



American Planning Association

Creating Great Communities for All

Digital Coast Connects: **A Comprehensive, Coordinated Educational Campaign for Nature-Based Solutions**

Assessment Report



An American Planning Association Project

planning.org

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TABLE OF CONTENTS

Overview and Background	4
Summary of Findings	5
Methodology.....	6
Project Partners	7
Communication Strategies	9
Audience	10
Media Outlets	11
Serial Communication Frequency	12
Events	13
Educational Programs and Products	14
Programs.....	15
Educational Products and Trainings	16
Publications	18
Analysis and Evaluation	26
Communications.....	26
Content.....	26
Recommendations	29
Process	29
Campaign Messages	31
Campaign Tactics	32
Appendix 1–Interview Questions	33

OVERVIEW AND BACKGROUND

As a group, the Digital Coast Partners have identified a need to do a better job of educating students, the public, professional staff, and local elected officials on the value of using nature-based solutions to address flooding. To do this, the Digital Coast Connects nature-based workgroup proposed the creation of a comprehensive, coordinated educational campaign focused on nature-based solutions. The purpose was to develop a framework for the education campaign and begin its initial launch. A campaign of this type will include but is not limited to: coordinated social media messaging, better promotion of the partners' nature-based programs among the other partners, more nature-based solution programming at partner events, a website with case studies (e.g., parks and open space), and a demonstration project. The campaign will target the public, professionals/local government staff, and elected officials.

Digital Coast Connects is an effort to address a local or regional need or issue through the Digital Coast partnership membership network. Each of the partner organizations identified nature-based solutions as an important topic for their members and most of the organizations have their own communication outlets and educational programs around this topic. Representatives from the following organizations (in the following "partner organizations") agreed to assess existing

educational programs related to nature-based solutions: the National Oceanic and Atmospheric Administration (NOAA) Office for Coastal Management (OCM), the American Planning Association (APA), the National Association of Counties (NACo), the National Estuarine Research Reserve Association (NERRA), the Association of State Floodplain Managers (ASFPM), the Urban Land Institute (ULI), the Coastal States Organization (CSO), the National States Geographic Information Council (NSGIC), and the Nature Conservancy (TNC). The goal is to use this information to inform the development of a coordinated educational campaign that includes the entire Digital Coast partnership. By coordinating communication and education around this topic, the partnership will be able to message nature-based approaches more consistently and effectively, thereby improving the understanding and capacity to apply nature-based solutions within the Digital Coast user community.

This report summarizes the assessment of nature-based efforts of the partner organizations leading to the development of the Digital Coast partnership-wide educational campaign framework. This report includes an inventory of Digital Coast partnership educational programs, an analysis of the findings and related stakeholder feedback, and first recommendations for the educational campaign.

SUMMARY OF FINDINGS

COMMUNICATION

- Main audiences for these materials are professionals who work in areas related to the built environment, including coastal managers, floodplain managers, and planners. Many materials are targeted toward elected officials and the general public.
- The main media outlets for partner organizations include e-newsletters, Facebook, LinkedIn, and Twitter.
- Organizations are more likely to share information through monthly communications.
- In 2020, there are at least five confirmed annual events taking place and at least three confirmed biennial conferences.

CONTENT

- A majority of resources address nature-based solutions at the community level.
- Resources catalogued in this inventory are more likely to provide guidance to practitioners and introduce concepts to elected officials.
- There is a strong focus on tools for coastal areas, floodplains, and communities.
- Many products combine information about nature-based solutions with case studies describing community implementation processes.
- Products often describe social, economic, and environmental benefits associated with nature-based solutions.
- Multiple resources focus on self-assessment to help communities understand how nature-based solutions can address flooding.
- Some resources focus on policy recommendation to support nature-based solutions in communities.
- The terms “green,” “infrastructure,” “coastal,” “stormwater,” “management,” “living,” and “natural” are words commonly used to describe nature-based solutions.

METHODOLOGY

The APA team assessed educational programs and products on nature-based solutions with the nine partner organizations.

Group members from NACo and ULI identified key considerations for an education campaign, including a collection of potential interview questions and target audiences. Based on this work and a general discussion on potential campaign contents during the project kick-off call in August with all partner organizations, APA developed a scope for the assessment and potential outline of educational campaign content, including categories of resources (educational products and publications), categories of audiences (e.g., planners, elected officials, and state floodplain managers), and types of products (e.g., online training, webinar, guidebook, whitepaper, or toolkit).

Data collection

APA conducted phone interviews with representatives from the partner organizations and reviewed related online content from the partner organizations' websites to create an inventory. Based on the scope and previous

discussions with the partner organizations on desired content of the educational campaign, APA worked closely with the partner organizations to develop interview questions (see Appendix 1—Interview Questions). The list includes general questions on the marketing strategy for nature-based solutions content, target audiences and media outlets, as well as more specific questions on educational content (trainings and webinars as well as publications).

Data analysis

The interview findings were summarized and clustered in the predetermined categories (see [Communication Strategies](#) and [Educational Programs and Products](#)). Each category was analyzed and evaluated according to what could be potential content for the educational campaign, what content or product types dominate, and what content or product types are missing (see [Analysis and Evaluation](#)). The results of this analysis and evaluation inform initial recommendations for the next steps of the creation of the educational campaign (see [Recommendations](#)).

PROJECT PARTNERS

The following organizations participated in this assessment:

NOAA Office for Coastal Management

“Coastal management” is a term that covers the decisions and actions taken to keep the natural environment, built environment, quality of life, and economic prosperity of our coastal areas in balance. The Coastal Zone Management Act is the guiding legislation for this purpose, and NOAA’s OCM is the federal agency tasked with implementation.

Coastal management issues are broad and challenging. Communities and the nation are constantly grappling with the best ways to address storm preparedness, erosion, development, habitat loss, sea level rise, public access, and threats to water quality, to name a few. As a scientific organization, NOAA provides access to the science and environmental intelligence communities need for these tasks.” (Source: [NOAA OCM](#))

The Office for Coastal Management consists of four major programs, including the **National Coastal Zone Management Program**, **National Estuarine Research Reserves**, **NOAA Coral Reef Conservation Program**, and **Digital Coast**. The OCM contains divisions with a strong regional presence with offices throughout the country. (Source: *Interview with NOAA OCM*)

American Planning Association

The American Planning Association provides leadership in the development of vital communities for all by advocating excellence in planning, promoting education and resident empowerment, and providing our members with the tools and support necessary to ethically meet the challenges of growth and change. (Source: [APA](#))

The American Planning Association is a membership organization with over 45,000 members from 100-plus countries. APA has 47 chapters throughout the United States and 21 divisions that embrace the wide range of planning. (Source: *Interview with APA*)

Association of State Floodplain Managers

The Association of State Floodplain Managers is an organization of professionals involved in floodplain management, flood hazard mitigation, National Flood Insurance Program, and flood preparedness, warning, and recovery. ASFPM is a respected voice in floodplain management practice and policy in the United States because it represents flood hazard specialists of local, state, and federal government, research community, insurance industry, and the fields of engineering, hydrologic forecasting,

emergency response, water resources, and others.

