

# Marine Debris: A Snapshot of Work in California

**Ocean Protection Council  
Staff Report  
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## California Local, State and Federal Agencies Contributors



The 27-member San Francisco Bay Conservation and Development Commission (BCDC) was created by the California Legislature in 1965 in response to broad public concern over the future of San Francisco Bay.



The mission of the Coastal Commission is to protect, conserve, restore, and enhance environmental and human-based resources of the California coast and ocean for environmentally sustainable and prudent use by current and future generations. <http://www.coastal.ca.gov/>



CalRecycle's vision is to inspire and challenge Californians to achieve the highest waste reduction, recycling and reuse goals in the nation. Through innovation and creativity, sound advancements in science and technology, and efficient programs that improve economic vitality and environmental sustainability, we build a stronger California. <http://www.calrecycle.ca.gov/>



Caltrans Improves Mobility Across California. One of Caltrans goals is to preserve and enhance California's resources and assets.



City of Los Angeles' Stormwater Program's mission is to protect the beneficial uses of receiving waters while complying with all flood control and pollution abatement regulations.



Los Angeles County, one of California's original 27 counties, was established Feb. 18, 1850. Originally the County occupied a comparatively small area along the coast between Santa Barbara and San Diego, but within a year its boundaries were enlarged from 4,340 square miles to 34,520 square miles, an area sprawling east to the Colorado River.



The mission of the Department of Boating and Waterways is to provide safe and convenient public access to California's waterways and leadership in promoting safe, enjoyable and environmentally sound recreational boating.



The mission of EPA is to protect human health and the environment.



Watershed Management Division was established in August 2000 to address the flood risk management, water quality, water conservation, open space, and recreational needs of the Los Angeles County Flood Control District.



The mission of the Monterey Bay National Marine Sanctuary is to understand and protect the coastal ecosystem and submerged cultural resources of central California.



The National Oceanic and Atmospheric Administration (NOAA) Marine Debris Program (MDP) supports national and international efforts to research, prevent, and reduce the impacts of marine debris. <http://marinedebris.noaa.gov>



The California Ocean Protection Council’s (OPC) mission is to ensure that California maintains healthy, resilient, and productive ocean and coastal ecosystems for the benefit of current and future generations. [www.opc.ca.gov](http://www.opc.ca.gov)



The Southern California Coastal Water Research Project (SCCWRP) is a research institute focusing on the coastal ecosystems of Southern California from watersheds to the ocean. SCCWRP was formed in 1969 to enhance the scientific understanding of linkages among human activities, natural events, and the health of the Southern California coastal environment; to communicate this understanding to decision makers and other stakeholders; and to suggest strategies for protecting the coastal environment for this and future generations. <http://www.sccwrp.org/Homepage.aspx>



The U.S. Coast Guard is one of the five armed forces of the United States and the only military organization within the Department of Homeland Security.



The Ventura Countywide Stormwater Quality Management Program’s mission is to enhance, protect and preserve water quality in Ventura County water bodies using proactive and innovative ideas for preservation of biodiversity, ecological viability and human health.



The State Water Board’s mission is to preserve, enhance and restore the quality of California’s water resources, and ensure their proper allocation and efficient use for the benefit of present and future generations. <http://www.waterboards.ca.gov/>

**Non-Governmental Organizations Contributors**



The 34th America’s Cup Healthy Ocean Project is a Global “Call to Action” Campaign that embraces the connection between the sport of sailing and protecting and restoring the ocean.



BASMAA is a 501(c)(3) non-profit organization comprised of the municipal stormwater programs in the San Francisco Bay Area representing 96 agencies, including 84 cities and 7 counties. BASMAA is focused on regional challenges and opportunities to improving the quality of stormwater that flows to our local creeks, San Francisco Bay and Delta, and the Ocean.



The California Coastkeeper Alliance’s mission is to unite 12 local Waterkeeper programs to fight for swimmable, fishable and drinkable waters for California communities and ecosystems. <http://www.cacoastkeeper.org/>

## Clean Seas Coalition



The purpose of the Coalition is to act as an informal clearinghouse for diverse efforts aimed at making the recommendations of the Ocean Protection Council relating to marine debris a reality, and to increase public awareness of the serious environmental impacts of disposing of trash and plastic waste in the Ocean.

<http://www.cleansseascoalition.org/>

Californians Against Waste is dedicated to conserving resources, preventing pollution and protecting California's environment through the development, promotion and implementation of waste reduction and recycling policies and programs.



Heal the Bay

Heal the Bay's mission is to make southern California's coastal waters and watersheds, including Santa Monica Bay, safe, healthy and clean.

<http://www.healthebay.org/>



The mission of the nonprofit Monterey Bay Aquarium is to inspire conservation of the oceans.



The Natural Resources Defense Council's mission is to safeguard the Earth: its people, its plants and animals and the natural systems on which all life depends.

<http://www.nrdc.org/>



The Ocean Conservancy's goal is to bring people together to find solutions for our water planet. We educate and empower people to defend not only the ocean and its wildlife, but also the millions who earn their living from the ocean.

<http://www.oceanconservancy.org/>



Oikonos is a non-profit organization that studies and protects imperiled ecosystems by engaging diverse communities through innovative scientific and artistic collaborations.



The University of California, Davis Wildlife Health Center's SeaDoc Society launched the California Lost Fishing Gear Recovery Project in July 2005. Since 2006, the project has removed more than 90 tons of lost fishing gear from California's coastal ocean. As well, the project has cleaned more than 1,400 pounds of recreational fishing gear off public fishing piers from Santa Cruz to Imperial Beach, including more than 1 million feet of fishing line. [www.lostfishinggear.org](http://www.lostfishinggear.org)



For over 30 years, Save Our Shores has been leading efforts to protect and preserve the Monterey Bay National Marine Sanctuary.



Surfrider's mission is the protection and enjoyment of oceans, waves and beaches through a powerful activist network.

<http://surfrider.org/>



Turtle Island Restoration Network's mission is to mobilize people in local communities around the world to protect marine wildlife and the oceans and inland watersheds that sustain them.

## **INTRODUCTION**

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Marine debris is a problem of international scale, as demonstrated by the North Pacific Subtropical Gyre; however, it is also an issue that needs to be addressed at a local level. Marine debris pollutes our beaches, creates a hazard for humans, entangles and poisons wildlife, and imposes costs on local municipalities through collection efforts and lost tourism revenue. The Ocean Protection Council (OPC) identifies marine debris as a priority issue and will continue its work to coordinate efforts to reduce marine debris by leading collaborative partnerships, supporting implementation of past recommendations, funding targeted studies to inform management and policy debates, and sharing that information with decision makers.

This document serves as an overview of marine debris related work from a variety of actors within California. The snapshot includes current actions that state agencies and non-governmental organizations (NGO) are taking to address the marine debris problem. This information provides the OPC with a better understanding of ongoing projects in California and will help identify gaps in order to better focus future efforts. Over 30 entities participated and reported their work, giving a comprehensive look at the various efforts of NGO and federal, state and local agencies.

Thus far, governmental contributors include; Bay Conservation and Development Commission, Ocean Protection Council, CalRecycle, CalTrans, California Coastal Commission, the County of Los Angeles, Department of Boating and Waterways, the Environmental Protection Agency, the City of Los Angeles, Los Angeles County Flood Control District, Monterey Bay National Marine Sanctuary, NOAA Marine Debris Program, Southern California CWRP, the University of California at Davis, and Water Resource Control Boards. NGO contributors include: America's Cup Healthy Ocean Project, Bay Area Stormwater Management Agencies Association, California Coastkeeper Alliance, Californians Against Waste, Heal the Bay, Ocean Conservancy, Oikonos, Turtle Island Restoration Network, Clean Seas Coalition, Surfrider Foundation and Natural Resources Defense Council.

This document is a compilation of existing marine debris programs and projects, and the OPC acknowledges that it is not an exhaustive account. Nevertheless, the activities reported provide enough information to identify existing management needs and gaps in order to effectively reduce marine debris.

## **ANALYSIS**

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The activities reported provide unique insight into the work being done to curb marine debris in California. With over 30 entities participating, the efforts to reduce marine debris are diverse and demonstrate significant effort towards addressing marine debris. The OPC can play a pivotal role in leading and coordinating the various statewide and West Coast efforts to make landmark progress in reducing trash. Of particular significance are the opportunities presented

by reinvigorating the California Marine Debris Steering Committee and supporting the work of the West Coast Governors Alliance on Ocean Health's Marine Debris Coalition.

Out of all activities reported cleanup and storm drain diversion, education and outreach and regional coordination had the highest number of entities working on them. Notably, fewer entities reported activities involving source reduction activities, legislative support and/or advocacy and research on marine debris.

Cleanup efforts and storm drain diversion/ capture are two of the most frequent activities in California to address marine debris. Over 20 entities work on cleanup, removal and diversion efforts. This is a high cost activity that contributes to the substantial expenditure reported in the [recent study](#) by Kier Associates and the Natural Resources Defense Council. The study found that California spends nearly half billion dollars a year preventing marine debris. In this category specific examples of activities reported include California Coastal Cleanup Day, substantial efforts to install and maintain storm drain diversion and capture devices and street sweeping. The high cost associated with this category of activity raise concern. The OPC could play a role in coordinating a more efficient means to reduce marine debris by focusing efforts on prevention and source reduction efforts.

Education and outreach efforts are one of the top reported activities in the report. Virtually all entities reported activities in this category. Significant social media presence and local and community outreach aim to encourage proper waste management, i.e. anti-litter campaigns, and discourage the use of common marine debris items such as disposable plastic bottles and single use plastic bags. Additionally, twelve entities reported working on regulations and bans of common marine debris items. Education and outreach coupled with regulations and bans of common marine debris items throughout cities and counties in California have resulted in significant awareness of marine debris. Yet both categories- education/outreach and regulations/ bans- consist of localized, piecemeal efforts that would benefit from increased coordination by which the OPC could play a lead role in improving. For instance, instead of 70+ local restrictions and/or bans on common marine debris items, industry manufacturers, retailers, and those impacted by marine debris would benefit from statewide, uniform bans and/or regulations. Additionally, the OPC can work to support Thank You Ocean's effort to coordinate a unified message on marine debris through the Ocean Communicator's Alliance.

Most entities reported some level of regional coordination activity. Many entities coordinate on a local scale. For example, there is significant coordination on storm drain diversion and capture efforts among entities in different local regions, such as in the Bay Area and in Southern California. There is also significant coordination and collaboration on data collection, research and monitoring efforts. The collaboration tends to be localized. For example, there is a high level of coordination around the 2013 Bight Regional Assessment Program among entities in Southern California. Statewide, there is substantial coordination on cleanup efforts among federal, state and local agencies with NGOs. Coastal Cleanup Day is a highly successful event each year and an example of successful collaboration. The two efforts that draw statewide coordination are Japanese Tsunami Marine Debris (JTMD) activities and the California Marine

Debris Steering Committee. The West Coast Governor's Alliance Marine Debris Coalition presents a unique opportunity to bring together stakeholders representing state, federal, regional, tribal and NGOs along the West Coast.

Among the least reported activities are source reduction efforts. Very few entities reported work to promote reducing the sources of marine debris. Statewide coordination and collaboration on source reduction measures is one of the most needed, important and pivotal roles the OPC could fulfill in order to efficiently reduce marine debris. The Marine Debris Steering Committee would be an effective tool to create momentum for this activity.

Legislative support and/or advocacy work on marine debris reduction was only reported from NGOs. Entities reported advocacy efforts including support for transparency on end-of-life claims on plastic products, extended producer responsibility and local and statewide bans/regulations on common marine debris items. There is a significant need for state agencies to be able to support legislation aiming to reduce marine debris. The OPC should consider support for legislation that aligns with their goals and objectives as outlined in the Strategic Plan.

