

Appendix A.

Marine debris and litter prevention initiatives in Virginia

A great deal has been accomplished in Virginia over the years to prevent and clean up litter and marine debris. Virginia state agencies, local governments, nongovernmental organizations, researchers, industry, formal and informal educators, and volunteer citizens are helping to eliminating litter and marine debris.

As stated in the Virginia Marine Debris Reduction Plan, Virginia is working towards a more collaborative and coordinated approach to the prevention, interception, innovation, and cleaning up and removing marine debris.

A partial list of litter prevention and marine debris programs in Virginia includes:

- Virginia Department of Environmental Quality (DEQ)'s Recycling Program
This program works closely with recycling program managers, local governments, and solid waste planning units to ensure that their recycling programs meet or exceed the state's mandated recycling rates. It also provides on-line information about computer and electronic recycling.
- DEQ's Litter Prevention Program
This program coordinates the distribution of annual grants to localities for recycling and litter activities, provides information and guidance on litter prevention and recycling topics, and works with localities, litter prevention program managers, and environmental groups on improving awareness of how litter damages the environment. Program staff track and report on how localities use their grants to support their litter prevention and recycling programs.
- The Virginia litter tax (Section 58.1-1707)
This tax, paid by Virginia businesses, provides funds for litter prevention and recycling grants to localities. According to DEQ, this tax since 1981 has contributed \$54,018,250 to support local government litter control and recycling programs.
- Virginia Department of Conservation and Recreation's annual "Stewardship Virginia" campaigns often include litter cleanup events.
- Virginia Department of Game and Inland Fisheries and the Virginia Marine Resources Commission administer a fishing line recycling program.
- Voluntary litter cleanup events, many of which include data collection, are run by several organizations:
 - Clean the Bay Day (organized by the Chesapeake Bay Foundation)
 - Virginia Waterways Cleanup/International Coastal Cleanup (organized by Clean Virginia Waterways of Longwood University)
 - Watershed-specific cleanup programs on the Potomac, James, Rappahannock, Roanoke Valley, Mattaponi and Pamunkey Rivers, and others.

- The Great America Cleanup, a project of Keep America Beautiful and Keep Virginia Beautiful
 - Adopt-a-Stream Program (Virginia Department of Conservation and Recreation)
 - Adopt-a-Highway (Virginia Department of Transportation)
- Keep Virginia Beautiful (KVB) and its many affiliates in Virginia offer litter prevention programs and litter cleanup events. KVB has been active in increasing the recycling of plastic shopping bags, and in implementing Keep America Beautiful's cigarette litter prevention campaigns in communities throughout Virginia. KVB also maintains a web site that serves as a clearinghouse for other groups to promote litter cleanup events. Between 2010 and 2014, KVB awarded more than \$90,000 in grants to schools, nonprofits, community groups, municipalities, and State Parks. Many of these grant projects focused on litter prevention.
 - Clean community commissions and councils that focus on litter prevention can be found throughout Virginia.
 - Local governments – many have litter prevention educational programs that reach the public as well as formal (K-12) and non-formal education audiences.
 - The Virginia Wildlife Center offers a “Critters Don't Need Litter” litter awareness program that includes up-close experiences with live, non-releasable wild animals. Many of these animals, including hawks and owls, were harmed when trying to eat road-side food scraps and litter.
 - Trex Company, Inc. – a Virginia-based company that manufactures alternative decking from a blend of 95% recycled wood and plastic – sponsors several community-based plastic bag recycling programs at major national grocery and retail chains.
 - Virginia Clean Marina Program (Virginia Sea Grant) promotes the voluntary adoption of measures that prevent or reduce pollution from traditional and non-traditional marinas, boatyards, and recreational boats.
 - Virginia Green, a partnership program between Virginia DEQ, Virginia Tourism Corporation, and Virginia Hospitality & Travel Association, promotes pollution prevention techniques in Virginia's tourism industry including hotels and restaurants.
 - Virginia Institute of Marine Science (VIMS) crab pot removal program (see Section 3.3 on derelict fishing gear).
 - Virginia Eastern Shorekeeper's clam netting monitoring and outreach.
 - Virginia Recycling Association (VRA) disseminates recycling information to its members, the general public, the Virginia General Assembly, local government, business, and industry. VRA is committed to expanding state recycling opportunities and promoting recycling as an integral part of resource conservation and solid waste management.
 - Virginia has many laws and regulations pertaining to littering, illegal dumping, waste management, and recycling.

- Research on the sources, impacts, and fate of marine debris and microplastics is underway at VIMS and other Virginia universities. Research into biodegradable alternatives is also underway.
- Smoking on many college and hospital campuses is restricted to designated areas in order to concentrate litter.
- Virginia Aquarium & Marine Science’s annual Trash Bash is a weekend that focuses on the impacts of marine debris on marine animals.
- Curriculum and educational materials that focus on litter prevention and recycling are available for formal (K-12) and informal educators from many organizations and agencies including DCR’s Virginia Naturally, Clean Virginia Waterways, NOAA, EPA, Ocean Conservancy, and others.

In addition to Virginia-specific initiatives, there are some marine debris efforts underway in the Mid-Atlantic:

- Discussions are underway regarding creating a Mid-Atlantic Marine Debris Initiative patterned after the NOAA-funded Southeast Atlantic Marine Debris Initiative (<http://sea-mdi.engr.uga.edu/>). Such a consortium would include people, agencies, and organizations historically and currently involved in marine debris issues in the Mid-Atlantic states.
- The U.S. Environmental Protection Agency’s Trash Free Waters program has convened packaging industry stakeholders that have identified innovative projects that they would be willing to support. One of these priorities is a municipal pilot project. EPA, working with local governments and nonprofit organizations, is coordinating and supporting municipal pilot projects in Richmond and Hampton Roads to be implemented as a public-private partnership with packaging industries. The goal is to prevent and reduce aquatic trash in these municipalities.
- EPA’s Trash Free Waters program is also compiling a ‘Great Practices’ tool for aquatic trash prevention and reduction in the Mid-Atlantic states.

Appendix B.

Virginia Marine Debris Summit: agenda and attendees

The Virginia Marine Debris Summit was held in February 2013 at the Virginia Aquarium & Marine Science Center, Virginia Beach

Agenda

Welcome and Goals of the Workshop

Mark Swingle, Director of Research & Conservation, Virginia Aquarium & Marine Science Center

Exploring Solutions that Educate, Motivate and Innovate

Laura McKay, Program Manager, Virginia Coastal Zone Management Program

Virginia Secretary of Natural Resources Remarks

Doug Domenech, Secretary of Natural Resources, Commonwealth of Virginia

Marine Debris – Global Perspectives

Nicholas Mallos, Conservation Biologist & Marine Debris Specialist, Ocean Conservancy

Microplastics: Is smaller bigger?

Dr. Robert Hale, Professor of Marine Science, Virginia Institute of Marine Science, College of William and Mary

Fishing Gear: Commercial and Recreational

Virginia Fishing Line Recycling Program

Alicia Nelson, Fisheries Management, Virginia Marine Resources Commission

Marine Debris: Lost Commercial Fishing Gear in Virginia Waters

Dr. Donna Marie Bilkovic, Virginia Institute of Marine Science, College of William and Mary

Items of Special Concern: Cigarette Butts & Balloons

Cigarette Butts as Litter

Katie Register, Executive Director, Clean Virginia Waterways of Longwood University

Bronwen Evans, Director of Litter Programs, Keep America Beautiful

Balloons as Litter: A Rising Concern

Christina M. Trapani, Stranding Information Specialist, Virginia Aquarium Stranding Response

Plastics in the Marine Environment: Food and Beverage Containers and Plastic Bags

Convenient Trash: On the go, on the beach, in the ocean

Nicholas Mallos, Conservation Biologist & Marine Debris Specialist, Ocean

Conservancy

Marine Debris Solutions

Creating Effective, Collaborative Partnerships to Reduce Litter

Ashley Carlson, Consultant, American Chemistry Council

Keep Virginia Beautiful Plastic Bag Campaign

Mike Baum, Executive Director, Keep Virginia Beautiful

Recycling Polyethylene Film: Trex Plastic Recycled Lumber

Samara Norman, Trex

The Power of a Nickel: The Story of the DC Plastic Bag Fee

Matt Robinson, Environmental Protection Specialist, Stormwater Management Division,
District of Columbia Dept. of Environment

Highlights of Innovative Programs, Solutions and Actions

Solutions: A Toolbox of Options

Katie Register, Executive Director, Clean Virginia Waterways of Longwood University

Do You Sea What I See?

Cris Ausink, Hampton Roads Storm, Hampton Clean City Commission

Stream to Sea

Wade Blackwood, Director, American Canoeist Association

Pilot Project to Assess Behavior and Attitudes Regarding Discarded Trash and Ocean Health

Mark Swingle, Director of Research & Conservation, Virginia Aquarium & Marine Science Center

Implementing the Anacostia River Trash TMDL

Matt Robinson, Environmental Protection Specialist, Stormwater Management Division,
District of Columbia Dept. of Environment

NOAA Action to Reduce the Impacts of Marine Debris: Responses to Pervasive Problems and Natural Disaster Events

Jason Rolfe, Southeast and Caribbean Regional Coordinator, Marine Debris Program,
National Oceanic and Atmospheric Administration

EPA National Trash Free Waters Program: A Strategic Approach to Reduce Trash and Debris in Aquatic Ecosystems

Robert Benson, Senior Advisor for Aquatic Ecosystem Strategies, Office of Wetlands,
Oceans and Watersheds, United States Environmental Protection Agency