The mission of ASFPM is to promote education, policies, and activities that mitigate current and future losses, costs, and human suffering caused by flooding, and to protect the natural and beneficial functions of floodplains—all without causing adverse impacts. (Source: [ASFPM](#))

ASFPM is a membership-based organization with 37 state and regional chapters. The ASFPM Board of Directors consists of regional and chapter directors. (Source: *Interview with ASFPM*)

Coastal States Organization

The Coastal States Organization represents the nation’s coastal states, territories, and Commonwealths on ocean, coastal, and Great Lakes resource issues. Helping states to maintain their leadership role in the development and implementation of national coastal and ocean policy is among CSO’s most important functions. CSO works with Congress to shape legislation and arrange for state testimony and works with federal agencies to comment on proposed regulations. CSO advocates for increased federal funding and support for state-based coastal and ocean programs, as well as responsiveness of federal agency program administration and policies to state concerns. (Source: [CSO](#))

CSO is a membership-based organization that serves 35 states. Members are appointed delegates from their states. Members convene twice a year to coordinate policy initiatives and decide on courses of action. (Source: *Interview with CSO*)

National Association of Counties

The National Association of Counties strengthens America’s counties, serving nearly 40,000 county elected officials and 3.6 million county employees. Founded in 1935, NACo unites county officials to (Source: [NACo](#)):

- Advocate county priorities in federal policy making
- Promote exemplary county policies and practices
- Nurture leadership skills and expand knowledge networks
- Optimize county and taxpayer resources and cost savings
- Enrich the public’s understanding of county government

NACo is a stand-alone organization without local chapters. Members include elected officials and county staff, including emergency and public works staff. NACo

has 10 policy steering committees, including three that relate to nature-based solutions: the Environment, Land Use and Energy Committee; the Resilient Counties Committee; and the Parks, Open Space, and Trails Committee. (Source: *Interview with NACo*)

National Estuarine Research Reserve Association

The National Estuarine Research Reserve Association is a national nonprofit established in 1987 to advance the work of the reserve system. Reserves and their friends groups rely on NERRA to help enhance successful programs, strengthen the network, and enable Reserves to address challenges to our estuaries, coasts, and communities. NERRA communicates Reserve funding needs and priorities to Congress and federal agencies and educates the public about the importance of estuaries. (Source: [NERRA](#))

The National Office connects 29 reserves. Each reserve has a partner organization (university, parks district, etc.). The National Office develops and shares information related to the reserves with elected officials at national level. They also work with local friends groups. (Source: *Interview with NERRA*)

National States Geographic Information Council

NSGIC strives to be the premier state-led forum for developing, exchanging and endorsing geospatial technology and policy best practices. NSGIC shares solutions to offer benefits across the geospatial ecosystem.

NSGIC facilitates connections between people and organizations across multiple sectors—and the data and systems they use—resulting in greater returns from the efficient use of geospatial technology.

NSGIC also pursues geospatial advocacy initiatives that coordinate activities, knowledge, and policies of collaborative outreach to support informed decision making. (Source: [NSGIC](#))

NSGIC is a membership-based organization that consists of state geographic information officers. (Source: *Interview with NSGIC*)

The Nature Conservancy

The Nature Conservancy is a global environmental nonprofit working to create a world where people and nature can thrive.

Founded at its grassroots in the United States in 1951, The Nature Conservancy has grown to become one of the most effective and wide-reaching environmental organizations in the world. Thanks to more than a million members and the dedicated efforts of TNC's diverse staff and more than 400 scientists, the organization impacts conservation in 72 countries across six continents.

TNC's mission is to conserve the land and waters on which all life depends. TNC's vision is a world where the diversity of life thrives, and people act to conserve nature for its own sake and its ability to fulfill our needs and enrich our lives. (Source: [TNC](#))

TNC is a member-based organization with chapters in all states and 30 countries abroad. (Source: *Interview with TNC*)

Urban Land Institute

The Urban Land Institute provides leadership in the responsible use of land and in creating and sustaining thriving communities worldwide. ULI is the oldest and largest network of cross-disciplinary real estate and land-use experts in the world. ULI is its members. Through ULI's members' dedication to the mission and their shared expertise, the Institute has been able to set standards of excellence in development practice. (Source: [ULI](#))

ULI has several local chapters, or districts, mostly driven by the real estate market. The Districts are represented by the District Council in America. The National Council represents countries in Europe and Asia. The Center for Sustainability and Economic Performance aims to build the business case for sustainability. The Center provides technical assistance to sponsor organizations to resolve complex land use problems and provide solutions. (Source: *Interview with ULI*)

COMMUNICATIONS STRATEGIES

Most of the partner organizations have messaging that promotes the use of nature-based solutions.

CSO emphasizes in their messaging that coastal management can protect communities. Nature-based solutions are highlighted in [CSO's Coastal Zone Management fact sheet](#), which underlines the importance of protecting natural resources: **"Planning for an uncertain future, coastal management helps protect lives and investments on the coast."**

NOAA OCM has led multiple campaigns around nature-based solutions. One of their messages, part of their [Natural Infrastructure Fast Facts information](#), has been **"Let Nature Be the First Line of Defense."** The OCM also provides fast facts on natural infrastructure, which highlights benefits of nature-based solutions. Examples of tag lines include **"Living Shorelines Rock"** and **"Growing Trees Grows Value."**

The Urban Resilience program, through the ULI Center for Sustainability and Economic Performance, creates messaging that connects resilience with economic and social opportunities. In the report [Ten Principles for Building Resilience](#), ULI makes the case for designing with natural systems. The report states that "[d]esigning resilience relies upon an understanding of **the function and geography of natural systems** and how they **can help strengthen manmade systems and communities.**"

In a web story titled ["Nature's Potential to Help Reduce Flood Risks,"](#) The Nature Conservancy illustrates the importance of nature-based solutions. TNC proposes that "[n]ature-based solutions—such as reconnecting floodplains to give rivers more room during floods or restoring reefs, marshes or dunes that can protect coastal communities during storms—can also help improve water quality, provide prime wildlife habitat, enhance recreational opportunities, and produce related economic and social benefits." TNC identifies nature-based solutions as **"The Path to a Better Future."**

ASFPM highlights the importance of natural and beneficial functions through multiple avenues. ASFPM's mission is to reduce flood risk and losses and protect natural and beneficial functions, which includes nature-based solutions and issues. One of messages shared by ASFPM is to encourage **"No Adverse Impacts."** This [floodplain management principle](#) helps communities think through adverse impacts of development and identify mitigation strategies before a community is faced with flood issues.

APA has adopted a [Policy Guide on Water](#), which illustrates the organization's preferred messaging around nature-based solutions and related issues addressing the One Water concept. One of the policies identified in this document **encourages planners to consider "[g]reen infrastructure and planning for multiple objectives as a cost-effective method for mitigating the effects of natural hazards while also supporting other benefits to the community."** Additionally, APA has participated in multi-stakeholder campaigns, such as "A Day Without Water," coordinated through the US Water Alliance. Further, APA organized the Water and Planning Connect specialty conference in 2018. Messaging around this activity included "explor[e] how planners can champion green infrastructure and work with engineers, architects, landscape architects, and water professionals" and **"green infrastructure [...] can produce multiple co-benefits for communities and regions"** (excerpts from the [WPC program](#)).

Some organizations, such as NACo, do not have specific messaging around nature-based solutions, but incorporate information about nature-based solutions as part of broader communications. NERRA and NSGIC do not have specific language around nature-based solutions; however, their members may have products related to nature-based solutions.

Audience

All organizations operate on a national scale; however, their target audiences vary. Table 1 provides target audience information for each organization.

TABLE 1: This table identifies target audience for each partner organization.

Organization	Target audience
APA	Planners
CSO	Elected officials
NOAA OCM	Coastal managers and planners
ULI	Real estate professionals
NERRA	Elected officials, National Estuarine Research Reserve System staff, and friends groups
TNC	Diverse member group
NACo	Elected officials and county staff
ASFPM	State floodplain managers
NSGIC	State Geospatial Information Officers

Media Outlets

Organizations use a variety of methods to reach their target audiences. Table 2 catalogs the variety of ways that organizations can communicate information to their members. Methods identified as most effective, or those methods that offer high levels of audience engagement, are represented by bold checkmarks.

All partner organizations use e-newsletters, Twitter, Facebook, and LinkedIn. Press releases, Instagram, and web stories or blogs seem to be of similar importance to some of the organizations. For the educational campaign, it will be important to focus on the media outlets everyone has access to and experience with. Facebook seems to be a popular media outlet every partner organization is using, and is also identified as one of the most effective ones. From the less popular media outlets, trainings, webinars, and print newsletters were identified as most effective.

Many partners refer to the [Naturally Resilient Communities site](#) as a key resource for this topic. This resource was developed in collaboration with APA, American Society of Civil Engineers, ASFP, Environmental and Water Resource Institute, NACo, TNC, and Sasaki. The page is maintained by TNC, including a Resources page that is routinely updated by TNC.