Reports of existing and ongoing research on marine debris and research needs provide important insight into the state of knowledge on the issue. Agencies and NGOs have both undertaken research to identify the sources and to create a baseline of marine debris. There is a resounding need for further research on the impacts of marine debris on water quality as well as socio-economic assessments of marine debris impacts. This information will enhance the current regional understanding of the effects of marine debris and enable a more comprehensive and consistent approach to curb the influx of pollution and toxins entering California's waters. The OPC could play a vital role in research coordination should commit to supporting research and initiatives that improve the scientific understanding of the effects of marine debris.

Notably, no activity or collaboration was reported with industry in California. The industries associated with marine debris include manufacturers and retailers of common marine debris items and the associated materials. In order to comprehensively address the complex issue, collaboration with industry will be crucial. As suggested, source reduction is a vital component in curbing marine debris and one in which legislative action is necessary. In order to create politically feasible legislation, collaboration is needed. As a coordinating body, OPC could work to bring together all state actors, including industry to work together to find progressive solutions.

Based on this analysis several activities, in which the OPC could play a lead role, emerge in order to comprehensively address marine debris in California. These include:

- The need for increased collaboration on outreach and education efforts on marine debris, including a unified message

- The need for statewide uniform policy on bans and regulations on common marine debris items.
- The need for statewide collaboration by a unifying body such as the California Marine Debris Steering Committee.
- The need to coordinate and concentrate work on preventing and reducing the sources of marine debris, such as by extended producer responsibility and bans and/or regulations on common marine debris items.
- The need for increased collaboration on marine debris legislation, particularly by state agencies in order to unify efforts.
- The need for state level legislative support by state and local agencies
- The need for increased scientific research particularly on the subject matter of the impacts of marine debris and socio-economic assessment.
- The need for coordination with industry members, particularly manufacturers and retailers of common marine debris items

The reported activities were classified into categories based on the nature of the activity. The fourteen categories are color coded. Please refer to the key below.

Key:

	General Activities
	Abandoned Derelict Vessel Removal
	Storm Drain Capture and Diversion and Measures to Reduce Improper Waste Management
	Cleanup and Trash Removal
	Trash Bin Placement and Trash Management at Events
	Recycling and Composting Activities
	Source Reduction- Prevention Measures to Decrease the Sources of Common Marine Debris Items Including Packaging Materials
	Education and Outreach Activities
	Bans and/or Regulations on Common Marine Debris Items
	Monitoring and Assessment of Marine Debris
	Research on Marine Debris
	Research Needs
	Legislative Support and/or Advocacy for Bills that Aim to Reduce Marine Debris
	Regional Coordination on Marine Debris Activities



## DEBRIS FROM LAND

This section contains information provided by **Local, State and Federal Agencies** on their marine debris activities relevant to land based debris sources.

<b>Bay Conservation and Development Commission</b>	
	Between 1997 and the present, the Richardson’s Bay Regional Agency (RBRA) has removed more than 797 vessels from Richardson’s Bay, equating 9,900 tons of marine debris. As of May 2012, there were approximately 160 illegally moored vessels in Richardson’s Bay, the majority of which are either abandoned or resided on. In 2012, the SF Bay Conservation and Development Commission (BCDC) assisted the RBRA in applying for and obtaining a \$500,000 solid waste disposal grant from CalRecycle to support its ongoing vessel removal efforts.
	Between 1995 and 2003, in a project known as Aqua Terra, the Port of Redwood City and local law enforcement removed 113 vessels from Redwood Creek, equating 1,000 tons of marine debris.
	Between 2005 and 2011, Contra Costa County Sheriff’s Department removed 186 vessels from its waterways.
	In 2011, CalRecycle and US EPA partnered to remove approximately 700 tons of marine debris and 15 vessels from the Petaluma River. Two hundred tons of metal was recycled.
	Presently, the Alameda-Oakland Estuary contains 30 abandoned and lived on vessels and other marine debris that is scheduled for removal in 2013 at a cost of \$1.2 million dollars (See below under regional coordination efforts for partners.)

<b>CalTrans</b>	
	Caltrans Institutional Controls include: public education and outreach programs, sweeping, litter removal and improved trash Bin/container management.
	Installation of <a href="#">structural treatment best management practices (TBMPs)</a> statewide which capture trash from highway runoff before being discharged to waterbodies are required as part of roadway improvements or retrofit projects. Caltrans maintains and cleans these devices free of trash and clogging to contain debris effectively. Structural Controls include installation of the following: Full-Capture Treatment Devices (i.e. GSRD);Infiltration Basin; Media Filter;Detention Basin
	Caltrans performs trash removal efforts by targeting hotspots along highways, ramps, especially in highly urban areas.
	<a href="#">Adopt-A-Highway (AAH) Program</a> provides an avenue for individuals, organizations, or businesses to help maintain sections of roadside within California's State Highway System to

	be cleaner and more attractive and at the same time helps to control the growing cost of litter removal.
	Caltrans performs sweeping of roads and shoulders to remove litter and debris.
	Drain Inlet Cleaning- Caltrans inspects drain inlets and performs cleaning when 50% capacity is reached; these activities are typically conducted before the rainy season in order to maintain hydraulic capacity.
	Litter removal is also performed by Caltrans maintenance crews, contracted litter removal, California Conservation Corps, and parolees.
	Caltrans also implements covered trash bins which are placed at vista points, and Park-and-Ride facilities throughout the District to encourage motorists to dispose of trash in containers rather than discarding it onto the roadway or parking lots at these facilities. Such trash bins are kept covered to prevent windblown trash from escaping.
	As part of its Stormwater Program, Caltrans implements guidelines in the detection, prevention, control, and reporting of illegal connections and illicit discharges, illegal dumping, and spill discharges in state highways.
	The <a href="#">Litter Abatement Plan</a> was developed as a comprehensive approach to address the many issues related to litter and achieve a balance between physical intervention and proactive, preventive measures.

<b>CalRecycle</b>	
	From late 2000 to early 2007 CalRecycle (formerly the California Integrated Waste Management Board) approved six partial grants under its Solid Waste Disposal and Codisposal Site Cleanup Program (Cleanup Program) to mitigate the impacts of and remove solid waste from storm water discharges to local waterways, beaches, and estuaries in Southern California jurisdictions. CalRecycle's total expenditures were approximately \$3.7 million.
	In the Fall of 2009 the Cleanup Program performed a \$1.9 million remediation project at the Goat Canyon debris basins in Border Field State Park in San Diego County to install trash collection booms and remove trash and trash-laden sediment that was threatening the Tijuana River estuary. In the Fall of 2012 the Program performed another basin cleanout at a cost of \$1.0 million.
	Provides assistance to stakeholders to develop/strengthen recycling, source reduction, composting programs.
	Assists stakeholders with identifying where receptacles are most needed and ensuring they are in place and maintained so that the public has a resource to dispose or recycle materials instead of littering.

	Provides grants and resources to local governments for education and outreach and purchase of recycling bins.
	Ensures landfills, transfer stations, material recovery facilities, non-disposal facilities are operating in compliance and prevent debris from facilities, such as barrier fencing.
	Ensures household hazardous waste is properly disposed to prevent illegal dumping of materials in drains that lead to the ocean.
	Continues to work with stakeholders on AB 2449 regarding plastic bag recycling
	Staff at CalRecycle continue to interact with Zone Administrators from Recycling Market Development Zones to site and expand businesses in California that will recycle materials, such as plastics.

<b>California Coastal Commission (CCC)</b>	
	The California Coastal Commission organizes California Coastal Cleanup Day, a one-day beach and inland waterway cleanup that has happened 29 years in a row and is the largest annual volunteer event in the state. <a href="http://www.coastal.ca.gov/publiced/ccd/ccd.html">http://www.coastal.ca.gov/publiced/ccd/ccd.html</a>
	The CCC also directs the year-round Adopt-A-Beach Program, in which volunteers can clean a beach or shoreline in any of the 15 coastal counties and select inland counties. Volunteers must commit to three cleanups per year to be considered an official “adopter,” although student groups are only required to clean once a year. One-time volunteers are welcome at any public cleanup. <a href="http://www.coastal.ca.gov/publiced/aab/aab1.html">http://www.coastal.ca.gov/publiced/aab/aab1.html</a>
	Through a grant-making program, the CCC supports the Kids Adopt-A-Beach Day, during which students from elementary schools in several (usually 7 or so) communities up and down the coast participate in beach cleanups and aerial artwork. These children have all participated in a school assembly focused on marine debris prior to their participation in the cleanup. <a href="http://www.oceanday.net/">http://www.oceanday.net/</a>

<b>City of Los Angeles</b>	
	The City of Los Angeles has attained a 90% trash discharge reduction from its storm drain system into the Los Angeles River and Ballona Creek Watersheds as of September 2012.
	The City has retrofitted approximately 50,000 catch basins with trash catch basins inserts and/or catch basin curb opening screen covers.
	The City has invested over \$80 million, since 2001, in structural BMPs to significantly reduce trash discharges to the local waterbodies.

<b>County of Los Angeles</b>	
	As part of compliance with nine Trash TMDLs in Los Angeles County, the County of Los Angeles has been implementing various structural and institutional controls over the last decade. As of 2012, the County spent over \$7 million to install nearly 4,000 trash Full Capture Devices in catch basins throughout the County Unincorporated Areas of Ballona Creek and Los Angeles River watersheds, attaining over 90% trash reduction in these areas. This effort and associated expense is expected to double in the near future as the County embarks on implementing other Trash TMDLs in the remaining watersheds of the County.
	In 2004, the County of Los Angeles adopted smoking ban ordinance for all County beaches. In 2009, this ordinance was extended to public parks and golf courses.
	In 2008, the County of Los Angeles adopted a single-use plastic bag ordinance, which bans plastic carry-out bags at stores in the County Unincorporated Areas.
	In 2009, the County of Los Angeles phased out the use of Expanded Polystyrene food containers at all County facilities.
	The County of Los Angeles implements aggressive street sweeping and catch basin cleaning programs in the County Unincorporated Areas.

<b>Department of Boating and Waterways (DBW)</b>	
	DBW is authorized to oversee two grant programs vital to the state’s efforts in reducing and eliminating abandoned vessels: the Abandoned Watercraft Abatement Fund (AWAF), and the Vessel Turn-In Program (VTIP).
	Since 1999, the AWAF has provided assistance to local participating agencies in removing 1622 vessels at an average cost of \$3200 per boat. Currently, 20 agencies statewide participate in AWAF with an expected increase to 27 in FY 2013/14.
	The VTIP, a pilot program effective in 2010, has resulted in 180 vessels surrendered by boat owners that had the potential of becoming abandoned, at an average cost of \$1600 per boat. Eleven agencies currently participate; increasing to 18 participants in FY 2013/14.

<b>Environmental Protection Agency Region 9 Marine Debris Program (EPA)</b>	
	In 2012 -2013 EPA R9 awarded the Agency’s first source reduction grants to Monterey Bay Aquarium (MBA) and Product Stewardship Institute (PSI). MBA’s program trained approximately 100 K – 12 California teachers about source reduction as it relates to decreasing marine debris, and in turn those teachers developed 30 innovative source

	reduction projects with their students. PSI focused on promoting green procurement practices to minimize use of single use disposable packaging with vendors on three coastal UC campuses.
	Recently California State University (CSU) and EPA R9 agreed on a partnership to assess marine debris using EPA R9's beach cleanup protocols wherein debris is not only sorted by type, volume and weight, but also through brand name identification. We are going to use this data to go back upstream to the vendors and manufacturers whose products are most frequently identified as marine debris to explore options with them for source reduction.

