* identifies the strategies and activities that NOAA Education programs will implement during this fiscal year to support the goals and objectives of the *2021-2040 NOAA Education Strategic Plan*.

At the start of the planning cycle in spring of 2020, Council members and the NOAA education community identified a core set of programs that supported the Strategic Plan's goals and objectives. From July to September, Council members participated in evaluation consultations to identify where their existing portfolio of programs best aligned with the plan strategies included for each objective in the plan. For each program strategy, we then could describe the activities that were planned for the upcoming fiscal year. By using this framework of program strategies, we can capture changes to activities as they are implemented and responses to external or unplanned events through the year.

In September, the Council hosted an Implementation Planning Retreat. As a community, we reviewed program strategies and planned activities drafted by Council members to develop a shared understanding of our collective effort over the next year. In addition, we identified and discussed areas of community concern: diversity, equity, and inclusion (DEI); workforce planning; and COVID-19 pandemic responses. From these discussions, a Council working group was proposed to further the work on DEI, and represents the Council's strategy and planned activities in support of Objective 5.3.

Throughout FY 2021, Council members will participate in evaluation consultations to monitor any progress on and update their program strategies and planned activities. This process will be overseen by the newly established NOAA Education Council Monitoring and Evaluation Committee. At the end of FY 2021, an internal report that summarizes the implementation outcomes will be shared with the Council.

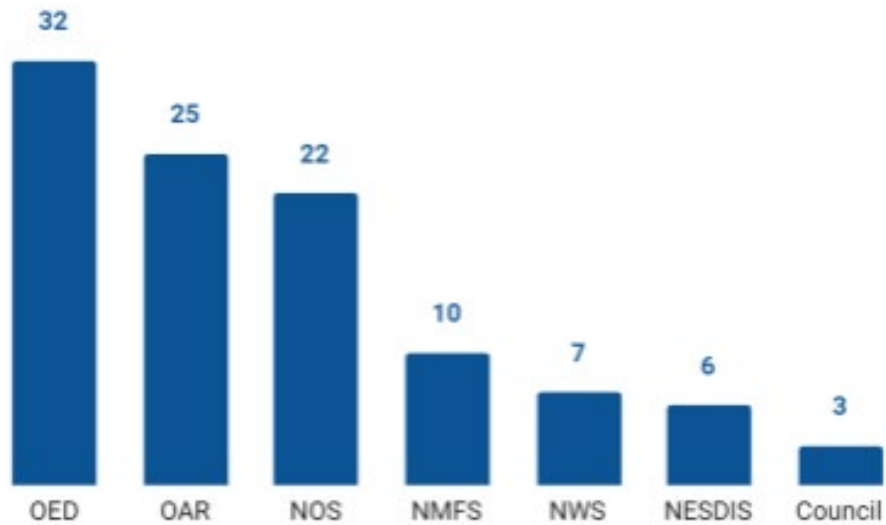
# NOAA Education Program Strategies



- 53** program strategies for Goal 1
- 11** program strategies for Goal 2
- 13** program strategies for Goal 3
- 19** program strategies for Goal 4
- 9** program strategies for Goal 5

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**105** program strategies



# Goal 1: Science-Informed Society

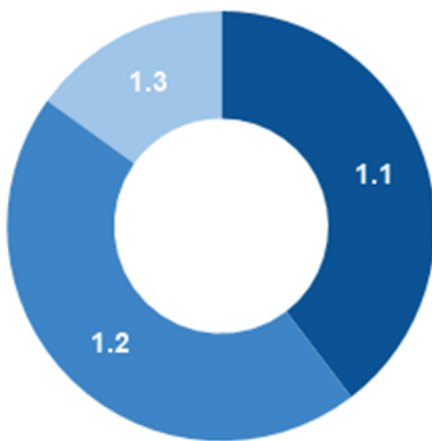
An informed society has access to, interest in, and understanding of NOAA-related sciences and their implications for current and future events.

Objectives:

1.1. Youth and adults from all backgrounds engage with NOAA-related sciences through education and outreach opportunities.

1.2. Formal and informal educators from all backgrounds integrate NOAA-related sciences into their teaching and programs.

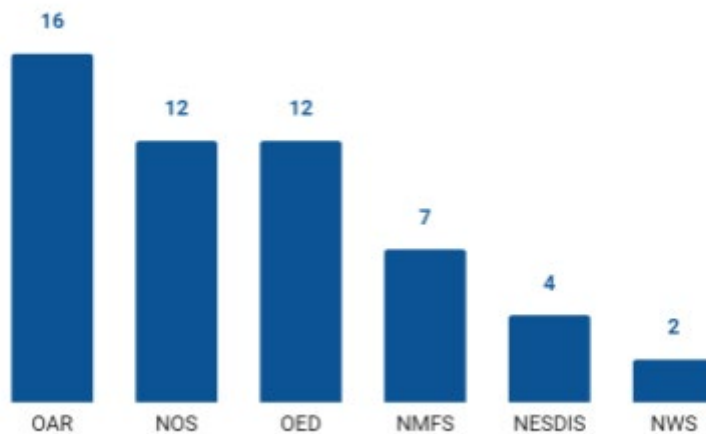
1.3. Organizations partner with NOAA to strengthen science, education, and outreach initiatives.



**21** program strategies for Objective 1.1  
**24** program strategies for Objective 1.2  
**8** program strategies for Objective 1.3

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**53** program strategies



## Goal 1 Program Strategies and Planned FY 2021 Activities

### **Objective 1.1. Youth and adults from all backgrounds engage with NOAA-related sciences through education and outreach opportunities.**

*Plan Strategy 1.1.1. NOAA will provide formal science education opportunities for students at places and facilities that NOAA manages.*

- OAR will provide formal science education opportunities for students at NOAA labs.
  - OAR will provide virtual student group tours and other online activities at Earth System Research Laboratories, Pacific Marine Environmental Laboratory, and National Severe Storms Laboratory.

*Plan Strategy 1.1.2. NOAA will provide formal science education opportunities for students in classrooms.*

- B-WET will fund grantees to provide Meaningful Watershed Educational Experiences (MWEEs) for students.
  - B-WET will issue seven notices of federal funding opportunity in FY 2021. These opportunities will include priorities that are responsive to the challenges in the field of environmental education and the K-12 education system resulting from the COVID-19 pandemic.
  - B-WET will also share tools and resources to help grantees adapt programming to the pandemic, including distance learning programming.
  - B-WET will complete a revision of the MWEE definition and associated guidance, including support for stewardship activities.
  - B-WET will support grantee project evaluation activities with tools, resources, and coaching.
- NMFS will provide virtual and in-person formal science education opportunities for students.
  - NMFS will provide webinars for students, as well as work with teachers, schools and districts.
  - The Pacific Region Outreach Group (PROG) will mentor students in virtual science fairs in the fall and spring. A Hollings Scholar will develop virtual tours of NOAA facilities in summer 2021.
- ONMS will provide formal science education opportunities for students.
  - ONMS will provide education opportunities for students through distance learning and other activities conducted remotely.
- SG will provide formal science education opportunities for students in classrooms.
  - SG plans to support school field trips, homeschool days, school visits, and education-focused competitions.
  - SG also reaches students through the educators that receive professional development.

