



The Great Lakes Marine Debris Action Plan: 2016 Action Summary Report

NOAA Marine Debris Program
National Oceanic and Atmospheric Administration
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The Great Lakes Land-based Marine Debris Action Plan

2016 Action Summary Report



Information collected and summarized by the NOAA Marine Debris Program on behalf of the Great Lakes Marine Debris Community.

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Executive Summary

The following document details progress on the Great Lakes Land-based Marine Debris Action Plan: Lowe, S.E. (ed.) (2014). The Great Lakes Land-Based Marine Debris Action Plan. NOAA Technical Memorandum NOS-OR&R-49. This action plan consists of 53 actions which are to be completed within five years (2014-2019). As indicated in the monitoring of the plan, there is to be an Action Summary Report completed each calendar year. This Action Summary Report highlights progress made in 2016.

During the first three years of the plan, contributors to the Great Lakes Land-based Marine Debris Action Plan began work on 32 actions and successfully completed 11 actions. Ten actions will be started in the future.

In 2016, the following six actions were completed: 1) Convene a small working group to discuss research community needs, timeline, scale, and intent for a future platform (1.1.1); 2) Once needs analysis is complete, examine existing platforms to meet those needs (1.1.2); 3) Share current venue opportunities and identify invitees. Invitees should include those researchers who are currently involved in, or have an interest in land-based marine debris research in the region (1.2.1); 4) Based on results of synthesis paper, perform a gap analysis to identify research needs in the region (1.3.2); 5) Based on completed synthesis paper and gap analyses (Obj 3), develop a list of prioritized questions that need to be addressed and share it with regional research community (1.5.1); and 6) Investigate Canadian volunteer program reporting mechanisms and see how they align with U.S. efforts (4.1.1).

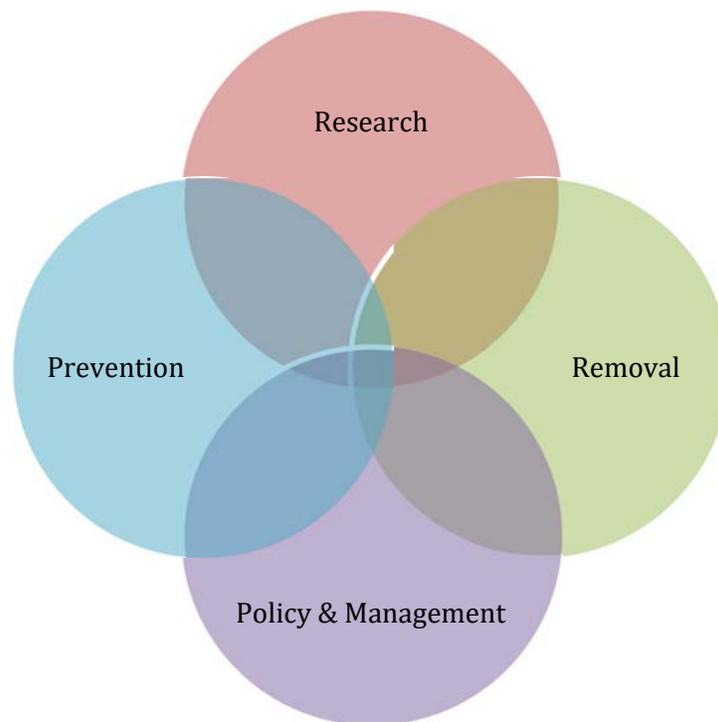
Semi-annual check-ins for the action plan were held on May 25 and November 16, 2016. During the webinars, participants heard and shared a summary of action progress to date. Specifically, summary information was presented for each of the four goals in the action plan, completed actions were highlighted in presentations, and other high-level updates were given from action coordinators. The webinars ended with an open discussion of feedback on reporting, communications, and challenges.

Action Plan Status

Vision: The Great Lakes, its coasts, people, and wildlife are free from the impacts of marine debris.

Mission: The Great Lakes will be free from marine debris through an increased understanding of the problem, preventative actions, reductions in impacts, and collaborative efforts of diverse groups.

FOUR GOALS

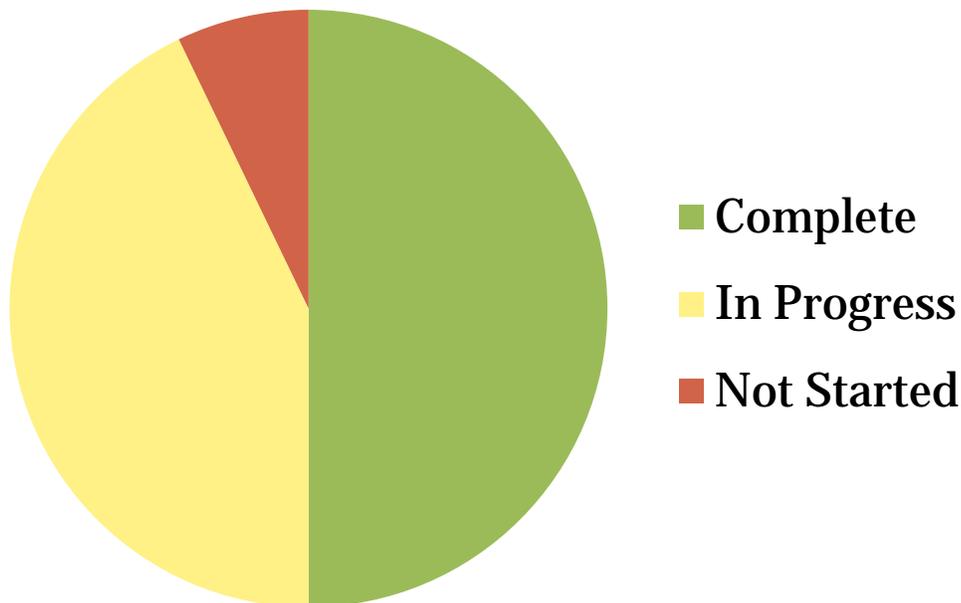


Goal 1: Knowledge gaps are identified and filled through research and monitoring of land-based marine debris.

