



North Carolina Marine Debris Action Plan

January 2020

Acknowledgements

The North Carolina Marine Debris Action Plan is the result of a multi-year collaborative effort. Many thanks go to the participants of the two workshops and North Carolina Marine Debris Symposium session, who provided the content of this plan; to the leadership team that led and executed the process of developing the plan and provided financial support for meetings and workshops; to the North Carolina Coastal Reserve and National Estuarine Research Reserve for supporting the process with facilitation services; and to the advisory and implementation committee for helping to guide the plan in its final stages.

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Advisory and Implementation Team:



Contact information for the Advisory and Implementation Team is found in [Appendix A](#)

A complete list of Action Plan participants is found in [Appendix B](#)

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List of Acronyms

ADV	Abandoned and Derelict Vessel
CAMA	Coastal Area Management Act
EPA	United States Environmental Protection Agency
GIS	Geographic Information System
NCDEACS	North Carolina Division of Environmental Assistance and Customer Service
NCDCM	North Carolina Division of Coastal Management
NCDEQ	North Carolina Department of Environmental Quality
NCDNCR	North Carolina Department of Natural and Cultural Resources
NCDOT	North Carolina Department of Transportation
NCDWM	North Carolina Division of Waste Management
NCDWQ	North Carolina Division of Water Quality
NCWRC	North Carolina Wildlife Resources Commission
NOAA	National Oceanic and Atmospheric Administration
NPS	National Park Service
USCG	United States Coast Guard
USFWS	United States Fish and Wildlife Service
UNC	University of North Carolina

Introduction

The North Carolina Marine Debris Action Plan (“Action Plan”) provides a strategic framework for prevention and removal of marine debris along the North Carolina coast and is based upon a recent evaluation of past and current attempts to address the problem. Despite efforts of many to address marine debris, the problem persists. This Action Plan is meant to inspire strategic coordination, focus, and direction for the organizations and communities that address or will address marine debris over the next five years and into future generations. North Carolina can maintain and perpetuate one of the cleanest and most productive coastal and marine environments in the world with support from the Action Plan.

The Marine Debris Act (33 U.S.C. §1951 et seq.; P.L. 109-449) establishes the definition of marine debris as “... any persistent solid material that is manufactured or processed and directly or indirectly, intentionally or unintentionally, disposed of or abandoned into the marine environment.” It is a widespread pollution issue of local, national, and international significance that impacts human health and welfare, wildlife, habitats, and economies. Addressing marine debris can prevent negative impacts and support healthy coastal economies and ecosystems.

Over the years, various programs and projects have been implemented in North Carolina to help prevent and remove marine debris; however, no single agency or program coordinates coastwide marine debris management efforts. The North Carolina Beach Sweep began in 1987 and transformed into a statewide coordinated cleanup program managed by the nonprofit, North Carolina Big Sweep. Dissolved in 2015, North Carolina Big Sweep events and programs are no longer coordinated by a central nonprofit, but are executed by some counties that chose to continue the effort.

In 2017, the North Carolina Coastal Federation (Coastal Federation) initiated a process to develop a coordinated effort to strategically address marine debris in North Carolina. The Coastal Federation convened a Leadership Team composed of partners from North Carolina Coastal Reserve and National Estuarine Research Reserve, North Carolina Sea Grant, Onslow County Solid Waste and North Carolina Marine Debris Symposium. In an effort to assess the current status of marine debris occurrence and management in the state, the leadership team engaged local and state government agencies, nonprofit organizations, academic institutions, and industry partners. The assessment revealed several types of debris as being problematic: consumer, derelict fishing gear, abandoned and derelict vessels, and storm-generated. It was also made clear that managing marine debris issues is complex, often falling to multiple entities and jurisdictions on the local, state, and federal levels or no agency at all. The full assessment entitled “[The State of Marine Debris in North Carolina: An Assessment of Prevention and Removal Efforts](#)” is a companion document to this Action Plan.

Purpose and Action Plan Development Process

The overall purpose of the Action Plan is to guide work over the next five years that will ***strategically reduce the amount of marine debris and its impacts in coastal North Carolina*** through tangible and measurable actions.

The Action Plan is a product of stakeholder input provided during workshops, professional meetings, and online surveys. Stakeholder affiliations are included in [Appendix B](#). The planning process was initiated by the

Coastal Federation and was supported by the leadership team. A summarized timeline of activities that contributed to the Action Plan is provided below and details can be found in [Appendix C:](#)



Action Plan Provisions

Overall Action Plan Duration: The overall Action Plan duration is five years. After five years, the Action Plan will be evaluated and updated by partners.

Action Plan Operational Cycle: The Action Plan operational cycle is one year. At the end of an operational cycle, partners will collate Action Plan accomplishments.

Leadership Team: Coordination of an Action Plan leadership team was led by the North Carolina Coastal Federation with collaborative process support provided by a trained facilitator from the North Carolina Coastal Reserve. Other team members included partners from North Carolina Sea Grant, Onslow County Solid Waste, Coastal Carolina Riverwatch, and the North Carolina Marine Debris Symposium. Together, team members established and executed a collaborative process that resulted in a published Action Plan. The leadership team consists of many of its initial members, although there are opportunities for others to join or leave as needed. This team, or parts thereof, is responsible for coordinating the advisory and implementation team and ensuring that the Action Plan is executed according to its provisions.