*Plan Strategy 1.1.3. NOAA will provide informal place-based and hands-on education opportunities for youth and adults.*

- B-WET will support grant partners to provide MWEEs to youth in 21<sup>st</sup> Century Community Learning Centers.
  - B-WET and implementation partner North American Association for Environmental Education (NAAEE) will support 21st Century Community Learning Centers (21CCLC) Watershed STEM grant partners in implementing projects

- B-WET will work with NAAEE to provide training and capacity building in order to adapt in response to the COVID-19 pandemic, including distance learning programming.
- B-WET will work with NAAEE to support grantee project evaluation activities with tools, resources, and coaching.
- NMFS will provide informal hands-on science education opportunities for youth.
  - NMFS plans to provide virtual summer programming, e.g. NOAA Science Camp, in summer of 2021.
  - NMFS will also provide webinars and remote programming that are open for informal science education. Alaska Fisheries Science Center will coordinate the weekly NOAA Live! Alaska webinar series. Northeast Fisheries Science Center and Woods Hole Sea Grant will coordinate the weekly NOAA Live! series through the 2020-21 school year.
  - PROG will participate in virtual STEM Nights.
  - Greater Atlantic Regional Fisheries Office will engage youth in recreational fishing opportunities.
- ONMS will provide informal science education opportunities for youth.
  - ONMS will provide virtual informal education opportunities for youth through their visitor centers, outreach events, and film festivals.
- SG will provide informal place-based and hands-on education opportunities for youth and adults.
  - SG plans to carry out and support summer camps, scout programs, family programs, Marine Science Day, science festivals, community festivals, and SG-run visitor centers

*Plan Strategy 1.1.4. NOAA will participate in science outreach events for youth and adults.*

- EPP/H will provide science outreach to K-12 students.
  - The Diversity and Professional Advancement Working *Group* will participate in virtual science outreach activities for K-12 students, as opportunities arise.
- NESDIS will participate in science outreach events for youth and adults.
  - NESDIS will participate in the Virtual Maryland STEM Day, NOAA DataFest, and NOAA Open House Day and will staff NOAA booths at conferences, e.g. Space Symposium.
  - Joint Polar Satellite System program will participate in STEM activities virtually.
- OAR will host science outreach events for youth and adults.
  - OAR will host virtual public tours either recorded or live at Earth System Research Laboratories, Pacific Marine Environmental Laboratory, and National Severe Storms Laboratory.
- OED will participate in science outreach events for youth and adults.
  - OED Outreach is planning to participate in NOAA Headquarters events, such as NOAA Kids Day and NOAA Open House. Outreach is also planning to participate in occasional national events such as the USA Science and Engineering Festival.
- OER will provide Ocean Exploration science education webinars and videos for youth and adults.
  - OER education staff will work with the University of Rhode Island Inner Space Center to produce video interviews with experts. These videos will be on a number of ocean science topics, provide activity demonstrations to stand alone, and support new online educator professional development opportunities.
  - OER staff will work cooperatively with NOS to periodically support ocean exploration content in their Ocean Today - Every Full Moon video series. These



items will be provided on the OER education web pages and a future cooperative Ocean Exploration website for educators.

*Plan Strategy 1.1.5 NOAA will support citizen science opportunities that advance learning for youth and adults.*

- ELP will support the integration of citizen science into education projects through grant-funded projects.
  - ELP has five active grant awards in FY 2021 that have citizen science as a major element of their project.
  - ELP will host a principal investigator's workshop in 2021 and the agenda will likely include sessions on citizen science.

*Plan Strategy 1.1.6 NOAA will support science and engineering competitions for youth.*

- ELP will support the National Ocean Sciences Bowl, Science Olympiad and International Science and Engineering Fair competitions for youth.
  - ELP will provide students and teams with NOAA subject matter experts and directly support competition and program activities with funding.

*Plan Strategy 1.1.7 NOAA will develop and disseminate science resources designed for youth and adults.*

- MDP will develop and disseminate science resources about marine debris for youth and adults.
  - MDP will update its website to provide additional detailed and engaging information about marine debris for the public.
- NESDIS will develop and disseminate online science resources designed for youth and adults.
  - NESDIS will redevelop their website. NESDIS will also support a GOES-R Satellite program site and the SciJinks website.
  - NESDIS will participate in social media under @NOAASatellites.
- NWS will develop and disseminate online weather science and safety resources.
  - NWS will continue to provide education resources on Weather.gov/education, Weather.gov/learning and NOAA Jetstream website.
- OAR will develop and disseminate science resources online designed for youth and adults.
  - OAR will disseminate online science resources through Earth System Research Laboratories, Pacific Marine Environmental Laboratory, National Severe Storms Laboratory, Air Resources Laboratory, and Ocean Acidification Program websites.
- OED will develop and disseminate science resources to a wide variety of audiences, including students, the public, and professionals.
  - OED Outreach will respond to email and phone messages from a wide variety of audiences, including educators, students, researchers, emergency services staff, technical users, and anyone who is interested in NOAA.
  - OED Outreach will develop and disseminate resources such as educational content, data, multimedia, and agency-related materials.

**Objective 1.2 Formal and informal educators from all backgrounds integrate NOAA-related sciences into their teaching and programs.**

*Plan Strategy 1.2.1 NOAA will deliver professional development programs on NOAA-related sciences and resources for educators.*