<b>Los Angeles County Flood Control District (LACFCD)</b>	
	The Los Angeles County Flood Control District installed trash booms at the mouth of major channels, such as Los Angeles River and Ballona Creek to prevent inland trash from going out to the Ocean. Over 1000 tons of trash is being removed annually from the trash booms.
	As part of the MS4 Permit compliance, the LACFCD conducts visual monitoring and removal of trash and debris from open channel at least once a year before a storm season.
	From 2002 to 2004, the LACFCD conducted a trash monitoring in the Los Angeles and Ballona Creek Watersheds to establish trash baseline and specific trash generation rate per landuse. The study results were used for prioritization of land areas for implementation of Trash TMDLs. Further, the Regional Water Quality Control Board used the study finding to set baseline for many of the trash TMDLs in Los Angeles region.
	In 2005, the LACFCD conducted a special study to assess removal effectiveness of various structural BMPs, such as catch basin inserts and hydrodynamic separators.
	The LACFCD annually sponsors the California Coastal Cleanup Day, organized by Heal the Bay .

<b>Marine Debris Program, NOAA</b>	
	The Marine Debris Program (MDP) and NOAA Restoration Center run an annual Community-Based Marine Debris Removal grant program. Previous grantees (2006 – 2012) have included the San Diego Unified Port District, The Watershed Project, Save Our Shores, UC Davis / SeaDoc Society, and San Francisco Baykeeper.
	The MDP and National Marine Sanctuaries Foundation supported Save Our Shores' Annual Coastal Cleanup Day efforts in Monterey and Santa Cruz Counties (2012 – 2013).
	A 2012 MDP grant to California Emergency Management Agency was awarded to the Coastal Commission's Adopt-A-Beach program to support mini-grants to eight program partners.

	The MDP has an active national outreach and education program focused on public education and marine debris prevention.
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<b>Ocean Protection Council (OPC)</b>	
	In 2011, the Ocean Protection Council commissioned an independent synthesis of scientific information as a place-marker for the current state of research on plastic debris in California's marine environment. The <a href="#">California Ocean Science Trust</a> partnered with <a href="#">USC Sea Grant</a> , to produce the report, <a href="#">Plastic Debris in the California Marine Ecosystem: A Summary of Current Research, Solution Efforts and Data Gaps</a> .
	The OPC convenes a Marine Debris Steering Committee which is comprised of 17 state and federal agencies and the four marine sanctuaries. The Committee agreed that a top priority was to increase communication and awareness among the public regarding Japan Tsunami Marine Debris (JTMD), and that OPC would take the lead on coordinating messaging and developing resources through Thank You Ocean.
	In 2011, an OPC-funded project on cigarette butt waste in beaches was completed. This project was led by Save Our Shores (SOS) in the cities of Santa Cruz and Capitola, CA, as a response to a lack of decrease in cigarette butt waste at beaches with smoking bans. This study demonstrated that smoking bans require corresponding public education and ongoing waste collection and removal to ensure efficacy.
	In April 2009, the OPC issued a <a href="#">Resolution Support for Extended Producer Responsibility Programs</a> . This resolution resolved to target the reduction of packaging to reduce the environmental impacts of products, reduce the costs to local government of handling packaging waste, supports the concept of Extended Producer Responsibility and recommends legislation that implements the CIWMB framework.
	In November 2008, staff brought to the Council an <a href="#">Implementation Strategy for the California Ocean Protection Council Resolution to Reduce and Prevent Ocean Litter</a> . Implementation Strategy contained the goal to reduce the amount of litter that accumulates in the ocean through the following objectives; <ul style="list-style-type: none"> <li>○ Reduce single-use plastic packaging and promote sustainable alternatives;</li> <li>○ Prevent and control litter and plastic debris;</li> <li>○ Cleanup and remove litter; and</li> <li>○ Coordinate efforts with other jurisdictions in the Pacific region.</li> </ul>
	In February 2007 the OPC adopted the <a href="#">Resolution of the California Ocean Protection Council On Reducing and Preventing Marine Debris</a> . This resolution resolves to pursue a wide-range of recommendations aimed at reducing and preventing marine debris.

<b>State Water Resources Control Board (State Water Board)</b>	
	<p>The California State Water Resources Control Board is considering the adoption of Amendments for Trash in the California Ocean Plan and the Enclosed Bays, Estuaries and Inland Surface Waters (Trash Amendments). The proposed Trash Amendments will include five elements: (1) Water Quality Objective, (2) Prohibition of Discharge, (3) Implementation, (4) Compliance Schedule, and (5) Monitoring. Water Board staff will release a draft Staff Report and Substitute Environmental Document (SED) for public comment. Following this formal release, the State Water Board will hold a public workshop(s) and a public hearing. At this time, staff proposes the State Water Board will consider adoption of the Trash Amendments in Winter 2013.</p> <p><a href="http://www.waterboards.ca.gov/water_issues/programs/trash/index.shtml">http://www.waterboards.ca.gov/water_issues/programs/trash/index.shtml</a></p>
	<p>Assembly Bill (AB) 258, which became effective January 1, 2008, adds Chapter 5.2 to Division 7 of the California Water Code, section 13367, entitled "Preproduction Plastic Debris Program." This section of the Water Code applies to facilities in California that manufacture, handle, or transport preproduction plastics, the raw materials used to produce plastic products. Regional and State Water Board staff conduct compliance inspections of preproduction plastic manufacturing, handling, and transport facilities enrolled under California's Industrial General Permit (IGP) for storm water discharges. Collectively these inspections are helping to develop cost-effective regulatory approaches for addressing this pollution problem.</p> <p><a href="http://www.waterboards.ca.gov/water_issues/programs/stormwater/plasticdebris.shtml">http://www.waterboards.ca.gov/water_issues/programs/stormwater/plasticdebris.shtml</a></p>
	<p>In California, 27 water bodies have approved total maximum daily loads (TMDLs) for impairments due to trash. One of the trash reduction mechanisms is the installation of the full capture devices into all catch basins. By keeping trash from entering the storm drains, this reduces the amount of trash that enters a surface water body and the ocean or beach.</p> <p><a href="http://www.epa.gov/waters/tmdl/docs/34863-RevisedStaffReport2v2.pdf">http://www.epa.gov/waters/tmdl/docs/34863-RevisedStaffReport2v2.pdf</a></p>
	<p>The San Francisco Bay Region (Region 2) uses provisions in the San Francisco Bay Area Municipal Regional Stormwater NPDES Permit (MRP) to address trash. The MRP prohibits the discharge of "rubbish, refuse, bark, sawdust, or other solid wastes into surface waters or at any place where they would contact or where they would be eventually transported to surface waters, including flood plain areas." The trash-related receiving water limitations identified in the MRP do not place numeric targets on trash but use narrative language to prohibit discharges.</p> <p><a href="http://www.waterboards.ca.gov/water_issues/programs/stormwater/docs/phase1r2_2009_0074.pdf">http://www.waterboards.ca.gov/water_issues/programs/stormwater/docs/phase1r2_2009_0074.pdf</a></p>

<b>Southern California Coastal Water Research Project (SCCWRP)</b>	
	<p>The Bight'13 Regional Debris Assessment Program will assess the quantities and types of debris in riverine channels. In doing so, we seek to quantify the abundance and types of debris</p>

	<p>in the channels of wadeable streams throughout Southern California Bight watersheds that have the potential to contribute to marine debris. The approach to answering this question involves assessing urban land use sites in the fall, with a mix of new sites to compare seasonal abundances and sites revisited from the spring to look at accumulation rates over the summer dry period.</p>
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<b>Ventura Countywide Stormwater Quality Management Program (VCSQMP)</b>	
	<p>Implement storm drain maintenance programs. Inspect and clean all catch basins and drainage facilities. In 2011-12 over 10,000 catch basins were inspected and cleaned if 25% or more full of debris. In addition, during the same time period, 55,000 tons of trash, sediment, and solid debris were removed from drainage facilities including 13,000 tons from channels and ditches and 42,000 tons from detention basins. All catch basins are labeled with the “Don’t Dump, Drains to Creek/Ocean” message.</p>
	<p>Implement street sweeping programs. In 2011-12 over 100,000 curb miles were swept countywide.</p>
	<p>Require conditions of development that target pollutants of concern, including trash on all new and redevelopment projects.</p>
	<p>Installed trash capture devices on all catch basins and trash receptacles in high-trash generating areas.</p>
	<p>Established programs for trash management at public events.</p>
	<p>Adopted litter and trash ordinances with specific prohibitions for the discharge or deposition of trash that may enter the storm drain system or receiving waters.</p>
	<p>The City of Ojai adopted Single-Use Bag Ordinance.</p>
	<p>The cities, the County, and VCWPD endorsed a pro-rata share of a regional Environmental Impact Report (EIR) to be prepared by Beach Erosion Authority for Clean Oceans and Nourishment (BEACON), which is required to be completed under the California Environmental Quality Act (CEQA) before the model single-use bag ban can be adopted. This is the first step for the other cities and the County to move forward with the consideration of adoption of a single-use plastic bag ban</p>
	<p>The cities of Camarillo and Oxnard, the County and VCWPD have complied with the Revolon Slough/Beardsley Wash Trash Total Maximum Daily Load (TMDL). Compliance has included the installation of full capture trash devices, special monthly trash cleanups, monthly monitoring in accordance with approved Trash Monitoring and Reporting Plan (TMRP) and a Minimum Frequency and Collection (MFAC) Program.</p>
	<p>The City of Ventura, the County and VCWPD have complied with the Ventura River Estuary</p>



	<p>Trash Total Maximum Daily Load (TMDL). Compliance has included the installation of full capture trash devices, special trash cleanups, weekly and/or monthly monitoring in accordance with approved Trash Monitoring and Reporting Plan (TMRP) and a Minimum Frequency and Collection (MFAC) Program. In 2011-12, the City of Ventura and VCWPD conducted arundo and homeless encampment trash removal events within their properties in Ventura River Estuary removing over 550 tons of trash. In addition, the City of Ventura, County, and other Agencies are committed to multi-agency effort to reduce trash and homeless encampments within the Ventura River watershed.</p>
	<p>The City of Thousand Oaks, Ventura County and VCWPD have complied with the Malibu Creek and Lagoon Trash TMDL and Santa Monica Bay Near and Santa Monica Bay Offshore Marine Debris TMDL. Compliance has included the installation of full capture trash devices in high trash areas (Class A catch basins per NPDES MS4 Permit), special trash cleanups, monthly monitoring per approved TMRP/MFAC program. In addition, a Plastic Pellet Spill Response Plan has been submitted to the Regional Water Quality Control Board.</p>
	<p>In 2011-12 the VCSQMP began comprehensive data analysis effort, aiming to identify historical trends in water quality and pollutant of concern to receiving waters.</p>
	<p>Hazardous materials collection events are held throughout the year.</p>

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This section contains information provided by **non-governmental organizations** on their marine debris activities relevant to land based debris sources.