Table 2: This table identifies various communication methods for each organization. Bold check marks indicate self-identified most effective methods for communication.

Organization	E-newsletter	Twitter	Facebook	LinkedIn	Press Releases	Instagram	Web stories/ Blogs	Magazine	Division communications	Communication Platform	Trainings	Webinars	Print Newsletter
APA	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓			
CSO	✓	✓	✓	✓		✓							
NOAA OCM	✓	✓	✓	✓	✓	✓	✓				✓		
ULI	✓	✓	✓	✓	✓	✓		✓				✓	
NERRA	✓	✓	✓	✓	✓	✓	✓						
TNC	✓	✓	✓	✓	✓	✓		✓					
NACo	✓	✓	✓	✓	✓				✓				✓
ASFP	✓	✓	✓	✓	✓		✓						
NSGIC	✓	✓	✓	✓	✓		✓			✓			

Serial Communication Frequency

All partner organizations communicate with their members using serial communication methods, such as newsletters, magazines, and e-newsletters. Most partner organizations send out serial communication on a monthly basis or more frequently (weekly or bimonthly). Table 3 illustrates the frequency of distribution of serial communications.

Table 3: This table identifies how frequently partners share information with their members through serial communication outlets.

Organization	Weekly	Bi-Monthly	Monthly	Every two months	Quarterly
APA	Interact newsletter		Planning magazine		
CSO		CSO Newsletters			
NOAA OCM			Digital Coast Connections newsletter		
ULI				ULI Center for Sustainability and Economic Performance newsletter	Urban Land magazine
NERRA			NERRA newsletter		
TNC			Great Places e-newsletter		Nature Conservancy magazine
NACo	E-newsletter	Biweekly print newsletter			
ASFPM			News & Views newsletter The Insider newsletter		
NSGIC			NSGIC newsletter		

Events

Partner organizations host various events that may have opportunities to feature nature-based solutions. Member events are spread across the year relatively evenly. Table 4 catalogs these activities, along with the name of the event and upcoming dates; in cases where there is currently no online record for a future activity, the comments/links section specifies the most recent iteration of the event.

Table 4: This table outlines events hosted by partner organizations.					
Organization	Spring	Summer	Fall	Winter	Past Events
APA	National Planning Conference (April 25-28, 2020)		Policy Conference (September 2020)		
CSO			National Summit on Coastal and Estuarine Restoration and Management (October 4-8 2020) (Biennial)		Fall Membership Meeting (November 4-8, 2019)*
NOAA OCM				Social Coast Forum (February 3-6, 2020) (Biennial)	
ULI	Spring Meeting (May 12-14, 2020)		Fall Meeting (October 12-15, 2020)		
NERRA					NERRS Annual Meeting (Date not available online)
TNC					America's Watershed Initiative (Date not available online)
NACoW				Legislative Conference (February 29-March 4, 2020) (Biennial)	Annual Conference & Exposition (July 12-15, 2019)*
ASFPM		Annual National Conference June 7-11, 2020			Coastal GeoTools (February 11-14, 2019)* (Biennial)
NSGIC					Annual Conference (September 23-27, 2019)*
*Past date, no upcoming date available online.					

EDUCATIONAL PROGRAMS AND PRODUCTS

This project analyzes products created by Digital Coast Partners. Products are organized into three categories:

- **Programs** refer to a collection of materials that were developed to address a similar topic.
- **Educational Products and Trainings** refer to in-person or recorded trainings, including webinars, conference session recordings, and short educational videos.
- **Publications** refer to resources that are self-paced. This category includes guides, reports, fact sheets, white papers, articles, and other publication formats.

This inventory includes resources that comply with the following criteria:

- They address nature-based solutions or natural system functions that address flooding.
- They are published by a Digital Coast Partner or feature Digital Coast Partner as contributor to final product.
- They are available through Digital Coast Partner website.

Some organizations, including NSGIC and NERRA, indicated that members (state government information officers and local reserves, respectively) create the bulk of materials to fit the needs of the communities they serve. These materials are not readily accessible through an organizational portal but may be relevant to an educational campaign. Identifying these resources would require inclusion of all organization members into this assessment, which would be beyond the scope of this project.

The bulk of materials catalogued as part of this inventory are targeted towards practitioners and coastal managers. Most of the products have been created in the past 10 years.

Programs

Programs are collections of resources, often including both educational and research materials. This section includes projects that are composed of complementary materials, including videos, guides, and tools.

Many of the programs focus on nature-based solutions at the community level, although some materials focus on how nature-based solutions impact regions or floodplains. Programs range from broad nature-based solutions information, such as the Naturally Resilient Communities project, to more specific projects that focus on parks, regional green infrastructure, and floodplain management.

Because of their scope (often focusing on spaces larger than individual land parcels, such as coastal regions, floodplains, and urban spaces), the available programs are mostly targeted toward environmental professionals, planning practitioners, and elected officials. Many of the programs provide guidance on how to implement nature-based solutions through floodplain management, coastal management, and urban land use. A majority of the programs identify additional resources for review—in some instances, these collections of resources are kept up to date by the owner organization and can serve as additional educational input.

In this sample, programs are more likely to be supported by funding than individual educational products or publications.

Table 5: This table summarizes programs available through partner organizations. The descriptions under “Product Summary” are either borrowed from the project website or created from project information.

Organization	Program Name	Program Type	Program Summary	Funder (if applicable)
APA	City Parks Forum	Program	This program identifies challenges of creating and enhancing parks in cities. It includes a series of white papers, case studies, and briefing papers.	Wallace Foundation; Doris Duke Charitable Foundation.
APA	Great Urban Parks Campaign	Program	This two-year project supported on-the-ground projects in local communities and developed resources and training programs on green infrastructure for park, recreation, and planning professionals. It specifically focused on dealing with gentrification and improving social equity. It includes a series of briefing papers and case studies.	JPB Foundation (recipient = NRPA)
APA	Green Infrastructure for Regional Resilience	Program	This program explores planning best practices related to using green infrastructure to enhance local and regional resilience. It includes a five-part toolkit, a series of publications and webinars.	National Fish and Wildlife Foundation
APA, ASFP, NACo, TNC, American Society of Civil Engineers, Environmental and Water Resource Institute, Sasaki	Naturally Resilient Communities	Program	This guide of nature-based solutions and related case studies of successful projects to help communities learn more about nature-based solutions and identify those solutions that might work best for them. It includes factsheets, case studies, and an interactive demonstration of where solutions can be applied.	Kresge Foundation
ASFP	No Adverse Impact Floodplain Management	Program	“No Adverse Impact Floodplain Management” is a managing principle that is easy to communicate and, from legal and policy perspectives, tough to challenge. In essence, No Adverse Impact floodplain management takes place when the actions of one property owner are not allowed to adversely affect the rights of other property owners.	
ASFP, CSO	CRS for Community Resilience	Program	This project promotes CRS participation, provides guidance on actions that increase a community's rating, and works directly with communities to increase their resiliency through the CRS process. It includes a guide, recordings of meetings with communities working on CRS projects, and a four-part webinar series based on the workshops.	National Fish and Wildlife Foundation, Hurricane Sandy Resilience Grant

Educational Products and Trainings

This section summarizes educational products that address nature-based solutions. Educational products include in-person trainings, recordings of conference sessions, and online courses.

The majority of these educational products are available as online trainings. It is possible that additional courses are available, but they may be behind paywalls. NOAA is the largest provider of free educational products. APA offers access to courses through APALearn, which are behind a paywall.

These materials mostly focus on informing planners and coastal managers on options for nature-based solutions in their communities. About half of the resources are recorded sessions from conferences. These sessions focus on case studies of entities that have applied nature-based solutions to address local or regional issues. Some of them address how communities can identify and implement nature-based solutions in their communities. This category is mostly comprised of coastal nature-based solutions.

Table 6: This table summarizes educational products and trainings available through partner organizations. The descriptions under "Product Summary" are either borrowed from the project website or created from project information.