- B-WET will fund grantees to provide professional development around MWEEs for educators.
  - B-WET funding opportunities in FY 2021 will emphasize professional development for educators who have been impacted by the COVID-19 pandemic.
  - B-WET will continue to support active projects that include professional development.
- CPO and partners will deliver professional development workshops on climate science and solutions to science educators.
  - CPO and partners will deliver virtual professional development to support teaching climate at the following conferences: Association for Science-Technology Centers (ASTC), North American Association for Environmental Education (NAAEE), and National Science Teaching Association (NSTA) and other related conferences and events throughout the year.
- MDP will deliver professional development trainings and workshops on marine debris to educators
  - MDP supports several partners who are providing professional development.
  - MDP Regional Coordinators will support professional development for educators.
- NESDIS will deliver professional development programs on NOAA-related sciences and resources for educators.
  - NESDIS will continue to support Data in the Classroom webinars through a contractor.
- NERRS will continue to provide Teachers on the Estuary (TOTE) workshops at all 29 Reserves and share lesson learned on best practices for delivering hybrid/virtual workshops
  - NERRS Education Coordinators will disseminate models for delivery of virtual TOTE workshops and lessons learned at the 2021 NERRS Education Virtual Meeting.
  - The TOTE Workgroup will create a sub-workgroup to focus on the involvement of pre-service teachers in TOTE workshops.
- NMFS will deliver professional development opportunities for educators.
  - Environmental Science Training Center will provide online professional development opportunities.
  - PROG will provide a teacher workshop in support of the Virtual Science Fair in fall 2020.
  - The Northwest Fisheries Science Center, Alaska Fisheries Science Center and West Coast Regional Office will provide professional development through the Washington Alliance for Better Schools summer ACCESS STEM program.
- NOS will deliver professional development programs on NOAA-related sciences to formal and informal educators.
  - NOAA Planet Stewards program will offer eight moderated Book Club meetings focused on environmental issues aligned with NOAA and NOS Education priorities. They will also sponsor two multi-day workshops in Galveston, TX and Detroit, MI in summer 2021. These events will focus on engaging educators of color or educators working in Title I schools.

- NOS Education will provide multiple presentations and workshops at the National NSTA conference in the spring.
- NOS Education is also working with the Ocean Today Team to incorporate Next Generation Science Standards (NGSS) into live webinars and existing video content on their website.
- OAR will provide professional development opportunities on OAR-related sciences.
  - Earth System Research Laboratories will provide online seminars to educators, normally these are provided in-person. Virtual delivery of these professional development activities will be improved in FY 2021.
- OER will deliver nationwide online Educator professional development programming on Ocean Exploration sciences and resources for educators.
  - OER will implement a new online educator professional development mini-series in FY 2021. The approach will combine asynchronous, synchronous, and follow-up programming in cooperation with multiple Education Alliance Partners.
  - The professional development program will be beta tested with one site in October of 2020. Soon after, the first topic will be offered in multiple time zones. A second topic will be developed and offered in multiple time zones by early 2021. Further topical programming will be developed and executed in spring 2021.
  - All programming will be evaluated to determine best practices for the longer term.
- ONMS will deliver professional development opportunities for educators.
  - ONMS will provide professional development focused on sanctuary resources through distance learning.
- SG will deliver professional development programs on NOAA-related sciences and resources for educators.
  - SG provides professional development to educators through research experiences for teachers at sea, workshops, webinars, and follow-up support.
- TAS will provide teacher research experiences on research cruises
  - TAS will not post an application for FY 2021. In FY20, TAS selected 20 teachers to sail, but they did not sail during the FY20 season because of COVID-19. Those 20 teachers will be held in a finalist status for FY 2021, with hopes of sailing them in 2021.
- WCM will deliver weather science and safety presentations and trainings for educators.
  - Weather Forecast Office staff plan to give presentations, trainings, office tours to educators, and host teacher externships.

*Plan Strategy 1.2.2 NOAA will develop and disseminate science resources designed for educators.*

- CPO will develop and disseminate climate science and education resources via climate.gov, Climate Literacy & Energy Awareness Network (CLEAN) network and partners to science educators.
  - CPO will deploy and market the Phase 3 design of the Climate.gov website. Phase 3 development includes rebuilding the site based on Drupal 9, and making changes based on user feedback, and more fully incorporating the CLEAN portal content.
  - Both the National Climate Assessment and Climate Resilience Toolkit websites will be more integrated in Climate.gov.
- MDP will develop and disseminate marine debris resources designed for educators.
  - MDP will develop an education content page on the website that will feature marine debris curricula, activities, and other resources.
- OED will develop and disseminate science resources designed for educators.

- OED Outreach will continue to update and provide content, such as education resources, student and educator opportunities, for the NOAA Education website.
- OED Outreach will develop and disseminate hard-copy science resources and distribute materials at conferences, at the NOAA Outreach Center, and through the mail.
- NESDIS will develop and disseminate online science resources designed for educators to use in the classroom.
  - NESDIS will continue to support the Data in the Classroom website and videos.
  - NESDIS will also disseminate materials at educator events like the NSTA conference, ASTC conference, and the USA Science and Engineering Festival.
  - National Centers for Environmental Information will develop tutorials and toolkits on Climate at a Glance and CrowdMag.
- NOS will develop and disseminate science resources designed for formal and informal educators.
  - NOS Education will continue to add and disseminate science and education content via the NOS website, Ocean Today website, and NOAA Games website. Increased dissemination will be aided by more aggressive social media presence, regular postings in The Watch e-newsletter, and as well as thought postings made via partners i.e. National Earth Science Teachers Association (NESTA), National Marine Educators Association (NMEA), National Aeronautics and Space Administration (NASA). In addition, planned participation at Planet Stewards workshops and conferences, like NSTA, will aid in dissemination.
  - NOS will also work with NSTA, providing NOAA scientists and educators to present via their webinars.
- OER will develop and disseminate science educator resources through the Ocean Explorer website.
  - OER, in cooperation with the National Marine Sanctuary Foundation, will hire contractors to revisit OER activities and rebuild them with an eye toward NGSS/21<sup>st</sup> Century pedagogy and to harvest a variety of content from websites of three Ocean Exploration partners.
  - OER, in cooperation with the NMSF, will hire a graphic designer to create a fresh look to developing OER education materials. OER education webpages with the new look and new materials is anticipated by the end of FY 2021.
- SG will develop and provide curriculum and other resources to P-12 formal and informal educators.
  - SG will support the Bridge, a website that collects and disseminates marine education materials.
- TAS will provide resources on their website
  - TAS team will work with a contractor to begin the design process for the TAS website. The new design is expected by the end of FY 2021.

*Plan Strategy 1.2.3 NOAA will support educator networks to promote and facilitate the teaching of NOAA-related sciences.*

- NOS will support a range of educator networks to promote and facilitate the teaching of NOAA-related sciences.
  - NOS will disseminate a bi-monthly e-newsletter, The Watch, with NOAA and NOAA partner science and education resources to the following educator networks: NOAA Planet Stewards, NSTA, NMEA, CLEAN, NASA and the NOAA Education community.

- NOS will support the Planet Stewards network via a federal funding opportunity to implement stewardship projects, a series of professional development workshops, and book club meetings.
- NOS will support the NESTA community by sponsoring online e-editions of their journal, The Earth Scientist; a major lecture at the NSTA national conference and a follow up workshop; and offering presentations at NESTA's full day session at NSTA.
- TAS will support alumni through workshops and other opportunities.
  - TAS will partner with the TAS Alumni Association to provide supplies to teachers to assist them with teaching from home, online, and in hybrid situations.
  - TAS will partner with the TAS Alumni Association to host an online regional workshop in FY 2021. This will enable continuity of service to alumni during COVID-19.