<b>Bay Area Stormwater Management Agencies Association (BASMAA)</b>	
	<p>Beginning in 2010, Bay Area cities and counties identified and assessed, and annually clean up and document trash removed from high trash impacted locations on State waters totaling at least one trash hot spot per 30,000 population or one per 100 acres of retail/wholesale commercial land area, and at least one spot per Municipal Regional Permit permittee.</p>
	<p>Beginning in 2010, Bay Area cities, counties, and special districts developed a methodology to determine the baseline trash load from their storm drain systems, and reported preliminary loads in 2012.</p>
	<p>In 2012, Bay Area cities, counties, and special districts produced short-term trash load reduction plans designed to attain a 40% trash load reduction by July 1, 2014.</p>
	<p>By February 1, 2014, Bay Area cities, counties, and special districts will develop long-term trash load reduction plans designed to attain a 70% trash load reduction by July 1, 2017 and a 100% reduction by July 1, 2022.</p>
	<p>By July 1, 2014, Bay Area cities and counties will have installed and maintained full trash</p>

	capture devices to treat runoff from an area equivalent to 30% of retail/wholesale commercial land uses. Installation of many of these devices (more than 4,000) will have been made possible through the <a href="#">Bay Area-wide Trash Capture Demonstration Project</a> , a project of the San Francisco Estuary Partnership, using Federal stimulus funds (American Recovery and Reinvestment Act of 2009) and state bond funds.
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<b>California Coastkeeper Alliance</b>	
	Works to strengthen the State Water Board trash policy as a Public Advisory Group member, and solicit input from local stakeholders.
	Coordinates with the Clean Seas Coalition to support statewide source control legislation, including SB 405 and AB 158 (plastic bag bans), AB 521 (marine plastic pollution producer responsibility), and SB 529 (fast food packaging reduction).
	Advocates for the State Water Board to implement initial trash reduction programs in the Phase II Small MS4 General Stormwater Permit (MS4 Phase II), and for the State Water Board to re-open its municipal stormwater permits (MS4 Phase II and Caltrans MS4 permits) to insert the Board’s trash policy requirements once adopted.
	Identifies waterways impaired by trash, and collecting and submitting data and photos to support waterways’ inclusion on the State Water Board’s 2012 303(d) List of Severely Polluted Waters.
	California Waterkeeper groups are actively monitoring critical trash “hotspots” throughout the state, with several Waterkeepers producing SWAMP-compatible data. Along with Rapid Trash Assessment methodology for monitoring trash, several California Waterkeepers are also conducting micro-plastics and open-ocean trawl monitoring.
	Local California Waterkeepers are conducting regular beach cleanup events throughout the state and are using the events to conduct trash source identification.

<b>Californians Against Waste</b>	
	Tracks/advocates for policies to reduce waste and/or increase recycling for problem products that can end up as marine debris.
	Sponsors/supports statewide legislation on issues related to marine litter reduction. Some related bills this year include: SB 405 (Padilla) Plastic bag reduction, SB 529 (Leno) Fast food packaging reduction, AB 521 (Hueso-Stone) Marine debris producer responsibility, AB 1001 (Gordon) Bottle bill expansion, AB 1142 (Bloom) Smoke free beaches/parks.
	Helps local agencies adopt single-use bag ordinances and polystyrene food packaging

	ordinances. Today, there are more than 76 cities or counties that have an adopted bag ban, and a similar amount for adopted foam food packaging bans.
	Participates at CalRecycle, Ocean Protection Council, and other state agencies on marine pollution issues, including protection of and regulatory processes for Rigid Plastic Packaging Container program and Bottle Bill program.
	Commented on the 2012 revision of the Federal Trade Commission Green Guides for the Use of Environmental Marketing Claims.
	Sponsored recent legislation (SB 567 by Senator DeSaulnier) to prevent greenwashing and false end-of-life claims on plastic products. For the last three years we have worked on a campaign to enforce this law, and the Green Guides, on egregious violations.
	Actively participates as a member in the American Society for Testing and Materials on proposed standards and revisions of current standards for plastics, including degradation and recycling of plastics.
	Supports efforts to enforce AB 258 (Krekorian), a bill we supported in 2007 to prevent pollution of plastic production pellets/nurdles.

<b>Clean Sea Coalition</b>	
	Facilitates the Clean Seas Coalition: a nationwide coalition of NGOs, businesses, academics, government representatives and individuals working to reduce plastic in our oceans and waterways.
	Promotes source reduction of plastics through advocacy, regulation and legislation: at the local, state, national and international levels.
	Advocates for CA state bills on: smoking ban; polystyrene ban; plastic bag bans; Extended Producer Responsibility; and other packaging bills (i.e. Leash the Lid, etc.)
	Assists in the development of and supports the CA State Trash Policy
	Supports the implementation of ban ordinances at the local level, in CA and other states and countries.
	Participates in legal defense of source reduction ordinances.
	Participates in development of local, state, national and international policy initiatives about marine debris, sustainable packaging, EPR, etc.
	Facilitates the reporting and compiling of information critical to source reduction legislation and ordinances; information such as source identification of trash, trash characterization,

	environmental and health impacts of plastic on humans and other species, etc.
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<b>Heal The Bay</b>	
	In 2012, Heal the Bay conducted 632 beach clean-ups at LA beaches, with over 36,400 volunteers.
	Currently working on statewide marine debris prevention legislation (e.g. EPR (AB 521), plastic bag bans (SB 405 and AB 158), fast food container (SB 529), and opposing legislation that would countervail marine debris prevention efforts.
	Participating in development of State Water Board trash policy through Public Advisory Group and advocacy efforts.
	Assisted with development and implementation of trash TMDLs in Los Angeles area.
	Working on local and tracking adoption of single-use bag policies (currently 72 municipalities in CA with a single-use bag policy under 51 ordinances) and policies that require more sustainable alternatives to foam food containers.

<b>Monterey Bay Aquarium</b>	
	In 2013, the Monterey Bay Aquarium supported AB 521, a bill authored by Assemblymember Mark Stone and Senator Ben Hueso that would set goals for reducing plastic pollution in our coastal waters and require producers of plastic products to join consumers and state and local governments in addressing the problem of marine plastic pollution. The bill was held in the Assembly Appropriations Committee this year but we will continue to support this policy in 2014.
	The Aquarium also supports local ordinances to ban plastic bags and polystyrene food-packaging in communities around the Monterey Bay.

<b>Natural Resources Defense Council</b>	
	Helped negotiate and defend in court the Los Angeles Trash TMDLs.
	For 22 years have produced Testing the Waters, an analysis of beach water quality at key recreational beaches around the country: <a href="http://www.nrdc.org/water/oceans/ttw/">http://www.nrdc.org/water/oceans/ttw/</a> . The 2013 report will include a feature on trash as a pollutant of concern off California's beaches.

	Since 1990's, NRDC has advanced improved waste management, recycling and extended producer responsibility laws and policies in a variety of states to address range of problematic waste products. The organization also defends such laws from attack in court.
	Developed and continuing to refine a unique producer responsibility program to address marine plastic pollution. This program was introduced in 2013 in AB 521 (Stone and Hueso).
	Cultivating ongoing information exchange at the international level, between experts, government representatives and stakeholder through a web based platform ( <a href="http://www.stopplasticpollution.org">www.stopplasticpollution.org</a> ) and through engagement with the Convention on Biological Diversity, the Global Environment Facility, and at the United Nation (UN) Conference on Sustainability in Rio de Janeiro in 2012. Educated and engaged policymakers from around the world about the problem of marine debris and about effective solutions and helped achieve a final agreement and commitment to address marine pollution, especially plastics, from land-based sources.
	NRDC is a lead member of the UN Environment Programme's Marine Litter Partnership, and hosted a December 2012 meeting of experts in marine litter source reduction law, policy and market innovations. Future meetings of this group to focus on extended producer responsibility are under development.
	Assist colleague organizations, e.g. in the Clean Seas Coalition, by supporting California State and local legislation to control some of the most problematic forms of plastic waste (e.g., single-use plastic bags and polystyrene take-out containers).

<b>Ocean Conservancy</b>	
	Convening an academic working group at the National Center for Ecological Analysis and Synthesis (NCEAS) at UCSB, to quantify the annual input of plastics entering the ocean globally, on an annual basis.
	Conducting brand characterization of marine debris items found on U.S. beaches.
	Modeling historical debris data to identify whether beaches are "sources" or "sinks" for marine debris. Modeling has been successfully completed on small scale but looking to expand.
	Rolling out new International Coastal Cleanup data form and supporting materials that apply material-specific classification to debris items.

<b>Oikonos</b>	
	Oikonos is working with the Ocean Stewardship Committee at the Berkeley Yacht Club to create regular shoreline cleanups along the Berkeley Marina shorelines.

<b>Save Our Shores</b>	
	Conducts an average of 250 inland and beach cleanups per year.
	Led the effort to ban styrofoam food containers in Santa Cruz City, Santa Cruz County, Watsonville, Scotts Valley, Capitola, Carmel, City of Monterey, County of Monterey, Pacific Grove, Seaside, Del Rey Oaks, Salinas, Marina.
	Led the effort to expand the foam ban to include retail sale of foam products in City of Santa Cruz, County of Santa Cruz, Capitola.
	Led the effort to ban plastic bags in County of Santa Cruz, City of Santa Cruz, Watsonville, Capitola, City of Monterey, Carmel.
	Led the effort to expand the plastic bag ban in the County of Santa Cruz to include restaurants.
	Is working with restaurants to reduce their use of disposable plastics. Currently they are leading the "Last Plastic Straw" campaign - encouraging restaurants to only give out straws upon request, or eliminate straws, or replace with paper or aluminum alternatives.

<b>Surfrider Foundation</b>	
	Rise Above Plastics (RAP) program's mission to reduce the impacts of plastics in the marine environment by raising awareness and advocating for a reduction of single-use plastics. This program is most successful in bag and EPS foam bans at the local level. <a href="http://www.surfrider.org/programs/entry/rise-above-plastics">http://www.surfrider.org/programs/entry/rise-above-plastics</a>
	Hold On To Your Butt program – designed to keep cigarette butts off the beach through smoking bans, awareness and receptacles.

<b>Turtle Island Restoration Network</b>	
	<i>Bag the Plastics</i> campaign's goals are to reduce the impacts of plastics to endangered sea turtles and ocean wildlife through raising awareness and supporting policy advocacy for a reduction of single-use plastics and polystyrene foam items ( <a href="http://www.seaturtles.org/plastics">http://www.seaturtles.org/plastics</a> ).

	<p><i>Marine Debris Action Teams</i> lead scientific assessments of marine debris density on shorelines and remove debris from the ocean ecosystem. To date, over 15,000 items have been recorded and removed from California beaches, density data from six beaches has been collected for two years consecutively, and methods training delivered to professionals at seven ocean conservation organizations. Staff and volunteers also conducted micro-plastics and on-water trawl monitoring.</p>
	<p>The new <i>Create Plastic-Free Sea Turtle Habitat</i> project works to transform sea turtle beach conservation stations into community centers for marine debris education, research, and beach cleanups. After its launch in 2013, 800 pounds of garbage were removed from sea turtle beaches in Costa Rica in one week.</p>

### DEBRIS FROM OCEAN

This section contains information provided by **local, state and federal agencies** on their marine debris activities relevant to ocean based debris sources.

<b>California Coastal Commission (CCC)</b>	
	<p>Both the Coastal Cleanup Day Program and Adopt-A-Beach Program deal with debris that washes up on shore from the ocean, as well as debris from land-based sources.</p>
	<p>In 2013, the CCC launched a new Japan Tsunami Marine Debris Cleanup Program in all 15 coastal counties, seeking to gather information about and remove debris that originated with the 2011 tsunami in Japan. <a href="http://www.coastal.ca.gov/publiced/jtmd/jtmd.html">http://www.coastal.ca.gov/publiced/jtmd/jtmd.html</a></p>

<b>CalRecycle</b>	
	<p>CalRecycle provides assistance to stakeholders with piers or boardwalks on waste reduction and recycling to reduce the amount of debris discarded into the ocean</p>
	<p>Beginning in 2010 CalRecycle undertook a series of Cleanup Program pilot projects to directly clean up marine debris and abandoned vessels in California's waterways. Five pilot projects were completed by CalRecycle's contractors with assistance from other agencies at sites in Contra Costa, Sacramento, and Sonoma Counties. The pilot projects were completed over a period from early 2010 to late 2012 at a total cost of \$2.6 million. A cleanup pilot project is currently underway in the Port of West Sacramento in Yolo County and another is under development in the Oakland Estuary in Alameda County. In addition, in 2012 CalRecycle provided \$495,000 grant to the Richardson Bay Regional Agency for a pilot project to clean up abandoned and derelict vessels in Richardson Bay in Marin County.</p>

<b>CalTrans</b>	
	In activities or projects located above or within waterbodies, Caltrans consults with various stakeholders and apply certifications from environmental agencies to ensure debris and other pollutants will not affect the surrounding water quality.