Organization	Program Name	Program Type	Program Summary	Funder (if applicable)
APA	Caribbean Recovery, Walkability and Green Infrastructure	Online Training	This course explores the connections between disaster recovery, the built environment, public health, and disaster risk reduction.	
APA	Green Infrastructure Retrofit Program in Hyperdrive	Online Training	This panel discussion explores the exponential implementation of green infrastructure in Prince George's County, Maryland.	
APA	Innovative Stormwater Management in Washington, DC	Online Training	This course examines innovative approaches to stormwater management, discusses the importance of collaboration, and emphasizes the need to attack stormwater challenges from multiple approaches and stakeholders.	
APA	Keeping It Green: Stormwater Life Cycle Management	Online Training	This course explores a life cycle approach toward resilience planning in the context of work under way in New Jersey's Meadowlands region under the Rebuild by Design program and the National Disaster Resilience program.	
APA	Regional Green Infrastructure Strategies and Tools	Online Training	This course explores the role of green infrastructure at a regional scale. It examines a vision for conserving and connecting open space across the regional landscape, proposed strategies to achieve greater intergovernmental/organizational collaboration and integrate green infrastructure systems into the comprehensive planning framework, and analytical tools for evaluating open spaces'ecosystem service' benefits.	
APA	Using Nature To Fight Nature's Threats	Online Training	This course examines the feasibility of constructing a resilient dune ecosystem to maintain beach access as a recreational resource for all users, to enhance existing habitats, and to provide flood and erosion protection against rising seas.	
NOAA	Green Infrastructure Mapping Guide	Online Training	Communities experiencing increasing incidents of coastal flooding are looking for relief. This online guide shows spatial analysts how to incorporate nature-based solutions, or green infrastructure, into their GIS work.	

Table 6: This table summarizes educational products and trainings available through partner organizations. The descriptions under “Product Summary” are either borrowed from the project website or created from project information.

Organization	Program Name	Program Type	Program Summary	Funder (if applicable)
NOAA	A Framework for Ecosystem Services Projects Worksheet	Training	Use this worksheet to help think through key considerations for planning an ecosystem services project and fill in specific details necessary for getting started.	
NOAA	Nature-Based Solutions for Coastal Hazards	Training; Online and in person	This course prepares coastal planners and managers for planning and implementing green or natural infrastructure projects to reduce coastal natural hazards in their communities.	
NOAA	Green Infrastructure Protective Services Animation	Video	This video explains green infrastructure—what it is and how it protects communities from coastal storm impacts. The video also provides information about actions communities can take to reap the benefits from this nature-based storm protection technique.	
NOAA	Living Shorelines: Bringing Together Science, Restoration, and Management on Our Nation's Coasts	Webinar	Living shorelines offer protection from coastal storms and provide wildlife habitat. This webinar introduces the concept and examines how the term is defined and applied. Experts from the East and West Coasts provide examples and highlight challenges they've faced with implementation.	

Publications

Publications include materials that provide information and are self-paced. They include articles, briefing papers, reports, and guides. The majority of resources identified during this inventory process fall into the publications category. The most common type of resource in this section are case studies, guides, and reports. It is important to note that some resources listed below may include components that are a different product type, or they may be part of a program.

The materials identified in this section address a variety of topics related to nature-based solutions, although the central message remains the same: **Nature-based solutions offer a variety of economic and environmental benefits.** Some resources offer general introductory information to nature-based solutions, while others provide more specialized information, such as living shorelines or incorporating the value of water in development projects. This section includes a variety of tools to help communities identify what nature-based solutions are suitable for communities. Many of these tools introduce examples from communities that have implemented nature-based solutions and highlight benefits of using green infrastructure to address community flooding challenges.

Table 7: This table summarizes publications available through partner organizations. The descriptions under "Product Summary" are either borrowed from the project website or created from project information.

Organization	Program Name	Program Type	Program Summary	Funder (if applicable)
APA	PAS Memo: The Effectiveness of Green Infrastructure for Urban Stormwater Management	Article	The May/June 2012 issue of PAS Memo explores the effectiveness and some of the economic implications of many common green infrastructure practices that are used to manage the water quality and flood risks associated with urban stormwater runoff.	
APA	Green Infrastructure and Post-Disaster Recovery Briefing Paper	Briefing Paper	This briefing paper shows how green infrastructure plays an important role in preparation for and recovery from natural disasters. By incorporating green infrastructure into post-disaster recovery, communities can become more resilient to future disasters.	
APA	How Cities Use Parks for Green Infrastructure	Briefing Paper	This briefing paper is part of the City Parks Forum program. It looks at how green infrastructure can support communities to upgrade and expand their green infrastructure, the interconnected system of green spaces that conserves natural ecosystem values and functions, sustains clear air and water, and provides a wide array of benefits to people and wildlife.	
ASFPM Riverine Erosion Hazards Working Group	ASFPM Riverine Erosion Hazards White Paper	Briefing Paper	The main purpose of this white paper is to encourage state and local governments to begin mapping riverine erosion hazard areas in their communities. The mapping should be carried out using methodologies that they feel are appropriate for their specific conditions and at a level of detail that meets their specific requirements.	Rebecca Pfeiffer, NBF Committee Co-chair
NOAA	A Community Works Together To Restore The Floodplain And Reduce Damages	Case Study	This case study illustrates how the Village of Walton, New York, restored a natural floodplain and reduce flooding impacts.	
NOAA	Amending Land Use Codes For Natural Infrastructure Planning	Case Study	Learn how a Sea Grant agent is working with Port Washington, WI, to audit and amend its existing land use codes and ordinances to be more inclusive of green infrastructure projects.	

Table 7: This table summarizes publications available through partner organizations. The descriptions under “Product Summary” are either borrowed from the project website or created from project information.

Organization	Program Name	Program Type	Program Summary	Funder (if applicable)
NOAA	Building Momentum For Green Infrastructure Implementation	Case Study	Toledo, Ohio, has travelled a typical Rust Belt trajectory of booming industrial economy followed by environmental and economic decline. As they write their next chapter, the city must address problems with water quality and recurring flooding. Their commitment to addressing these and other issues in a sustainable way has led to the city to consider green infrastructure approaches. A study of green infrastructure and its benefits helped Toledo explore the role of these practices and build support for a comprehensive approach.	
NOAA	Community Rain Gardens Are A Great Environmental Outreach Tool	Case Study	A training clinic and demonstration project were designed to teach Village of Faga’alu community members how to install rain gardens to lessen stormwater impacts from pollution and flooding. The experience gave local communities the wherewithal to install future rain gardens and greater confidence in natural solutions to manage their resources “from ridge to reef.”	
NOAA	Designing Green Infrastructure Standards For Retrofits	Case Study	Monroe County and the City of Rochester have been proactive in addressing flooding problems. Officials employed nature-based solutions, including bioswales, permeable sidewalks, and green roofs, using these projects as opportunities to test techniques, build skills, and get buy-in to support more use of green infrastructure.	
NOAA	Designing Living Shorelines For New England Coasts	Case Study	New England conditions create special challenges for coastal property owners in the Cape Cod and islands region, with shorelines threatened by erosion, flooding, varying tidal ranges, winter ice, sea level rise, and storms. In Orleans, Massachusetts, one property owner asked a local ecologist to design a living shoreline sturdy enough to protect a steep bank and sand-cobble beach from these threats. A sturdier living shoreline was built with the aid of rigorous site analysis, an ecologist-engineer design team, winter-storm-resistant design, and effective communication with the regulatory board.	
NOAA	Economic Assessment of Green Infrastructure Strategies for Climate Change Adaptation: Pilot Studies in the Great Lakes Region	Case Study	The economic effects of flooding events—including preparation costs and expenses related to damages—are being experienced throughout the Great Lakes region. This study assesses the economic benefits of green infrastructure, provides information on stormwater management practices, and examines case studies in Toledo, Ohio, and Duluth, Minnesota.	NOAA

Table 7: This table summarizes publications available through partner organizations. The descriptions under “Product Summary” are either borrowed from the project website or created from project information.