Action Status:

7 Complete
6 In-Progress
1 Not Started

Goal 1 Action Progress



GOAL HIGHLIGHT

Complete: 1) *Based on results of synthesis paper, perform a gap analysis to identify research needs in the region.* 2) *Based on completed synthesis paper and gap analyses (Obj 3), develop a list of prioritized questions that need to be addressed and share it with regional research community.*

The International Joint Commission (IJC) held a microplastics workshop in April 2016. At this workshop, research gaps were identified in regard to microplastic research in the

marine debris. The IJC produced a final workshop report, which includes prioritized

[http://www.ijc.org/files/tinymce/uploaded/Microplastics in the Great Lakes Workshop Report FINAL September14-2016.pdf](http://www.ijc.org/files/tinymce/uploaded/Microplastics%20in%20the%20Great%20Lakes%20Workshop%20Report%20FINAL%20September14-2016.pdf)

| Goal 1: Knowledge gaps are identified and filled through research and monitoring of land-based marine debris. | | | |
|---|---|----------|---|
| <i>Objective 1: By the end of 2016, develop a platform for long-term collaboration on Great Lakes marine debris research.</i> | | | |
| Action Strategies | Coordinating & Partner Organizations | Status | Progress Description |
| 1. Convene a small working group to discuss research community needs, timeline, scale, and intent for a future platform. | <p><u>Coordinator:</u> NOAA MDP</p> <p><u>Partners:</u> University of Waterloo, Clean Water Action</p> <p><u>Participants:</u> All research organizations</p> | Complete | NOAA MDP is working on the development of a regional web-platform for the Great Lakes marine debris community. Stakeholders submitted ideas/desires for the platform, and also provided input on the prioritization of features. A contractor has been hired and the site is currently under development. Stakeholders will get the opportunity to preview the site for feedback in early 2017. |
| 2. Once needs analysis is complete, examine existing platforms to meet those needs. | Coordinator: NOAA MDP | Complete | NOAA MDP is working on the development of a regional web-platform for the Great Lakes marine debris community. NOAA MDP has met with the developers and manager of DIVER (Data Integration Visualization Exploration and Reporting) and have concluded that this platform is a good fit based on desires/requirements of regional community that were identified in action 1.1.1. |

| <i>Objective 2: By 2016, convene researchers to foster partnerships and collaboration.</i> | | | |
|--|---|----------|---|
| Action Strategies | Coordinating & Partner Organizations | Status | Progress Description |
| 1. Share current venue opportunities and identify invitees. Invitees should include those researchers who are currently involved in, or have an interest in land-based marine debris research in the region. | <p><u>Coordinator:</u> Alliance for the Great Lakes</p> <p><u>Partners:</u> SUNY Fredonia, NOAA MDP, University of Wisconsin-Superior</p> | Complete | The Alliance was one of the partners for the first ever Great Lakes Day on August 20th coordinated by the eXXpedition. As a partner we connected Inland Seas Education Association with the eXXpedition planners, and as a result Inland Seas was a lead student boat. In addition, the eXXpedition planners connected Inland Seas with an educational program in Toronto Brigantine that also participated in GLs Day and also used Inland Seas shipboard curriculum for microbeads. |
| 2. Host a research panel or session at a regional conference. | <p><u>Coordinator:</u> University of Michigan</p> <p><u>Partner:</u> University of Wisconsin-Superior</p> | Complete | IAGLR 2014 session is complete. See Goal Highlight in 2014 Summary Report for details. Researchers also gathered again at IAGLR in 2015 and 2016 for a session on marine debris. During the 2016 Sea Grant Week, state Sea Grant representatives hosted a workshop on emerging contaminants, which included microplastics as one of three topics. |

Objective 3: Over the next five years, create summary documents of existing research on land-based marine debris and identify key data gaps for the research community.

| Action Strategies | Coordinating & Partner Organizations | Status | Progress Description |
|--|--|----------|---|
| 1. Publish synthesis paper on plastic marine debris research in the Great Lakes. | <u>Coordinator:</u> University of Waterloo | Complete | The synthesis paper, entitled "Plastic debris in the Laurentian Great Lakes: A review", was published in the March 2015 issue of the Journal of Great Lakes Research. (doi:10.1016/j.jglr.2014.12.020) |
| 2. Based on results of synthesis paper, perform a gap analysis to identify research needs in the region. | <u>Coordinator:</u> NOAA MDP <u>Partners:</u> University of Waterloo, University of Western Ontario, University of Michigan, Loyola University, SUNY Fredonia, University of Wisconsin-Superior, Environment Canada | Complete | The International Joint Commission held a microplastics workshop in April 2016. At this workshop, research gaps were identified for this particular debris type. Additional analysis will be needed to identify gaps in other types of land-based marine debris. IJC produced a final workshop report (including prioritized research needs) located here: http://www.ijc.org/files/tinymce/uploaded/Microplastics in the Great Lakes Workshop Report FINAL September14-2016.pdf |

Objective 4: Through 2019, engage Great Lakes management communities to prioritize and foster implementation of relevant research topics.

| Action Strategies | Coordinating & Partner Organizations | Status | Progress Description |
|---|---|--------------------|--|
| <p>1. Identify relevant management stakeholders and establish communication channels.</p> | <p><u>Coordinator:</u> Great Lakes Sea Grant Network</p> <p><u>Partner:</u> GL National Estuarine Research Reserves (NERRs)</p> | <p>In Progress</p> | <p>Sea Grant participated in the Plastic Working Group (PWG) for Cleveland and helped with planning the Northeast Ohio Plastic Reduction Symposium. Through the PWG, Ohio Sea Grant has broadened the stakeholders it has worked with on the issue of plastic debris and shared education ideas and learned of new ideas from partners involved in the PWG. With the planning of the NEO Plastic Reduction Symposium, it has been identified that the inner city communities of Cleveland have not been involved in the conversation or the conversation has not been made relevant to their needs in regards to marine debris. The group is discussing the best ways to involve these stakeholder groups that have been left out.</p> |
| <p>2. Through established communication channels, work with management stakeholders to develop a list of research questions that are of interest to the Great Lakes management community.</p> | <p><u>Coordinator:</u> Great Lakes Sea Grant Network</p> <p><u>Partner:</u> NERRs</p> | <p>In Progress</p> | <p>In late May, following a National Sea Grant-funded training on marine debris, Great Lakes Sea Grant directors were provided with a list of research gaps as part of a justification for elevating marine debris/microplastics in Sea Grant's strategic planning and research funding (copy available). One of the breakout sessions at the NEO Plastic Reduction Symposium on Nov. 30, 2016 will focus on research needs and actions that can be taken to fill some of the research gaps for marine debris in NEO. Also with the completion of Cleveland's single-use plastic item survey on Oct. 31, more research needs will be identified as results are analyzed.</p> |

| Objective 5: Within the next five years, the Great Lakes research community will address knowledge gaps on land-based marine debris by completing and publishing a minimum of two studies. | | | |
|---|--|-------------|---|
| Action Strategies | Coordinating & Partner Organizations | Status | Progress Description |
| 1. Based on completed synthesis paper and gap analyses (Obj 3), develop a list of prioritized questions that need to be addressed and share it with regional research community. | <p><u>Coordinator:</u> NOAA MDP</p> <p><u>Partners:</u> Researchers, Alliance for the Great Lakes, Environment Canada, Inland Seas Education Association</p> | Complete | <p>The International Joint Commission held a microplastics workshop in April 2016. At this workshop, research gaps were identified for this particular debris type. Additional analysis will be needed to identify gaps in other types of land-based marine debris. IJC produced a final workshop report (including prioritized research needs) located here:</p> <p>http://www.ijc.org/files/tiny_mce/uploaded/Microplastics in the Great Lakes Workshop Report FINAL September14-2016.pdf</p> |
| 2. Identify funding sources for land-based marine debris research, both current and future. | <p><u>Coordinator:</u> University of Waterloo; University of Michigan</p> <p><u>Partner:</u> Great Lakes Sea Grant Network, University of Wisconsin-Superior</p> | In Progress | <p>Melissa Duhaime (University of Michigan), along with other colleagues, took part in a Sea Grant training workshop on microplastics (NOAA GLERL, April 2016). Sea Grant affiliates will request microplastics be stated as a priority research item in next Sea Grant RPFs. This is one step forward, as Sea Grant is identified as potential funding source.</p> |
| 3. Create and send a bi-national letter to inform potential funding officials of regional research needs for land-based marine debris. | <p><u>Coordinator:</u> University of Waterloo; University of Michigan</p> | In Progress | <p>Melissa Duhaime (University of Michigan) and Hans Dürr (University of Waterloo), along with other colleagues, took part in the International Joint Commission workshop on Microplastics. The goal of the workshop was to establish research gaps and priorities, which was accomplished. The IJC will now formalize these statements to present to U.S. and Canadian governments to encourage addressing these points by funding basic research. This report could also serve as a template for further dissemination.</p> |