Attendees

- Hillary Adams.** Student, Virginia Commonwealth University
- Faye Andrashko.** Education & Public Relations Specialist, Northern Neck Soil & Water Conservation District
- Chris Ausink.** Environmental Educator, Hampton City Clean Commission
- Kyle Barbour.** Park Manager, Virginia Department of Conservation and Recreation-False Cape State Park
- Mike Baum.** Executive Director, Keep Virginia Beautiful
- Sharon Baxter.** Pollution Prevention Manager, Virginia Department of Environmental Quality
- James Beckley.** Quality Assurance Coordinator, Office of Water Monitoring, Virginia Department of Environmental Quality
- Robert Benson.** Senior Advisor for Aquatic Ecosystem Strategies, EPA, Office of Wetlands, Oceans and Watersheds
- Donna Marie Bilkovic.** Research Assistant Professor, Virginia Institute of Marine Science
- Wade Blackwood.** Executive Director, American Canoe Association
- Ruth Boettcher.** Coastal Terrestrial Biologist, Virginia Department of Game and Inland Fisheries
- Ashley Carlson.** Consultant, American Chemistry Council
- Steve Coe.** Recycling & Waste Tire Management Coordinator, Virginia Department of Environmental Quality
- Cara Crawford.** ORISE Fellow, Environmental Protection Agency
- Nissa Dean.** Virginia Director, Alliance for the Chesapeake Bay
- Debbie Devine.** Municipal Marketing Manager, TFC Recycling
- Doug Domenech.** Secretary of Natural Resources, Commonwealth of Virginia
- John Deuel.** Executive Director, Keep Norfolk Beautiful
- Clara Elias.** Program Associate, Alice Ferguson Foundation
- Bronwen Evans.** Director, Litter Programs, Keep America Beautiful
- William Fischer.** Litter Control Officer, Accomack County Department of Public Works
- Robert Hale.** Professor of Marine Science, Virginia Institute of Marine Science
- Arne Hasselquist.** Wetlands Board Member, Hampton
- Kirk Havens.** Director, Coastal Watersheds Program, Virginia Institute of Marine Science
- Steve Herbert.** Deputy City Manager, City of Virginia Beach
- Paige Hutchinson.** Environmental Educator, Virginia Department of Environmental Quality
- Todd Janeski.** Program Manager, VA Commonwealth University
- Lisa Renee Jennings.** Clean Community Coordinator, Keep Norfolk Beautiful
- Adriana Leiva.** Vice Chair, Surfrider Foundation-Texas Coastal Bend
- Michelle Lennox.** Program Manager, Mid-Atlantic Regional Council on the Ocean (MARCO)
- Benjamin Lewis.** Regional Litter Control Coordinator, Northern Neck Planning District Commission
- Nick Mallos.** Conservation Biologist & Marine Debris Specialist, The Ocean Conservancy
- Laura McKay.** Program Manager, Virginia CZM Program
- Kris McKinnon.** Communications & Administrative Assistant, Lynnhaven River Now

Linda Minner. Recycling Coordinator, City of Virginia Beach
Gerilyn Mireles. Wildlife Biologist, Back Bay Wildlife Refuge
Shep Moon. Coastal Planner, Virginia CZM Program
Angela Neilan. Community Involvement Specialist, Virginia Dept. of Environmental Quality
Samara Norman. Senior Materials Sourcing Representative, Trex
Kathy O'Hara. Sensible Seafood Program Coordinator, Virginia Aquarium & Marine Science Center
Susan Park. Assistant Director for Research, Virginia Institute of Marine Science/VA Sea Grant
Katie Register. Executive Director, Clean Virginia Waterways
Ann Regn. Director, Public Information and Outreach, Virginia Department of Environmental Quality
Matt Robinson. Stormwater Management Division, District of Columbia Department of the Environment
Frank Rocco. Development Director, WashedAshore
Greg Rolf. Stewardship Coordinator, American Canoe Association
Jason Rolfe. Southeast and Caribbean Regional Coordinator, NOAA Marine Debris Program
David Ruble. Community Environmental Educator, Virginia Department of Conservation and Recreation
Anne Smith. Clean Marina Specialist, Virginia Sea Grant/Virginia Institute of Marine Science
Carl Smith. Vice President, Glasdon, Inc
Curt Smith. Director of Planning, Accomack-Norhampton Planning District Commission
George Stevens. President, Belle Haven Marina Inc.
Mark Swingle. Director of Research & Conservation, Virginia Aquarium & Marine Science Center
Walt Tegge. Visitor Services Manager, Back Bay National Wildlife Refuge
Carl Thomas. Environmental Specialist, Senior, Virginia Department of Environmental Quality
Denise Thompson. Sustainability Manager, City of Norfolk
Christina Trapani. Stranding Information Specialist, Virginia Aquarium & Marine Science Center
Josediego Villegas. Vice President, Glasdon, Inc
Susan Vreeland. Master Naturalist Volunteer, Master Naturalist Virginia Program
Virginia Witmer. Outreach Coordinator, Virginia Department of Environmental Quality
Justin Worrell. Environmental Engineer, Virginia Marine Resources Commission

Appendix C

Marine debris reduction strategies from other plans

This list summarizes goals found in marine debris management plans from several states and regions. It is provided as a reference only. Compiled in January 2014 by Katie Register, Clean Virginia Waterways, and modified July 2014.

A. Improved Coordination

1. Create a marine debris alliance in the state in order to create a framework to identify, assess, prevent and reduce marine debris and oversee the execution of the marine debris strategies through increased collaboration.
 - i. Why? Success requires coordination, a comprehensive approach to addressing marine debris and more resources (funding). Coordination will help identify gaps in knowledge, best approaches to implement solutions.
2. Building co-operation, co-ordination and synergies. Bring together stakeholders and experts representing state, federal, regional, tribal, and not-for-profit organizations that have experience with derelict fishing gear and land-based debris, including recovery and cleanup, policy analysis and planning, funding, research, and much more.
3. Facilitate dialogue between stakeholders; share best practices or lessons learned.
4. Secure funding and leverage existing resources and expertise.
5. Support state and federal policies for achieving marine debris reduction goals, including debris prevention through expanded recycling, improved trash maintenance, public education, and enforcement of litter laws.
6. Educate partners (and neighboring states) about promising marine debris programs. Consider a regional approach.
7. Convene workshops with subject experts from the region on specific topics (e.g., land-based debris, derelict fishing gear, best practices for solid waste management.)

B. Research Needs & Sharing Data

1. Research to inform future actions and investigate data gaps. Better understand:
 - a. Marine debris “hot spots”;
 - b. Impacts of plastics (micro, pollutant transport, etc.);
 - c. Effective anti-litter (behavior change) campaigns
 - d. Nature characteristics & extent of debris,
 - e. Aquatic life impacts
 - f. Economic burden on local government
 - g. Characteristics of trash in urban runoff
 - h. Potential cleanup approaches in various habitats (open water, benthic, beaches, etc.)
 - i. Innovative cleanup technologies
2. Sharing data: consider a regional Marine Debris Database - A comprehensive database that will be used to establish a marine debris baseline, inform policy and management decisions, and serve as an educational tool for the general public.
3. Generate an inventory of monitoring and removal activities.
4. Evaluate existing projects.

C. Specific Focus: Sources of Land-based Discharges

1. Focus on plastics and micro plastic.
2. Focus on land-based sources as they are the most significant sources of marine debris.

D. Specific Focus: Sources of Ocean-based Discharges

1. Develop and strengthen implementation of waste minimization and proper waste storage at sea, and of disposal at port reception facilities, in order to minimize incidents of ocean dumping.
2. Develop and promote use of fishing gear modifications or alternative technologies to reduce the loss of fishing gear and/or its impacts
3. Increase use of fishing materials and practices designed to reduce impacts of marine debris.

E. Increase Enforcement (litter laws, solid waste management)

1. Implementation and enforcement of policies and legal requirements.
2. Build capacity to monitor and enforce compliance with regulations and permit conditions regarding litter, dumping, solid waste management, stormwater, and surface runoff.
3. Build capacity to monitor and enforce ocean-dumping laws.
4. Build capacity to enforce water quality permits and laws.

F. Increase Education And Outreach (Land-Based And Ocean-Based)

- a. Raise awareness, information and education.
- b. Conduct education and outreach on marine debris impacts and the need for improved solid waste management.
- c. Conduct ocean-user education and outreach on marine debris impacts, prevention, and management.
- d. Conduct education and outreach targeted to specific audiences.
- e. Utilize existing tools and resources (NOAA, EPA, national & local NGOs, others).

G. Decrease the Quantity of Disposable Products and Packaging Waste (source reduction)

1. Promotion of green purchasing of products and services.
2. Waste minimization and trash reductions.
3. Decrease use of potential debris items.

H. Specific Focus: Stormwater Best Practices (Where litter becomes aquatic debris)

1. Employ infrastructure and implement best practices for improving stormwater management and reducing discharge of solid waste into waterways.
2. Improve effectiveness of stormwater permitting system
3. Support trash TMDLs & stormwater permit requirements

I. Improve Waste Management

1. Employ infrastructure and implement best practices for improving waste management.
2. Provide low-cost and convenient disposal options for gear and solid waste (land-based and ocean-based).

J. Cleanups and Removal of Debris

1. Improve the ability of volunteers to learn about cleanup events.
2. Conduct regular cleanup efforts on coastal lands, in watersheds, and in waterways.
3. Locate marine debris accumulations (reporting system?) and increase capacity and coordination to remove accumulations.
4. Develop or strengthen implementation of incentives for removal of large accumulations of

marine debris encountered at sea

K. Decrease the Number of Abandoned and Derelict Vessels

1. Educate vessel owners on maintenance and maritime preparedness
2. Develop capacity and coordination mechanisms for abandoned vessel removal
3. Develop sustainable funding mechanisms and resources for vessel removal

L. New Laws & Regulations

1. Employ market-based instruments to support solid waste management & waste minimization
2. Improve the regulatory framework regarding stormwater, sewage systems, and debris in tributary waterways

Sources:

California: Eliminating Land-based Discharges of Marine Debris in California

http://www.plasticdebris.org/CA_Action_Plan_2006.pdf

Hawai'i Marine Debris Action Plan

<https://sites.google.com/site/himdap/>

Honolulu Strategy: A global framework for prevention and management of marine debris

<http://marinedebris.noaa.gov/sites/default/files/honolulustrategy.pdf>

West Coast Governors Alliance on Ocean Health --Marine Debris Action Coordination Team

From <http://www.westcoastoceans.org/index.cfm?content.display&pageID=81>

U.S. EPA Region 9 Marine Debris Strategy

<http://www.epa.gov/region9/marine-debris/strategy.html>

Appendix D

Survey questions

Virginia Marine Debris Reduction Plan Stakeholder Survey



Thank you for taking the time to complete this survey by the Virginia Coastal Zone Management Program and its partners. YOUR input will make a difference and help improve the coastal environment! We are seeking your opinions and knowledge on marine debris* to inform the development of reduction goals and strategies to address this issue in the Commonwealth. Your feedback is important to us as we move forward.

This survey is 18 questions and should take approximately 15 to 20 minutes to complete.

If you have any questions regarding this survey or the development of the Virginia Marine Debris Reduction Plan, please contact Katie Register (registerkm@longwood.edu).

* Marine debris is 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 can come from land, such as litter that washes into storm drains and rivers, and from sea, such as lost fishing gear and boat waste and may include plastics such as bags, food and beverage containers, fishing line and nets.