*Plan Strategy 1.2.A NOAA will assess the resource needs of educators.*

- NOS will assess the multimedia, distance learning, and educational resource needs of educators.
  - NOS will conduct an ongoing needs assessment of educators. NOS will share the data collected with the Ocean Today program, NOS Communications team, and the editor of the educator e-newsletter, The Watch, to inform their efforts in reaching students and teachers.

**Objective 1.3 Organizations partner with NOAA to strengthen science, education, and outreach initiatives.**

*Plan Strategy 1.3.1 NOAA will work with partner organizations to integrate NOAA's science and education assets.*

- ELP will work with partner organizations to integrate NOAA's science and education assets.
  - ELP will connect partners to subject matter experts at NOAA, build awareness of NOAA programs and assets, and assist in coordination of events and programs that feature NOAA science.
- NMFS will work with science centers, museums, and aquariums to host fisheries exhibits and programming.
  - NMFS will continue to partner with museums to host exhibits, though many institutions may remain closed in 2021.
  - Alaska Fisheries Science Center will work with the Museum of the Aleutians and Unalaska educational organizations for educational programming related to an exhibit on NOAA and the Pribilof Islands.
  - West Coast Regional Office will work with the Museum of the Pacific in Long Beach, CA on an exhibit.
  - PROG will work with the Hawaii Academy of Science and the Waikiki Aquarium.
- NOS will work with partner organizations to integrate NOAA's science and education assets.
  - NOS will work with partners, including Artist Boat and the Detroit Zoological Society, to integrate NOAA science and education assets into their programming.
  - NOS will also offer NOAA science and education resources for integration into programming of the following partners: NESTA, NSTA, CLEAN, NMEA, and American Meteorological Society.

- NOS will support NOAA Ocean Today kiosks and webinars to integrate NOAA science and education resources at museums, aquariums, nature centers across the country.
- OAR will work with partner organizations to integrate NOAA's science assets into education.
  - OAR will partner with the Exploratorium to do ad hoc virtual programs beginning in the second quarter of FY 2021.
  - The Ocean Acidification Program will provide mini-grants.
- OER, Ocean Exploration Trust and Schmidt Ocean Institute will develop a new cooperative Ocean Exploration education resources website to support formal and informal education.
  - OER, in cooperation with the National Marine Sanctuary Foundation, will hire a web designer and associated support staff to build out cooperative ocean exploration resource website for educators. The content will be contributed across three partners: OER, Ocean Exploration Trust, and Schmidt Ocean Institute. The full site is anticipated to be developed by the end of FY 2021.

*Plan Strategy 1.3.2 NOAA will support formal education systems with NOAA-related science programs and resources.*

- B-WET will build capacity of the educational community in states and school districts to be prepared to implement MWEEs.
  - B-WET will continue to support systemic implementation of MWEEs through existing grantee partnerships and FY 2021 funding opportunities.

*Plan Strategy 1.3.3 NOAA will work with partner networks to improve science teaching and programs.*

- CPO will support a national network of organizations that support regional and local cohorts of educators for climate education professional development.
  - CPO will increase the support for regional organizations to provide professional development to cohorts of teachers across the country.
  - CPO will improve its coordination with regional organizations and improve understanding of their evolving needs.
- ELP will work with the Coastal Ecosystem Learning Centers (CELC) and Science on a Sphere (SOS) networks to share lessons learned and promote the use of best practices.
  - The CELC network will hold monthly calls, support an active listserv, coordinate working groups, and work with the members to help meet their goals and support their programs.
  - The SOS network will hold a virtual workshop in fall 2020, support an active listserv, and provide a weekly newsletter.

## Goal 2: Conservation and Stewardship

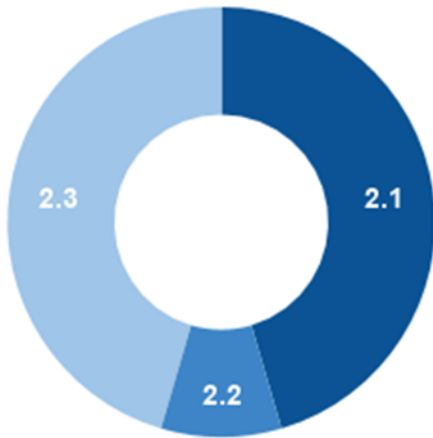
**Individuals and communities are actively involved in stewardship behaviors and decisions that conserve, restore, and protect natural and cultural resources related to NOAA's mission.**

Objectives:

2.1 Youth and adults from all backgrounds understand and apply conservation and stewardship concepts and practices in their lives and communities.

2.2 Formal and informal educators from all backgrounds integrate conservation and stewardship into their teaching and programs.

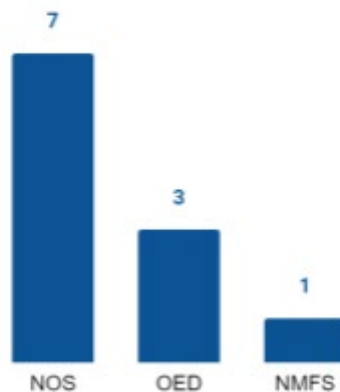
2.3 Organizations partner with NOAA to strengthen conservation and stewardship initiatives.



**5** program strategies for Objective 2.1  
**1** program strategies for Objective 2.2  
**5** program strategies for Objective 2.3

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**11** program strategies



## Goal 2 Program Strategies and Planned FY 2021 Activities

### **Objective 2.1 Youth and adults from all backgrounds understand and apply conservation and stewardship concepts and practices in their lives and communities.**

*Plan Strategy 2.1.1 NOAA will provide formal stewardship education and action opportunities for students.*

- MDP will provide formal marine debris education and stewardship projects to students.
  - MDP has the following 11 Prevention Grant, National Marine Sanctuary Foundation, and Sea Grant partners in FY 2021: Eckerd College, Alice Ferguson Foundation, University of North Carolina Wilmington, Community Foundation for Northeast Michigan, Salem Sound 2000, Inc., George Mason University, North Slope Borough, One Cool Earth, Blue Ocean Society for Marine Conservation, CiMaTec School, Oregon Sea Grant, Wisconsin Sea Grant.
  - MDP Regional Coordinators will provide and support education and stewardship projects to students.