<b>City of Los Angeles</b>	
	The City of Los Angeles operates a series of stormwater low flow diversions at outlets to Santa Monica Bay that prevents dry-weather nuisance flow from entering the ocean. Preventing trash, bacteria, and other pollutants from entering the Bay.
	The City of Los Angeles is currently constructing dry-weather flow reduction projects in the Santa Monica Bay Watershed. These projects will capture trash and other pollutants as well as beneficially use the flow for groundwater augmentation or above ground irrigation.

<b>Environmental Protection Agency Region 9 Marine Debris Program (EPA)</b>	
	Since early 2012, EPA R9 has worked with CA State and county agencies to develop and disseminate assessment protocols for handling potential tsunami debris making landfall that may contain oil or hazardous materials. The protocols were also shared with Coastal Tribes, NPS, BLM, and the States of AK, OR, WA, HI, and Mexico and British Columbia. EPA R9 also worked collaboratively with CA Coastal Commission to develop protocols for volunteer groups interested in helping collect marine and tsunami debris.

<b>Marine Debris Program, NOAA</b>	
	The MDP, NOAA Southwest Fisheries Science Center, NOAA Office of National Marine Sanctuaries (Cordell Bank and Monterey Bay), and UC Davis / SeaDoc Society collaborated on survey, assessment, and removal of derelict fishing gear (DFG) and other marine debris in deepwater benthic environments in Central and Southern CA ( <a href="http://montereybay.noaa.gov/resourcepro/resmanissues/lostgear.html">http://montereybay.noaa.gov/resourcepro/resmanissues/lostgear.html</a> ).
	The MDP coordinates the international response to debris generated by the March 2011 earthquake and tsunami in Japan. This includes shoreline monitoring and assessment, collection and tracking of debris sightings, aerial and satellite detection efforts, close coordination and collaboration with the impacted states and other federal and local partners, addressing invasive species concerns, outreach and communication efforts, and modeling the trajectory of tsunami debris.



	<p>The MDP partners with the National Fish and Wildlife Foundation, Covanta Energy, and Schnitzer Steel on the Fishing for Energy program, which provides free port-side disposal options for derelict and retired fishing gear and offers grants for gear removal and assessment efforts. In 2012, Fishing for Energy placed a temporary disposal bin in Long Beach; the program is currently scoping other locations in California.</p>
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<b>Monterey Bay National Marine Sanctuary</b>	
	<p>Using a remotely operated vehicle, the Monterey Bay National Marine Sanctuary and partners retrieved lost fishing gear including over 1000 feet of rockfish gillnet, a variety of crab and spot prawn traps and 700 pounds of clump weight lead.</p>

<b>Southern California Coastal Water Research Project (SCCWRP)</b>	
	<p>The Bight'13 Regional Debris Assessment Program will assess the quantities and types of debris in marine and estuarine sediments and epibenthos. Here we seek to evaluate the differences in the abundance and types of debris found in surface sediments (epibenthos) retained from otter trawls and within sediments among major Bight estuarine and marine habitat types.</p>
	<p>The Bight'13 Regional Debris Assessment Program will assess the prevalence of plastic in nearshore demersal and pelagic fish. Here we will quantify the amount and types of debris ingested by demersal and pelagic fish found in onshore versus offshore habitats. Fish stomach contents will be analyzed to determine if plastic is present, and in what types and amounts.</p>

<b>State Water Resource Control Board</b>	
	<p>The California Ocean Plan specifies that wastes discharged to the ocean must be essentially free of floatable, will become floatable or settleable material or substances. The California Ocean Plan further designates 34 Areas of Special Biological Significance (ASBS). Waste discharges are prohibited into an ASBS.</p> <p><a href="http://www.waterboards.ca.gov/water_issues/programs/ocean/index.shtml">http://www.waterboards.ca.gov/water_issues/programs/ocean/index.shtml</a></p>

<b>United States Coast Guard (USCG)</b>	
	<p>USCG's primary concern with marine debris is that it may obstruct the safe navigation of federally regulated waterways. Coast guard will generally coordinate with US Army Corps of</p>

	Engineers to remove debris and the Waterways Management Division will monitor, notify mariners, or mark it on navigational charts if it becomes a permanent obstruction to navigation
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<b>Ventura Countywide Stormwater Quality Management Program (VCSQMP)</b>	
	The cities, the County and VCWPD actively participate in the annual Coastal Cleanup Day events. We organize the cleanup of over 22 inland waterbodies and coastal beach locations. In 2012 over 11,000 pounds of trash and recyclables were removed by over 3,300 volunteers at over 36 miles of shorelines. It is worth mentioning that Ventura County’s beaches continue to score high on Heal the Bay’s Beach Report Card. In the 2012 report, Ventura County’s beaches received 100 percent A grades for both dry and wet weather and received the coveted spot of having the most pristine beach water in Southern California.

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This section contains information provided by **non-governmental organizations** on their marine debris activities relevant to ocean based debris sources.

<b>Bay Area Stormwater Management Agencies Association (BASMAA)</b>	
	Bay Area cities, counties, and special districts regularly clean up ocean debris deposited by the tides in shoreline areas and up creeks through routine maintenance programs and volunteer cleanup events (e.g., Coastal Cleanup Day).

**California Lost Fishing Gear Recovery Project, UC Davis**

	Contracts with commercial fishermen to recovery lost fishing gear from coastal marine waters, utilizing SCUBA techniques and equipment, and with funding from state and federal agencies and private foundations.
	Maintains a database of all lost commercial fishing gear observed and recovered by project personnel and ocean users.
	Provides a website with information regarding lost fishing gear in California: <a href="http://www.seadocsociety.org/lostfishinggear">http://www.seadocsociety.org/lostfishinggear</a> .
	Maintains a toll-free hotline and an online reporting form for lost fishing gear accessible via the website; these reporting systems are monitored daily and enable anyone to report the loss of or sighting of lost fishing gear; a link to the website can be found on the California Department of Fish & Wildlife website.
	Produced a California Lost Fishing Gear Recovery Project Policies & Procedures Manual,

	available for downloading from the project website.
	Serves as a Point of Contact for emerging commercial and recreational fishing gear recovery projects nationwide.

<b>Heal the Bay</b>	
	Track efforts if we hear of a dumping issue.

<b>Ocean Conservancy</b>	
	National Center for Ecological Analysis and Synthesis (NCEAS) working group is identifying data sources for which ocean-based debris estimates can be generated (e.g., fishing, cruise ships) and an estimate of global “ocean-derived” plastic debris can be calculated.

<b>Oikonos</b>	
	Aspects of Oikonos research on plastic ingested by Black-footed albatross and Northern fulmar seabirds has promoted an awareness for urgent actions to stop the flow of plastic entering the ocean.
	The research project on Northern fulmars is entitled: BiOPs - Biological Indicators of Ocean Plastic Pollution and the main goal is to improve the health of the North Pacific Ocean by reducing the amount of pollution entering the marine food webs. To this end, Oikonos is using seabirds and fish as biological samplers of litter at sea and quantifying changes in the amount and types of bioavailable plastic pollution levels in the major oceanographic regions of the North Pacific.
	The research project on Black-footed albatross provided important information to create the activity package in partnership with Cordell Bank National Marine Sanctuary and the Papahānaumokuākea Marine National Monument for middle school/high school educators entitled <i>Winged Ambassadors Ocean Literacy through the Eyes of Albatross</i> . Lessons include <i>Introduction to Seabirds, Tracking Albatross Migrations, Protecting Ocean Hotspots, Bolus Analysis, and Campus Debris Survey</i> .

<b>Save Our Shores</b>	
	Has been running the Dockwalker program since 1992. This is a program where we train volunteers to walk the docks in the 4 harbors of the Monterey Bay Sanctuary to talk to boaters

	about not polluting and hand out free clean boating kits which provide tools to prevent pollution. Information includes where to safely dispose of used oil and what the fines are for disposing of trash at sea. This program was adopted by the State of California as the statewide model and has been adopted by some other states as well.
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<b>Turtle Island Restoration Network</b>	
	Campaigning to remove drift gillnets as a legal fishing gear in California. Mile-long derelict drift gillnets represent a source of potential marine debris that harms ocean habitat and entangles marine life.
	Recording and reporting floating debris items when engaged in offshore Leatherback Watch Program cruises. ( <a href="http://www.seaturtles.org/events">http://www.seaturtles.org/events</a> )

### OUTREACH AND MESSAGING

This section contains information provided by **local, state and federal agencies** on their outreach and messaging activities relevant to marine debris.

<b>Bay Conservation and Development Commission</b>	
	BCDC Commission Briefing on Abandoned Vessels and Marine Debris, March 21, 2013.
	In 2002, the Port of Redwood City adopted ordinances to better manage its harbor and waterways and prevent the return of the so-called “Aqua Terra” problem.
	In 2005, Contra Costa County established and implemented ordinances to manage an illegal vessel-mooring problem that had crept up on the region.
	In 2008, following Contra Costa County’s lead, Solano and Sacramento Counties established and implemented ordinances to manage their illegal vessel-mooring problem.
	In 2011, the City of San Leandro updated its vessel mooring ordinances to include all of the water areas within the City limits in addition to the marinas and regularly issues violation letters to the owners of illegally moored vessels.
	Senate Bill 122 to extend the VTIP Program

<b>CalTrans</b>	
	For Caltrans Non-highway facilities Caltrans performs stenciling of storm drain inlets which

	<p>serves to educate the public and Caltrans staff about the connection between storm runoff and receiving waters. Caltrans currently stencils storm drain inlets in maintenance stations, in Park-and-Ride facilities, and along state routes as stenciling is not required in areas where pedestrian access is prohibited.</p>
	<p>Using a comprehensive, multicultural approach and in partnerships with multiple agencies, the <a href="#">Don't Trash California</a> campaign targets primary offenders of highway littering, as well as the general public, to create a social mindset in California that California does not tolerate polluting our freeways and highways.</p>
	<p>The Adopt a Highway Program has reached out to more than 120,000 Californians that have cleaned over 15,000 shoulder-miles of roadside. <a href="#">AAH Informational Handouts</a> are available for those who want to participate in the program.</p>

<b>CalRecycle</b>	
	<p>CalRecycle utilizes the majority of forms of social media for programs related to disposal, recycling, technology, composting and legislation.</p>
	<p>CalRecycle staff provides education and outreach to stakeholders on ways to reduce illegal dumping, littering and recycling programs located at beaches.</p>

<b>California Coastal Commission (CCC)</b>	
	<p>The Coastal Cleanup Day, Adopt-A-Beach, and to some degree, the Japanese Tsunami Marine Debris (JTMD) Cleanup programs all have outreach and messaging components.</p>
	<p>The CCC makes an especially big push around outreach and messaging for Coastal Cleanup Day, which includes event posters, postcards, t-shirts, web pages, and social media. You can access our Facebook page at <a href="http://www.facebook.com/CaliforniaCoast">www.facebook.com/CaliforniaCoast</a> and our Twitter page at <a href="http://twitter.com/cleanupday">twitter.com/cleanupday</a></p>

<b>City of Los Angeles</b>	
	<p>The City of Los Angeles' Stormwater Program is one of the sponsors that brings about Kids Ocean Day at Dockweiler State Beach. This event takes elementary age kids to the beach to learn about the ocean and how to sustain it. Now in its 20<sup>th</sup> year, the most recent event in 2013 brought over 3,000 kids to the beach.</p>
	<p>The City of Los Angeles' Stormwater Program is active in the social media using internet tools such as its website, Facebook, YouTube, and blog to distribute its message.</p>

	The City of Los Angeles' Stormwater Program provides free of charge educational materials to residents, schools, environmental and community-based organizations.
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<b>Department of Boating and Waterways</b>	
	DBW works closely with law enforcement agencies and public marinas to develop awareness and understanding of these two grants. Attendance at meetings of state, federal and public entities, speaking engagements, site visits, and diligent attention to abatement activity of participants has helped strengthen and grow participation of local public agencies.
	"Is Your Boat An Anchor?" This VTIP poster was designed and distributed by DBW to participants for their outreach efforts to their local communities.
	DBW maintains information on its website for potential and participating agencies as well as the public.