*** 1. Which of these best describes your affiliation:**

- Local government
- State government
- Federal government
- Local litter prevention coordinator
- Nonprofit organization
- Academia/educational institute
- Community/civic group
- Industry or business
- Other

Please specify the name of the organization you work for (OPTIONAL)

Virginia Marine Debris Reduction Plan Stakeholder Survey

*2. Where do you live?

- Delaware
- District of Columbia
- Maryland
- New Jersey
- New York
- North Carolina
- Virginia

Other (please specify)

*3. In what county do you live?

4. How would you rate your expertise in marine debris issues (with 1 being novice, and 5 being expert)?

- 1
- 2
- 3
- 4
- 5

5. When you think about marine debris, what are the three things that bother you the most?

1	<input type="text"/>
2	<input type="text"/>
3	<input type="text"/>

Virginia Marine Debris Reduction Plan Stakeholder Survey

6. How important are the following impacts of marine debris (on a scale of 1-5, with 1 being low and 5 being high).

	1	2	3	4	5
Human safety (broken glass, propeller entanglement, medical waste)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Navigation hazards	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Habitat impacts	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Protected areas	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Aesthetics	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Endangered species	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Financial cost to communities to prevent or pick up litter	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Loss of tourism income	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Loss of economically important species due to lost or abandoned (derelict) fishing gear	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Animal entanglement	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Animal ingestion	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Debris as a method of transporting invasive species	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Storm or flooding-related impacts	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Impacts on food chain from plastics and associated toxics	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Other (please specify)

7. What is your role in preventing and reducing marine debris?

(Select all that apply.)

- I organize clean-up efforts
- I organize educational efforts (e.g., outreach efforts on litter prevention, distribute fishing line recycling bins)
- I address the impacts (e.g., rescue entangled animals)
- I work in solid waste management to regulate or manage the sources of marine debris
- I work in stormwater management to regulate or manage the sources of marine debris
- I do research on marine debris
- I develop products to prevent or reduce wastes
- I develop policies to prevent or reduce wastes
- I am a volunteer who participates or would like to participate in an event to reduce or clean up debris
- NONE of the ABOVE

Other (please describe)

Virginia Marine Debris Reduction Plan Stakeholder Survey

8. In your opinion, how much does each item below contribute to marine debris in Virginia (on a scale of 1-5, 1 being low and 5 being high)?

	1	2	3	4	5
Abandoned commercial fishing gear such as crab pots, nets or buoys	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Monofilament fishing line and other lost or abandoned (derelict) recreational fishing gear	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Lost or abandoned (derelict) vessels	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Glass, metal, and rubber waste	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Release of balloons	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Cigarette butts and smoking-related litter	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Micro-plastics (fragmentation of large macro-plastic and microbead plastics) used in household and personal hygiene products i.e., detergents, soaps, scrubs, lotions, cosmetics, toothpaste)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Plastic single-use bags	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Beverage containers, straws, and food-related packaging	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Waste from cargo, cruise, or other ocean-going commercial ships	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Waste from land-based industrial/manufacturing facilities	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Maintenance of trash receptacles, dumpsters	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Litter from uncovered trucks	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Other (please list specific local concerns)

9. Which of the above sources DO YOU THINK are the most important to reduce? Please select YOUR TOP THREE (3).

1	
2	
3	

Virginia Marine Debris Reduction Plan Stakeholder Survey

10. In your opinion, how IMPORTANT should the following be FOR THE STATE OF VIRGINIA to reduce through new technologies, policies/laws, education, etc. (on a scale of 1-5, 1 being low and 5 being high)?

	1	2	3	4	5
Crab pots, nets or buoys from lost or abandoned (derelict) commercial fishing gear	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Monofilament fishing line and other lost or abandoned (derelict) recreational fishing gear	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Lost or abandoned (derelict) vessels	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Glass, metal, and rubber waste	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Release of balloons	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Cigarette butts and smoking-related litter	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Micro-plastics (fragmentation of large macro-plastic and microbead plastics used in household and personal hygiene products i.e., detergents, soaps, scrubs, lotions, cosmetics, toothpaste)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Plastic single-use bags	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Beverage containers, straws, and food-related packaging	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Waste from cargo, cruise, or other ocean-going commercial ships	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Waste from land-based industrial/manufacturing facilities	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Maintenance of trash receptacles, dumpsters	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Litter from uncovered trucks	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Other (please list specific local concerns)

11. Of the above list, which are the top THREE (3) MOST ACHIEVABLE things that VIRGINIA COULD FOCUS on in the next few years to reduce marine debris?

1	
2	
3	

12. Are you working with municipal stormwater management or an MS4 (Municipal Separate Storm Sewer Systems)?

If "yes", please answer question 13.
If "no", please skip to question 14.

- Yes
- No

Virginia Marine Debris Reduction Plan Stakeholder Survey

13. If you answered, “Yes” to question 12, please tell us how you are addressing (floatable) litter in your plan, including any tools or resources that would help improve your planning efforts. If you have documents or attachments you would be willing to share, please email them to registerkm@longwood.edu.

Land-based Sources of Marine Debris

Land-based sources of marine debris include food- and beverage-related items, bags, smoking-related items, construction materials, balloons, tires, fireworks and other solid waste items.

14. When thinking about land-based sources of marine debris, which of the following strategies or management actions do you think will be MOST EFFECTIVE to minimize debris (on a scale of 1-5, 1 being low and 5 being high)?

	1	2	3	4	5
Education and outreach on litter prevention and marine debris impacts	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Improved solid waste management	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
A tax on plastic bags or deposits on bottles	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Well-maintained trash receptacles	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Best practices for improving stormwater management	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Reduce discharge of solid waste into waterways	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Legislation and policies to support solid waste minimization and management	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Enforcement of regulations and permits regarding litter, dumping, solid waste management, stormwater, and surface runoff	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Regular cleanup efforts on coastal lands, in watersheds, and in waterways	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Advanced planning for the removal of marine debris after natural disasters such as hurricanes or flooding events.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Infrastructure improvements (such as trash receptacles, waste transfer stations, public recycling centers, etc.)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Offer incentives for removal of litter and accumulations of marine debris	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Other (please specify)	<input type="text"/>				

Ocean-based Sources of Marine Debris

Ocean-based sources of marine debris include solid waste; lost cargo; derelict fishing gear (abandoned, lost, or

Virginia Marine Debris Reduction Plan Stakeholder Survey

otherwise discarded nets, crab pots, traps, fishing line, etc.); and abandoned vessels

15. When thinking about ocean-based (or water-based) sources of marine debris, which of the following strategies or management actions do you think will be MOST EFFECTIVE to minimize debris (on a scale of 1-5, with 1 being low and 5 being high)?

	1	2	3	4	5
Education and outreach on marine debris impacts, prevention, and management for the fishing and boating communities	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Minimize incidents of ocean dumping by promoting proper waste storage at sea, and proper disposal at port reception facilities and marinas	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Minimize abandonment of vessels	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Minimize accidental loss of cargo, solid waste, and gear at sea by implementing fishing industry best management practices (BMP)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Reduce loss of fishing gear and/or its impacts through fishing gear modifications or alternative technologies	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Legislation and policies to prevent and manage marine debris from at-sea sources	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Enforce compliance with requirements that marinas, boatyards, and docks have well-maintained trash receptacles or other infrastructure	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Increase the capacity at docks, ports and marinas to accept (and recycle) waste	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Offer incentives for removal of derelict fishing gear, derelict vessels, and accumulations of marine debris	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Other (please specify)	<input style="width: 100%; height: 20px;" type="text"/>				

16. Think about the MOST EFFECTIVE rules, laws, regulations or educational efforts that address the sources of marine debris. This can be on the local, state or federal level, and it can be in Virginia or another place.

Please list THREE (3) of the MOST effective rules, laws, regulations or educational efforts below:

1	<input style="width: 95%; height: 20px;" type="text"/>
2	<input style="width: 95%; height: 20px;" type="text"/>
3	<input style="width: 95%; height: 20px;" type="text"/>

17. Are there gaps in knowledge about marine debris that you think should be explored? If so, please list.

▲
▼

Virginia Marine Debris Reduction Plan Stakeholder Survey

18. Please share here any other ideas, thoughts, emerging issues, or concerns you have about marine debris.

Thank you!

Thank you again for your time to complete the Virginia Marine Debris Reduction Plan Stakeholder Survey! Your input is very important to us as we move forward in developing a Virginia Marine Debris Reduction Plan that identifies achievable solutions.

If you would like more information, would like to stay informed as this process advances, or would like to assist in our efforts, please contact Katie Register at Clean Virginia Waterways (registerkm@longwood.edu or 434-395-2602) or visit these web sites:

Virginia Dept. of Environmental Quality's Virginia Coastal Zone Management: Virginia Marine Debris [click here](#)

Clean Virginia Waterways: Marine Debris Plan [click here](#)

National Oceanic and Atmospheric Administration: NOAA Marine Debris Program [click here](#)

US Environmental Protection Agency: Trash Free Waters [click here](#)

Appendix E

Summary of survey results

Virginia Marine Debris Reduction Plan

Survey Results, 2013



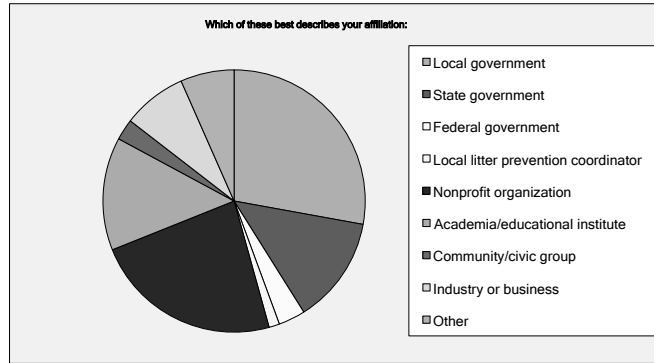
Who took the survey?

151 took survey, of whom 47 considered themselves experts ("4" or "5" on a scale of 1 to 5)

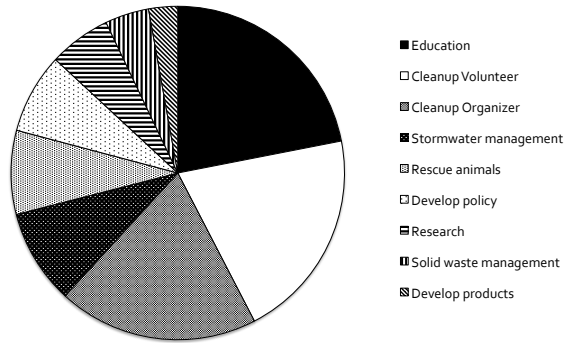
Also: 15 marine debris experts outside of Virginia

- California
- District of Columbia
- Maryland
- Massachusetts
- North Carolina
- Oregon
- Texas
- Istanbul, Turkey
- Virgin Islands UK

Affiliations



What is your role in preventing & reducing marine debris?