*Plan Strategy 2.1.2 NOAA will provide informal stewardship education and action opportunities for youth and adults.*

- ELP will provide informal ocean stewardship action opportunities for youth.
  - CELC will bring together teams of high school students from member aquariums for a virtual youth summit in 2021.
  - Before the summit, NOAA will provide professional development activities for aquarium staff and guided community needs assessment resources for participating teens.
  - During the summit, NOAA will provide skills-based workshops, facilitated project action planning, and networking opportunities to participating teens.
  - After the summit, aquarium teens will carry out their planned projects with the support of aquarium staff.
- MDP will provide informal marine debris education projects and outreach to youth and adults.
  - MDP supports several partners who are providing formal education opportunities for students.
  - MDP Regional Coordinators will provide and support education and stewardship projects to students.
- NERRS will continue to deliver Conservation Action Education (CAE) programs and improve the approach used.
  - NERRS will work with the CAE workgroup to establish a baseline of which Reserves do CAE programs or intend to create a CAE program.
  - The workgroup will provide examples as to how to measure change to Education Coordinators.
  - The workgroup will also collaborate with the NERRS Coastal Training Program to learn different approaches for measuring change and discuss potential professional development opportunities.



*Plan Strategy 2.1.3 NOAA will provide conservation and stewardship outreach for youth and adults.*

- NMFS will provide fisheries outreach opportunities for youth and adults.
  - NMFS will provide webinars for youth and adults that apply conservation and stewardship principles. Alaska Fisheries Science Center will coordinate NOAA Live! Alaska webinars. Northeast Fisheries Science Center and Woods Hole Sea Grant will coordinate NOAA Live! webinars through the school year.
  - NMFS will provide supplemental education content for these webinars on the NOAA Fisheries website.
  - West Coast Regional Office will provide online salmon conservation and stewardship educational resources (curriculum, board game, children's book, and life cycle animation).

**Objective 2.2 Formal and informal educators from all backgrounds integrate conservation and stewardship into their teaching and programs.**

*Plan Strategy 2.2.3 NOAA will work with educators to implement stewardship action projects.*

- NOS will directly support formal and informal educators in the implementation of stewardship action projects.
  - NOAA Planet Stewards will directly support formal and informal educators in the implementation of stewardship action projects focused on marine debris, habitat conservation and restoration, and carbon footprint reduction and carbon sequestration with \$5000 federal funding opportunities.

**Objective 2.3 Organizations partner with NOAA to strengthen conservation and stewardship initiatives.**

*Plan Strategy 2.3.1 NOAA will work with partner organizations to implement conservation and stewardship initiatives.*

- ELP will work with partner organizations to implement aquaculture education initiatives.
  - The Coastal Ecosystem Learning Centers (CELC) network members will meet with NOAA programs and industry partners to establish common priorities and activities to enhance aquaculture education initiatives and efforts.
  - The OED CELC team will support these activities through the development of a transdisciplinary community of practice.
  - OED will offer mini-grants to create aquaculture-related resources and programs.
- MDP will work with partner organizations to host exhibits and displays about marine debris at partner sites.
  - MDP has a nationwide network of partners that host existing exhibits.
  - MDP will work with partners to complete five additional exhibits in FY 2021.
- NOS will work with partner organizations to implement conservation and stewardship initiatives.
  - NOAA Planet Stewards will partner with the NOS Hollings Marine Laboratories in FY 2021. They will support a program with local high schools called Charleston Planet Stewards focused on analyzing and mitigating stormwater runoff in Charleston, SC.
  - NOS Education will also partner with universities making up NOAA's Coastal Center for Marine Ecosystems as well as NOAA EPP/MSI to support undergraduates working on green coastal infrastructure, also known as living shoreline, projects.

*Plan Strategy 2.3.2 NOAA will support formal education systems with conservation and stewardship programs and resources.*

- B-WET will support formal education systems with student-driven conservation and stewardship programs and resources.
  - B-WET will work on a revised definition for Meaningful Watershed Educational Experience and related Educator Guide. The revisions will include additional resources on designing and implementing stewardship action projects and incorporating best practices, such as youth voice.
- ONMS will continue to support Ocean Guardian Schools with stewardship programs and resources.
  - ONMS will assist schools in making adaptations to their Ocean Guardian School projects during COVID-19.
  - ONMS will conduct a webinar series for students and teachers in Ocean Guardian Schools program to highlight NOAA scientists.

## Goal 3: Ready, Responsive, Resilient

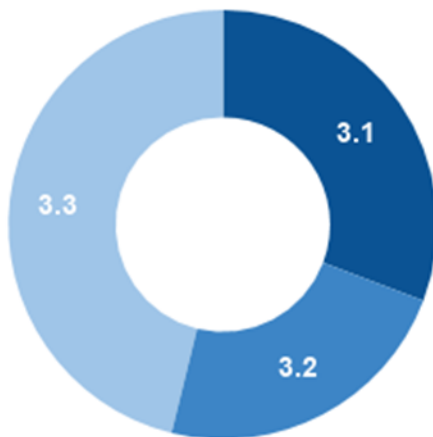
Individuals and communities are ready, responsive, and resilient to the increasing challenges and impacts of hazardous weather, changes in climate, and other environmental threats monitored by NOAA.

### Objectives

3.1 Youth and adults from all backgrounds understand the environmental hazards facing their communities and act to increase their community resilience.

3.2 Formal and informal educators from all backgrounds integrate environmental hazards and resilience into their teaching and programs.

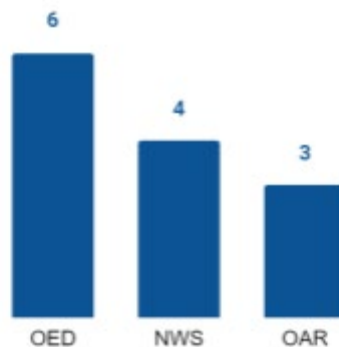
3.3 Organizations partner with NOAA to strengthen environmental hazards- and resilience-related initiatives.



- 4 program strategies for Objective 3.1
- 3 program strategies for Objective 3.2
- 6 program strategies for Objective 3.3

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**13** program strategies



## Goal 3 Program Strategies and Planned FY 2021 Activities

### **Objective 3.1 Youth and adults from all backgrounds understand the environmental hazards facing their communities and act to increase their community resilience.**

*Plan Strategy 3.1.1 NOAA will provide formal education opportunities on resilience, readiness, and responsiveness for students.*

- ELP will support student-driven resilience action projects.
  - ELP has 13 active grantees in FY 2021 that will support student-driven resilience action projects. The grant projects contributing are: Resilient Schools Consortium (RiSC) phase 1 & 2, New England Aquarium, The WILD Center phase 1 & 2, University Corporation for Atmospheric Research, Michigan Sea Grant, Nurture Nature Center, Chugach School District, Ecorise, Florida Atlantic University, and University of Hawaii.
  - ELP will use Community Resilience Education Theory of Change to guide those projects.
- WCM will provide formal education opportunities on weather safety and science for students.
  - Weather Forecast Office staff plan to visit classrooms remotely, present at student webinars, and host virtual office visits.
  - WFO staff plan to support student science fairs and Science Olympiad teams.