Advisory and Implementation Committee: The advisory and implementation committee consists of the leadership team, along with a diverse group of stakeholders with a vested interest in marine debris. The committee will work together to advise on and participate in implementing the Action Plan. Members meet three to four times a year and commit to serving a minimum of one year.

Communication: Updates, coordination, and information sharing will be provided through a list-serv that will include all Assessment and Action Plan participants and other interested marine debris stakeholders. The leadership team, advisory and implementation committee, subcommittees, and other teams will participate in facilitated meetings in-person and via conference calls. An annual progress report will be published by the North Carolina Coastal Federation with assistance from partners to encourage accountability, demonstrate, and track success, as well as inspire and motivate Action Plan partners.

Foundations: The Action Plan will be executed with consideration to the following:

- **Creativity and Credibility:** diverse experts working together are a trusted source of information and solutions.
- **Collaboration:** working together will ensure that realistic and effective strategies are developed and implemented.
- **Efficiency:** wise use of available knowledge and resources will maximize productivity.
- **Empowerment and Accountability:** collaborations enable and empower organizations to do what is necessary to reduce marine debris.

Goals, Objectives, Strategies, and Actions

Goals, objectives, strategies, and actions of the Action Plan are presented in the following two formats for maximum utility across stakeholders:

“Roadmap” of Goals, Objectives, Strategies, and Actions ([Appendix D](#)). An extensive list of potential marine debris reduction strategies and actions were generated by stakeholders through facilitated activities and online surveys during development of the Action Plan. The list of ideas was synthesized and organized into a detailed roadmap of five goals and associated detailed objectives, strategies, and actions with implementing organizations identified. Strategies not selected for near-term implementation were removed and are included in [Appendix E](#) for future consideration. The primary purpose of this format is to serve as a detailed reference for stakeholders who helped develop the Action Plan and/or are implementing strategies and actions.

Strategic Plan with Goals and Priority Objectives. To ensure maximum utility of the Action Plan for a diverse array of stakeholders, the detailed Action Plan roadmap was consolidated into a strategic plan with priority objectives found below. The strategic plan will also exist as a standalone document to be used when there is a need for a short, easily digestible version of the Action Plan.

Goal 1: Lead and Coordinate

Lead, coordinate, and communicate in a way that effectively engages partners and other stakeholders to carry out the Action Plan and advance the issue of marine debris at the state level.

Objectives

- Identify core leadership team and establish marine debris stakeholder advisory and implementation committee to support the state Action Plan.
- Publish, distribute, and implement the Action Plan.
- Encourage state level planning, coordination, and assistance for marine debris issues.
- Create a communications strategy centered around the Action Plan that includes at least two stakeholder engagement events per year.

Goal 2: Prevent

Prevent the introduction of marine debris with programs that increase awareness, improve policy, and inspire behavior change.

Objectives

- Collaborate with businesses to implement marine debris reduction strategies.
- Develop a marine debris education strategy for K-12 students.
- Develop two marine debris prevention programs specific to target audiences.
- Implement and promote [North Carolina Shellfish Mariculture Best Management Practices](#).
- Work with state and local governments to improve public policy that supports the prevention of marine debris.

Goal 3: Remove

Remove chronic and storm debris in a strategic and efficient way, inspiring and assisting citizens and other stakeholders to participate as appropriate.

Objectives

- Target select volunteer groups to assist with marine debris cleanups, while maximizing participant and public awareness of the issue.
- Establish an annual paid cleanup of marine debris.
- Increase readiness and capacity for engaging in storm response.
- Devise and implement a microplastic wastewater reduction strategy.

Goal 4: Prevent and Remove Abandoned and Derelict Vessels (ADV)

Implement strategies that support removal of existing derelict vessels, increased capacity for prevention, and careful environmental response.

Objectives

- Establish and maintain a comprehensive georeferenced database of derelict vessels in coastal North Carolina.
- Remove existing abandoned and derelict vessels with state and federal funds that have been provided since Hurricane Florence.
- Establish and adequately fund a formal state program to prevent and remove abandoned and derelict vessels.
- Better coordinate state and federal policy, planning, and response related to ADVs, including ADVs generated during storm events.
- Actively encourage county government ordinances that prevent and remove abandoned and derelict vessels.
- Minimize damage to sensitive habitats caused by displaced vessels.

Goal 5: Research and Assessment

Identify, support and conduct research to understand the extent and impacts of marine debris and monitor trends to progressively improve strategies.

Objectives

- Establish standardized protocols for marine debris cleanups that would contribute to quantitatively assembling and analyzing debris status and trends.
- Produce an annual list of research priorities related to marine debris.
- Improve understanding of plastic debris entering coastal waters.

N.C. Marine Debris Action Plan

Appendix A.

Advisory and Implementation Committee Members

Name	Affiliation	Email
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Appendix B.

Action Plan Stakeholder List: Organizations and agencies that have been involved in the creation of the Action Plan through participation in Action Plan workshops and/or surveys.