Question 7

What bothers you most?

- Impacts (87)
- Sources (60)
- Specific items (52)
- Littering behavior (42)
- Other (11)

Question 5

What bothers you most about IMPACTS of marine debris?

- Wildlife Impacts
 - Entanglement
 - Ingestion
- Habitat Impacts
- Aesthetics
- Human Safety
- Economic Impacts

Question 5

What bothers you most about SOURCES?

- Fishing, crabbing & boating related
- General litter sources
- Food & Beverage
- Cigarette Butts

Question 5

What SPECIFIC ITEMS bother you most?

- Plastics
 - Micro plastics
- Bags
- Food & Beverage
- Balloons
- Cigarette Butts

Question 5

What LITTERING BEHAVIOR bothers you most?

- Lack of awareness, caring, responsibility
- Failure to enforce
- Lack of effective laws
- Manufacturers' roles

Question 5

What bothers you most (OTHER)?

- Persistence (lasting impacts)
- Pervasiveness
- Lack of coordination
- Unknowns (how much is out there)
- Impacts from industry & military
- Challenging to affect change swiftly
- Virginia has no plan

Question 5

How important are the following impacts of marine debris (Ranked: 1 is "most important")

Impact	All responses	VA Experts	Non-VA Experts
Habitat Impacts	1	2	3
Animal Entanglement	2	3	2
Impacts on food chain from plastics and associated toxins	3	1	1
Animal ingestion	3	4	1

Question 6

How much does each item contribute to marine debris in Virginia? (Ranked: 1 is "contributes most")

Impact	All responses	VA Experts	Non-VA Experts
Beverage & food related	1	1	1
Plastic single-use bags	2	2	2
Cigarette butts & smoking related litter	3	3	4
Microplastics	4	5	3
Commercial fishing gear	5	4	5

Question 8

How important for the state of Virginia to reduce? (Ranked: 1 is "most important")

Impact	All responses	VA Experts	Non-VA Experts
Plastic single-use bags	1	1	2
Beverage & food related	2	2	1
Cigarette butts & smoking related litter	3	3	3
Microplastics	3	6	4
Commercial fishing gear	3	4	6
Recreational fishing gear	4	5	7

Question 10

How important are the following impacts of marine debris? (Ranked: 1 is "most important")

1. Habitat Impacts
2. Animal Entanglement
3. Impacts on food chain from plastics and associated toxins
3. Animal ingestion

How important for the
state of Virginia to reduce?

1. Abandoned fishing gear
2. Single-use Plastic Bags
3. Beverage & food related
4. Cigarette butts & smoking related
5. Microplastics
6. Balloons
7. Waste from ships

Most achievable – Land-Based

Plastic bags (tax, ban, increase recycling, allow local laws)
Beverage & food related
Cigarette butts and smoking related
Balloon releases
Manufacturing facilities
Uncovered trucks
Micro-plastics
Dumpsters & trash receptacle maintenance

Most achievable– Ocean-Based

1. Abandoned fishing gear
2. Waste from ships
3. Vessels, lost, abandoned or derelict

MOST EFFECTIVE Strategies

1. Enforcement
2. Education & outreach
3. Infrastructure improvements
4. New legislation & policies
5. Trash receptacle maintenance/ BMPs
6. Incentives for removal
7. Increase capacity at docks
8. Proper storage at sea

Gaps in knowledge

1. Education and outreach
2. Micro plastics
3. Extent/Impacts/Sources
4. Policy/Research needs
5. Human Health
6. Enforcement
7. Wildlife
8. Economic Impacts/Issues

Land-Based Sources: which strategies or actions do you think will be MOST EFFECTIVE?

Impact	All responses	VA Experts	Non-VA Experts
Enforcement or regulations	1	1	1
Reduce discharge of solid waste into waterways	2	2	5
Education & outreach	3	3	3
Infrastructure improvements	4	4 (tie)	2
Legislation & Policies	5	5 (tie)	3
Trash receptacle maintenance	6	4 (tie)	7

Question 14

Land-Based Sources: which strategies or actions do you think will be MOST EFFECTIVE?

BROAD CATEGORIES:

- Enforcement or regs
- Reduce discharge of solid waste into waterways
- Education & outreach

Question 14

Land-Based Sources: which strategies or actions do you think will be MOST EFFECTIVE?

More Specific:

- Infrastructure improvements
- Legislation & policies
- Trash receptacle maintenance
- Planning for natural disasters
- Bag tax and deposits on bottles
- Storm water management BMPs
- Improved solid waste management
- Incentives for removal
- Cleanup events

Question 14

OCEAN-Based Sources: which strategies or actions do you think will be MOST EFFECTIVE?

Impact	All responses	VA Experts	Non-VA Experts
Enforcement or regulations	1	1	3
Incentives for removal	2	2	8
Increase capacity at docks to accept & recycle waste	3	3	1
Proper storage at sea	4 (tie)	5	7
Education & outreach	4 (tie)	4	6

Question 15



Appendix F

Interview questions

Person Interviewed: _____

Interviewer: _____

Date: _____

Thank you for agreeing to be interviewed today about the Virginia Marine Debris Reduction Plan. As you know, we are interested in gathering input from stakeholders like you, and we are asking that you share your thoughts about the recent Survey that we conducted. We are going to ask you five open-ended questions, then get more specific.

1. Please describe your involvement in marine debris, litter prevention, recycling, waste management or related issues.
2. On a scale of 1 to 5, how concerned are you about marine debris?
(With 5 being “very concerned,” and 1 being “not concerned”)
3. What is top on your mind regarding marine debris?
4. And what do you think should be done about this?
5. In your opinion, what has worked in Virginia to reduce or manage marine debris?
6. What else do you think needs to be done?

We sent a survey about marine debris in Virginia to more than 650 people, and we got responses from 151 people. I’d like to have you comment on some of the highlights from the survey.

First, one of the Survey questions asked about PRIORITIES -- “How important should the following be for the State of Virginia to reduce.”

As I read the list, please think about if you agree with the list...or if there are things on the list that surprise you...

The **top priorities** from the survey RANKED in importance:

1. Fishing gear (commercial & recreational)
2. Plastic single-use bags
3. Beverage and food related litter
4. Cigarette butts & smoking related litter
5. Microplastics
6. Balloons
7. Waste from ships

7. What is your reaction to this list?

8. Was something on this list that surprised you? If so, what was it? Why?

9. What is missing from the list?

Thank you for sharing what you think **should** be done...now we'd like to focus on the development of the Marine Debris Reduction Plan for Virginia, and what is actually achievable.

Another Survey question asked **about Achievability**

“Which are the MOST ACHIEVABLE things that Virginia Could focus on in the next few years to reduce marine debris?”

As I read the list, please think about if you agree with the list...or if there are things on the list that surprise you...

These “Most Achievable” items from the survey are RANKED in importance:

Land-based marine debris items

1. Plastic Bag (tax, ban, increase recycling, allow local laws)
2. Beverage containers, straws, and food-related packaging
3. Cigarette Butts and smoking-related litter
4. Balloon releases
5. Waste from land-based industrial/manufacturing facilities
6. Uncovered trucks (includes municipal and commercial waste hauling vehicles)

Ocean-based marine debris items

1. Abandoned commercial fishing gear
Including Crab pots
2. Waste from cargo, cruise, or other ocean-going commercial ships
3. Vessels, lost, abandoned or derelict

10. What is your reaction to this list?

11. Was something on this list that surprised you? If so, what was it? Why?

12. What is missing from the list?

In order to structure the plan we would like your help to develop a realistic time frame including near-term, mid-term and long-term strategies and actions.

13. What are the top two things you think can really be achieved in Virginia in the **Near term** (next two years)?
14. What are the top two things you think can really be achieved in Virginia in the **Mid term** (up to 5 years)?
15. What are the top two things you think can really be achieved in Virginia in the **Long term** (5 to 10 years)?
16. Who in should be **leading** marine debris reduction in Virginia?
17. Who in should be **participating** in marine debris reduction in Virginia? Give me the top five individuals, entities, organizations, or agencies...
18. What do you think is the proper role for Virginia in reducing marine debris? In other words, what should the state government do?
19. Now, the “Magic Wand” question. If you had no constraints, what would the ONE thing you do to reduce marine debris?
20. Is there anything else you would like to add?
21. Will you give us permission to publish your name, title and place of employment in the acknowledgement portion of the final the Virginia Marine Debris Reduction Plan?
22. May we call you back if there are addition things we want to follow up on?

Thank you so much for your time! I appreciate your input.

Appendix G

Bang-for-buck charts

In order to prioritize actions and allocate resources, the VMDRP Leadership Team participated in a “bang-for-buck” exercise during which they considered the costs and benefits of several actions.

Major actions that had been suggested by the survey and interview process were printed at the top of flipchart sheets. On each sheet was a chart with four equal sections. The x-axis represented costs or effort, starting with “low costs/low effort” and increasing to the right with “high costs/high effort.” The y-axis represented impact, the lowest values representing “Low impact” and increasing toward the top with “High impact.”

Each member of the leadership team was asked to place a dot on the flipcharts that corresponded with their opinion as to whether an action would be high or low cost, and have high or low impact. The results were then digitized. Some of the Bang-for-Buck charts showed close agreement, while others did not.

The bang-for-buck charts assisted the leadership team in determining near-term and longer-term priorities.