*Plan Strategy 3.1.2 NOAA will provide informal education opportunities on readiness, responsiveness, and resilience for youth and adults.*

- ELP will support projects that provide active learning opportunities that integrate science and policy to engage community members, in particular youth, in resilience-related planning and practices.
  - ELP has 22 active grantees in FY 2021 that support active learning opportunities in resilience-related planning and practices. ELP will use the Community Resilience Education Theory of Change to guide those projects.
- WCM will provide informal education and outreach opportunities on weather safety and science for youth and adults.
  - Weather Forecast Office staff plan to support informal education for youth at summer camps.
  - Weather Forecast Office staff will provide training to youth and adults through Spotter and CoCoRaHS programs.
  - Weather Forecast Office staff will conduct outreach at a variety of public events like Preparedness fairs, open houses, conferences, festivals, Science Days, science centers and museums, and universities.
  - Weather Forecast Office staff will also present to local clubs and at scout events.
  - Weather Forecast Office staff will also educate public attendees through Integrated Warning Team public events. Many events are planned around Severe Weather Awareness weeks.

### **Objective 3.2 Formal and informal educators from all backgrounds integrate environmental hazards and resilience into their teaching and programs.**

*Plan Strategy 3.2.1 NOAA will deliver professional development programs on readiness, responsiveness, and resilience for educators.*

- CPO will deliver professional development workshops on climate action and project-based learning pedagogy to educators across the curriculum.
  - CPO will partner with Climate Generation and other partners to hold virtual national teacher institute in summer 2021. Each day consists of hands-on activities, diving into lessons from Climate Generation's and other partners' curricula, hearing from speakers on interdisciplinary topics, and planning and networking time.
- ELP will support professional development programs that help educators use resilience curricula and integrate data to guide their students' exploration of locally relevant environmental hazards
  - ELP has 11 active grantees in FY 2021 that will develop and offer professional development programs. They will use the Community Resilience Education Theory of Change as a guide for developing those programs.

*Plan Strategy 3.2.2 NOAA will develop and disseminate resources on readiness, responsiveness, and resilience for educators.*

- CPO will develop and disseminate resources on human impacts on the climate and decision-making tools to all educators.
  - CPO will deploy and market the Phase 3 design of Climate.gov. Phase 3 development includes rebuilding the site based on Drupal 9, and making changes based on user feedback. Both the National Climate Assessment and Climate Resilience Toolkit websites will be more integrated in Climate.gov.

### **Objective 3.3 Organizations partner with NOAA to strengthen environmental hazards- and resilience-related initiatives.**

*Plan Strategy 3.3.1 NOAA will work with partner organizations to integrate NOAA's readiness, responsiveness, and resilience assets.*

- ELP will work with grantees to incorporate NOAA's readiness, responsiveness, and resilience assets into formal and informal education programs.
  - ELP has 20 active grantees in FY 2021 that are required to integrate NOAA's readiness, responsiveness, and resilience assets into their formal and informal education programs.
- WCM will work with partner organizations to integrate NOAA's readiness, responsiveness, and resilience assets.
  - Weather Forecast Office staff will work with local partners through programs like StormReady for Schools, Impact-based Decision Support Services (Preparedness phase), and Weather-Ready Ambassadors.

*Plan Strategy 3.3.2 NOAA will work with partners to engage vulnerable populations in becoming ready, responsive, and resilient.*

- CPO will work with partners to support the development of the U.S. ACE National Strategy.
  - CPO will lead the completion of the U.S. Action for Climate Engagement (ACE) National Strategic Planning Framework in FY 2021. It will be delivered to U.S. decision makers.

- ELP will emphasize approaches that address disparate vulnerabilities, as articulated in Theory of Change causal pathways, with grantees and other organizations.
  - ELP has eight new resilience education projects in FY 2021 that will use approaches that address disparate vulnerabilities.
  - ELP will build awareness of the Community Resilience Education Theory of Change among partners. More projects will then incorporate activities that build awareness of and address disparate vulnerabilities in a community.
- WCM will work with partners to engage vulnerable populations in becoming ready, responsive, and resilient.
  - Weather Forecast Office staff will work with partners that engage populations that are vulnerable to weather hazards because of physical access and communication access.

*Plan Strategy 3.3.A NOAA will work with partner organizations to advance community resilience education.*

- ELP will work with grantees to advance community resilience education.
  - ELP will host a principal investigator community of practice workshop and provide other learning opportunities to encourage use of the Community Resilience Education Theory of Change to guide new grantees' practices

## Goal 4: Future Workforce

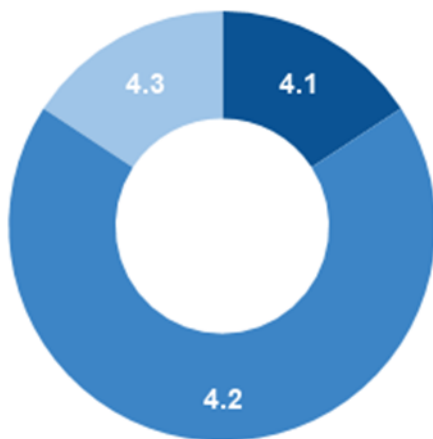
**A diverse and highly-skilled future workforce pursues careers in disciplines that support NOAA's mission.**

### Objectives

4.1 Students, particularly from underrepresented groups, become aware of and interested in education and career pathways in NOAA mission disciplines.

4.2 Students, particularly from underrepresented groups, explore and prepare for careers in NOAA mission disciplines.

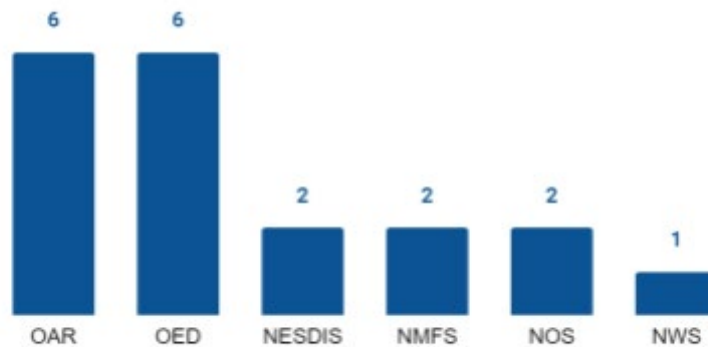
4.3 Graduates, particularly from underrepresented groups, enter the NOAA mission workforce.