American Chemistry Council
Association of Plastics Recyclers (APR)
Atlantic Coast Marine Group, Inc. dba TowBoatUS
Bald Head Island Conservancy
Beaufort County, South Carolina
Blockade Runner Beach Resort
BlueTube, Inc.
Brunswick County Government
By the Brook Productions LLC
Carolina Ocean Studies
Carteret County Big Sweep
Carteret County Crossroads
Carteret County Emergency Services
Carteret County Public Schools - East Carteret High School
City of New Bern
City of Southport
City of Wilmington
Clements Marine Construction Inc.
Coastal Carolina Community College
Coastal Carolina Riverwatch
Coastal Review Online
Crystal Coast Ocean Friendly Establishments
Crystal Coast Waterkeeper
Dare County
Department of Environmental Management
Down East Council
Duke University Environmental Law and Policy Clinic

Duke University Marine Lab
Emerald Isle Sea Turtle Patrol
Emerald Isle Sea Turtle Protection Program - permit
Fort Caswell: Environmental Stewardship Program
Fort Macon Sail and Power Squadron
Friends of Pleasure Island State Park
Friends of the Reserve
Halyburton Park
Jennette's Pier (N.C. Aquariums)
Keep Onslow Beautiful
League of Women Voters - Dare County
Mayor, Town of Beaufort
More Recycling
National Park Service - Outer Banks Group
National Park Service - Cape Hatteras National Seashore
National Park Service - Cape Lookout National Seashore
NOAA Fisheries - Habitat Conservation
NOAA Marine Debris Program
NOAA - Office of Response and Restoration
N.C. Coastal Federation
NCDEQ - Division of Water Resources
NCDEQ - Albemarle-Pamlico National Estuary Partnership
NCDEQ - N.C. Coastal Reserve and National Estuarine Research Reserve
NCDEQ - N.C. Division of Coastal Management
NCDEQ - N.C. Division of Environmental Assistance and Customer Service
NCDEQ - N.C. Division of Marine Fisheries
NCDEQ - N.C. Division of Waste Management
NCDEQ - N.C. Division of Waste Management, Solid Waste Section
NCDNCR - N.C. Aquariums - Fort Fisher
NCDNCR - N.C. Aquariums - Jennette's Pier

NCDNCR - N.C. Aquariums - Pine Knoll Shores
NCDNCR - N.C. Aquariums - Roanoke Island
NCDNCR - N.C. Historic Sites - Brunswick Town/Ft. Anderson State Historic Site
NCDNCR - N.C. Maritime Museum - Beaufort
NCDNCR - N.C. State Parks - Fort Fisher State Recreation Area
NCDNCR - N.C. State Parks - Fort Macon
NCDNCR - N.C. State Parks - Hammocks Beach
NCDNCR - N.C. State Parks - Jockey's Ridge
N.C. Department of Public Safety - N.C. Emergency Management
NCDOT - State Maintenance Operations
N.C. Sea Grant
N.C. Sentinel Site Cooperative/N.C. Sea Grant
N.C. State University
N.C. State University - N.C. Cooperative Extension – N.C. Big Sweep
N.C. State University, Center for Marine Sciences and Technology
N.C. State University, CMAST Youth Programs
N.C. State University, College of Veterinary Medicine, Center for Marine Science and Technology
N.C. Wildlife Resources Commission - Law Enforcement Division
N.C. Wildlife Resources Commission - Wildlife Diversity Program
Oak Island Beach Preservation Society
Oak Island Sea Turtle Protection Program
Ocean Conservancy
Ocean Friendly Establishment s- Crystal Coast
Office of U.S. Senator Thom Tillis
Onslow County Schools - Dixon Middle School AVID 8th
Onslow Solid Waste Department
Parrot Heads of N.C.
Peltier Creek Marina Inc.
Plastic Ocean Project, Inc.
Science by the Sea

Sea Turtle Hospital (KBSTRRC)
Sierra Club - Croatan Group
Sonoco Recycling - Jacksonville
Sound Rivers
Sturgeon City
Surfrider Foundation - Cape Fear Chapter
Surfrider Foundation - Outer Banks Chapter
Town of Atlantic Beach
Town of Beaufort
Town of Cedar Point
Town of Leland
Town of Manteo
Town of Morehead City
Town of Oriental
Town of Swansboro
Town Of Wrightsville Beach
Tyrrell County Emergency Management
UNC Institute of Marine Sciences
UNCW Marine Quest
U.S. Army Corps of Engineers - Navigation Section
U.S. Coast Guard
U.S. Coast Guard Auxiliary- Flotilla 09-11
U.S. Fish and Wildlife Service - Alligator River and Pea Island National Wildlife Refuges
U.S. Fish and Wildlife Service - Cedar Island National Wildlife Refuge
U.S. Power Squadrons, National Environmental Committee
Wrightsville Beach Keep It Clean

Appendix C.