Plastic Bag Control Measures

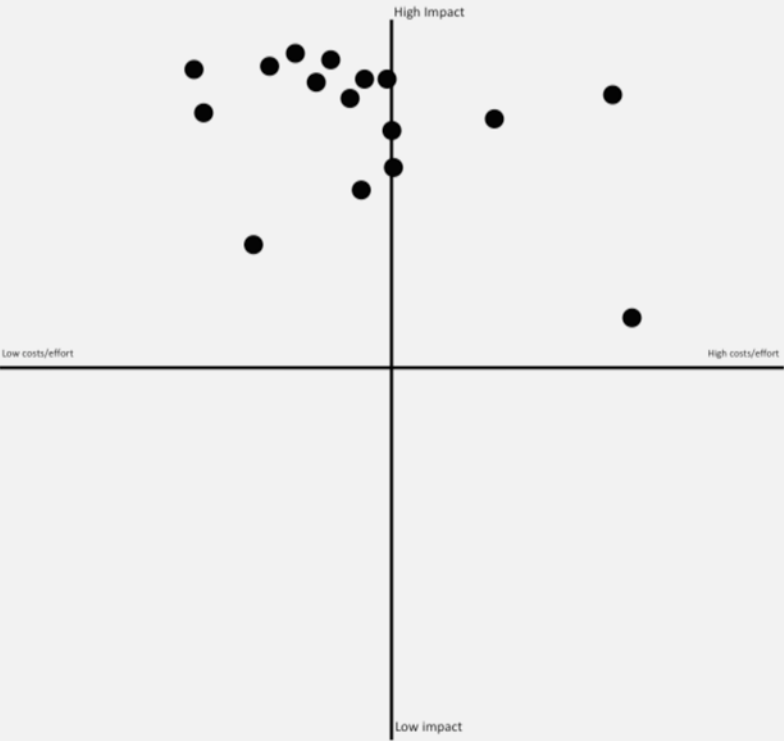


Figure 1. "Bang for Buck" in enabling localities to petition State Government to implement local plastic bag control measures (fees, bans, etc.)
Votes for #1 Priority: 5
Votes for #2 Priority: 0

Reduce Balloon Releases

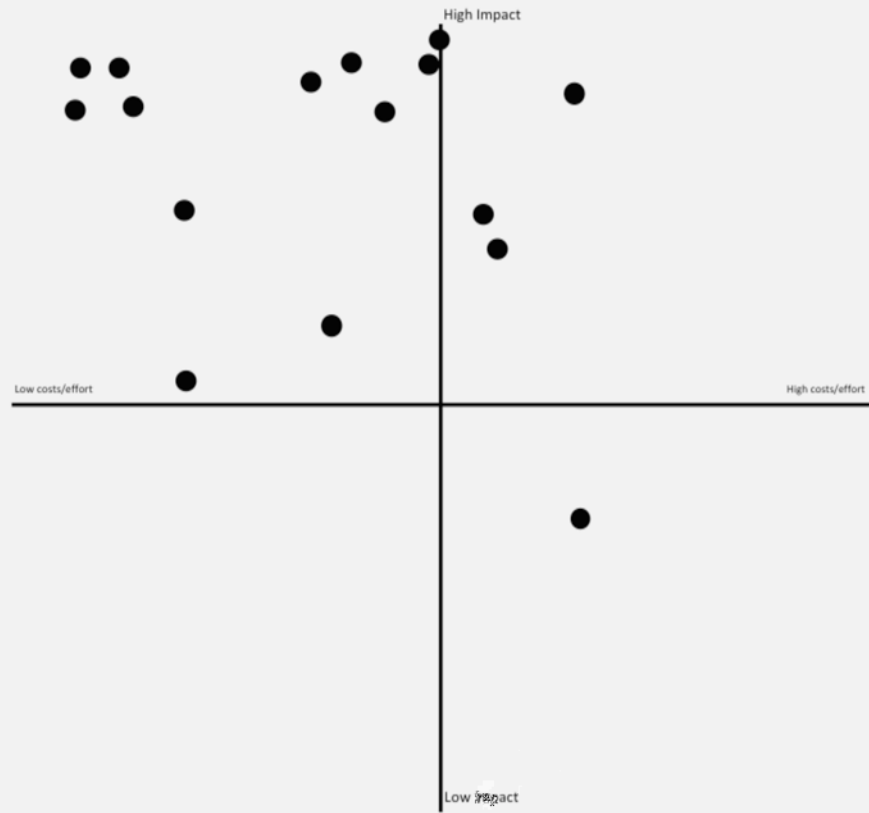


Figure 3. "Bang for Buck" in reducing balloon release

Votes for #1 Priority: 2
Votes for #2 Priority: 1

Increase Collaboration

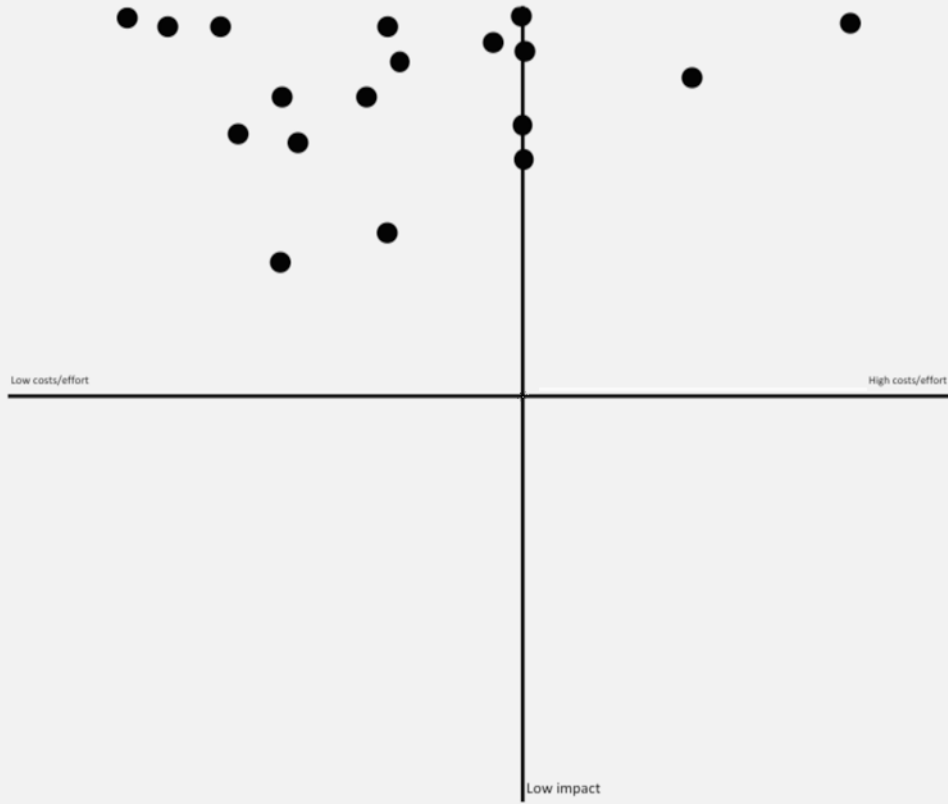


Figure 2. "Bang for Buck" in increasing collaboration.

Votes for #1 Priority: 2

Monofilament Recycling

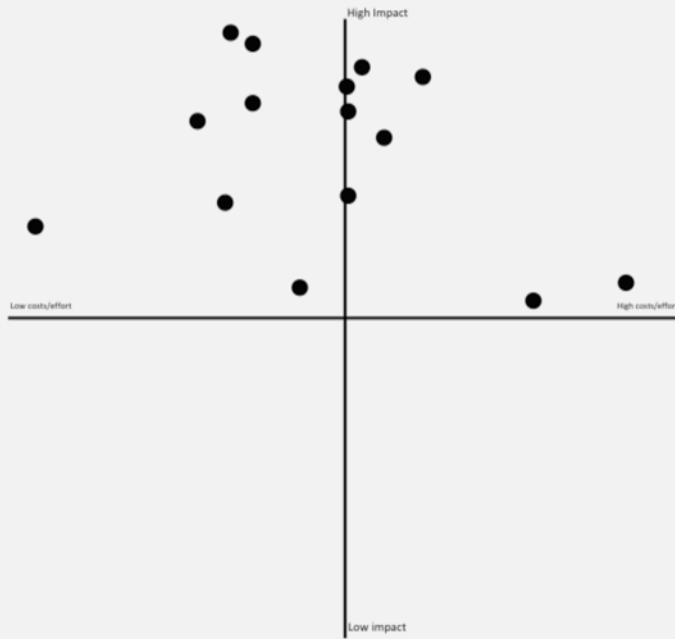


Figure 4. "Bang for Buck" in increasing availability, volume, and education of monofilament recycling (monitor use of different bins and exploit best design nationally).