Objective 6: Through 2019, ensure data collection consistency and quality assurance by multiple users.

| Action Strategies | Coordinating & Partner Organizations | Status | Progress Description |
|---|---|-------------|--|
| <p>1. Establish protocol/ methodology to ensure metadata on land-based debris exists and is consistent for the following mediums:</p> <p>a) Open & Nearshore Water b) Shoreline c) Deep & Nearshore Sediments d) Fisheries e) Water Infrastructure (wastewater systems, stormwater, etc.)</p> | <p><u>Coordinator:</u> SUNY Fredonia & University of Michigan</p> <p><u>Partners (corresponding to mediums listed):</u></p> <p>a) SUNY Fredonia, NOAA MDP, University of MI, University of Wisconsin – Superior, Inland Seas</p> <p>b) Loyola University, University of Waterloo, Alliance for the Great Lakes, NOAA MDP, Inland Seas</p> <p>c) University of Western Ontario, NOAA MDP</p> <p>d) State/ Provincial Departments of Natural Resources</p> <p>e) SUNY Fredonia</p> | In Progress | <p>The first 2 steps in our revised timeline (provided below) have been completed. We have made significant progress on step 3:</p> <ol style="list-style-type: none"> 1. Compile methods (complete) 2. Review methods & identify the steps in the protocols where metadata collection is crucial (complete) 3. Develop recommended metadata for each sampling media (April 2016 - December 2016). Modeled after MIGS/MIMS (especially the metadata requirements for environmental sampling component): http://www.nature.com/nbt/journal/v26/n5/full/nbt1360.html 4. Share drafts of recommended metadata collection forms for various media types in January 2017 via email and in May 2017 at the annual IAGLR meeting, Freshwater Plastic Pollution session 5. Request various research personnel use the form to 'report' some of their samples to us to ensure that we have accounted for all crucial metadata (January 2017 - August 2017) 6. Revise metadata forms based on feedback from researchers (September - November 2017) 7. Submit final recommendations for metadata collection to Action Plan (December 2017) |

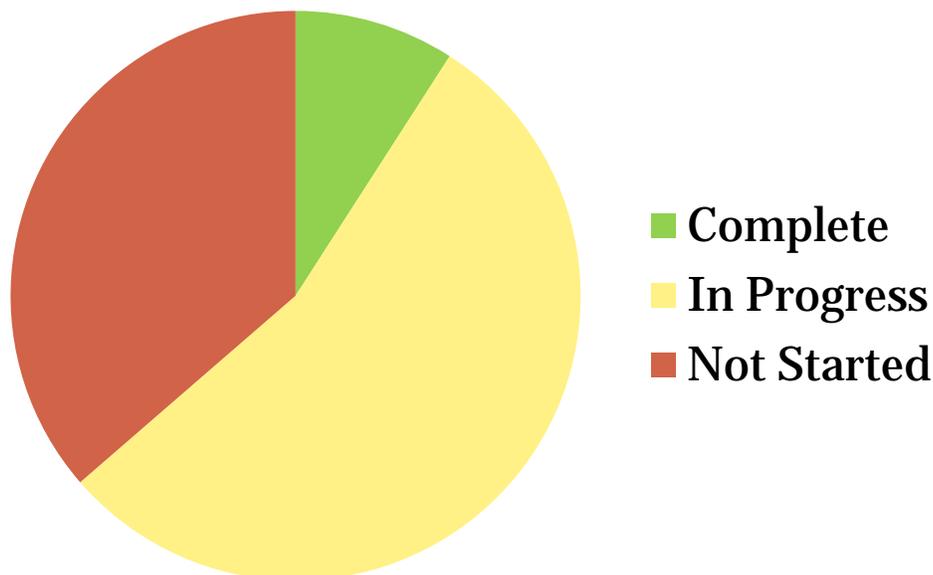
| | | | |
|---|--|--------------------|--|
| <p>2. Establish opportunities to share and/or provide training on established protocols across the regional organizations. This may be completed in conjunction with Obj 2.</p> | <p><u>Coordinator:</u> Alliance for the Great Lakes</p> <p><u>Partners:</u> SUNY Fredonia, NOAA MDP, University of Wisconsin-Superior, NERRs</p> | <p>In Progress</p> | <p>EPA Trash-Free Waters hosted a microplastics training on October 11, 2016 in New York. Presenters for the workshop included Dr. Sheri Mason - SUNY; Abby Barrows - Adventure Scientists; and Marcus Erikson - 5 Gyres. The focus of this workshop was on citizen microplastic sampling.</p> |
| <p>3. Identify obstacles within quality assurance of data (ex. volunteer error) and make recommendations on how these obstacles can be resolved or clarified to data users.</p> | <p><u>Coordinator:</u> Keep America Beautiful</p> | <p>Not started</p> | <p>KAB has recently volunteered to lead this action.</p> |

Goal 2: A science-based and strategic approach is used to guide land-based marine debris policy and management decisions in the Great Lakes.

Action Status:

1 Complete
6 In Progress
4 Not Started

Goal 2 Action Progress



GOAL HIGHLIGHT:

In-Progress: *Engage storm water professionals and the Great Lakes Storm Water Management Institute on land-based marine debris issues in the region.*

The Lake Superior National Estuarine Research Reserve has identified a contact with the Great Lakes Stormwater Management Institute and plans on networking with them to determine areas of collaboration, and also to assist with coordinating a “stormwater-control practices” marine debris working group for the Great Lakes.

Goal 2: A science-based and strategic approach is used to guide land-based marine debris policy and management decisions in the Great Lakes.