2017-2019 Timeline and Outcomes of the NCMDAP Development Process

2017

- **January 2017, Leadership team.** The North Carolina Coastal Federation convened a leadership team of stakeholders to conduct an assessment of the occurrence of debris and debris management efforts along the coast.
- **August 2017, Online stakeholder survey.** Marine debris stakeholders participated in an online questionnaire about their perceptions and knowledge of marine debris in coastal North Carolina. They were also asked for two solutions to help address marine debris in North Carolina. Potential respondents were encouraged to participate in the survey if they were active in the following marine debris activities:
 - Removal and/or disposal
 - Identification of problem debris locations
 - Recruitment and/or management of volunteers
 - Development or enforcement of policy or laws (or interested in pursuing)
 - Waste management
 - Development and/or implementation of best management practices
 - Provide rewards and/or recognition to organizations/businesses that implement best management practices/reduction strategies
 - Research and technology
 - Outreach and education (formal and non-formal educators)
 - Advocacy
 - Regulatory
 - Wildlife rescue and/or rehabilitation (under permit only)

The survey was targeted to hundreds of stakeholders through the following: North Carolina Environmental Educators list-serv, North Carolina Marine Debris Symposium email list, Keep America Beautiful list-serv, County Big Sweep coordinators, North Carolina Coastal Training Program email list, organizational social media pages of the leadership team, and individual contacts identified by the leadership team such as public land managers, select businesses and legislative staff, contacts for the North Carolina Marine Debris Emergency Response Guide, and participants in a prior state-level abandoned and derelict vessels meeting. Survey results are found in an appendix of ["The State of Marine Debris in North Carolina: An Assessment of Prevention and Removal Efforts."](#)

- **September 2017, N.C. Marine Debris Symposium.** The leadership team introduced the idea of a coastwide marine debris action plan, presented an outline of the assessment, and gathered initial input from stakeholders.

2018

- **January 2018, Stakeholder Feedback.** Stakeholders digitally provided feedback on the draft assessment.

- **February 2018, Debris-Free N.C. Workshop.** Marine debris stakeholders participated in a workshop to begin developing actionable solutions to the marine debris problem using the Strategic Doing™ method. Activities were centered around the framing question, “Imagine if people and wildlife of coastal North Carolina never encountered marine debris. What would that be like?”
- **November 2018, published** [“The State of Marine Debris in North Carolina: An Assessment of Prevention and Removal Efforts.”](#)
- **November 2018, NOAA Southeast Regional Marine Debris Action Plan.** The leadership team and other state marine debris stakeholders participated in a regional action plan workshop to share ideas and where appropriate, ensure that the North Carolina and Southeast plans complement each other.

2019

- **February 2019, N.C. Marine Debris Action Plan Workshop.** Participants reviewed, discussed, and when needed, provided edits to the list of goals, actions, and strategies that had been developed during the entire Assessment and Action Plan process. The leadership team incorporated workshop input to produce a solid draft of Plan strategies and action.
- **April 2019, Online Feedback Survey.** Stakeholders provided feedback on the draft Plan strategies and actions that were refined during the February workshop. Stakeholders had the opportunity to express interest in participating in specific actions if they had not already committed to do so at an earlier date.
- **May 2019, Strategies and Actions Finalized.** The leadership team reviewed feedback gathered from stakeholder review of the refined strategies and actions. If one or more implementing organizations were not assigned to an action, the item was saved as a “future action” and placed in Appendix B of the Plan.
- **July 2019, First meeting of the Action Plan Advisory and Implementation Committee.** Committee members established steps for completing the Action Plan, including formation of an editing sub-committee.
- **December 2019, Edits Finalized.** Edits were finalized by the leadership team and the advisory committee planned the next steps for releasing, promoting, and executing the Action Plan.
- **January 2020, Plan Published.**

Appendix D

Roadmap of Goals, Objectives, Strategies, and Actions

GOAL 1: LEAD AND COORDINATE	
<i>Lead, coordinate, and communicate in a way that effectively engages partners and other stakeholders to carry out the plan actions and strategies to advance the issue of marine debris at the state-level.</i>	
Objective 1.1: Publish, distribute, and implement the Action Plan.	
Strategies and Actions	Partner(s)
1.1.1 Develop a communications strategy for distributing and promoting the Action Plan.	Action Plan Leadership Team, Action Plan Advisory and Implementation Committee
1.1.2 Develop a strategy to coordinate Action Plan implementation.	Action Plan Leadership Team, Action Plan Advisory and Implementation Committee
Objective 1.2: Identify core leadership team and establish marine debris stakeholder advisory and implementation committee to support the Action Plan.	
Strategies and Actions	Partner(s)
1.2.1: Confirm participation of organizations that expressed interest in joining the committee.	Action Plan Leadership Team
1.2.2: Establish a schedule and guidelines for the committee.	Action Plan Advisory and Implementation Committee
Objective 1.3: Create a communications strategy centered around the Action Plan that includes at least two stakeholder engagement events per year.	
Strategies and Actions	Partner(s)
1.3.1: Establish a marine debris stakeholder email list-serv for North Carolina.	Albemarle-Pamlico National Estuary Partnership
1.3.2: Establish guidelines for the use of the list-serv and send out to subscribers.	USFWS
1.3.3: Coordinate at least two stakeholder engagement events per year.	Action Plan Leadership Team, and Action Plan Advisory and Implementation Committee, N.C. Marine Debris Symposium
Objective 1.4: Coordinate and lead the Action Plan in a way that is complementary to the S.E. regional plan and collaborate with local governments.	
Strategies and Actions	Partner(s)
1.4.1: Review the draft S.E. regional plan and incorporate strategies and actions as appropriate for the N.C. plan.	Action Plan Leadership Team, Duke University Marine Lab (Dan Rittschoff), Jennette's Pier, NOAA Marine Debris Program, NCDWQ, NCWRC, USFWS
1.4.2: Share the N.C. Marine Debris Assessment and Action Plan with coastal and environmental agencies, programs, and the General Assembly.	Action Plan Leadership Team, Action Plan Advisory and Implementation Committee, NCWRC, USFWS, NCDWQ, Jennette's Pier