Organization	Program Name	Program Type	Program Summary	Funder (if applicable)
NOAA	From Gray To Green: Replacing A Bulkhead With A Living Shoreline At A High-Energy Riverine Site	Case Study	In 2004, Tracy Skrabal, a senior coastal scientist with the North Carolina Coastal Federation, led one of the first living shoreline projects in North Carolina, which replaced a failing bulkhead at a high wave-energy site in a freshwater setting. The site was at the Edenhouse public boat ramp along the Chowan River in North Carolina. It proved to be an effective early demonstration of living shoreline techniques, combining erosion control practices with the restoration of a freshwater marsh and native riparian buffer vegetation.	
NOAA	Implementing Green Infrastructure At Multiple Scales To Enhance Resilience	Case Study	This case study illustrates how Alachua County, Florida, developed a Green Infrastructure Investment Strategy. Learn how to approach green infrastructure at all scales to enhance resilience to hazards and future climate change impacts.	
NOAA	Investing In Flood Mitigation Pays Off Immensely	Case Study	This case study explores how Folly Beach, South Carolina, conserved its existing coastal structures to protect the community from storm surge and flooding. Learn how one small community is investing in different land use approaches such as open space preservation to reduce flooding, resulting in savings for flood insurance policy holders.	
NOAA	Navy Pier Redevelopment Project Serves As Model Of Sustainability Using Green Infrastructure	Case Study	Chicago’s Navy Pier undertook a major redevelopment project to reinvent 50 acres of urban lakefront. The Illinois Coastal Management Program and Navy Pier, Inc., applied green infrastructure techniques to demonstrate a model of sustainability that will both improve the health and vitality of the local community and inspire future adaptation projects.	
NOAA	Post-Sandy Recovery Efforts Provide Opportunity To Prepare For Future Flooding	Case Study	In 2012, Post-Tropical Cyclone Sandy caused \$15.4 million in flood damage to the City of Brigantine Beach, a barrier island near Atlantic City. Brigantine Beach used the post-recovery period to prepare to improve its flood mitigation and community resilience planning. These efforts led to new floodplain management ordinances, greater community buy-in on the need for flood preparedness, and progress on an early warning system.	

Table 7: This table summarizes publications available through partner organizations. The descriptions under “Product Summary” are either borrowed from the project website or created from project information.

Organization	Program Name	Program Type	Program Summary	Funder (if applicable)
APA	Green Stormwater Infrastructure	Clearinghouse	This collection summarizes the state of the practice regarding local efforts to reduce and treat stormwater runoff with on-site vegetation or rainwater harvesting systems that use or mimic natural processes, and it catalogs numerous resources that provide background and policy or design guidance or demonstrate how localities are using plans, regulations, and programs to minimize dependence on gray infrastructure for stormwater management. It will be published in 2020.	
NOAA	Green Infrastructure Effectiveness Database	Clearinghouse	Search this online database of literature sources containing information on the effectiveness of green infrastructure to reduce the impacts of coastal hazards, such as inundation and erosion from tropical storms and cyclones, more frequent precipitation events, and sea level rise. The database contains records from a wide range of sources, such as peer-reviewed journals, online tools, and gray literature, and includes information on 32 different coastal green infrastructure types.	
NOAA	Green Infrastructure Benefits	Fact Sheet	Use this handout to communicate with local officials about the benefits of green infrastructure to reduce climate and hazard impacts. In addition to the benefits, short success stories and key points covered during NOAA’s Green Infrastructure for Coastal Resilience training are included.	
NOAA	Green Infrastructure Practices and Benefits Matrix	Fact Sheet	Use this quick reference to get information about common green infrastructure practices used to lessen community flooding. Included practices range from natural landscape conservation to nature-based solutions at the site level. Planning context, scale, and a summary of the benefits of each technique are included.	
NOAA and USACE	Natural and Structural Measures for Shoreline Stabilization	Fact Sheet	This brochure provides easy-to-digest overview information on the use of living shorelines and structural shoreline stabilization techniques to reduce coastal risks and improve resilience. Techniques range from “green” living shorelines to structural or “gray” approaches, as well as hybrid solutions.	SAGE, NOAA, U.S. Army Corps of Engineers
ASFPM, Federal Interagency Floodplain Management Task Force	Understanding and Managing Flood Risk: A Guide for Elected Officials	Guide	This guide provides guidance to elected officials in communities that experience flooding. The guide identifies strategies to protect a community from the impacts of flooding, including restoring the natural benefits of floodplains.	

Table 7: This table summarizes publications available through partner organizations. The descriptions under “Product Summary” are either borrowed from the project website or created from project information.

Organization	Program Name	Program Type	Program Summary	Funder (if applicable)
NOAA	A Community Resource Guide for Planning Living Shorelines Projects	Guide	This publication provides community leaders, citizens, and contractors with guidance on key elements that should be considered when embarking on living shoreline projects, as well as links to additional resources for the planning process. This guide is a companion to The Nature Conservancy's Coastal Resilience Tool and the Restoration Explorer, a web-based application that allows users to visualize which living shoreline techniques are most appropriate for reducing erosion at specific sites along New Jersey's coastline.	
NOAA	A Guide to Assessing Green Infrastructure Costs and Benefits for Flood Reduction	Guide	To plan successfully, communities need to understand the options for addressing flood-related issues and their associated costs. This guide lays out a six-step watershed-based approach for documenting the costs of flooding, projecting increased flooding and associated costs under future land use and climate conditions, and calculating the long-term benefits and costs of a green infrastructure approach.	
NOAA	Coastal and Waterfront Smart Growth Guide	Guide	Communities can use smart growth strategies to achieve environmental, social, and economic goals. This online guide outlines ten coastal smart growth elements and provides a wide range of tools and techniques for incorporating these elements into community planning efforts. The guide also highlights the connection between smart growth strategies and community resilience and green infrastructure.	
NOAA	Green Infrastructure Options to Reduce Flooding	Guide	Use the practices described in this handout to help reduce flooding and aid communities in designing a green infrastructure strategy. Please note that while green infrastructure practices make communities more resilient, complete alleviation of flooding is not likely.	
NOAA	How to Consider Climate Change in Coastal Conservation	Guide	This step-by-step approach can be used to create a new conservation plan or update an existing one that incorporates climate change information. It is suitable for anyone working to manage or conserve lands in coastal areas.	
NOAA	Stormwater Management in Pacific and Caribbean Islands: A Practitioner's Guide to Implementing Low Impact Development	Guide	This guide helps designers, engineers, agencies, and others advance the application of low impact development practices to manage stormwater runoff in Hawaii, the Commonwealth of the Northern Mariana Islands, Guam, American Samoa, U.S. Virgin Islands, and Puerto Rico. The guide outlines steps along with design details, best management practices, and examples through photos.	

Table 7: This table summarizes publications available through partner organizations. The descriptions under “Product Summary” are either borrowed from the project website or created from project information.

Organization	Program Name	Program Type	Program Summary	Funder (if applicable)
NOAA and TNC	Marshes on the Move	Guide	Predicting where and how coastal environments will be impacted by sea level rise is a complex science. Despite the availability of several models and methods, interpreting results and data can be challenging for coastal officials. This publication provides a basic understanding of the parameters and uncertainties involved in modeling the impacts that sea level rise will have on coastal wetlands.	Collins Northwest Conservation Fund
The Nature Conservancy	A Guide for Incorporating Ecosystem Service Valuation into Coastal Restoration Projects	Guide	This guidebook provides a framework for incorporating ecosystem service valuations at the beginning, rather than at the end, of coastal habitat restoration and creation projects. Applying ecosystem service valuation to coastal restoration projects has multiple advantages, including greater stakeholder support and greater likelihood of project success. Measuring the value of the ecosystem service benefits of coastal restoration projects in New Jersey will generate more specific, local data on the benefits of healthy coastal ecosystems to coastal communities.	Henry Philip Kraft Family Memorial Fund, NOAA
NOAA	Coastal County Snapshots	Interactive Map	This online tool provides managers and citizens with easy-to-understand charts and graphs that describe complex coastal data. Users select a county of interest and the website does the rest, creating a helpful educational tool for governing bodies and citizen groups.	
NOAA	Coastal Flood Exposure Mapper	Interactive Map	This online visualization tool supports communities that are assessing their coastal hazard risks and vulnerabilities. The tool creates a collection of user-defined maps that show the people, places, and natural resources exposed to coastal flooding.	
TNC	Coastal Resilience Mapping Portal	Interactive Map	This online, interactive tool helps users visualize future flood risks from sea level rise and storm surge. The tool identifies areas and populations at risk and provides a better understanding of potential ecological, social, and economic impacts.	
APA	PAS Report: Green Infrastructure: A Landscape Approach	Report	This well-grounded report shows how green infrastructure cleans the air and water, replenishes aquifers, reduces flooding, and moderates the climate.	
ASFPM	Floodplain Management: State Programs Update 2017	Report	In partnership with the University of Colorado's Natural Hazards Center, ASFPM developed and administered an electronic survey to the state NFIP coordinator for every U.S. state and territory based on survey instruments used in past years. Survey data was analyzed by the Natural Hazards Center.	