**3** program strategies for Objective 4.1  
**13** program strategies for Objective 4.2  
**3** program strategies for Objective 4.3

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**19** program strategies



## Goal 4 Program Strategies and Planned FY 2021 Activities

### **Objective 4.1 Students, particularly from underrepresented groups, become aware of and interested in education and career pathways in NOAA mission disciplines.**

#### *Plan Strategy 4.1.1 NOAA will provide career interest programs.*

- EPP/H will provide career development programming and mentoring to undergraduate and graduate students.
  - Diversity and Professional Advancement Working Group will engage undergraduate and graduate scholars in the EPP/MSI and Hollings Scholarship programs via virtual engagement activities.
- SG will grow awareness of career paths that support the needs of the nation's coastal communities.
  - SG plans to support and host career awareness activities like job shadows, career fairs, research experiences, science fair mentors, and high school internships.

#### *Plan Strategy 4.1.2 NOAA will develop and disseminate career awareness resources.*

- OED will develop and disseminate career awareness resources.
  - OED Outreach will continue to update and promote the NOAA career resources and student opportunities web listings.
  - OED Outreach will also update and disseminate the student and career opportunities one-pager.

### **Objective 4.2 Students, particularly from underrepresented groups, explore and prepare for careers in NOAA mission disciplines.**

#### *Plan Strategy 4.2.1 NOAA will provide scholarships and fellowships to undergraduate and graduate students.*

- CPO will provide scholarships and fellowships to undergraduate and graduate students.
  - CPO will support three to four undergraduate and graduate students in the Significant Opportunities in Atmospheric Research and Science (SOARS) program in summer 2021 and engage them on future NOAA and other workforce opportunities.
  - CPO will support two to three American Meteorological Society graduate fellowships per year.
  - CPO will facilitate 10 to 20 undergraduate and graduate summer interns in OAR labs through the William Lapenta NOAA Internship Program.
- EPP/H will provide internships with NOAA mentors, scholarships, and fellowships to undergraduate and graduate students.
  - EPP/MSI Undergraduate Scholarship Program and Hollings Scholarship Program will recruit the Class of 2021.
  - EPP/MSI Cooperative Science Centers will provide NOAA Experiential Research & Training Opportunities (NERTO) internships for graduate students.
- NMFS will provide scholarships and fellowships to undergraduate and graduate students.
  - NMFS will continue to support the Woods Hole Partnership Education Program (PEP).
  - The Office of Science and Technology will offer the Quantitative Ecology and Socioeconomics Training (QUEST) program.



- NMFS will also partner with Sea Grant on the Joint Fellowship Program in Population and Ecosystem Dynamics and Marine Resource Economics.
- ONMS will support the Dr. Nancy Foster Scholarship Program, internships, and fellowships for undergraduate and graduate students.
  - ONMS will provide scholarships, fellowships, and internships for undergraduate and graduate students and adapt as needed during COVID.
- SG will provide scholarships and fellowships to undergraduate and graduate students.
  - SG will provide many internship, fellowship, research assistantship, and scholarship programs for undergraduate, Masters, and PhD students.

*Plan Strategy 4.2.2 NOAA will provide work-based learning for students.*

- EPP/H will provide paid internships with NOAA mentors for undergraduates, particularly from underrepresented groups.
  - EPP/MSI Undergraduate Scholars from the Class of 2020 and 2021 will conduct paid internships with NOAA mentors.
  - Hollings Scholars from the Class of 2020 will conduct paid internships with NOAA mentors.
- NESDIS will provide internships for undergraduate and graduate students.
  - NESDIS will participate in FY 2021 in a number of early career programs within NOAA including but not limited to: Pathways Programs, the Ernest F. Hollings Undergraduate Scholarship Program, the EPP/MSI program, and Cooperative Institute programs.
  - NESDIS will also participate in external program partnerships such as NASA DEVELOP, the Marion Barry Summer Youth Program, the Group on Earth Observations (GEO) Blue Planet Policy Program, and the Eleanor Roosevelt High School mentorship program.
- NMFS will host fisheries internships for high school, undergraduate and graduate students.
  - Northeast Fisheries Science Center will continue the Partnership Education Program in FY 2021 via a virtual format. The center will also build opportunities via the Talent 21 program.
  - NMFS will partner with the EPP/MSI NOAA Living Marine Resources Cooperative Science Center to host NERTO internships.
  - NMFS offices will also host Hollings Scholars.
  - Pacific Islands Fisheries Science Center, Alaska Fisheries Science Center, and Northwest Fisheries Science Center will also work with partners to host high school interns.
- OAR will host work-based learning for undergraduates and graduate students.
  - OAR will host fellows and interns at labs and with the Ocean Acidification Program.
- OER will provide training and internships to undergraduate and graduate students.
  - OER will hire an internship coordinator through the National Marine Sanctuary Foundation. The coordinator will manage and increase internship opportunities across OER and to work cooperatively with other offices.
  - OER will continue its diversity and inclusion work on internship opportunities across OER via specific staff efforts.
- WCM will provide work-based learning to Pathways students and undergraduate, high school and middle school volunteers.
  - Weather Forecast Offices will host Pathway program interns, as well as student volunteers in middle school, high school, and college.

- The University Partnership Program will continue to provide career exploration opportunities to undergraduate students.

*Plan Strategy 4.2.3 NOAA will work with minority serving institutions and other partners to increase opportunities for students from communities that are underrepresented in NOAA mission fields.*

- EPP/H will work with minority serving institutions and other partners to increase opportunities for students and build institutional capacity to offer degrees in NOAA-related fields.
  - EPP/MSI Cooperative Science Centers will collaborate with NOAA scientists and managers on research projects and create opportunities for students.
- NOS will work with minority serving institutions to provide opportunities for students from communities that are underrepresented in NOAA mission fields.
  - NOS Education will work with the EPP/MSI program and the minority serving institutions that are partners in NOAA's Coastal Center for Marine Ecosystems to provide opportunities for students from communities that are underrepresented in NOAA mission fields. NOS will fund green coastal infrastructure, living shoreline, student research projects.

### **Objective 4.3 Graduates, particularly from underrepresented groups, enter the NOAA mission workforce.**

*Plan Strategy 4.3.1 NOAA will provide fellowship and postdoctoral opportunities for recent graduates.*

- CPO will provide climate postdoctoral opportunities for recent graduates.
  - CPO will support 16 fellows through the Cooperative Programs for the Advancement of Earth System Science postdoctoral program.
  - CPO will use the available direct hire authorities, e.g. Pathways, Conservation Corps Act, to leverage NOAA investments in its workforce.

*Plan Strategy 4.3.2 NOAA will remove barriers to bringing NOAA-supported students into the NOAA workforce.*

- NESDIS will remove barriers to bringing NOAA-supported early career graduates into the NOAA workforce.
  - NESDIS will establish enterprise-wide workforce objectives to encourage program offices to participate in early career programs, improve position management efforts, and increase entry-level talent acquisition.
  - NESDIS will leverage applicable hiring authorities such as Schedule D and the Conservation Corp Act Direct Hire Authority to streamline the federal hiring process.
  - NESDIS will improve the tracking and reporting of early career program participants to ensure eligible candidates are recruited expeditiously.