1.4.3: Assist local governments with adopting policies that support prevention of marine debris (e.g., Ocean Friendly Establishments, building codes for water dependent structures, and construction site management).	Coastal Federation, Debris Free N.C. Work Group, NCDWQ, Jennette's Pier, Coastal Carolina Riverwatch, Crystal Coast Waterkeeper, and White Oak-New Riverkeeper Alliance
Objective 1.5: Encourage State and county-level planning, coordination, and assistance for marine debris issues.	
Strategies and Actions	Partner(s)
1.5.1: Highlight/quantify the impact of the former N.C. Big Sweep Program, by determining which counties are continuing on their own.	NCDWQ, Jennette's Pier
1.5.2: Brainstorm how a marine debris coordinator could work within the Department of Environmental Quality.	NCDCM, NCDWM, NCDWQ
Objective 1.6: Establish a method for engaging underserved areas, including unincorporated coastal areas.	
Strategies and Actions	Partner(s)
1.6.1: Launch "Stewards of Stump Sound" pilot project to engage unincorporated and/or underserved areas in and around Stump Sound with marine debris prevention and removal programming.	North Topsail Beach, American Chemistry Council, UNC-Chapel Hill, Coastal Carolina Riverwatch and White Oak-New Riverkeeper Alliance
1.6.2: Extend success of "Stewards of Stump Sound" project to other unincorporated and/or underserved areas.	NCDWQ

GOAL 2: PREVENT

Prevent the introduction of marine debris with programs that increase awareness, improve policy and inspire behavior change.

Objective 2.1: Collaborate with businesses to implement marine debris reduction strategies.

Strategies and Actions	Partner(s)
2.1.1: Encourage participation in voluntary certification programs that generate less waste (e.g. Ocean Friendly Establishments, NCDCM Clean Marina Program, N.C. Green Travel).	Crystal Coast Waterkeeper, US Power Squadron (Tom Myers), Jennette's Pier, NCDCM Clean Marina Program and Clean Boater (Pat Durrett)
2.1.2: Co-develop waste reduction plans with businesses that prevent marine debris and save costs.	N.C. Green Travel, NCDEACS
2.1.3: Develop additional criteria within N.C. GreenTravel applications that strongly encourage marine debris prevention.	N.C. Green Travel, NCDEACS

2.1.4: Encourage alternatives to single use plastics through programs such as Ocean Friendly Establishments, N.C. Stream Watch, Turtle Trash Collectors, and others.	Coastal Federation, Plastic Ocean Project, North Carolina Aquariums, Surfrider Foundation, Crystal Coast Waterkeeper, Jennette's Pier, Duke University Marine Lab, Debris Free N.C. Work Group, NCDWQ, UNC-Wilmington MarineQuest
2.1.5: Encourage participation in the NCDWM Clean Marina Program, including highlighting practices that generate less waste.	NCDWM Clean Marina Program
2.1.6: Reward businesses that take action to reduce debris through recognition at public events and through various types of media.	Debris Free N.C. Work Group
Objective 2.2: Marine debris experts and advocates conduct outreach to businesses.	
Strategies and Actions	Partner(s)
2.2.1: Incorporate marine debris research into outreach efforts for businesses.	Duke University Marine Lab, USFWS, Coastal Federation, Jennette's Pier
2.2.2: Educate on the proper disposal of plastic bottles and aluminum cans.	North Carolina Aquariums, Local Government Solid Waste Management Departments, Keep America Beautiful Affiliates, Carolina Recycling Association, Coastal Federation, Duke University Marine Lab, Debris Free N.C. Work Group, USFWS, Jennette's Pier
2.2.3: Create awareness of the impacts of polystyrene and ways to reduce its use.	N.C. Sea Grant, Duke University Marine Lab, Debris Free N.C. Work Group, NCDWQ, Coastal Federation, Jennette's Pier
Objective 2.3: Develop and implement a marine debris education strategy for K-12 students.	
Strategies and Actions	Partner(s)
2.3.1. Assess completeness of current K-12 educational efforts, identify gaps, deficiencies, and opportunities for improvement.	Duke University Marine Lab, UNC-Wilmington MarineQuest, Jennette's Pier
2.3.2: Add additional materials, programs, and/or activities to the strategy where needed.	Duke University Marine Lab, NCDWQ, UNC-Wilmington MarineQuest, Jennette's Pier
2.3.3: Incorporate the NOAA Marine Debris Program K-12 curriculum along with other relevant curricula into education strategy.	Duke University Marine Lab, NOAA Marine Debris Program, UNC-Wilmington MarineQuest, Jennette's Pier
2.3.4: Align programming with appropriate grade level standards within the course of study.	Duke University Marine Lab, UNC-Wilmington MarineQuest, Jennette's Pier
2.3.5: As part of education efforts, include exercises where students identify waste and propose reduction measures (ie. Disposables used in lunch rooms, foam trays).	Duke University Marine Lab, UNC-Wilmington MarineQuest, Jennette's Pier