Votes for #1 Priority: 0
Votes for #2 Priority: 0

Increase Cleanups and Removal

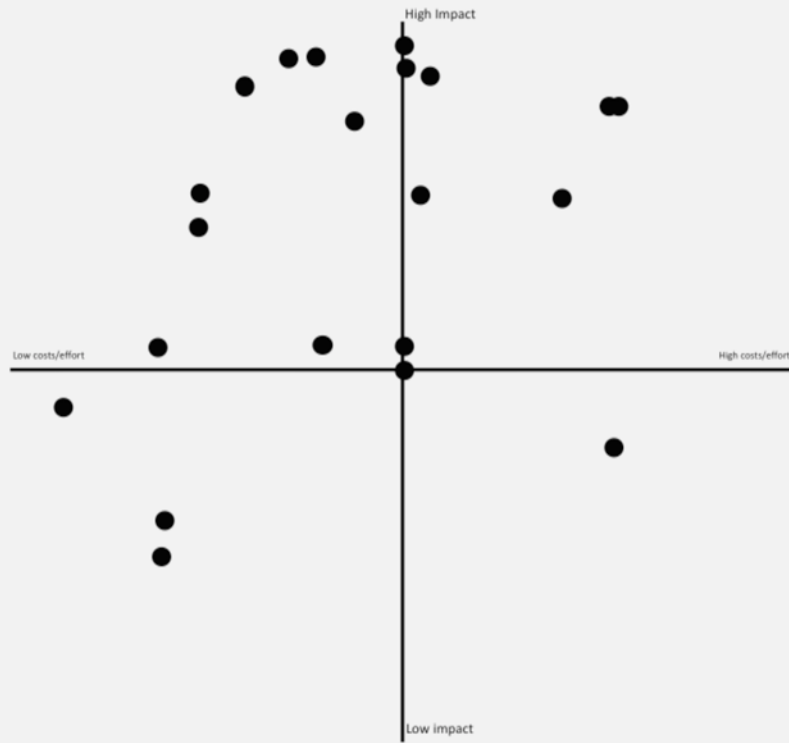


Figure 5. "Bang for Buck" in increasing Sponsor/Encourage Cleanups and Removal

Votes for #1 Priority: 0

Votes for #2 Priority: 0

Reduce Plastic Bags

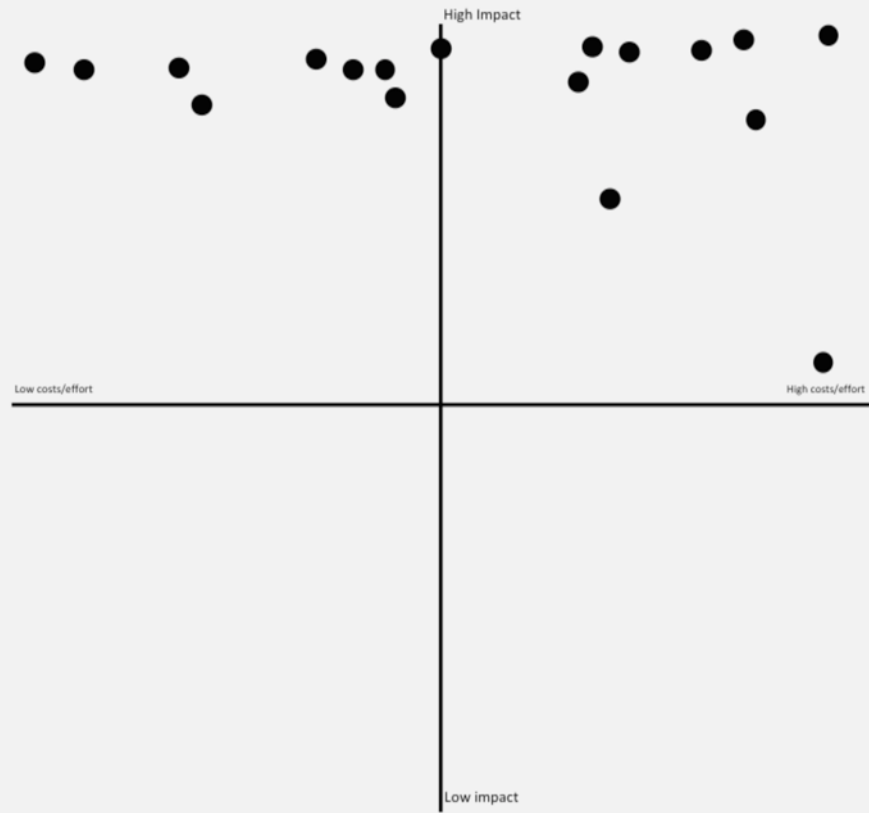


Figure 6. "Bang for Buck" in reducing plastic bags

Votes for #1 Priority: 1
Votes for #2 Priority: 0

Reduce Beverage and Food Related Litter

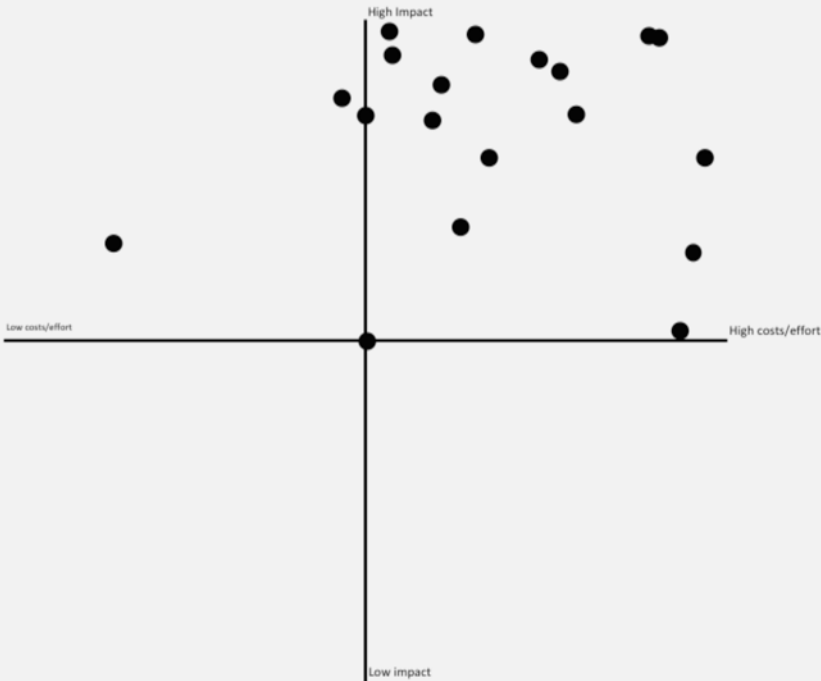


Figure 8. "Bang for Buck" in reducing beverage and food related

Votes for #1 Priority: 0
Votes for #2 Priority: 1

Establish Dedicated Fund for Marine Debris Programs

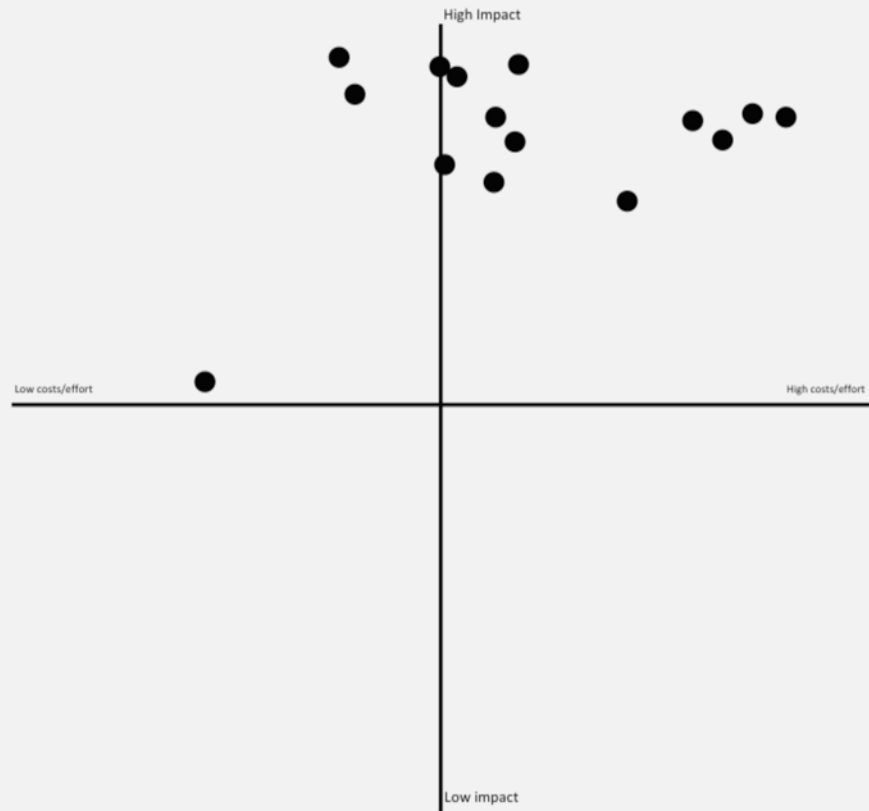


Figure 9. "Bang for Buck" in establishing a dedicated fund for marine debris education and enforcement program