Objective 1: By the end of 2017, create a summary document of existing land-based marine debris policies and management systems in the Great Lakes.

| Action Strategies | Coordinating & Partner Organizations | Status | Progress Description |
|---|--|-------------|--|
| 1. Inventory and create a summary document on existing policies and best management practices related to land-based marine debris in the Great Lakes. | <u>Coordinator:</u> Clean Water Action <u>Partners:</u> Keep America Beautiful, American Chemistry Council | In Progress | No new progress to report. Clean Water Action has begun the process of collecting and compiling data on existing litter laws in the Great Lakes' states. Our next step is to convene a call with partner organizations to determine the criteria for analyzing the data. |
| 2. Review developed summary document and identify potential target areas for improvement. | <u>Coordinator:</u> Clean Water Action <u>Partners:</u> Keep America Beautiful, American Chemistry Council, Alliance for the Great Lakes | Not Started | Work on this action will begin after completion of action 1 |
| 3. Share the developed summary with policy makers in the Great Lakes region and make recommendations for policy improvements. | <u>Coordinator:</u> Clean Water Action <u>Partners:</u> Keep America Beautiful, American Chemistry Council, Alliance for the Great Lakes | Not Started | Work on this action will begin after completion of action 2 |

| Objective 2: Share the developed land-based marine debris action plan with the policy and management communities upon its completion. | | | |
|--|---|-------------|---|
| Action Strategies | Coordinating & Partner Organizations | Status | Progress Description |
| 1. Present the finalized action plan at relevant local, regional, and national conferences and/or meetings. | <u>Coordinator:</u> None – captured in annual reporting. <u>Partners:</u> Everyone | In Progress | During 2016, the action plan was presented 15 times to policy, management, and corporate groups, reaching approximately 542 people. |
| 2. Develop a contact list of policy and management representatives for distribution of the final action plan. | <u>Coordinator:</u> NOAA MDP <u>Partners:</u> State/Provincial management programs (Coastal Zone, DNRs) EPA, Great Lakes Sea Grant Network, NERRs | Complete | Completed in 2014: The NOAA Marine Debris Program, in partnership with state management programs (Coastal Zone Management Offices, Departments of Natural Resources or Environmental Quality), the Environmental Protection Agency, the Great Lakes Sea Grant Network, and the National Estuarine Research Reserves developed a contact list of relevant policy and management representatives from around the region. These contacts received the Great Lakes Land-based Marine Debris Action Plan via email on August 5, 2014. Partners continue to follow-up with these individuals. |
| 3. Develop a summarized action plan with brief talking points. | <u>Coordinator:</u> Ohio Coastal Management, Great Lakes Sea Grant Network <u>Partners:</u> Michigan DEQ, City of Cleveland Office of Sustainability, Wisconsin Coastal Management | In Progress | A fact sheet about marine debris in the Great Lakes has been created and sent to partners. No feedback was received. Coordinators will resend the fact sheet to project partners and hope for feedback. |

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| <p>4. Create a general presentation or summary slide on final action plan and share with Great Lakes marine debris community for use in outreach to the policy and management communities.</p> | <p><u>Coordinator:</u> Ohio Coastal Management, Great Lakes Sea Grant Network <u>Partners:</u> Michigan Department of Environmental Quality, City of Cleveland Office of Sustainability, Wisconsin Coastal Management Program</p> | <p>In Progress</p> | <p>The PowerPoint presentation has been started and submitted to project partners for review. No feedback was received so the coordinators will resend it to project partners for feedback. The presentation is designed to be customizable for any group to use.</p> |
| <p>5. Work with states, municipalities, and other key constituencies throughout the Great Lakes region to fully understand their trash prevention goals, programs, and perceived needs and barriers to success, and develop collaborative regional projects to address those factors.</p> | <p><u>Coordinator:</u> EPA</p> | <p>Not Started</p> | <p>EPA continues to hold on action 2.2.5, but hopes to gear up some activity with colleagues in EPA's Great Lakes office in 2017 (in addition to research work they already are doing).</p> |

| <i>Objective 3: Review and prioritize storm water control practices at five municipal districts in the Great Lakes by 2019.</i> | | | |
|--|--|-------------|--|
| Action Strategies | Coordinating & Partner Organizations | Status | Progress Description |
| 1. Engage storm water professionals and the Great Lakes Storm Water Management Institute on land-based marine debris issues in the region. | <p><u>Coordinator:</u> NERRs</p> <p><u>Partners:</u> Coastal Zone Management Offices, Clean Water Action, EPA, Great Lakes Sea Grant Network, Erie Soil & Water Conservation District, Cleveland Mayor's Office of Sustainability, Alliance for the Great Lakes, City of Cleveland Water Pollution Control</p> | In Progress | <p>Lake Superior NERR has found a contact with the Great Lakes Stormwater Management Institute and plans on networking with them to determine areas of collaboration and to assist with coordinating a "stormwater-control practices" marine debris working group for the Great Lakes. The LS NERR also has partnered with the City of Superior, WI and conducted two days of Erosion Control Workshops for Contractors and Consultants with 75 participants. The LS Reserve and the City of Superior delivered two Superior Stormwater BMP bus tours for local citizens and local officials in August 2016, with 20 in attendance. LS Reserve continues to plan for 2017 stormwater-related workshops for contractors, consultants and municipal stormwater staff. OWC NERR has continued to partner with the Erie Conservation District to form the Clean Water Contractor (CWC) Program, which has hosted trainings on sediment & erosion control, as well as installing stormwater best management practices. This program requires contractors to pledge to become "Clean Water Contractors," which involves meeting a set of criteria that contributes to their clean water status. OWC NERR has also been associated with the NEOH Marine Debris Reduction Plan development. This will hopefully result in the brainstorming of training and outreach tactics that will confront various marine debris items via multiple methods (e.g. stormwater management).</p> |

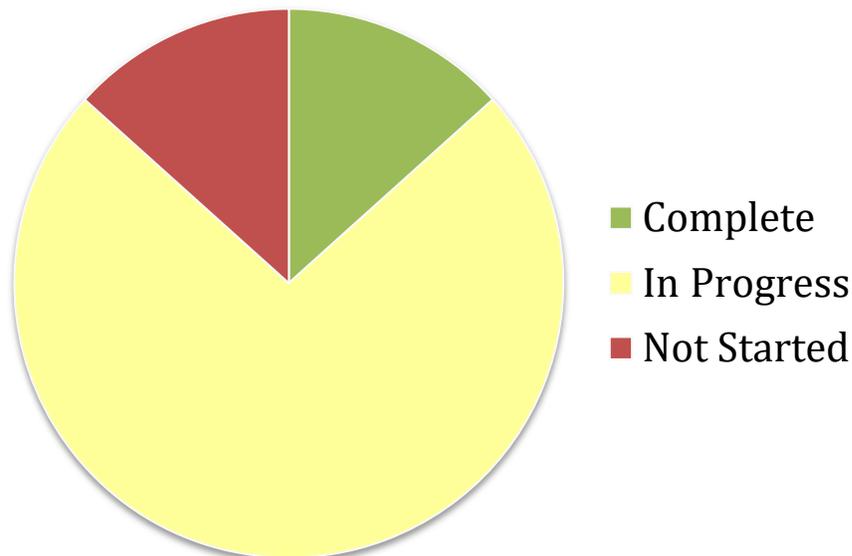
| | | | |
|--|---|--------------------|--|
| <p>2. Identify existing storm water control practices related to land-based marine debris and identify gaps in programs and/or policy.</p> | <p><u>Coordinator:</u> NERRs <u>Partners:</u> Coastal Zone Management Offices, Clean Water Action, EPA, Great Lakes Sea Grant Network, Erie Soil & Water Conservation District, Cleveland Mayor's Office of Sustainability, Alliance for the Great Lakes, City of Cleveland Water Pollution Control</p> | <p>In Progress</p> | <p>We will be holding a call in December with our partners to identify existing marine debris efforts, create a strategy, and allocate assignments to move forward on the progress of this action item. The NERRS coordinators are working closely to organize the team of partners. The CTP Coordinator for LS Reserve has allocated intern time to support moving this action forward.</p> |
| <p>3. Implement tools and incentives to leverage action by various groups.</p> | <p><u>Coordinator:</u> NERRs <u>Partners:</u> Coastal Zone Management Offices, Clean Water Action, EPA, GL Sea Grant Network, Erie Soil & Water Conservation District, Cleveland Office of Sustainability, Alliance for the Great Lakes, Cleveland Water Pollution Control</p> | <p>Not Started</p> | <p>This will need to be a key part of the call the NERRs will facilitate with partners in December 2016; largely dependent on actions 1 & 2 of this objective.</p> |