2.3.6: Share appropriate educational resources with teachers (teacher workshops, teacher programs in schools).	Duke University Marine Lab, N.C. Coastal Reserve, UNC-Wilmington MarineQuest, Jennette's Pier
2.3.7: Continue the current K-12 classroom and field programs and improve them based on the Action Plan strategies.	Coastal Federation, Duke University Marine Lab, UNC-Wilmington MarineQuest, Jennette's Pier
2.3.8: Provide training on and access to the NOAA Southeast Marine Debris Collaborative Portal.	NOAA Marine Debris Program
Objective 2.4 Encourage recycling at schools.	
Strategies and Actions	Partner(s)
2.4.1: Create a list of counties that provide school recycling.	NCDEACS, Duke University Marine Lab, Jennette's Pier
2.4.2: Provide outreach assistance to areas that do not provide school recycling.	Jennette's Pier, NCDEACS, Carolina Recycling Association
Objective 2.5: Use public events as educational platforms to reduce debris, i.e. boat shows, Duke Open House, Take A Kid Fishing.	
Strategies and Actions	Partner(s)
2.5.1: Develop and/or use existing interactive displays to engage all ages; create and play existing videos on the topic that can be played on loop during events.	Bald Head Island Conservancy, NPS-Cape Lookout National Seashore, Coastal Federation, Duke University Marine Lab, UNC-Wilmington MarineQuest, Plastic Ocean Project-North American Marine Environment Protection Association, New River Roundtable, Sturgeon City, N.C. Coastal Reserve, North Carolina Aquariums, Keep Onslow Beautiful, Onslow Solid Waste, Jennette's Pier
Objective 2.6: Implement and promote N.C. Shellfish Mariculture Best Management Practices.	
Strategies and Actions	Partner(s)
2.6.1: Promote the use of Best Management Practices (to prevent marine debris) for shellfish mariculture.	Coastal Federation
2.6.2: Share the Best Management Practices document with N.C. Sea Grant, Shellfish Growers Association, Carteret Community College, and others and encourage them to disperse the plan.	Coastal Federation, N.C. Division of Marine Fisheries
Objective 2.7: Include priority messaging in marine debris education and outreach efforts.	
Strategies and Actions	Partner(s)
2.7.1: Develop and distribute outreach materials that target recreational crabbers to prevent crab pot loss.	N.C. Sea Grant, Duke University Marine Lab, NCDWQ, Jennette's Pier
2.7.2: Educate on the proper disposal of plastic bottles and aluminum cans.	Local Government Solid Waste Departments and Public Works Divisions, NCDEACS, Carolina

	Recycling Association, Keep America Beautiful Affiliates, Duke University Marine Lab, NPS-Cape Lookout National Seashore, Debris Free N.C. Work Group, UNC-Wilmington MarineQuest, Jennette's Pier
2.7.3: Create awareness of the impacts of polystyrene and ways to reduce its use.	Duke University Marine Lab, NPS-Cape Lookout National Seashore, Debris Free N.C. Work Group, USFWS, UNC-Wilmington MarineQuest, Jennette's Pier
2.7.4: Increase visibility and use of the NCDOT's Swat-A-Litterbug.	Debris Free N.C. Work Group, NCDOT Office of Beautification, NCDOT Litter Management Section, N.C. Solid Waste Enforcement Officers Association, NCDWQ, Jennette's Pier
2.7.5: Encourage alternatives to single use plastics.	Duke University Marine Lab, NPS-Cape Lookout National Seashore, Debris Free N.C. Work Group, UNC-Wilmington MarineQuest, Jennette's Pier
2.7.6: Incorporate marine debris research into public outreach and education efforts.	Duke University Marine Lab, NPS-Cape Lookout National Seashore, Coastal Carolina Riverwatch, Crystal Coast Waterkeeper, White Oak-New Riverkeeper Alliance, Debris Free N.C. Work Group, UNC-Wilmington MarineQuest, Jennette's Pier
2.7.7: Acknowledge businesses that take measures to reduce debris.	Debris Free N.C. Work Group, Duke University Marine Lab, Jennette's Pier
Objective 2.8: Engage local governments.	
Strategies and Actions	Partner(s)
2.8.1: Work with local governments to ensure availability and capacity of waste/recycling receptacles on beaches (e.g. including information on cans to report them being full).	Coastal Federation
2.8.2: Execute countywide cleanups that engage local governments and local volunteer groups.	Carteret Big Sweep, Jennette's Pier, Town of Nags Head, Topsail Longboard Association, Surfrider Foundation, Plastic Ocean Project, Coastal Carolina Riverwatch, Crystal Coast Waterkeeper, White Oak-New Riverkeeper Alliance

Objective 2.9: Increase the visibility and use of monofilament recycling programs.	
Strategies and Actions	Partner(s)
2.9.1: Recruit and/or reinvigorate volunteer groups to install and manage bins.	N.C. Maritime Museum, NCDWQ, UNC-Wilmington MarineQuest, Jennette's Pier
2.9.2: Promote monofilament recycling through fishing retailers.	Jennette's Pier
Objective 2.10: Encourage and/or establish use of reusable dinnerware (e.g., coffee cups and take out containers) at businesses.	
Strategies and Actions	Partner(s)
2.10.1: Examine local health code laws as they relate to patron use of reusable dinnerware.	Coastal Federation
Objective 2.11: Work with state and local governments to improve public policy that supports the prevention of marine debris.	
Strategies and Actions	Partner(s)
2.11.1 Develop and promote model ordinances with local governments that will reduce marine debris.	Coastal Federation
2.11.2 Propose enhancements to state building code to make waterfront structures (docks) more storm resilient.	Coastal Federation