Votes for #1 Priority: 0

Votes for #2 Priority: 0

Increase Education and Outreach

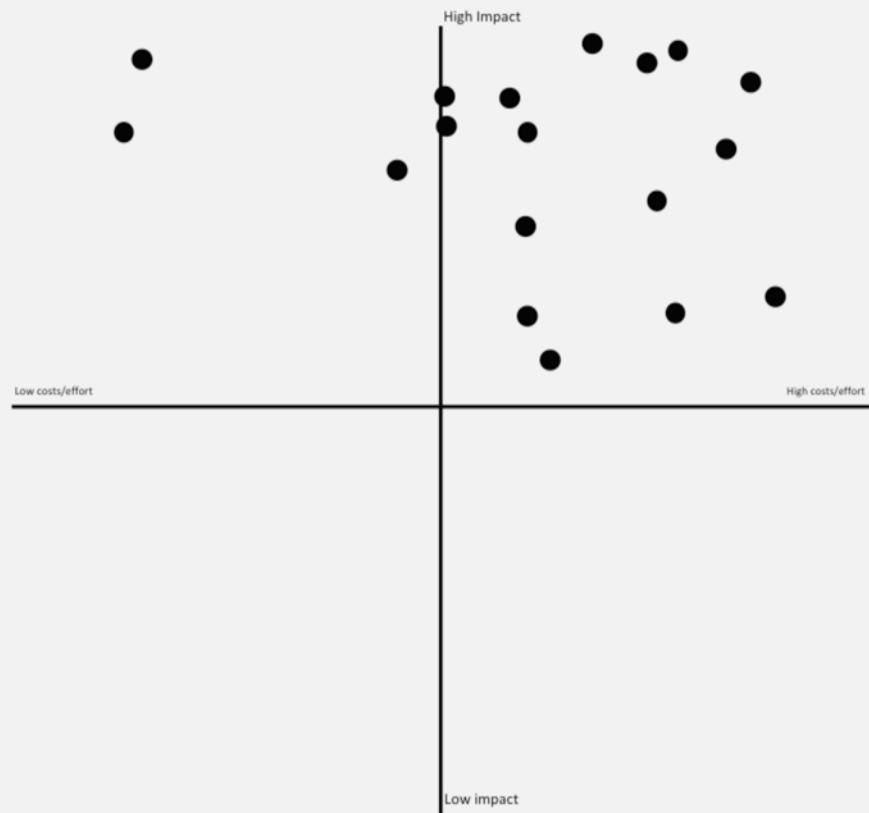


Figure 10. "Bang for Buck" in increasing education and outreach

Votes for #1 Priority: 0

Votes for #2 Priority: 0

Give Away Reuseable Bags

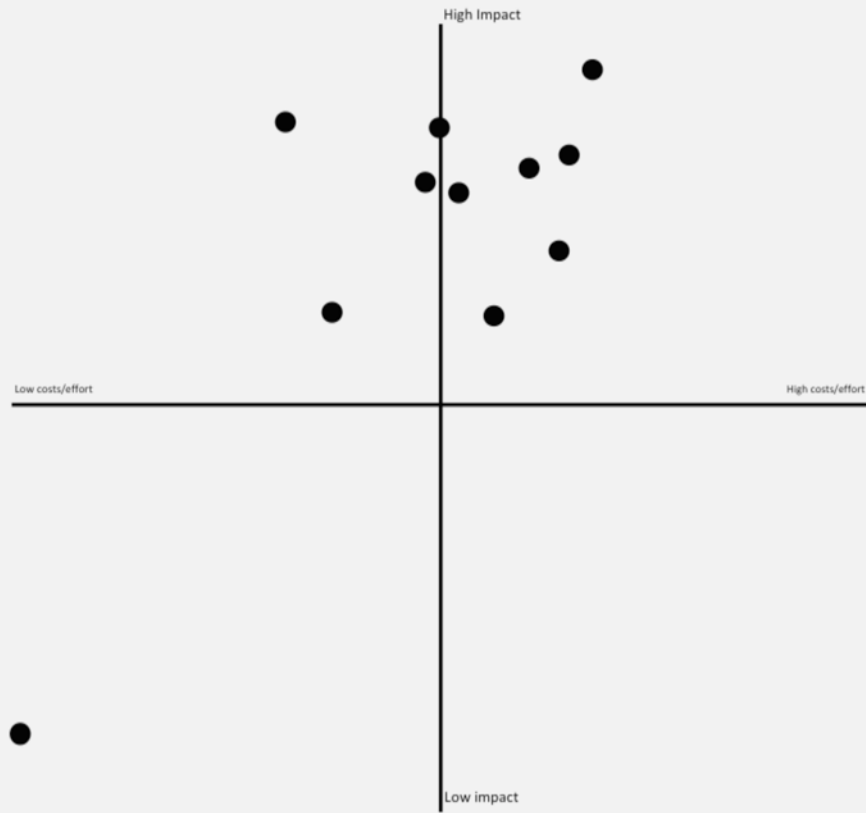


Figure 11. "Bang for Buck" in reusable bag giveaway

Votes for #1 Priority: 0
Votes for #2 Priority: 0

Increase Research and Fill Data Gaps

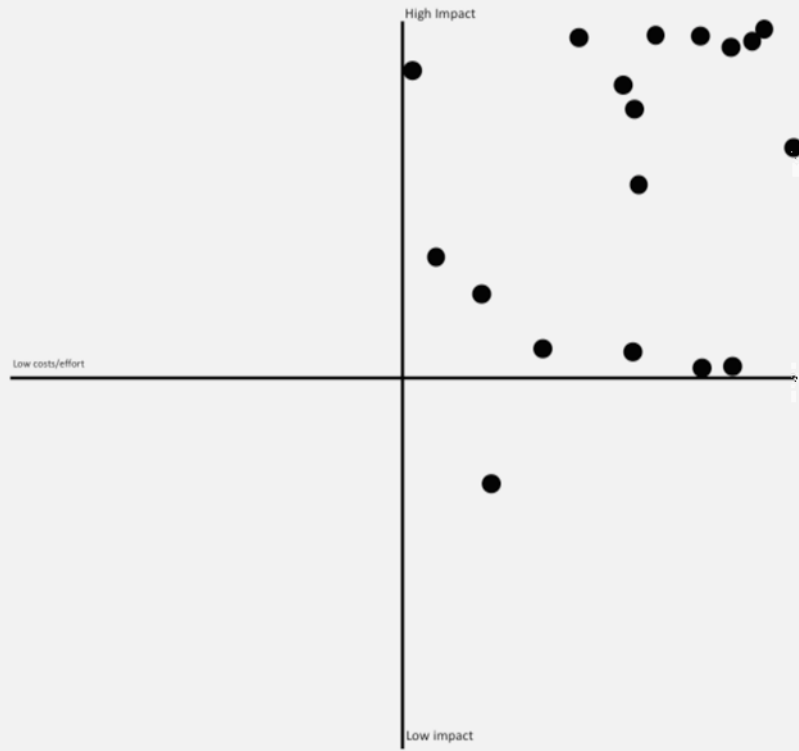


Figure 12. "Bang for Buck" in increasing research and fill data gaps. (also on chart: "Reporting, evaluation and follow up).

Votes for #1 Priority: 0
Votes for #2 Priority: 0

Increase Enforcement

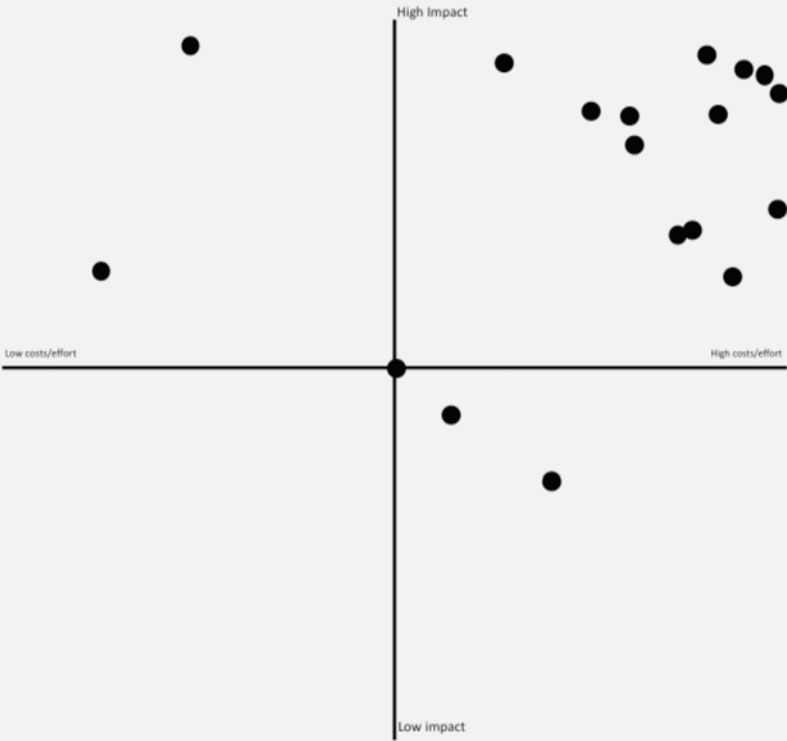


Figure 13. "Bang for Buck" in increasing Enforcement
Votes for #1 Priority: 0
Votes for #2 Priority: 1