Goal 3: Land-based marine debris is prevented and reduced through an educated and involved community.

Action Status:

2 Complete
11 In Progress (1 annual complete)
2 Not Started

Goal 3 Action Progress



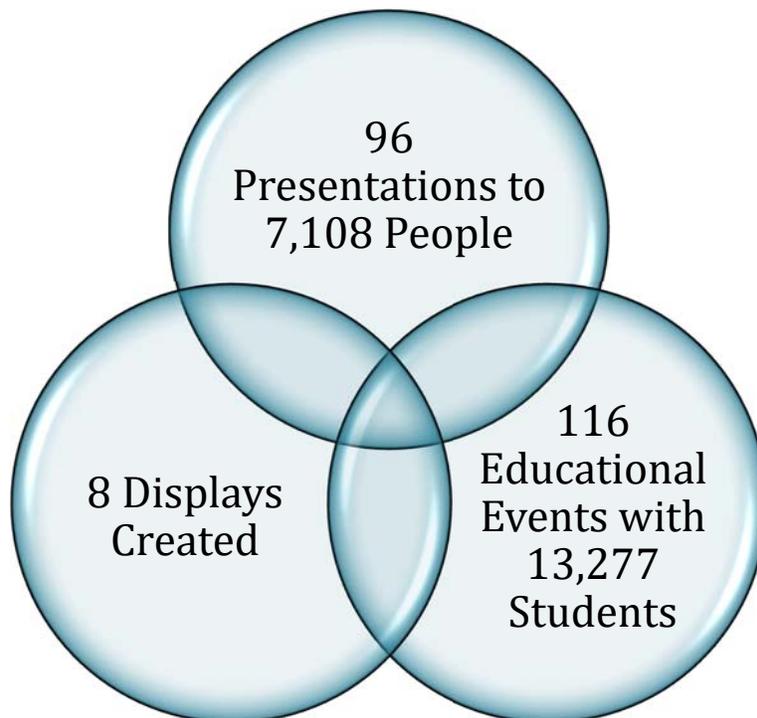
Objective 4: Conduct five informal education activities on land-based marine debris per year, per lake, to the general public.

Ontario: 1
Erie: 71
Huron: 9
Michigan: 15
Superior: 4

Objective 5: Conduct five formal education activities on land-based marine debris per year, per lake, to targeted audiences.

Ontario: 1
Erie: 62
Huron: 32
Michigan: 18
Superior: 1

2016 Outreach Highlights



GOAL HIGHLIGHT:

In-Progress: *Create land-based marine debris educational displays at public venues (i.e. state parks, museums, marinas, universities, etc.). The displays may be mobile in nature to be easily shared across the region.*

An exhibit now on display in Superior, Wisconsin encourages viewers to take an active role in preventing trash from reaching Lake Superior. The exhibit features all the plastic collected by Dr. Lorena Rios Mendoza and a group of UW-Superior students on Wisconsin Point on one day in September 2015. Designed by staff at the Lake Superior National Estuarine Research Reserve with support from the National Oceanic and Atmospheric Administration's (NOAA) Marine Debris Program, the mobile exhibit has been touring the region, collecting pledges to prevent trash in the Great Lakes.