GOAL 3: REMOVE	
<i>Remove chronic and storm debris in a strategic and efficient way, inspiring and assisting citizens and other stakeholders to participate as appropriate.</i>	
Objective 3.1: Expand use of existing technologies and mapping resources to identify and prioritize debris removal efforts.	
Strategies and Actions	Partner(s)
3.1.1: Use GIS mapping and drones to find problem debris areas and direct cleanups.	Duke University Marine Lab (locally), Jennette's Pier
3.1.2: Utilize and publicize removal resources to coastal professionals, such as the NOAA National Geodetic Survey post-storm aerial imagery.	Debris Free N.C. Work Group, NOAA Marine Debris Program, Coastal Federation, NCDEQ
3.1.3: Request NOAA and others to expand post-storm damage assessment flights.	NCDCM
Objective 3.2: Establish and leverage centralized media campaigns to more effectively market cleanups.	
Strategies and Actions	Partner(s)
3.2.1: Establish "Debris-Free N.C." media sites to advertise cleanup events.	Debris Free N.C. Work Group
3.2.2: Capitalize on successful local, national and international campaigns such as the viral social media "#TrashTag" initiative.	Duke University Marine Lab, N.C. Coastal Reserve, Debris Free N.C. Work Group, Jennette's Pier

Objective 3.3: Target select volunteer groups to assist with marine debris cleanups, while maximizing participant and public awareness of the issue.	
Strategies and Actions	Partner(s)
3.3.4: Recruit school classes to conduct cleanups and collect data as an academic endeavor.	Duke University Marine Lab, UNC-Wilmington MarineQuest, Jennette's Pier
3.3.5: Capitalize on the popularity of college spring break and fall breaks for cleanups.	Coastal Federation, N.C. Coastal Reserve, Duke University Marine Lab, NPS-Cape Lookout National Seashore, Jennette's Pier
3.3.6: Engage county and state employees and elected officials to promote cleanups and marine debris awareness.	NCDCM, Coastal Federation, NPS-Cape Lookout National Seashore, Jennette's Pier
Objective 3.4: Establish annual paid clean-ups of marine debris	
Strategies and Actions	Partner(s)
3.4.1: Recruit commercial watermen to locate and recover lost crab pots annually.	Coastal Federation
3.4.2: Use public and/or awarded funds to conduct large scale paid cleanups.	Coastal Federation
3.4.3: Conduct annual "Fishing for Trash" tournaments using hired boats.	Plastic Ocean Project
Objective 3.5: Increase readiness and capacity for engaging in state-level storm response and recovery.	
Strategies and Actions	Partner(s)
3.5.1: Coordinate with the NOAA Office of Response and Restoration Scientific Support Coordinator (SSC) present at the USCG Incident Command Post to provide pertinent state/local contacts.	NOAA Marine Debris Program, USCG, EPA, NCDEQ, NCWRC
3.5.2: Increase awareness and coordinated use (particularly for solid waste and emergency managers) of the NOAA Incident Waterway Debris Response Guide prior to and during disasters.	NCDEQ, NOAA Marine Debris Program
Objective 3.6: Devise and implement a micro-plastic wastewater reduction strategy	
Strategies and Actions	Partner(s)
3.6.1 Propose new standards for state wastewater permits to remove microplastics.	Coastal Federation

GOAL 4: PREVENT AND REMOVE ABANDONED AND DERELICT VESSELS (ADV's)	
<i>Implement strategies that support removal of existing derelict vessels, increased capacity for prevention, and careful environmental response.</i>	
Objective 4.1: Establish and maintain a comprehensive georeferenced database of derelict vessels in coastal NC.	
Strategies and Actions	Partner(s)

4.1.1: Work with partner organizations to create and populate the database.	NCWRC
4.1.2: Develop a way for partners to access the database.	NCWRC
Objective 4.2: Remove existing abandoned and derelict vessels with state and federal funds that have been provided since Hurricane Florence.	
Strategies and Actions	Partner(s)
4.2.1: Obtain legislative authority from the General Assembly for vessel removals.	NCWRC, Coastal Federation
4.2.2: Coordinate vessel removal with other organizations to increase efficient use of funding.	NCDEQ, NCWRC, Coastal Federation, USCG
Objective 4.3: Actively encourage county government ordinances that prevent and remove abandoned and derelict vessels.	
Strategies and Actions	Partner(s)
4.3.1: Hold workshop for CAMA counties to learn about their ability to pass ordinances that provide the authority to remove and dispose of ADVs.	NCWRC, NCDEQ, Coastal Federation
Objective 4.4: Establish and adequately fund a formal state program to prevent and remove abandoned and derelict vessels.	
Strategies and Actions	Partner(s)
4.4.1: Make recommendations through the 2018 vessel study requested by the General Assembly.	NCDEQ, NCWRC, Coastal Federation, NOAA Marine Debris Program
4.4.2: Coordinate a Task Force to examine the issue of ADVs and craft solutions.	NCWRC
Objective 4.5: Better coordinate state and federal policy, planning, and response related to ADVs, including ADVs generated during storm events.	
Strategies and Actions	Partner(s)
4.5.1: Establish a vessels subcommittee of the USCG Area Committee.	USCG and Area Committee Partners
4.5.2: USCG Area Committee, Vessels Subcommittee adopts a vessel strategy that closely mirrors that of the Action Plan and is incorporated into the Area Contingency Plan.	USCG and Area Committee Partners
Objective 4.6: Educate boat owners on proper vessel disposal practices and policies	
Strategies and Actions	Partner(s)
4.6.1: Participate in a collaborative meeting of NCDCCM Clean Marina Program coordinators from N.C., S.C., and G.A. to identify ways to work through NCDCCM Clean Marina Programs.	NCDCCM Clean Marina Program