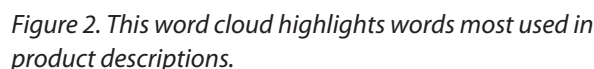
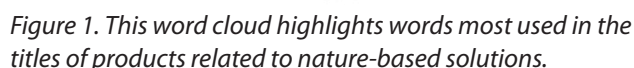
Table 7: This table summarizes publications available through partner organizations. The descriptions under “Product Summary” are either borrowed from the project website or created from project information.

Organization	Program Name	Program Type	Program Summary	Funder (if applicable)
ASFP, National Wildlife Federation, Allied World Assurance Company	Natural Defenses in Action: Harnessing Nature to Protect Our Communities	Report	Natural Defenses in Action highlights the important role that natural and nature-based approaches can play in reducing the mounting risks to our communities from weather and climate-related natural hazards. The report highlights how properly managed ecosystems and well-designed policies can help reduce disaster risk in ways that are good for both people and nature. Natural Defenses in Action profiles a dozen case studies that highlight best-in-class examples of how natural defenses are being put to use to avoid or reduce risks from flooding, coastal storms, erosion, and wildfire.	Allied World
NACo	Managing Disasters at the County Level: A Focus on Flooding	Report	This report focuses on emergency management for flooding, the most common natural hazard. However, the majority of principles highlighted here can be applied to virtually any emergency or disaster situation. County best practices from across the nation are used to underscore and exemplify each resilience strategy.	
NOAA	A Policy Analysis of the Use of Ecosystem Service Values in State and Local Decision-Making	Report	Understanding the value of ecosystem services, such as flood protection, recreation, tourism, and water quality, can be important when making decisions that affect coastal resources. This study helps coastal managers understand when ecosystem valuations can be used for decisions involving conservation versus development, shoreline protection, land-use planning, permitting for development, and managing retreat.	
ULI	Harvesting the Value of Water: Stormwater, Green Infrastructure, & Real Estate	Report	This 2017 report explores the real estate sector's increased participation in stormwater management through the incorporation of green infrastructure. The report details how cities in the United States are dramatically revising their stormwater management regulations and requiring participation from the private sector. Many of the green infrastructure and water management briefs found on this website derived from this report.	Kresge
ULI Boston/New England	The Urban Implication of Living With Water	Report	This report identifies strategies to protect four sites in Boston from changing climate conditions, such as sea-level rise. It illustrates how green infrastructure can play a role in adapting these four areas to	Kresge
APA	Zoning Practice: Regulating Green: Is Your Municipality Promoting Green Infrastructure?	Research Publication	This article uses case studies of Atlanta and Philadelphia to illustrate how planning, policy, and regulation can be used to promote green infrastructure at the local level.	

Table 7: This table summarizes publications available through partner organizations. The descriptions under “Product Summary” are either borrowed from the project website or created from project information.

Organization	Program Name	Program Type	Program Summary	Funder (if applicable)
ASFP	Natural and Beneficial Floodplain Functions: Floodplain Management—More than Flood Loss Reduction	Research Publication	This document contains information about the natural functions of a floodplain. It proposes strategies to protect floodplains, including policy recommendations at the local, state, and federal level.	
NOAA, TNC, Partnership for the Delaware Estuary	A Framework for Developing Monitoring Plans for Coastal Wetland Restoration and Living Shoreline Projects in New Jersey	Research Publication	The framework outlines the process of developing a monitoring plan for living shoreline and wetland restoration or enhancement projects. During this process, users select metrics that are relevant to their projects’ goals and restoration type, and methods of collecting data for each metric appropriate to their experience and resources. Finally, the publication recommends monitoring plan components in a template that can be filled out for specific projects.	
NACo	Local Government Guide to Coastal Resilience	Webpage	This website was created to build the capacity of coastal managers in the Gulf of Mexico Region to educate and work with their local elected officials on coastal hazards and to effectively utilize the high-level coastal management resources available to them. It discusses structural activities, including green infrastructure and preservation and restoration.	
NACo	Resilient Counties Initiative	Webpage	NACo works to strengthen county resiliency by building leadership capacity to identify and manage risk, and allow counties to become more flexible and responsive. Through the use of sustainable practices and infrastructure, counties will be better prepared to address these issues in a manner that can minimize the impact on local residents and businesses, while helping counties save money.	
NOAA	Living Shorelines	Webpage	This webpage provides information on living shorelines. It introduces concepts related to living shorelines and identifies case studies where living shorelines have been implemented.	
ULI	Developing Urban Resilience	Webpage	This web site showcases best practices in resilient design. It features projects and policies that address climate shock and stresses at the site level, including environmental vulnerabilities like sea-level rise and storms.	JPB Foundation, Kresge Foundation, New York Community Trust, ULI Foundation

A majority of resources address nature-based solutions at the community level. Resources catalogued in this inventory are more likely to provide guidance to practitioners and introduce concepts to elected officials. There is a strong focus on tools for coastal areas, floodplains, and communities. Many products combine information about nature-based solutions with case studies describing community implementation processes. Products often describe social, economic, and environmental benefits associated with nature-based solutions. Multiple resources focus on self-assessment to help communities understand how nature-based solutions can address flooding. Some resources focus on policy recommendation to support nature-based solutions in communities.



While word clouds are not representative of the breadth of content available through these materials, they do summarize themes that are present in inventoried materials. Therefore, they can serve as an initial guidance on how to phrase certain wording of the educational campaign in a consistent way. Further, there may be program components, such as case studies available through NRCsolutions.org, that have not been individually catalogued for the inventory.

Are there concepts that are not present in the word clouds, but might be helpful for the campaign? This information can help inform campaign messages.

Even though the collection of nature-based solutions programs and products of the partner organization is extensive and of high quality, a few topic areas are not addressed. There are opportunities to generate materials and introduce messaging related to nature-based solutions. While many of the resources discuss nature-based solutions at the community level, there are fewer resources that dis-

cuss how to ensure that all community members benefit from nature-based solutions. There may also be opportunities to create content for a general audience. Most of the materials catalogued in this collection are geared toward practitioners and elected officials. While some of these materials can be understood by a general audience, there is less clear messaging for a general audience.