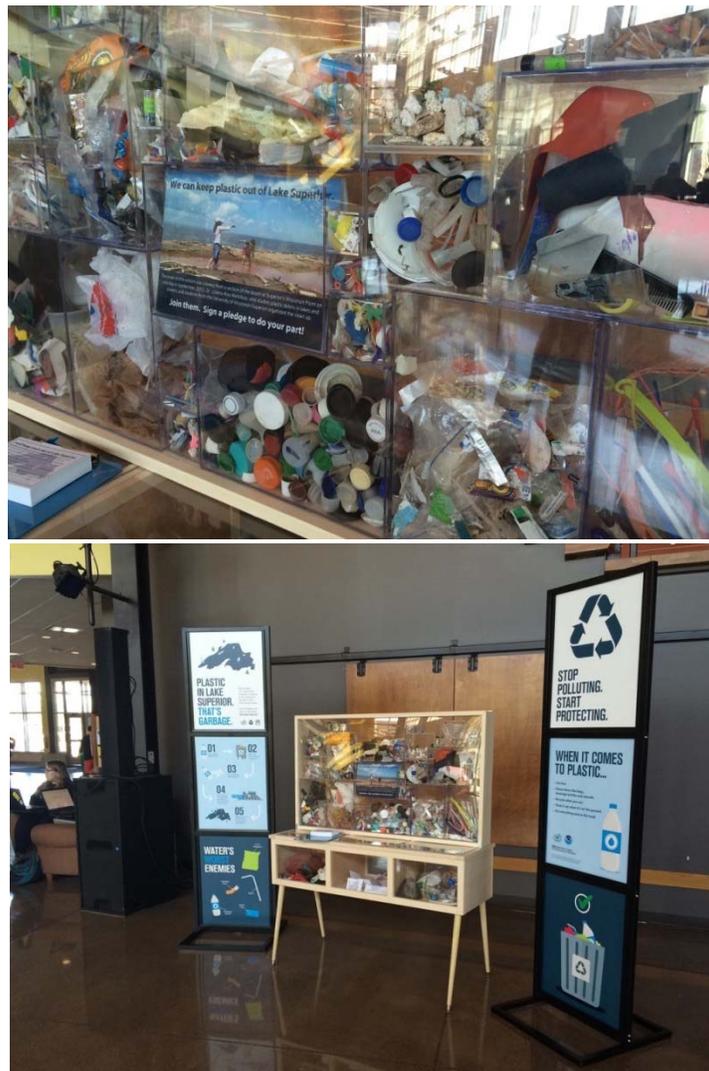


Photo Credits: Lake Superior NERR

| Goal 3: Land-based marine debris is prevented and reduced through an educated and involved community. | | | |
|---|---|-------------|--|
| <i>Objective 1: By the beginning of 2016, conduct a needs assessment for future education efforts on land-based marine debris in the Great Lakes.</i> | | | |
| Action Strategies | Coordinating & Partner Organizations | Status | Progress Description |
| 1. Identify target audiences and potential new partners for future education efforts. | <u>Coordinator:</u> Alliance for the Great Lakes | Complete | In 2015, the Alliance interviewed all partners listed (with the exception of those that did not respond to our outreach) in goal 3. Through that initial outreach we determined that the target audiences that partners want to reach varies between formal education and public education. To narrow the focus, it has been decided that for this particular objective, the focus would be on formal education. Informal/public education would be the focus of Objective 2 under goal 3. |
| 2. Inventory educational resources that are currently available and identify gaps in content and style/type. | <u>Coordinator:</u> Alliance for the Great Lakes <u>Partners:</u> Great Lakes Sea Grant Network, NOAA MDP, NERRs, Coastal Training Program, City of Cleveland Office of Sustainability, Inland Seas, Shedd Aquarium | In Progress | To date, educational materials have been compiled and reviewed by partners. Initial steps for identifying gaps have been taken. It is challenging, however, to gather partners to analyze materials for gaps. This might be best served by NOAA or an organization that has specific objectives to complete this task in their organizational objectives. |
| 3. Create new or adapt existing educational materials to fill gaps identified above. | <u>Coordinator:</u> Alliance for the Great Lakes <u>Partners:</u> Great Lakes Sea Grant Network, NOAA MDP, NERRs, WI Coastal Management Program | Not Started | See action 3.1.2. |

| Objective 2: By the end of 2016, launch at least one awareness campaign for Great Lakes communities regarding land-based marine debris. | | | |
|--|---|-------------|---|
| Action Strategies | Coordinating & Partner Organizations | Status | Progress Description |
| 1. Identify and review existing awareness campaigns that could be leveraged. | <p><u>Coordinator:</u> Keep America Beautiful</p> <p><u>Partner:</u> Alliance for the Great Lakes, Inland Seas, Hubbub (UK-based litter prevention organization)</p> | In Progress | We have developed a campaign targeting cigarette butts. February through May 2017, Keep America Beautiful plans to pilot Hubbub's "ballot bins" in the United States, using a Great Lakes city as a pilot site. "Ballot Bins" are cigarette ash receptacles that ask questions; you can vote on answers by depositing your cigarette butt. Keep America Beautiful will be the exclusive provider of "ballot bins" in the U.S. and will work to test the effectiveness of the bins, as well as their color, bin placement, the questions asked on the bins, and the frequency of changing the questions. |
| 2. Engage a marketing expert to assist in the development of a campaign. | <p><u>Coordinators:</u> City of Cleveland</p> <p><u>Partners:</u> Alliance for the Great Lakes, American Chemistry Council, Great Lakes Sea Grant Network, Keep America Beautiful, Hi-Cone, Inland Seas</p> | In Progress | The City of Cleveland has executed a contract with the marketing firm Thunder Tech Inc. and Ohio Sea Grant has subcontracted with Thunder Tech Inc. to conduct the research for the campaign. Ohio Sea Grant has distributed an online survey to identify a target audience and barriers to desired behaviors for handling three plastic marine debris items: plastic grocery bags, disposable water bottles, and plastic cigar tips. |

| Objective 3: By 2019, develop a social marketing plan, including 10 communication products to address land-based marine debris in the Great Lakes. | | | |
|---|--|-------------|---|
| Action Strategies | Coordinating & Partner Organizations | Status | Progress Description |
| 1. Identify and review effectiveness and impact of existing social marketing programs on littering behavior. | <u>Coordinators:</u> Keep America Beautiful & Alliance for the Great Lakes <u>Partners:</u> Great Lakes Sea Grant Network, Clean Water Action, NERRs | In Progress | We are compiling a list of social marketing campaigns for review. We will continue to add to and refine this list, seeking additional input from our contacts, affiliates, and others, particularly those connected with water. A project intern will assist. |
| 2. Create a brand with localized and targeted messages based on social science research on barriers and benefits. Social science research may include public-opinion focus groups and value identification. | <u>Coordinator:</u> City of Cleveland, Alliance for the Great Lakes | In Progress | See progress report for Action 3.2.2. These two actions have been combined. |

| Objective 4: Conduct five informal education activities on land-based marine debris per year, per lake, to the general public. | | | |
|--|---|--|--|
| Action Strategies | Coordinating & Partner Organizations | Status | Progress Description |
| 1. Engage the Beach Ambassador Program as well as museums and/or aquariums on educational activities related to land-based marine debris in the Great Lakes. | <p><u>Coordinator:</u> Alliance for the Great Lakes</p> <p><u>Partner:</u> Old Woman Creek NERR</p> | In Progress | The Alliance launched a new pilot initiative in Chicago called "My Beach Your Beach" through which multiple social and cleanup activities were hosted at Oak Street Beach throughout the summer. These events included: placing small flags on the beach during beach cleanups as items were removed from the beach; a voting box in which individuals could vote with cigarette butts; and various cleanup events. We will be assessing the impacts of this work. In addition, the Alliance is working with the state of Michigan on a Clean Beaches Initiative where we are bringing together agencies at the state level to share information on marine debris in Michigan coastal areas and looking for opportunities to partner to reduce debris. |
| 2. Organize an annual Boat Float in Lake Erie. | <p><u>Coordinator:</u> City of Cleveland Office of Sustainability</p> <p><u>Partners:</u> Cleveland Metroparks, Cleveland Museum of Natural History, Alliance for the Great Lakes, Drink Local Drink Tap and RES Polyflow</p> | In Progress; 2014, 2015, 2016 complete | The 8th Annual Great Lake Erie Boat Float was held at Edgewater Park Beach on Saturday, September 10, 2016. Six boats and one Li'l Sailor competed for trophies and prizes and many spectators came out to watch. A beach cleanup was held after the Boat Float. Several tabling events and presentations about the threat of plastic marine debris to our waterways were given in the months preceding the Boat Float. We are now planning for the 9th Annual Boat Float. We will re-evaluate and increase our marketing efforts next year due to the low number of boats participating in 2016. |

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| <p>3. Stop in and present to coastal communities during research cruises [Outreach to general public, including presentations to coastal communities during field research expeditions.].</p> | <p><u>Coordinator:</u> None – captured in annual reporting. <u>Partners:</u> All researchers</p> | <p>In Progress</p> | <p>In 2016, 96 tabling events and presentations were conducted reaching 7,108 people.</p> |
| <p>4. Create land-based marine debris educational displays at public venues (i.e. state parks, museums, marinas, universities, etc.). The displays may be mobile in nature to be easily shared across the region.</p> | <p><u>Coordinator:</u> None – captured in annual reporting. <u>Partners:</u> Everyone</p> | <p>In Progress</p> | <p>During 2016, eight displays were created. For example, working with Watershed Academy participants, WISG created a display for the Wisconsin Maritime Museum that highlighted beach waste, specifically cigarette butts. The display was in the museum during August 2016 and reached an estimated 4,000 people.</p> |
| <p>5. Encourage large-scale public events (i.e. conferences, etc.) to be “zero-waste.”</p> | <p><u>Coordinators:</u> Keep America Beautiful & City of Cleveland Office of Sustainability <u>Partners:</u> SC2019 ZeroWasteNEO Working Group, Graduates of the Cuyahoga County Solid Waste District's Master Recyclers class</p> | <p>In Progress</p> | <p>This year, the City of Cleveland has assisted in the coordination and execution of several reduced-waste events in the City. Many of these events were outdoor and/or street festivals, e.g. Rock the Blocks, Night Market, ciCLEvia and Potluck in the Park. Indoor events included the Sustainable Cleveland Summit Orientation and Summit. For each event, our partners were also the organizers of the event willing to work with us to make the event either reduced waste or zero waste.</p> |