Objective 4.7. Minimize damage to sensitive habitats caused by displaced vessels.	
Strategies and Actions	Partner(s)
4.7.1: Inform and notify owners that displaced vessels in sensitive habitats require special removal practices.	NCDCM
4.7.2: Conduct outreach to marine contractors informing them that removal of displaced vessels in sensitive habitats requires special removal practices.	NCDCM
4.7.3: Suspected or known pollution threats on ADVs, such as fuel or oil, are immediately reported to the National Response Center or Incident Command if there is an active ESF-10 mission.	NCDEQ, NCWRC, Coastal Federation
Objective 4.8: Participate in relevant strategies of the NOAA Southeast Marine Debris Action Plan	
Strategies and Actions	Partner(s)
4.8.1: Participate in a collaborative meeting of N.C., S.C., and G.A. state agencies to share information and expertise about addressing ADVs.	NOAA Marine Debris Program (lead), NCWRC, NCDCM, NPS-Cape Lookout National Seashore, NOAA Marine Debris Program, Coastal Federation

GOAL 5: CONDUCT RESEARCH AND ASSESSMENT	
<i>Identify, support, and conduct research to understand the extent and impacts of marine debris and monitor trends to progressively improve strategies.</i>	
Objective 5.1: Create annual list of research priorities related to marine debris	
Strategies and Actions	Partner(s)
5.1.1: Generate priority list of research topics considered most relevant to North Carolina.	Duke University Marine Lab, USFWS, Jennette's Pier, Coastal Federation
5.1.2: Generate list of research projects currently underway in North Carolina.	N.C. Marine Debris Symposium, N.C. Sea Grant, N.C. Coastal Reserve
5.1.3: Identify and include available funding opportunities to research and enhance collaboration and partnerships.	NPS-Cape Lookout National Seashore, Duke University Marine Lab, Jennette's Pier
5.1.4: Develop work group to construct the lists.	N.C. Marine Debris Symposium, N.C. Sea Grant, N.C. Coastal Reserve, Coastal Federation
Objective 5.2: Investigate the extent and type of plastic pollution in North Carolina's coastal near and offshore environments.	
Strategies and Actions	Partner(s)
5.2.1: Conduct trawl surveys for microplastics.	Crystal Coast Water Keeper, Duke University Marine Lab
5.2.2: Improve understanding of the volume of plastic debris entering coastal waters.	N.C. Sea Grant, N.C. State University

Objective 5.3: Establish standardized protocols for marine debris cleanups that would contribute to quantitatively assembling and analyzing the status and trends.

Strategies and Actions	Partner(s)
5.4.1: Increase awareness and importance of data collection during removal and advocate use of existing data collection tools.	Debris Free N.C. Work Group, UNC-Wilmington MarineQuest, Jennette's Pier
5.4.2: Encourage commitment to consistent use of digital applications (or data sheets when necessary) to collect data during marine debris removal.	Duke University Marine Lab, USFWS, Jennette's Pier

Appendix E

Future Objectives, Strategies, and Actions

The following objectives, strategies, or actions were not included in the Action Plan and will be reconsidered at a future date.

- Develop a public outreach strategy that provides priority messaging to target audiences that would promote behavior change and effective and measurable outcomes.
- Train non-formal educators to teach program participants about marine debris.
- Expand use of existing technologies and mapping resources to identify and prioritize debris removal efforts.
- Create a public hotline to report marine debris.
- Expand use of existing technologies and mapping resources to identify and prioritize debris removal efforts.
- Develop a centralized database for current technologies and mapping resources.
- Non-profit groups assist local governments with implementing plastic bag, Styrofoam, or straw bans where there is community support.
- Better understand the geographic scope of cleanups in the state by analyzing cleanup data and communicating with stakeholders.
- Research efficacy of increasing penalties or fines for littering.
- Produce a GIS map of cleanup distribution and abundance.
- Compile boat disposal information (repurposing, recycling, and disposal companies).
- Educate boat owners on proper vessel disposal practices and policies.
- Develop flyer with information about vessel disposal.
- Provide the educational vessel disposal flyer with state vessel registration, during boater safety courses, through Clean Marina program, and by boat dealers at every sale.
- Supply marinas across the state with information on local mooring/anchoring to prevent ADVs.
- Support establishment of a dedicated lead on marine debris planning, coordination and assistance in N.C. and at the county level.
- Establish Big Sweep county coordinators.
- Offer incentive program for boat owners to turn in their vessels instead of letting them become derelict.

- Assess sources of marine debris (e.g., type/brand) and how they are entering the coastal system to target prevention and removal.
- Evaluate how NOAA's Southeast Marine Debris Collaborative Portal could support K-12 student and teacher activities.