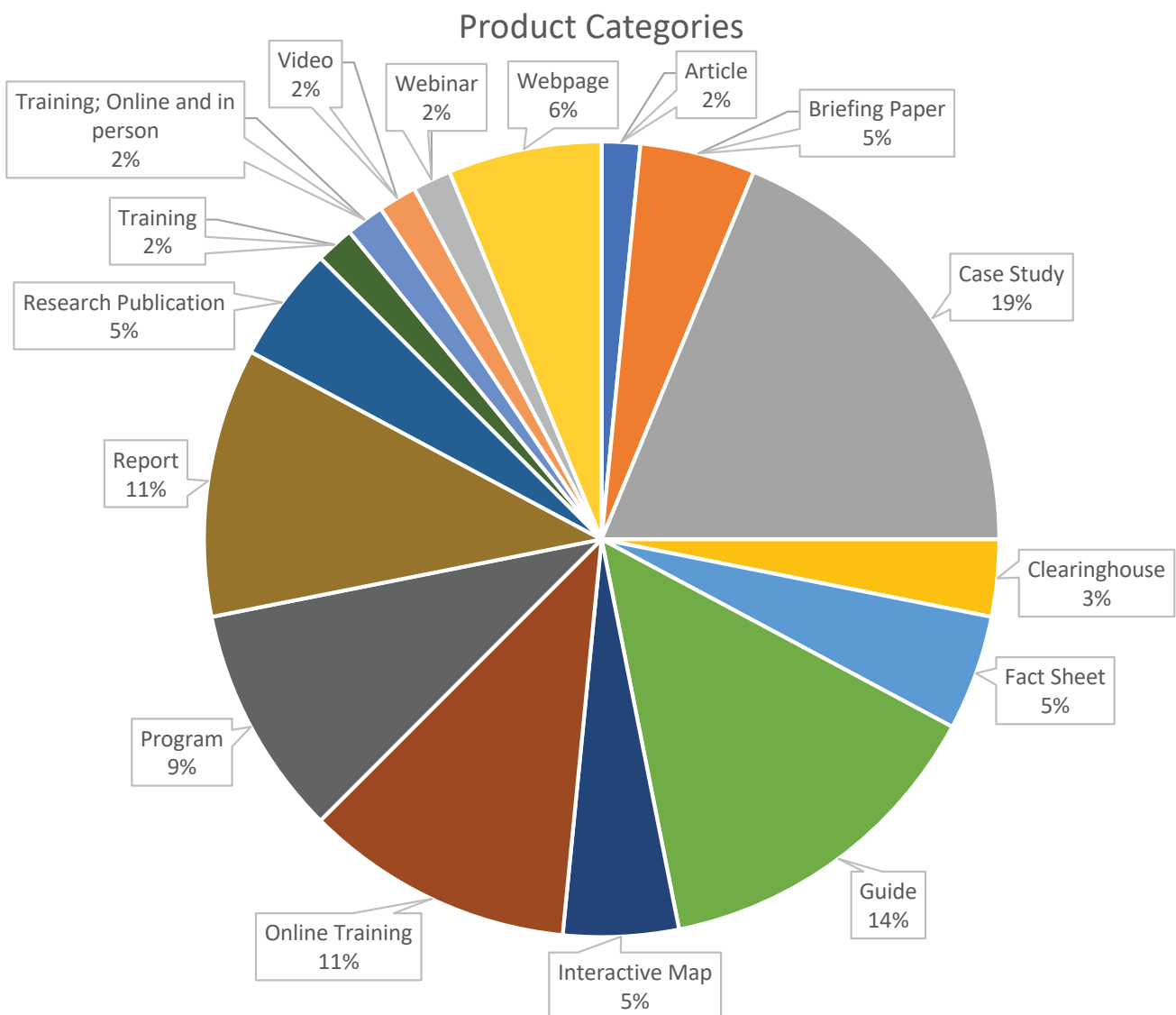


Figure 3. This chart breaks down the product types identified in the inventory.

Figure 3 (on page 27) breaks down project types for the resources identified during this inventory process. Product were categorized into resource categories. The single largest resource type are stand-alone case studies, accounting for 19% of all resources, followed by guides (14%), online trainings (11%), and reports (11%).

Over a third of resources present information in multi-media formats, such as webinars, webpages, interactive maps, online trainings, and programs.

The in-person training category does not include live sessions presented at conferences. Recorded conference sessions are categorized as online training.

RECOMMENDATIONS

The resources identified during this inventory process effectively communicate the value of nature-based solutions. Using a coordinated approach, the partner organizations can implement an educational campaign that communicates nature-based solutions with different target audiences.

The recommendations proposed in this section are based on findings from the evaluation and analysis and integrate campaign objectives identified by the Nature-Based Connects team. Additional recommendations were based on experience from previous multi-stakeholder campaigns APA participated in in the past.

Process

A collective implementation process can help partners identify key messages and share information with audiences in a uniform way. Figure 4 illustrates a sample process for jointly creating and implementing an educational campaign focused on nature-based solutions.

The following sections provide more details on process steps and component activities.

Identify shared values, goals, and objectives and success factors

The first step to implementing a coordinated educational campaign includes identifying a joint vision for the educational campaign. This vision will inform educational campaign goals, objectives, desired outcomes and outputs, and metrics for success factors.

Clearly communicate campaign vision. The vision can be informed by the opportunity statement developed by the group (“the Digital Coast Partners have identified a need to do a better job at educating students, the public, professional staff, and local elected officials on the value of using nature-based solutions.”). A vision statement would identify how the future would be different with successful implementation of an educational campaign.

- An example of a vision statement would be “This educational campaign will educate the public, professional staff/local government staff, and local elected officials on the value of using nature-based solutions to address flooding.”

Identify campaign goals. A goal broadly defines the desired outcome from the educational campaign. Examples of campaign goals include:

- Enhance understanding of nature-based solutions.
- Encourage practitioners to use of nature-based solutions.
- Demonstrate the value of nature-based solutions across disciplines.
- Others?

Identify campaign objectives. Campaign objectives inform campaign goals. These are specific and measurable. Examples of objectives include:

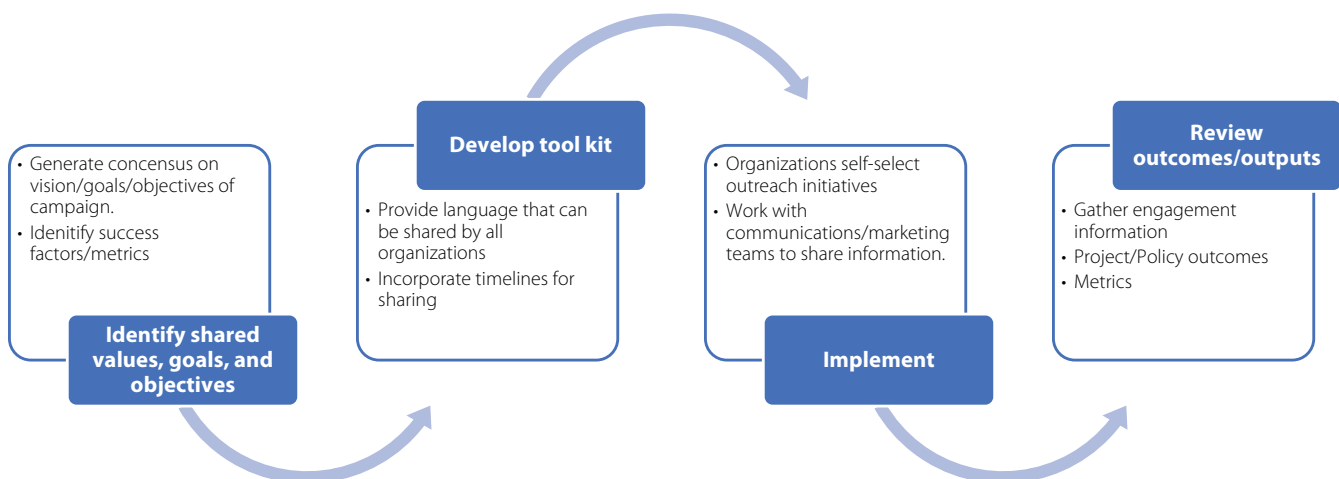


Figure 4. Components of an educational campaign include identifying shared values, goals, and objectives; sharing a tool kit; implementation; and reviewing outputs/outcomes.

- Increase engagement with online resources.
- Increase conference sessions highlighting nature-based solutions.
- Engage general audience through demonstration event.

Identify metrics for success factors. Metrics help identify whether the campaign has been successful. Metrics can be related to engagement with educational campaign materials, increase in knowledge on nature-based solutions, or increase in implementation of nature-based solutions. They include:

- Google Analytics information, such as percent increase in unique pageviews for shared resources
- Number of shared messages on social media platforms
- Self-reported knowledge gain using survey at the end of a project campaign
- Self-reported increase in implemented projects related to nature-based solutions

Identify length of the campaign. The length of the campaign can have a significant impact on final framework. APA's communications team recommends a year-long campaign to provide opportunities for multiple points of contact with target audiences and to provide flexibility with sharing messages.