<b>Environmental Protection Agency Region 9 Marine Debris Program (EPA)</b>	
	EPA R9 participates in numerous conferences, workshops and trainings ranging from the local level to international organizations presenting information related to our Regional Marine Debris Program, giving routine updates on our research work, grant opportunities and collaboration activities. <a href="http://www.epa.gov/region9/marine-debris/index.html">http://www.epa.gov/region9/marine-debris/index.html</a>

<b>Los Angeles County Flood Control District (LACFCD)</b>	
	As part of the efforts to meet AB 939 solid waste diversion requirements as well as the MS4 Permit requirements, the County and the LaCFCD established the <a href="http://www.CleanLA.com">www.CleanLA.com</a> website to provide outreach to County residents, businesses, institutions, and government to promote sustainable living such as the "Reduce, Reuse, and Recycle" strategy.

<b>Marine Debris Program, NOAA</b>	
	In 2013, the MDP announced a Federal Funding Opportunity for outreach and education partnership projects, which is planned to continue on an annual basis contingent on funding availability.

	The MDP has a wealth of information and outreach materials, resources, project information, videos, and links online at <a href="http://marinedebris.noaa.gov">http://marinedebris.noaa.gov</a> , which includes links to social media including blogs, Facebook, and Twitter.
	The MDP developed a number of Japan tsunami marine debris – specific outreach tools and materials, including brochures, posters, graphics, videos, and podcasts.
	The MDP recently revised a set of lesson plans for grades 1 through 12, “Turning the Tide on Trash”, which is available for download at <a href="http://marinedebris.noaa.gov/outreach/activity.html">http://marinedebris.noaa.gov/outreach/activity.html</a> . The MDP runs an annual “Keep the Sea Free of Debris!” art contest for K-8 students

<b>Monterey Bay National Marine Sanctuary</b>	
	Reduce benthic hazards to marine organisms posed by lost fishing gear. Gear can create long-term entrapment mechanisms that continuously impact fish and crustaceans for many years. Net materials are constructed to be strong and resilient, thus preventing escape of entangled wildlife and persisting in the environment for decades. Nets and traps have also been documented to entangle bottom feeding whales and other marine mammals, becoming ensnared on flukes and fins.
	Removing gear from the benthos also provides a safer environment for deepwater submersible researchers and fishermen. Lost fishing gear can cause hazards to fishing gear being actively used by fishermen. For example, lost traps may snag additional traps being set nearby. Catching new gear on lost gear is a nuisance and a hazard.
	Provide HD images and video to the public as shared via <a href="#">Facebook</a> and <a href="#">SIMoN</a> (Sanctuary Integrated Monitoring Network Photo Library).

<b>Ocean Protection Council (OPC)</b>	
	The Ocean Protection Council in partnership with the National Oceanic and Atmospheric Administration (NOAA) runs a statewide outreach campaign, Thank You Ocean. Thank You Ocean has prioritized marine debris as one of their top four priority issues. The Thank You Ocean website features information about marine debris, Japanese tsunami marine debris as well as action items for the public to reduce their personal impact on marine debris. Thank You Ocean also has featured marine debris on several of their bimonthly podcast productions. <a href="http://www.thankyouocean.org/threats/marine-debris/">http://www.thankyouocean.org/threats/marine-debris/</a>

<b>Southern California Coastal Water Research Project (SCCWRP)</b>	
	Results from the Bight'13 Regional Debris Assessment Program will be used by participants to outreach to the public as well as stakeholders managing land and ocean resources.

<b>State Water Resource Control Board (State Water Board)</b>	
	The State Water Board released a short Trash Video on the September 13, 2012. This video highlights the issue and challenges of trash throughout state waters (i.e. rivers, lakes, and ocean) and details the role of the State and Regional Water Boards in finding a solution. <a href="http://www.waterboards.ca.gov/videos/video_pages/beaches.html">http://www.waterboards.ca.gov/videos/video_pages/beaches.html</a>

<b>United States Coast Guard (USCG)</b>	
	Contact local Coast Guard units to report marine debris in federally regulated channels.

<b>Ventura Countywide Stormwater Quality Management Program (VCSQMP)</b>	
	The VCSQMP has an extensive public outreach program, "Community for a Clean Watershed", that includes a campaign focusing on trash. The program includes messaging via television, radio, webpage, Facebook, and print advertising. In addition, school outreach is conducted with a focus on litter prevention. Visit our outreach website at <a href="http://www.cleanwatershed.org">www.cleanwatershed.org</a> to view the program's outreach efforts, including the commercial, "A Day in the Life" on trash. Over 7 million impressions are made annually via the countywide outreach program.
	In addition to the VCSQMP's outreach, the Ventura County Coalition for Clean Waterways, of which most cities, the County and VCWPD are members of, organize Coastal Cleanup Day in Ventura County at over 22 sites and sponsors a very intensive social media campaign for the event. Visit the website at <a href="http://www.vccoastcleanup.org">www.vccoastcleanup.org</a> or Facebook at <a href="http://www.facebook.com/VenturaCountyCoastalCleanupDay">www.facebook.com/VenturaCountyCoastalCleanupDay</a> .
	In addition to the countywide efforts, each of the ten cities and the County run outreach campaigns with a focus on trash, that includes Earth Day events, newsletter mailouts, and school outreach programs.



This section contains information provided by **non-governmental organizations** on their outreach and messaging activities relevant to marine debris.

<b>America's Cup Healthy Ocean Project</b>	
	<p>Organization of and participation in 16 shoreline or beach clean-ups here in the Bay Area, in partnership with Sea Scavenger. These clean-ups have resulted in over 1600 volunteer hours and more than 8000 pounds of trash removed from the shoreline. Additional clean-ups are planned through September 2013.</p> <p>Periodic public film and lecture series events, many of which focused on the issue of marine debris. However, each event includes introductory discussions of the ACHOP commitment to keeping plastics out of the ocean. Further public events about marine debris are being planned during this summer's America's Cup.</p>
	<p>Support for the Zero Waste racing events in accordance with the America's Cup Sustainability Plan. The October 2012 America's Cup World Series (ACWS) event had a 98% waste diversion rate, and this summer's event will similarly include measures such as no single-use plastic bottles; compostable ware at all concessions; Recycle/Compost stations throughout the venue; and volunteers to help guests with sorting along with back-of-house waste sorters.</p>
	<p>An ACHOP exhibit, which debuted during ACWS events in the summer and fall of 2012. An enhanced exhibit will be installed on Marina Green in summer 2013, and plastics messaging will also be present throughout Piers 27 and 29. This messaging is estimated to be viewed by millions of visitors.</p>
	<p>Ongoing online and social media content encouraging the America's Cup audience and the general public to take individual action in support of ocean health.</p>

<b>Bay Area Stormwater Management Agencies Association (BASMAA)</b>	
	<p>In 2004-05, as part of a multi-year Regional Advertising Campaign focused on raising watershed awareness, BASMAA added behavior change messages, including an anti-littering message.</p>
	<p>Starting in 2006-07, BASMAA has conducted at least one media pitch every year to Bay Area media outlets focused on preventing litter and cleaning up areas with significant amounts of trash.</p>
	<p>In 2011-12, BASMAA developed and launched a 3-year Regional Outreach Campaign, <a href="#">Be the Street</a>, using a social media approach to create a new social norm for littering in a targeted sector of the population – primarily young males (aka "Rubbish Rebels").</p>

	Bay Area cities and counties have supplemented BASMAA's Regional Advertising Campaigns and Regional Outreach Campaign with complementary and locally focused efforts.

<b>California Coastkeeper Alliance</b>	
	Conducts outreach to local organizations on the development of the State Water Board's trash policy around coastal cleanup day and other beach cleanup events. We collect and use beach cleanup day statistics and photos in advocacy to the State Water Board for a strong trash policy.
	Educates media and the public on the content and State Water Board process to develop a statewide trash policy. Developed a briefer to summarize the trash policy components, describe its impact to municipalities, and relation to bag bans and other source reduction efforts.
	Works with California Waterkeepers to provide information to local media outlets on trash impacts to local waterways and tips on how to reduce trash when visiting outdoor areas (eg. Los Angeles Waterkeeper's 10 minute trash cleanup).
	Encourages the public to report marine debris and other sources of pollution via the <i>Swim Guide</i> smartphone application and local Waterkeeper hotlines.

<b>Californians Against Waste</b>	
	Conducts informational presentations on the need for and enforcement of California's anti-greenwashing plastics labeling law.
	Participates in panels on single-use plastic pollution and ways to reduce it.
	Maintains website with an online activist tool kit for local bag bans and a regularly updated list of local bag and food packaging ordinances.
	Provides public updates on marine-debris related bills, ordinances, and issues via website blogs, social media outlets, and action alerts to members.

<b>Heal the Bay</b>
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	Delivers presentations about marine debris prevention and what people can do in their daily lives at beach clean-ups, Speakers Bureau presentations (Heal the Bay volunteer corps of 50 speakers give multi-media presentations to over 40,000 people annually), Youth Summits (4 annually), and other outreach events.
	Conducts outreach through social media via Twitter (>31,000 followers), Facebook (>9,500 likes), and Instagram (2450 followers), as well as Majestic Plastic Bag You Tube video. We may be hosting some Twitter parties on marine debris this year, contingent upon funding.
	Runs the Los Angeles International Coastal Clean-up Day which includes over 60 sites.
	Features a plastic pollution exhibit at our Santa Monica Pier Aquarium (more than 85,000 visitors annually).
	Hosts an interactive Heal the Bay marine debris database (used with beach clean-up groups and schools): <a href="http://www.healthebay.org/about-bay/pollution-101/marine-debris-database">http://www.healthebay.org/about-bay/pollution-101/marine-debris-database</a>

<b>Monterey Bay Aquarium</b>	
	In 2011 we reopened our Ocean Travelers gallery, which now exhibits works by artists who have focused on ocean conservation. Several art installations are made from everyday plastic items and tell stories about how plastic marine debris impacts open-ocean animals like seabirds, sea turtles and whales. Our Guest Ambassadors also utilize the exhibit to interpret the impacts of marine debris with visitors throughout the year and with students during the summer through our Teen Conservation Leaders program. ( <a href="https://www.montereybayaquarium.org/efc/efc_plastic/">https://www.montereybayaquarium.org/efc/efc_plastic/</a> )
	In the 2012-2013 academic year, we hosted a three-part Ocean Plastic Pollution summit to help teachers and their students reduce single-use plastics in their schools and communities. The summit included fall, winter, and spring sessions (two of which were overnights) at the Aquarium, addressed the science behind plastic issues, and offered networking opportunities for teachers. It also included support for teachers and students who undertook various action projects targeting source reduction of plastic and involving measurable data and communication of results to the school or community. Nearly 30 teachers and their students completed projects that ranged from reduction of plastic utensils in the cafeteria to purchasing hydration stations for use with reusable water bottles. We will be hosting another three-part summit in 2013-2014.