| <i>Objective 5: Conduct five formal education activities on land-based marine debris per year, per lake, to targeted audiences.</i> | | | |
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| Action Strategies | Coordinating & Partner Organizations | Status | Progress Description |
| 1. Host a regional webinar on land-based marine debris for education/outreach professionals. | <u>Coordinators:</u> NOAA MDP & Alliance for the Great Lakes <u>Partners:</u> Great Lakes Sea Grant Network | Not Started | Work on this action will begin in 2017 |
| 2. Host a teacher workshop or class on land-based marine debris. | <u>Coordinators:</u> Great Lakes Sea Grant Network, NOAA MDP <u>Partner:</u> Alliance for the Great Lakes, Old Woman Creek NERR, Regional Science Consortium at the Tom Ridge Environmental Center | Complete Add'l Wrkshps In progress | 2015: In partnership with The Ohio State University's Stone Lab on Lake Erie, the NOAA MDP and Ohio Sea Grant held a free three-day workshop on marine debris for teachers and informal educators on June 8-10, 2015. Thirteen educators experienced a mix of classroom curriculum and field activities, including using manta net trawls and conducting sample analysis with Dr. Rios Mendoza, as well as a beach cleanup with the Alliance for the Great Lakes. Pennsylvania Sea Grant and the Center for Great Lakes Literacy also held a teacher training for ten teachers at Tom Ridge Environmental Center in Erie, PA. |

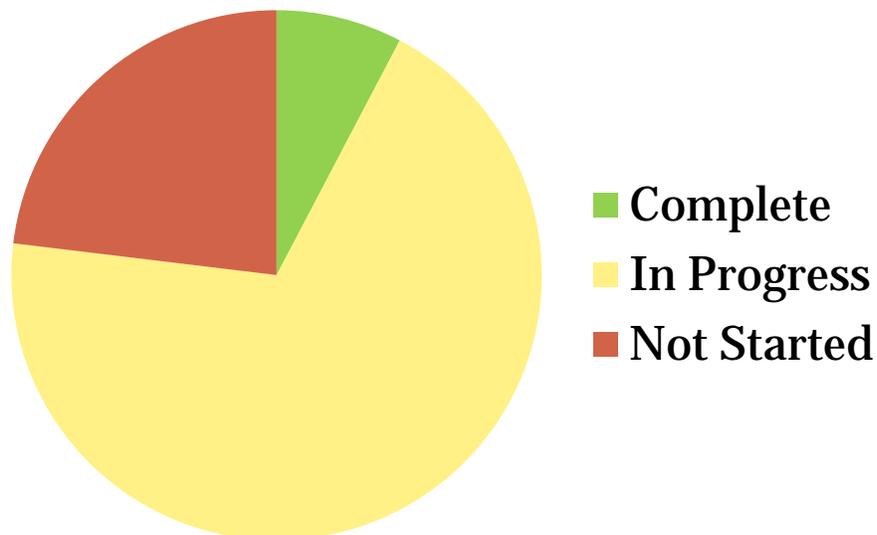
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| | | | <p>2016: On October 1, 2016 training was provided for ten NY and PA teachers that included marine debris and microplastics as one of three focus topics. Teachers were encouraged to develop and implement service learning projects. Support is being provided for field trips that inform these projects and supplies to develop and share an outreach component. On August 3, 2016 Helen Domske hosted a teacher training on microplastics. Sixteen teachers attended. Those teachers reach approximately 1,900 students. Also, seven teachers participated in marine debris training over the summer as part of Water and Wildlife Training for Educators, a week-long course offered at OSU's Stone Lab in Lake Erie's Western Basin.</p> |
| <p>3. Conduct land-based marine debris educational activities with students of all ages in the Great Lakes.</p> | <p><u>Coordinator:</u> None – captured in annual reporting. <u>Partners:</u> Everyone</p> | <p>In Progress</p> | <p>In 2016, 13,277 students of various ages were reached through 116 education events.</p> |

Goal 4: The impacts of land-based marine debris are reduced through removal and tracking efforts.

Action Status:

1 Complete
9 In Progress
3 Not Started

Goal 4 Action Progress



GOAL HIGHLIGHT:

In-Progress: *Identify funding opportunities and land-based marine debris removal projects throughout the region.*

Action plan participants identified the following sources of funding for the removal of land-based marine debris. This list will continue to grow as new opportunities are identified.

| Identified Funding Opportunity for REMOVAL of land-based marine debris. | Link to funding opportunity |
|--|---|
| Boat US Foundation Grassroots Grant | http://www.boatus.org/grants/ |
| Boat US Foundation Cigarette Litter Prevention Program for Marinas | http://www.boatus.org/cigarette-litter/ |
| West Marine Blue Future Grants & Sponsorships | https://www.westmarine.com/BlueFuture/Grants |
| Ohio EPA Recycling and Litter Prevention Grants | http://epa.ohio.gov/ocapp/grants.aspx |
| NOAA Marine Debris Removal Grant | http://marinedebris.noaa.gov/about-us/funding |
| Coca-Cola Foundation: Community Requests | http://www.coca-colacompany.com/our-company/community-requests-guidelines-application |
| Coastal Management Program Small Grants | See state coastal management program websites |
| Five Star Urban Waters Restoration Grant | www.nfwf.org/fivestar |

| Goal 4: The impacts of land-based marine debris are reduced through removal and tracking efforts. | | | |
|---|---|-------------|---|
| <i>Objective 1: By 2019, bi-nationally record and report count and weight (in tons) of land-based marine debris removed from Great lakes shorelines and watersheds by volunteer programs.</i> | | | |
| Action Strategies | Coordinating & Partner Organizations | Status | Progress Description |
| 1. Investigate Canadian volunteer program reporting mechanisms and see how they align with U.S. efforts. | <u>Coordinator:</u> Alliance for the Great Lakes <u>Partners:</u> Surfrider, Ocean Conservancy | Complete | Great Canadian Shoreline Cleanup has a similar system for tracking volunteer cleanups through an online database tool. The GCSC is now also encouraging year-round cleanups in addition to the traditional ICC event. They use the same data collection card as the Alliance and the other groups in the Great Lakes doing the ICC event. |
| 2. Identify centralized location that will coordinate and host volunteer coastal cleanup data. | <u>Coordinator:</u> Alliance for the Great Lakes | In Progress | Waiting to get status update on NOAA site for GL marine debris where we could post links and information on volunteer events throughout the region including: <ul style="list-style-type: none"> * Alliance for the Great Lakes Year-round Adopt-a-Beach and ICC events * Great Canadian Shoreline Cleanup * NY & PA ICC * Clean Streams Ohio |