Identify outputs. Outputs are products generated by the educational campaign. These outputs are connected to objectives and metrics. They may include:

- A combined mark (or logo)
- New materials (factsheet/web graphic) to share information about resources
- Conference session presentation or other presentation materials
- A survey to identify success of educational campaign
- A campaign website

Campaign Website Considerations

The project scope includes language about creating a project website. A website or web page can provide opportunities to elevate the campaign, but it is important to identify the specific functions of such a site. Examples of functions include sharing an inventory of resources, gathering feedback through surveys, or collecting project information from organization members.

A website or web page could provide a central location to house inventory information and an opportunity to collect data on engagement, including Google Analytics information to address metrics. **Would the**

campaign benefit from creating a separate website/platform for case studies (as originally stated in the scope), or would it make sense to use existing websites and platforms?

If developing a project website is preferable, it may benefit from being hosted on the Digital Coast site. This way, the campaign is not creating a new space for conversation, but rather, joining an existing conversation. APA's digital communications team recommends joining existing conversations whenever possible.

Alternatively, campaign information can make use of existing networks by connecting with other projects related to nature-based solutions, such as the Naturally Resilient Communities site. This may make it more challenging to capture web traffic information, but it would bring this information to audiences that are engaged with this conversation.

Develop Toolkit

The second step of a coordinated educational campaign is to develop shared language that will appeal to partner organizations and target audiences. Once partner organizations select collective messages, these options can be presented in a media toolkit that includes sample language, graphics, and a campaign calendar for organizations to implement. The toolkit can also include different implementation tactics, such as sample social media posts, presentations, and guidelines for demonstration events.

Implement

Partner organizations identify what campaign recommendations are feasible. During this phase, partners meet with their respective communications and marketing departments to identify solutions.

As mentioned above, the most effective way to communicate to the right audience is to go where the conversation already takes place (e.g., use existing hashtags on Twitter, participate in existing discussions on Facebook, etc.).

Furthermore, it is recommended to share an "archive" of messaging and comments that were posted by each partner organization between the campaign participants. This archive can provide content and messaging produced by one of the organizations that partner organizations can reuse, amplifying campaign messages between multiple audiences.

To make the campaign most successful, it is also recommended to select a specific target audience that will find the content most useful instead of sending it to the entire membership of a partner organization (e.g., for APA, planning practitioners who deal with flooding in coastal areas).

Table 8. This table includes sample contents for a media toolkit. Components can be added or removed depending on partner organization preferences and campaign objectives and goals.

Recommended Toolkit Content	Partner Organization Decisions
Define ways on how to participate	<ul style="list-style-type: none"> Most used media outlets Most used media outlets Partner organization capacity for sharing information
Message framework	Value statements <ul style="list-style-type: none"> Why should be care message (for each organization's audience) – one umbrella message and several organizations-related messages Goals Objectives General messaging <ul style="list-style-type: none"> What—identify the problem Why—provide reasons for nature-based solutions, such as benefits of nature-based solutions and disadvantages of grey infrastructure. How—build capacity of audience by providing EDU products Call to action—describe what the target audiences should do in order to tackle the problem
Messaging calendar / content strategy	Messaging calendar, or theme-based calendar Content strategy with key themes to coordinate organizational messaging
Campaign Visuals	Determine how to present the campaign as a collaborative effort <ul style="list-style-type: none"> Consistent visuals could strengthen the campaign image How do we represent all partner organizations/logos?
Social media hashtags and graphics	What conversations are taking place online? <ul style="list-style-type: none"> #nature is one of the most popular Twitter hashtags Graphics to support cohesive branding, themes and messages
Messaging templates	Include materials for all media outlets Organized by messaging calendar, but flexible to allow other content
Conference materials	Helpful to create template for conference presentations? This can be tweaked by individual organizations Other conference materials, such as interactive boards, brochures, grab and go resources, etc.
Demonstration project guidance	Include materials needed for a demonstration project.

Review outcomes

The final step of a coordinated educational campaign is to identify if the team met goals and objectives. During this phase, member organizations could analyze information gathered after the implementation phase to identify if the campaign met the goals identified in the beginning of the campaign process. A review process can provide more information on opportunities for improvements, newly identified messaging or resource needs, and strengths and successes of the educational campaign.

Campaign Messages

An effective educational campaign can leverage existing communication efforts from the partners and incorporate new messaging that is congruent across partner organizations. Based on the assessment, these are our recommendation:

- Emphasize key themes found in inventory and analysis. These themes are centered around the fact that nature-based solutions provide social, environmental, and economic benefits.
- Use existing language to refer to nature-based solutions. This can incorporate language used by partner organizations to describe nature-based solutions. A representative from American Rivers suggested that natural infrastructure can be a unifying term for all terms used to describe nature-based solutions.

Thematic Groupings

An educational campaign can highlight existing resources through thematic groupings. Below are some recommendations for grouping options:

By topic

- Geographies
 - Coastal
 - Inland
 - Urban
- Self-assessment
 - Mapping tools to identify opportunities
 - Options for communities
- Policy
 - Recommendations
 - Engagement
 - Examples from around the country

By compelling reason. The examples below are informed by work on [NRCsolutions.org](https://nrcsolutions.org).

- Nature-based solutions support environmental function.
- Nature-based solutions encourage social systems.
- Nature-based solutions can improve health.
- Nature-based solutions benefit local and regional economies.

Themes could focus on routine nature events, such as hurricane season, or around activities that take place at specific points of the year, such as spending more time near water in the summer.

Additionally, the campaign could focus on signature programs or products that are relevant to all target audiences. This inventory includes many case studies in all formats, including fact sheets, recorded sessions, and as program components. Could this educational campaign provide an opportunity to spotlight select case studies and connect related guidance materials?

Campaign tactics

Previous discussions between the partner organizations generated ideas on specific campaign tactics. The tactics listed below can be part of a media kit.

- Coordinated social media messaging
 - Create a nature-based solutions toolkit with messaging, graphics, and other materials that can be shared in serial publications.
- More nature-based solution programming at partner events
 - Cross-participation of the partner organizations at each other's conferences
 - Organization of NBS-related side-events
 - Development of template presentations, brochures, banners, or other marketing material to promote NBSs
- A website with case studies
 - There are options for creating a new presence and to connect with existing programs. A campaign site could be hosted through Digital Coast. Other projects that address nature-based solutions might be appropriate. [NRCsolutions.org](https://nrcsolutions.org) is a comprehensive resource that features case studies and strategies. This project is coordinated through TNC.
- Encourage members to share their products. Some organizations expressed that their members create content that might be relevant. Asking members to share their products can provide an opportunity to highlight work created by organization on different platforms.

APPENDIX A: INTERVIEW QUESTIONS

Nature-Based Solutions Interview Questions

Organization name:

What is your organizational structure? Explain your local chapters, divisions, etc.

Please list your existing nature-based products. If your organization has multiple products related to nature-based solutions, answer items a through h for each project.

- Product name
- Product type
 - Education, Training (webinar, in person training)
 - Research publication (white paper, report, guide, etc.)
 - Other
- Target audience
- Scale
 - National
 - Regional
 - Local
- Product summary. 1–2 sentences describing the product.
- Funder (if applicable):
- Point of contact name:
- Point of contact email:

Please list existing nature-based communication messages:

- What is the message?
- Is it national, regional, or local?
- What are your media communication outlets?
- Which of your communication outlets are the most effective for this topic?
- Please provide the name of your organization's communications director.
- Have they worked specifically on nature-based communication messages?

Annual events

- With a lens towards nature-based programming, what events (annual conferences, etc.) does your organization hold annually?
- What is the timeline for session proposal and participation for this event? If you have a webpage explaining this process, please include the URL.
- Is there anything else related to nature-based planning you would like to share that was not touched on?