<b>Natural Resources Defense Council (NRDC)</b>	
	NRDC has 1.4 million members and activists nationwide who periodically receive information about our work on marine plastic pollution. We also send action alerts and information to our

	½ million California members and activists.
	Created and are continuing to update a coalition website for groups interested in supporting producer responsibility for marine plastic pollution at <a href="http://www.stopplasticpollution.org">www.stopplasticpollution.org</a>
	Produced a short film to explain producer responsibility for marine plastic pollution: <a href="http://youtu.be/Lkuek9RqjXE">http://youtu.be/Lkuek9RqjXE</a>

<b>Ocean Conservancy</b>	
	Provides an education program for teachers, volunteer organizations, etc. to be used prior to, during, and following Cleanup events in order to build a holistic understanding about the issue of ocean trash.
	Runs a social media campaign on plastics as a disruption to the natural order of things, emphasizing the inhumanity of plastics in the ocean.

<b>Oikonos</b>	
	Use of results of Oikonos research on plastic ingested by Black-footed albatross and Northern fulmars has been used to inspire people of all ages to be involved in ocean stewardship and the prevention of plastic pollution.

<b>Save Our Shores</b>	
	Save Our Shores (SOS) runs the Annual Coastal Cleanup Day for Monterey and Santa Cruz County which includes 70 sites and up to 4,000 volunteers.
	Attend at least 50 community events in both counties where we distribute information about marine debris.
	Run monthly beach cleanups in both counties where we conduct a marine debris presentation before the cleanup.
	In the past year we have increased the number of corporate groups coming out for cleanups 10 fold. These groups receive a presentation on marine debris before cleaning the beach.
	Run the Adopt A Beach program in both counties so we give a marine debris presentation to all of these groups on their first cleanup.

	Send out a newsletter three times a year that always includes information about marine debris and this reaches 5,000 people.
	Send out a monthly electronic newsletter that reaches 5,000 people and includes information about upcoming cleanups. Collect data at all of our cleanups and we post the information on our website and on the Monterey Bay Sanctuary's SIMoN (Sanctuary Integrated Monitoring Network) site.
	Conduct outreach through our Facebook and Twitter accounts and our Blog. June 2013 we launched a Beachkeepers program so we have additional social media accounts for that program that caters to individuals going out and cleaning up their favorite beach on their own.
	Give presentations to civic organizations such as Rotary groups approximately 25 times per year.
	Created a marine debris curriculum and we were awarded the Santa Cruz County Green Schools contract for the past three years. We reach over 3,000 students per year in all grade levels with our in-class and on the beach presentations.

<b>Surfrider Foundation</b>	
	The Surfrider Foundation maintains a website, Facebook, Twitter and Blog ( <a href="http://www.surfrider.org/coastal-blog/c/rise-above-plastics">http://www.surfrider.org/coastal-blog/c/rise-above-plastics</a> ) accounts.
	Conducts grassroots outreach through our 84 local Chapters.
	Surfrider holds "Teach the Teacher" courses so that the issues can spread through the community through word of mouth.

<b>Turtle Island Restoration Network</b>	
	Focus of outreach messaging is linking the fact that 37% of leatherbacks encountered have ingested plastic, California's coast is a critical habitat feeding area, the Pacific leatherback is now the official marine reptile of the State, leatherbacks mistake plastic for their jellyfish prey, and Californians should work to protect them from plastic pollution.
	Delivering presentations about the impacts of plastic marine debris to marine life (4,000 audience annually), leads and supports beach clean-ups (12-20 annually), and promotes advocacy at outreach events (10,000 audience annually).

	<p>Outreach through membership emails and social media via Twitter, Facebook, and YouTube reaches an audience of over 100,000 per message.</p> <p>(<a href="http://www.facebook.com/pages/Sea-Turtle-Restoration-Project/199010435394">http://www.facebook.com/pages/Sea-Turtle-Restoration-Project/199010435394</a>)</p> <p>(<a href="http://twitter.com/SeaTurtles_org">http://twitter.com/SeaTurtles_org</a>)</p> <p>(<a href="http://www.youtube.com/user/SeaTurtleRestoration">http://www.youtube.com/user/SeaTurtleRestoration</a>)</p>
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### EMERGING RESEARCH AND RESEARCH NEEDS

This section contains information provided by **local, state and federal agencies** on emerging research relevant to marine debris as well as overarching research needs.

<b>Bay Conservation and Development Commission</b>	
	<p>Database of location, quantity and cost to abate abandoned, collapsed and derelict structures in and around SF Bay, including pilings.</p>

<b>CalTrans</b>	
	<p>Caltrans has been continuously evaluating and investigating new methods to contain debris and other pollutants using treatment best management practices. The Department has conducted <a href="#">Monitoring Research and Applied Studies</a> and updates technology and development status reports to annually.</p>

<b>City of Los Angeles</b>	
	<p>The City of Los Angeles as part of reaching full compliance with the existing Trash TMDLs is currently conducting a scientific study to quantify the benefits of its institutional measures in the reduction of trash discharges. Preliminary results of Year-1 are promising in that it appears that the City of Los Angeles will be able to demonstrate full compliance with the TMDL.</p>
	<p>Through the many years of implementing various measures to achieve Trash TMDL compliance, the City of Los Angeles recognizes that various programs, such street sweeping, can be enhance (i.e., changing the performance standard from “curb miles” to “mass collected”) to improve its effectiveness. Additional research is needed to determine similar parameters in other programs that can realize significant impacts.</p>

<b>Department of Boating and Waterways</b>	
	Track abandoned and derelict vessels (ADVs) in California which would indicate trends, provide photos and status (floating/sunk), identify repeat offenders, identify boats repeatedly sold at lien sales, identify position/location/changes of specific ADVs, and improve and coordinate efforts and communication with local agencies.
	Identify “at-risk” vessels and communicate with owners before they abandon them.
	Track and identify vessel owners not maintaining registration.
	Update old lien sale laws to reduce the possibility of boats recurring in lien sales from agency to agency.
	AWAF and VTIP grant program trends: successes, differences, future

<b>Environmental Protection Agency Region 9 Marine Debris Program (EPA)</b>	
	Working with the Romberg Center in Tiburon, EPA R9 is using CODAR (Coastal Doppler Radar) technology, tracking the velocity of currents off the coast of California, to better predict areas and times of likely marine debris landfall.
	In partnership with California Office of Environmental Health Hazard Assessment, (OEHHA) and UC Davis, UC Santa Barbara and UC San Diego, EPA R9 has supported and developed three fish tissue studies to examine the effects of ingestion and subsequent transfer of persistent organic pollutants to fish tissue from marine microplastics. We are also preparing to assess areas of open ocean convergence and accumulation of microplastics along coastal California during 2014.

<b>Marine Debris Program, NOAA</b>	
	In 2013, the MDP announced a Federal Funding Opportunity for research projects focused on the chemical impacts and degradation rates of marine debris. This opportunity is planned to continue on an annual basis contingent on funding availability. Specific research focus areas are guided by the MDP’s five-year research strategy.
	In 2012, the MDP initiated the Marine Debris Monitoring and Assessment Project (MD-MAP),

	<p>which partners with various organizations for regular shoreline surveys according to NOAA survey protocols at select shoreline sites and submission of survey data to an online database at <a href="http://md-map.net">md-map.net</a>. The project currently includes monitoring at least 26 shoreline sites in California. Partners include Gulf of the Farallones National Marine Sanctuary, Heal the Bay, Save our Shores, Sonoma Surfrider, Monterey Surfrider, Ocean Conservancy, and the California Coastal National Monument Task Force.</p>
	<p>The MDP and IEC, Inc. are conducting a project in Orange County, CA to assess the economic benefits of reduction of marine debris through establishing whether residents' recreational travel decisions are affected by shoreline debris loads.</p>

<b>Monterey Bay National Marine Sanctuary</b>	
	<p>An HD video camera mounted on the remotely operated vehicle captured footage of the gear and documented a diversity of fishes, invertebrates and habitats. We completed a total of 30 site surveys and video characterization from areas 30-300 meters deep in the Monterey Bay National marine Sanctuary.</p>
	<p>MBNMS staff refined deepwater remotely operating vehicle (ROV) retrieval procedures of lost fishing gear such as nets and traps.</p>
	<p>This project provided a unique opportunity to characterize encrusting invertebrate communities associated with lost fishing gear. In state marine protected areas, invertebrates were removed by hand when possible, photographed on deck, and then returned to the water, as well as any entrapped fish. At locations outside state MPAs, unusual or interesting specimens found on the nets or in traps were collected for educational or scientific purposes. Selected invertebrates associated with the retrieved gear were collected and/or photographed.</p>
	<p>MBNMS staff led a graduate level internship for a California State University of Monterey Bay student to develop a <a href="#">3D visualization</a> of the lost fishing gear density at Portuguese Ledge.</p>

<b>Southern California Coastal Water Research Project (SCCWRP)</b>	
	<p>The Bight 13 Debris survey addresses the research need to quantify the abundance and types of debris found in coastal watersheds and nearshore marine environments and to link the abundance to ingested plastic in demersal and pelagic fish. Additional work is needed to establish the effect of ingested plastics on bioaccumulation of contaminants in fish and other marine life.</p>



**State Water Resource Control Board (State Water Board)**

	Quantification of impacts of trash on beneficial uses.
	Protocols for monitoring trash reduction.
	Quantification of chemical bioaccumulation in the food chain from trash materials.
	Quantification of economic benefits from trash reduction in a municipality.

**Ventura Countywide Stormwater Quality Management Program (VCSQMP)**

	Cost-effective trash assessment and monitoring programs.
	Effectiveness of control measure implementation.
	Full capture equivalent studies.

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This section contains information provided by **non-governmental organizations** on emerging research relevant to marine debris as well as overarching research needs.

**Bay Area Stormwater Management Agencies Association (BASMAA)**

	In 2013, Bay Area cities, counties, and special districts will be reporting refined trash loads from their storm drain systems, based on additional storm event data.
	Beginning in 2013, using a Proposition 84 stormwater planning and monitoring grant, BASMAA will be developing and evaluating stormwater and receiving water monitoring methods to accurately measure trash loads from stormwater conveyances and receiving waters and detect trends over time; and assessing the effectiveness and costs/benefits of implementing enhanced source control best management practices as alternatives to trash full capture devices (a treatment BMP).

**California Coastkeeper Alliance**

	Identify what types of products are showing up in rivers, shorelines, and on beaches. Identify
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	the source of these products. Identify the primary sources of micro-plastic debris.
	Assess the percentage of the plastic industry in full compliance with Operation Clean Sweep and determine what practices are effective during storm events, and if there are any plastics facilities implementing those practices successfully.
	Analyze the prevalence of debris in near shore fauna.
	Additional research on the extent and magnitude of plastic debris consumed by coastal fishes.
	Analyze the impacts of plastic pollution on benthic communities.
	Determine the effects of bioaccumulation of toxins in marine species due to plastic pollution in the marine environment.
	Assess the economic impacts of marine debris on our beaches and in our waterways. Determine the economic cost to cleanup marine debris from our storm drains, beaches, and waterways.
	Identify the composition of plastic marine debris to determine if it has changed off the California coast over the years.

<b>Californians Against Waste</b>	
	How to best clarify environmental claims in the market to prevent greenwashing or consumer confusion.
	Impacts to litter reduction if statewide bottle bill program is expanded to cover additional containers.
	Effectiveness of local ordinances in reducing litter and related costs.
	Direct cost savings of marine pollution reduction to consumers, local governments, waste haulers, etc.
	Quantification of marine debris components, by percentage and product.

<b>California Lost Fishing Gear Recovery Project, UC Davis</b>
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	Improved and more sustainable processes involving fishing communities for the reduction and retrieval of lost fishing gear.
	Greater understanding for the health impacts of marine debris, including lost fishing gear, on marine life and habitats.

<b>Clean Seas Coalition</b>	
	Need for more information and NGO understanding about Bioplastics.
	Need to gather more information and data on the effectiveness of the implementation of source reduction ordinances.