| <i>Objective 2: By 2019, develop and publish recommendations for best practices for removing land-based marine debris.</i> | | | |
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| Action Strategies | Coordinating & Partner Organizations | Status | Progress Description |
| 1. Investigate existing removal methods for land-based marine debris and analyze for similarities as well as benefits and challenges. | <u>Coordinator:</u> NERRs | In Progress | <p>Old Woman Creek NERR has been collaborating with the City of Cleveland Office of Sustainability and Sea Grant on a Northeast Ohio Land-based Marine Debris Action Plan and the various outreach necessary to move marine debris removal plans to practical application. Existing removal methods for land-based marine debris have been identified (e.g. efforts by the Cleveland Port Authority). OWC has also had discussions with Ohio Clean Marinas on how to potentially confront marine debris removal from a marina standpoint. While OH Clean Marinas does employ some tactics for appropriate disposal of monofilament fishing line, OWC NERR and OH Sea Grant are interested in furthering this effort via educational outreach and implementation at venues beyond marinas and are in the process of applying for a collaborative grant.</p> <p>OWC and LS NERRs have also discussed the potential for surveying other NERRs outside of the Great Lakes to gain insight on different marine debris removal tactics (e.g. removal of derelict crab pots, disposal/recycling of monofilament fishing line). LS Reserve has assigned this action item to an intern to assist the CTP Coordinator in developing an on-line survey to determine current practices and challenges associated with those practices.</p> |

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| <p>2. Develop or adapt best management practices (BMPs) to target specific environments or debris types.</p> | <p><u>Coordinator:</u> Great Lakes Sea Grant Network</p> | <p>In Progress</p> | <p>Ohio Sea Grant is working with Toledo Tennis Club and Mentor Heisley Racquet Club to obtain and distribute monofilament recycling containers to anglers. Ohio Sea Grant has received 403 bins, and it is in the process of writing a grant for funding to host workshops to make larger monofilament bins and to purchase the other items needed to complete the personal monofilament bins. Many youth volunteers from the Cleveland Metroparks have helped to construct the personal monofilament bins and in the process have learned more about marine debris while receiving volunteer hours for school.</p> |
| <p>3. Incorporate land-based marine debris BMPs into existing guides (ex. Clean Marina).</p> | <p><u>Coordinator:</u> Great Lakes Sea Grant Network <u>Partner:</u> WI Coastal Management Program</p> | <p>In Progress</p> | <p>The Ohio Clean Marinas Program will be updating publications and is planning on adapting marine debris removal BMPs to the marina and boating community for these outreach materials.</p> |
| <p>4. Share BMP recommendations with stakeholders.</p> | <p><u>Coordinator:</u> Great Lakes Sea Grant Network</p> | <p>In Progress</p> | <p>Ohio Sea Grant is continuing outreach and education efforts to work with high school and middle school students through programs with the Cleveland Metroparks, Perry Middle School, and Stow-Munroe High School. Students fill out Alliance for the Great Lakes debris data collection cards and learn about the effects of marine debris and actions they can take to lessen its impact. At outreach events, Ohio Sea Grant and the Ohio Clean Marinas/Clean Boater Programs educate stakeholders on marine debris based on the recommendations from the Land-Based Marine Debris Action Plan and through sharing of current research to create an informed public.</p> |

Objective 3: Within five years, target removal efforts towards land-based marine debris items that are expected to have the greatest impact or which are most abundant in number.

| Action Strategies | Coordinating & Partner Organizations | Status | Progress Description |
|---|--|-------------|--|
| 1. Analyze existing cleanup data to identify land-based marine debris types, quantities by type, and impact. Reports may be separated by geography due to variations in data. | <p><u>Coordinator:</u> Alliance for the Great Lakes</p> <p><u>Partner:</u> Ocean Conservancy</p> | In Progress | In April, we provided Adopt-a-Beach Program results to Dr. Melissa Duhaime of the University of Michigan to look for a correlation between them and Lake Erie nearshore and circulation pattern data. In addition, the Alliance worked with Loyola University on a project that analyzed data from volunteer cleanups in NY and IL. The sites selected for the study focused on urban to rural beaches. The paper was submitted for review. The Alliance is planning on posting results of that work in the coming months. |
| 2. Partner with industry, manufacturers, and packaging companies to create targeted removal efforts (Ex. A large retail company like Coca-Cola could participate in a local cleanup). | <p><u>Coordinators:</u> Hi-Cone & Illinois Tool Works</p> <p><u>Partner:</u> Shedd Aquarium</p> | In Progress | We lost our environmental partner, Leave No Trace, and have not had progress with our customers in partnering with Land Based Debris projects. We are rebuilding our marketing program and hope to integrate this proposal in our sustainability portion. |

| Objective 4: <i>Create a natural disaster preparedness plan (by state or lake) for land-based marine debris within five years.</i> | | | |
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| Action Strategies | Coordinating & Partner Organizations | Status | Progress Description |
| 1. Review lessons-learned from Hurricane Sandy response. | <u>Coordinator:</u> NOAA MDP <u>Partners:</u> Alliance for the Great Lakes, Ohio Department of Natural Resources/Ohio Emergency Management Association, Environment Canada | Not Started | Work on this action will begin in 2017 |
| 2. Review preparedness plans from other regions and industry partners. | <u>Coordinator:</u> NOAA MDP <u>Partner:</u> Environment Canada | Not Started | Work on this action will begin in 2017 |
| 3. Engage the U.S. Coast Guard, FEMA, and the Canadian equivalents on land-based marine debris issues in the region as well as the creation of the preparedness plans. | <u>Coordinator:</u> NOAA MDP <u>Partner:</u> Environment Canada | Not Started | Work on this action will begin in 2017 |

| Objective 5: By 2019, remove 200 tons of land-based marine debris from Great Lakes environments. | | | |
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| Action Strategies | Coordinating & Partner Organizations | Status | Progress Description |
| 1. Understand the current baseline of land-based marine debris removed by volunteers in the region. Report on these values. | <p><u>Coordinator:</u> Alliance for the Great Lakes</p> <p><u>Partner:</u> Ocean Conservancy</p> | In Progress | <p>Results for 2016 will be reported in the May 2017 action progress report.</p> <p>2015 Results Total pounds = 92,616 or 46.3 tons.</p> <p>Total pounds removed per state/province: IL: 13,498 IN: 1,588 MI: 9,710 MN: 296 NY: 1,366 OH: 19,548 PA: 8,387 WI: 3,925 Ontario, Canada: 34,300</p> |
| 2. Identify funding opportunities and potential land-based marine debris removal projects throughout the region. | <p><u>Coordinator:</u> None – captured in annual reporting.</p> <p><u>Partners:</u> Everyone</p> | In Progress | <p>Participants to the action plan have identified 8 funding opportunities for marine debris removal projects. This list will continue to grow as new opportunities are identified.</p> |



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