*Plan Strategy 4.3.3 NOAA will coordinate agency-wide recruitment efforts for the NOAA workforce.*

- EPP/H will work with OHCS and line offices to support agency-wide recruitment efforts, particularly underrepresented minority applicants.
  - EPP/MSI will provide certificates of eligibility for the Conservation Corps Act Direct Hire Authority to scholars who successfully complete the program.

- Hollings Undergraduate Scholarship program will provide certificates of eligibility for the Conservation Corps Act Direct Hire Authority for scholars who successfully complete their internship.

# Goal 5: Organizational Excellence

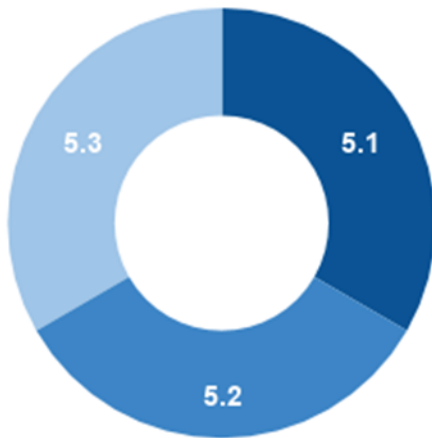
**NOAA functions in a unified manner to support, plan, and deliver effective educational programs and partnerships that advance NOAA’s mission.**

## Objectives

5.1 The NOAA Education community works together to better serve all educational audiences.

5.2 The NOAA Education Community is strategic, coordinated, and continuously improving.

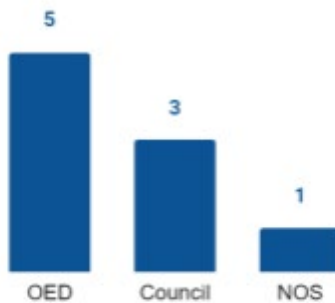
5.3 The NOAA Education Community advances inclusion, diversity, equity, and access within our programs.



- 3 program strategies for Objective 5.1
- 3 program strategies for Objective 5.2
- 3 program strategies for Objective 5.3

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**9** program strategies



## Goal 5 Program Strategies and Planned FY 2021 Activities

### **Objective 5.1 The NOAA Education community works together to better serve all educational audiences.**

#### *Plan Strategy 5.1.1 NOAA will support collaborative networks of NOAA educators.*

- The Education Council will improve its support of community-building among members.
  - OED will improve the on-boarding process for new Education Council members.
  - Coordinating Committee will improve Education Council monthly meeting agendas in order to foster in-depth discussions and engagement between Education Council members.

#### *Plan Strategy 5.1.2 NOAA Educators will cooperate across programs and offices.*

- OED will enable NOAA educators and researchers to collaborate across programs and offices.
  - OED will support the completion of the NOAA Citizen Science Strategic Plan. After which, an implementation plan will be written that articulates how NOAA uses citizen science to support Science and Technology strategies.
  - OED Citizen Science will ensure that research projects have an education component, when appropriate.
  - OED Citizen Science will coordinate NOAA's submissions to a report to Congress being prepared by the White House Office of Science and Technology Policy.
  - OED Citizen Science will continue to host webinars, and make connections to resources.
  - OED Citizen Science will coordinate participation from the NOAA community in the Citizen Science Association conference, which will be virtual in May 2021.
- OED will support and collaborate with NOAA Educators across programs and offices.
  - OED Outreach will field outreach requests from across the country and connect requesting parties to regional offices.
  - OED Outreach will continue to connect and collaborate with NOAA educators to share and promote education-related content.
  - OED Outreach will continue to offer conference and resource support for participants in NOAA's professional development programs such as NOAA Teacher at Sea and NOAA Planet Stewards.

### **Objective 5.2 The NOAA Education Community is strategic, coordinated, and continuously improving.**

#### *Plan Strategy 5.2.1 NOAA will monitor and evaluate education programs.*

- B-WET will improve monitoring and evaluation of education programs.
  - B-WET will initiate an analysis of its national evaluation data collected from grantees and professional development program participants to explore the relationship between Meaningful Watershed Educational Experience best practices and outcomes.
  - B-WET and North American Association for Environmental Education will support program evaluation for the 21st Century Community Learning Center Watershed STEM grant partners through an external contract with the Education Development Center.

- The Education Council will develop and implement evaluation policies that apply to education programs.
  - The Monitoring and Evaluation (M&E) Committee will monitor the evaluation of the implementation plan and consider a policy proposal for evaluating the implementation plan.
  - M&E Committee will revisit the common measure definitions, both existing and possible proposed ones.

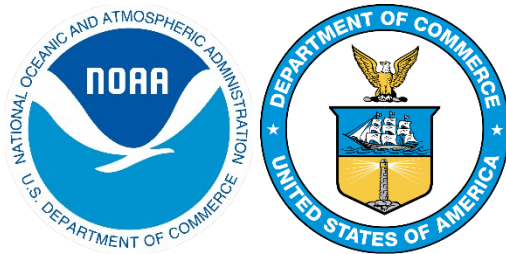
*Plan Strategy 5.2.3 NOAA will use communications to share the impact of NOAA education programs.*

- OED will improve the quality of storytelling and communication of NOAA Education stories.
  - OED Communications will highlight NOAA Education programs in web stories and an annual accomplishments report.
  - OED Communications will continue to use web data, analytics, and communication best practices to evaluate success and determine future priorities for noaa.gov/education.

**Objective 5.3 The NOAA Education Community advances inclusion, diversity, equity, and access within our programs.**

*Plan Strategy 5.3.1 NOAA will undertake all appropriate measures to make programs inclusive and equitable.*

- B-WET will promote funding opportunities and improve program processes to support equity and inclusion.
  - B-WET will emphasize equity in FY 2021 funding opportunities. Funding priorities will include an emphasis on community engagement and reaching vulnerable audiences and those disproportionately impacted by the pandemic.
  - B-WET will actively recruit applicants that represent diverse and underserved communities. They will ensure that diverse perspectives are included in the process of reviewing and selecting applications.
  - B-WET will also seek opportunities to minimize burden associated with reporting and other administrative tasks.
- The Education Council will develop and implement diversity and inclusion policies that identify and remove barriers to inclusion.
  - Council will consider the establishment of a Diversity and Inclusion working group.
  - Council will challenge education programs to commit to changes that remove barriers to inclusion.
- MDP will advance inclusion, diversity, equity, and access to educational resources and opportunities.
  - MDP is compiling information on similar initiatives across NOAA to better inform appropriate future measures, including potentially bringing in a consultant to guide planning.



*Cover Photo Credit: Claire Fackler, NOAA*