Address Disposable Products and Packaging Waste

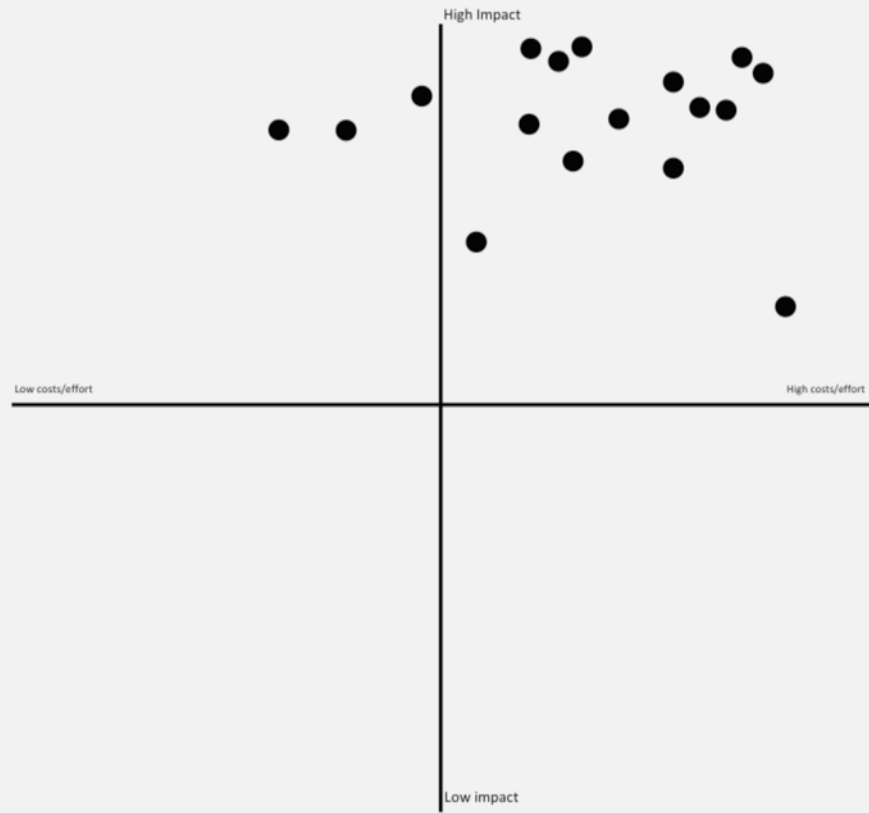


Figure 15. "Bang for Buck" in addressing disposable products and packaging waste

Votes for #1 Priority: 0

Votes for #2 Priority: 0

Improve Waste Management

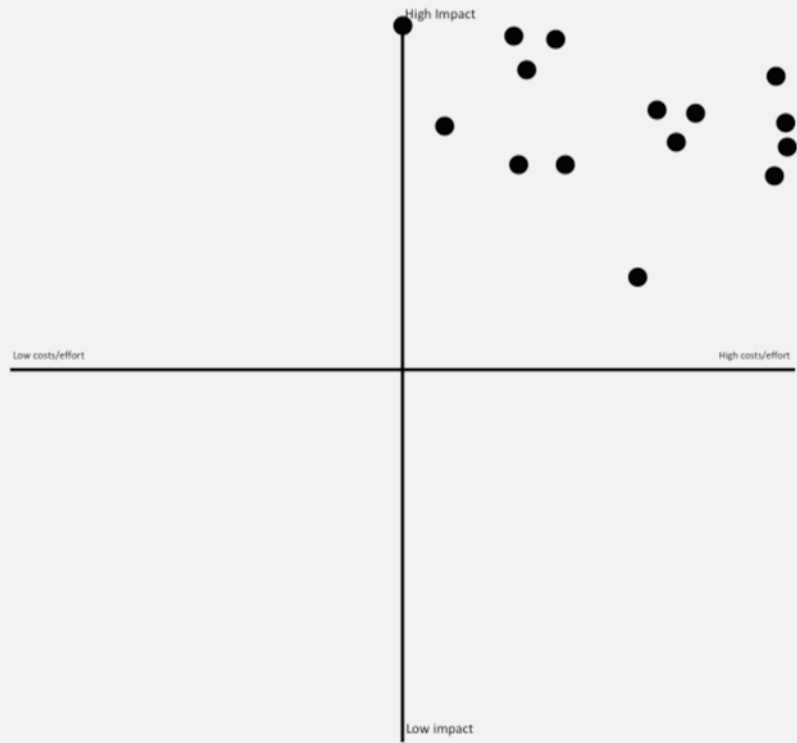


Figure 14. "Bang for Buck" in improving waste management

Votes for #1 Priority: 0

Votes for #2 Priority: 0

Improve Stormwater Management

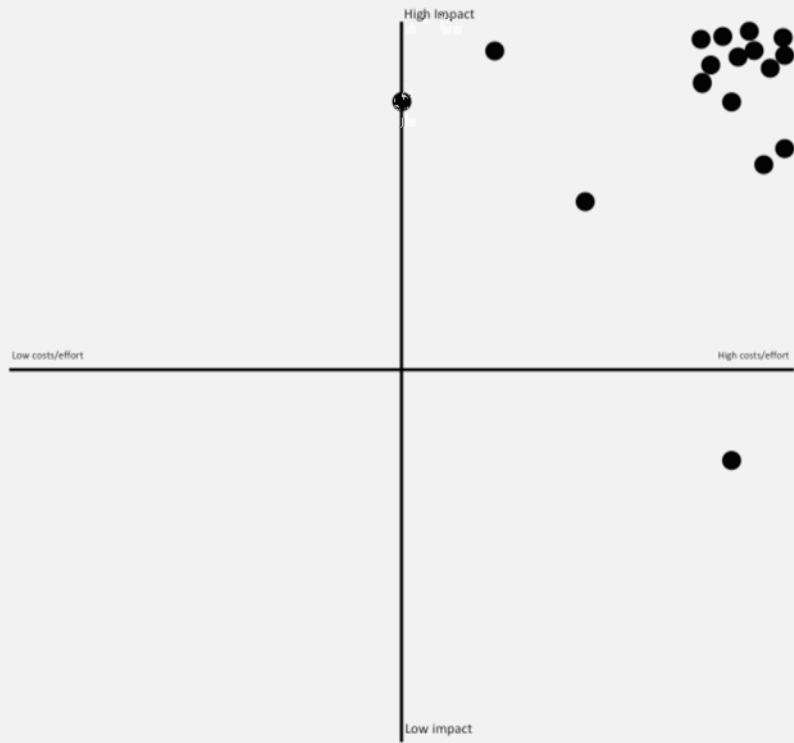


Figure 16. "Bang for Buck" in improving stormwater management

Votes for #1 Priority: 0

Votes for #2 Priority: 0

Reduce Lost and Abandoned Fishing Gear

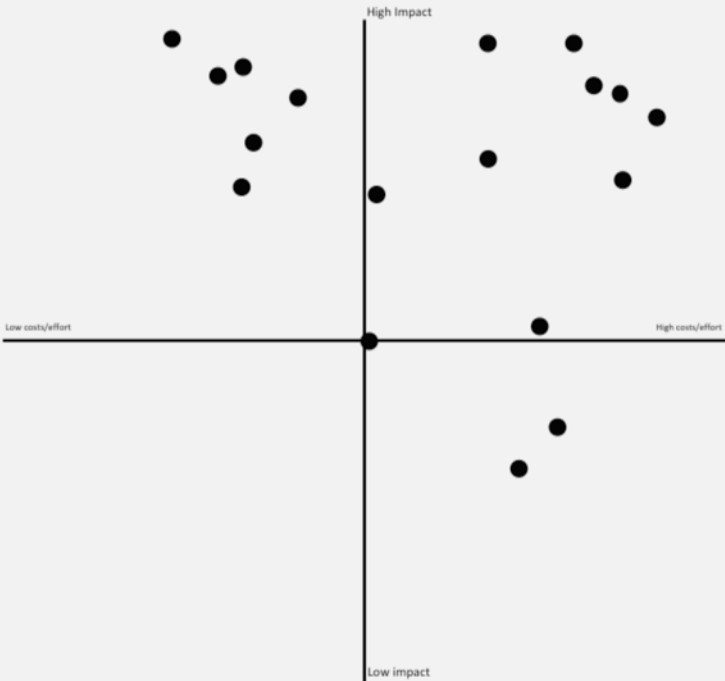


Figure 17. "Bang for Buck" in reducing abandoned fishing gear

Votes for #1 Priority: 0

Votes for #2 Priority: 0

New Laws and Regulations

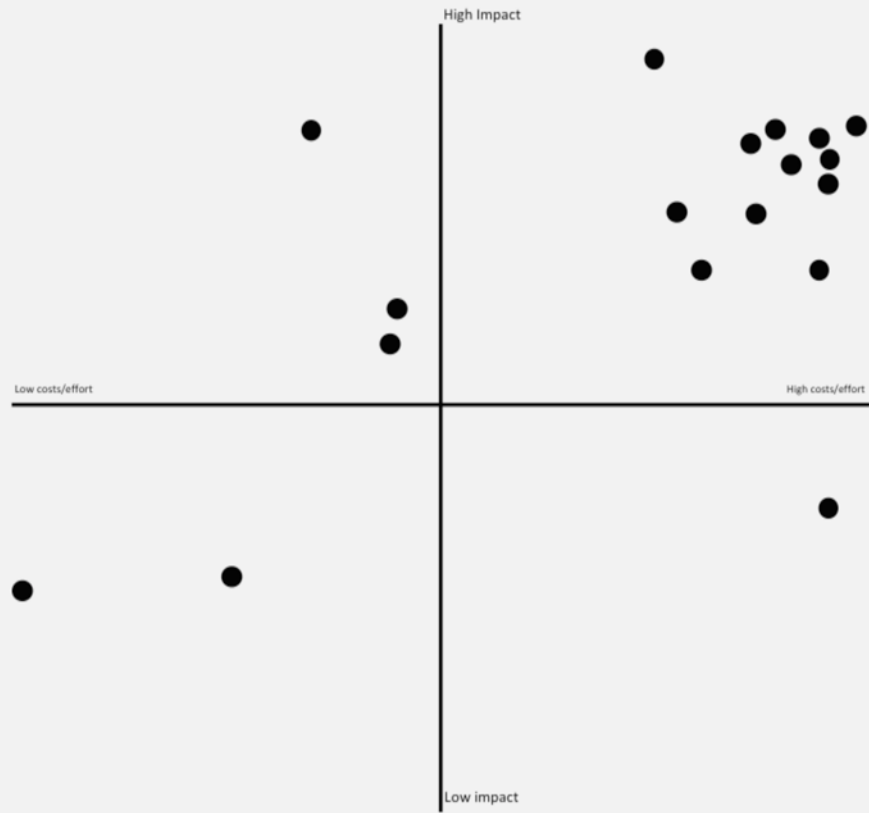


Figure 19. "Bang for Buck" in researching existing and developing new laws and regulations

Votes for #1 Priority: 1
Votes for #2 Priority: 0

Reduce Waste from Ships

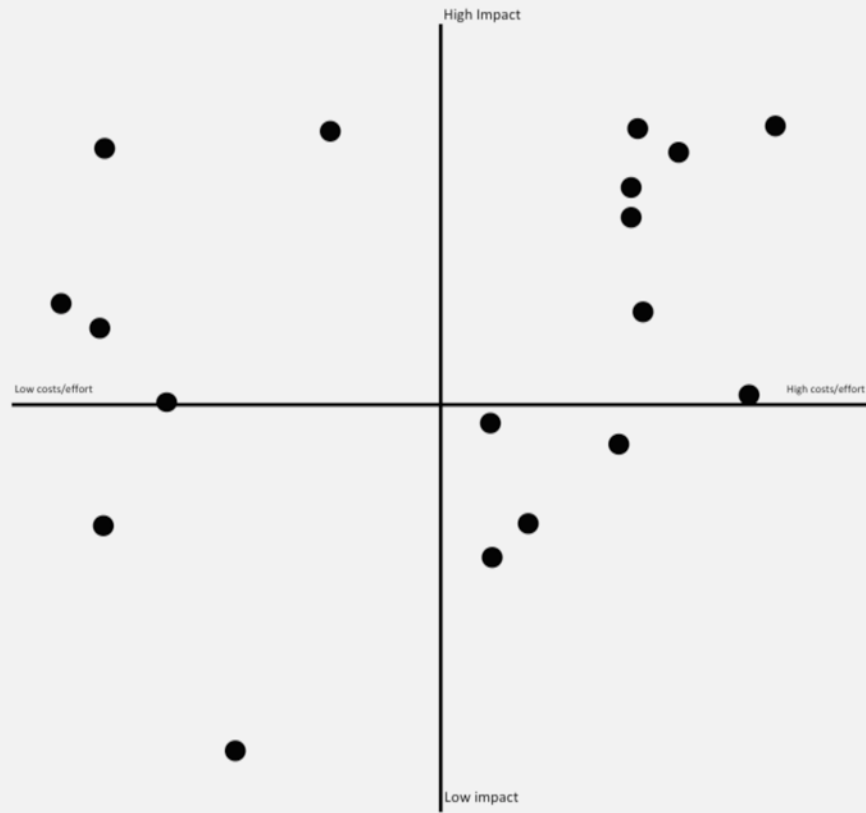


Figure 18. "Bang for Buck" in reducing waste from ships

Votes for #1 Priority: 0
Votes for #2 Priority: 0

Appendix H.

Additional contributors to the Plan

In addition to members of the Virginia Marine Debris Reduction Plan Leadership Team, the following people contributed to the development of the Plan.

- Cris Ausink, Stormwater Environmental Educator, Hampton Clean City Commission
- Richard Ayers, Virginia Natural Heritage Program
- Mike Baum, Executive Director, Keep Virginia Beautiful
- Sharon Baxter, Manager, Office of Pollution Prevention, Virginia Department of Environmental Quality
- Bob Benson, Acting Chief, Marine Pollution Control Branch, Office of Water, Environmental Protection Agency
- Sonya Besteiro, Associate Director, International Coastal Cleanup, Ocean Conservancy
- Wade Blackwood, Director, American Canoeist Association
- Sandra Brooke, PhD, Associate Research Faculty, Florida State University
- Don Brunson, Environmental Specialist II, Solid & Hazardous Waste Regulatory Programs, Virginia Department of Environmental Quality
- Ashley Carlson, Consultant, American Chemistry Council
- Steve Coe, Recycling and Litter Prevention Programs, Virginia Department of Environmental Quality
- Matt Colombo, Oak Ridge Institute for Science and Education Fellow, Environmental Protection Agency
- Deborah DeBiasi, Environmental Specialist II, Pollution Discharge Elimination, Virginia Department of Environmental Quality
- Bronwen Evans, Director of Litter Programs, Keep America Beautiful
- Mike Foreman, Director, Office of Environmental Education, Virginia Department of Conservation and Recreation
- Tom Griffin, Virginia Green Program Coordinator
- Robert Hale, PhD, Professor of Marine Science, Virginia Institute of Marine Science
- Drew Hammond, Environmental Specialist, Virginia Department of Environmental Quality
- Nancy Heltman, Visitor Services Manager, Virginia State Parks, Virginia Department of Conservation and Recreation
- Leslie Middleton, Consultant
- Mike Murphy, Director, Piedmont Regional Office, Virginia Department of Environmental Quality
- Samara Norman, Trex
- Ann Regn, Director, Public Information and Outreach, Virginia Department of Environmental Quality
- Matt Robinson, Environmental Protection Specialist, Stormwater Management Division, District of Columbia, Department of Environment
- Steve W. Ross, PhD, Research Professor, UNC-W, Center for Marine Science
- David Ruble, Environmental Education Coordinator, Office of Environmental Education, Virginia Department of Conservation and Recreation
- Nancy Wallace, Chief, Marine Debris Division, Office of Response and Restoration, National Oceanic and Atmospheric Administration
- Tony Watkinson, Chief, Habitat Management, Virginia Marine Resources Commission
- Virginia Witmer, Outreach Coordinator, Virginia Coastal Zone Management Program