<b>Heal the Bay</b>	
	Promotion of recent US EPA's recent economic research which highlights the costs of marine debris, as well as NOAA's research on this issue.
	Cost-benefit analyses comparing single-use products (e.g. water bottles, plastic bags, coffee cups) to reusable alternatives – sort of like a life-cycle assessment comparison.
	Cost analysis of contamination of the recycling stream by biodegradable products.
	Analysis of cost savings to businesses in communities with carryout bag reduction policies.
	Market evaluation of the green job potential of shifting towards reusable items in place of single-use alternatives (e.g. bags, water bottles, coffee mugs, etc).
	Additional analysis of the ability for compostable/biodegradable plastics (e.g. Metabolix Mirel) to breakdown in aquatic environments, and toxicological analysis of the byproducts from any breakdown that occurs.
	Additional analysis of the bioavailability of toxins associated with plastic marine pollution (plastic additives and chemicals adsorbed to plastic marine debris) to wildlife.
	Bioaccumulation studies of toxins associated with plastic marine pollution (plastic additives and chemicals adsorbed to plastic marine debris) in marine life.

<b>Ocean Conservancy</b>
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	Identify what the <u>actual</u> entry points of debris into the marine environment are. Moving beyond ambiguous terms and “storm water” source, and identifying actual pathways for which prevention, not cleanup, can be implemented.
	Toxicity of plastics/contaminants in seafood.

<b>Oikonos</b>	
	During coastal cleanups on the future shoreline cleanups in the Berkeley Marina, the use of the California Coastal Commission data cards to collect marine debris data contributes to emerging research and research needs.
	Oikonos conducted a review of the 'state of knowledge' that demonstrated that the phenomenon of seabird plastic ingestion has been widely documented in seabirds and warrants an urgent need to implement a robust approach to quantify the severity of exposure and trends over time.

<b>Save Our Shores</b>	
	Drafted a paper on plastic bag bans to show how and why local bans were put in place on the Central Coast. There is currently no paper such as this available to refute the claims of the plastics industry that say that bag bans are bad for local economies. This paper shows that plastic bag litter has decreased by 80% in just the first year of the bag ban. This could mean that local economies are doing better because beaches are cleaner and bringing more visitors. There could be more research done to effectively prove this argument in support of bag bans.

<b>Surfrider Foundation</b>	
	Costs of plastic pollution on local economies.
	Effects of plastic pollution on marine environment, including marine animals (there is a lot out there, but it is good to be more specific).
	Need to refute plastics industry arguments about the safety of plastic bags and dangers of reusable bags.

<b>Turtle Island Restoration Network</b>	
	Publishing standardized scientific method to record marine debris density on shorelines with objective source score. Preliminary results from indicate high density variability with significant source score differences among twelve sites in California and six sites in Costa Rica.
	Current micro-plastics observations will drive future shoreline investigations to determine density and estimate total beach plastic load within Point Reyes Seashore.
	Re-formatting debris density and coastal cleanup data to include in NOAA and West Coast Governors Alliance marine debris online databases.

### REGIONAL COORDINATION EFFORTS

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This section contains information provided by **local, state and federal agencies** on their regional coordination efforts related to marine debris.

<b>Bay Conservation and Development Commission</b>	
	State Department of Boating and Waterways Abandoned Watercraft Abatement Fund (AWAF)
	State Department of Boating and Waterways Vessel Turn In Program (VTIP)
	United States Coast Guard sponsored quarterly inter-agency meetings and establishment a database of abandoned and derelict vessels. Attendees include local harbor masters and salvors and staff from local, state and federal agencies. The meetings have forged partnerships and coordination that would not otherwise have occurred.
	In 2011, an East Bay Harbor Master formed the Estuary Coalition to manage an abandoned vessel, anchor out vessel and theft problem in the Alameda Oakland Estuary, which lead to the below cited project.
	CalRecycle and National Fish and Wildlife Foundation partnership and planned a \$1.2 million dollar cleanup of the Alameda Oakland Estuary to remove approximately 1,000 tons of marine debris consisting of abandoned wharves, pilings and 30 vessels
	Richardson's Bay Regional Agency's ongoing work to remove abandoned and derelict vessels from Richardson's Bay.

	<p>Since 1949, the Army Corps of Engineers has been removing debris from the Bay's navigation channels using its authority under the Harbors and Rivers Act. During the past three years, this program's budget has averaged \$2.5 million dollars annually.</p>
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<b>CalTrans</b>	
	<p>Caltrans districts coordinate with local enforcement agencies (LEA) concerning proper storage and disposal of waste generated materials.</p>
	<p>Whenever accidental spills occur in highways, Caltrans conduct coordinated efforts with the CHP, DTSC, RWQCB, and other environmental agencies to contain and remove any debris or chemicals away from the public.</p>
	<p>Caltrans has performed Enhanced storm Drain Inlet Inspection and Cleaning Program in coordination with metropolitan areas along the South Coast as part of litter and debris reduction.</p>
	<p>Caltrans also has maintenance agreements with various local agencies which include litter abatement efforts.</p>

<b>California Coastal Commission (CCC)</b>	
	<p>CCC staff chairs the West Coast Governors' Alliance Marine Debris Action Coordination Team, which is developing a strategy for addressing marine debris along the entire West Coast, among other deliverables.  <a href="http://www.westcoastoceans.org/index.cfm?content.display&amp;pageID=81">http://www.westcoastoceans.org/index.cfm?content.display&amp;pageID=81</a></p>
	<p>CCC staff also participates in the California Ocean Protection Council's Marine Debris Steering Committee. <a href="http://www.opc.ca.gov/">http://www.opc.ca.gov/</a></p>

<b>City of Los Angeles</b>	
	<p>The newly adopted LA Region Stormwater Permit (Dec. 28, 2012, issued by the LA Regional Water Quality Control Board) requires the development of Regional Watershed Plans (Enhanced Watershed Management Programs) as well as a Coordinated Integrated Monitoring Plans (CIMP). The City of Los Angeles is leading efforts in 4 Regional Watershed Plans and CIMP (LA River, Ballona Creek, Dominguez Channel, and Santa Monica Bay – J2 &amp; J3).</p>

	The City of Los Angeles is partnering with over 30 LA Region Municipalities to accomplish the preparation of the Plans in realizing improve water quality in the local waterbodies as well as an effective monitoring program.

<b>Department of Boating and Waterways</b>	
	Letter of Support for CalRecycle’s Oakland Estuary Enhancement Project.
	Increased AWWF funding support to Delta law enforcement agencies for FY 13/14.
	Attendance and participation of U.S.C.G. Abandoned Vessel Workgroup meetings.
	Increased communication with other state entities involved in ADVs.

<b>Environmental Protection Agency Region 9 Marine Debris Program (EPA)</b>	
	In FY 2011, Region 9 developed a cross-media Marine Debris Strategy to employ existing EPA program tools and resources and work with a host of governmental and non-governmental partners to address the problem of marine debris both on land and in the open ocean. The Strategy encompasses waste minimization and trash reductions from stormwater discharges as well as further assessment of marine debris characteristics and investigation of potential cleanup approaches in rivers, estuaries, lakes and the open ocean. We are also continuing our collaborative efforts to monitor the migration of tsunami debris and evaluate potential mitigation options.

<b>Los Angeles County Flood Control District (LACFCD)</b>	
	The County and the LACFCD participated in regional studies to quantify and assess the sources of trash through various regional programs, such as the Southern California Stormwater Monitoring Coalition, and the Southern California Bight Regional Monitoring Program.
	Since 2011, the County and the LACFCD have participated in the State Water Board’s Public Advisory Group to guide the development of a Statewide Trash Policy.

<b>Marine Debris Program, NOAA</b>	
	The MDP has Regional Coordinators located throughout the nation to engage in and support local and regional projects, partnerships, activities and actions, facilitate information sharing, conduct outreach, and identify regional issues and needs.
	In July 2013, the MDP will be publicly releasing the Marine Debris Clearinghouse, a web-based portal that will allow the active marine debris community and general public to access information on activities and lessons learned ( <a href="http://clearinghouse.marinedebris.noaa.gov/">http://clearinghouse.marinedebris.noaa.gov/</a> ).
	As part of the effort to coordinate the overall response to Japan tsunami marine debris, the MDP has had regular communication and coordination with various state and local partners, including CA Emergency Management Agency, Ocean Protection Council, CA Department of Natural Resources, CA Department of Fish and Wildlife, CA Coastal Commission, EPA Region 9, and U.S. Coast Guard District 11.
	The MDP has active participation on the West Coast Governors' Alliance Marine Debris Action Coordination Team.

<b>Monterey Bay National Marine Sanctuary</b>	
	California Academy of Sciences and Steinhart Aquarium collaborated to study and catalogue specimens found on the nets, such as sponges, brittle stars, tunicates and crabs.
	The collaborative project is funded through a federal settlement to conduct restoration projects in Monterey Bay National Marine Sanctuary. Other key contributors include Cordell Bank National Marine Sanctuary, UC Davis' SeaDoc Society, California Department of Fish and Game, National Marine Fisheries Service, Marine Advanced Technology Education Center, Marine Applied Research and Exploration, California State University Monterey Bay and fishing partners.

<b>Ocean Protection Council (OPC)</b>	
	Plays the role of liaison between the Executive Committee and Marine Debris Action Coordination Team through the West Coast Governors Alliance on Ocean Health. The Executive Committee is in the process of approving the marine debris strategy which is a framework to reduce the amount and impact of marine debris through leveraging existing resources and expertise within the three states and the federal government. Also heavily involved with the development of a regional marine debris database: <a href="http://debris-db.westcoastoceans.org/">http://debris-db.westcoastoceans.org/</a>



	<p>Participates in the Pacific Coast Collaborative to address issues related to marine debris, including Japan Tsunami marine debris:  <a href="http://www.pacificcoastcollaborative.org/priorities/resource/Pages/ResourceConservation.aspx">http://www.pacificcoastcollaborative.org/priorities/resource/Pages/ResourceConservation.aspx</a></p>
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<b>Southern California Coastal Water Research Project (SCCWRP)</b>	
	<p>The 2013 Regional Assessment Program (Bight'13) is a partnership that has grown to more than 60 organizations collaborating to address management questions of regional importance in the Bight offshore, nearshore and estuarine habitats. Although marine trawl debris has been a part of previous Bight surveys, Bight'13 represents the first time marine debris will be a focus area.</p>
	<p>Previous Bight surveys have provided the foundation for continuous trawl debris monitoring by local POTWs (e.g. Sanitation Districts of Los Angeles County, the City of Los Angeles and the City of Oxnard) as a requirement of the NPDES permit monitoring program developed by their corresponding Regional Water Quality Control Board (e.g. Los Angeles RWQCB).</p>
	<p>Bight'13 seeks to leverage ongoing data collection by the Stormwater Monitoring Coalition Stream Bioassessment assessment Program (<a href="http://www.smc.org">www.smc.org</a>), which is has been monitoring the abundance and types of debris in wadeable stream channels.</p>
	<p>For the Bight'13 Regional Debris Survey we are also partnering with Algalita Marine Research Institute, an independent research group, and with Coast Keeper, River Keepers and Heal the Bay—the environmental NGOs that are responsible for the majority of volunteer monitoring and debris clean-up activities in Southern California.</p>
	<p>The Bight '13 Regional Debris Assessment objective is to characterize the extent and magnitude of debris in Southern California Bight watersheds and marine environments and determine any linkages.</p>

<b>State Water Resource Control Board (State Water Board)</b>	
	<p>The State Water Board is part of the Bight '13 Debris Assessment Regional Monitoring Group. This group is tasked to assess trash and marine debris within the Southern California Bight.</p>
	<p>The State Water Board partnered with the Southern California Coastal Water Research Project (SCCWRP) and CSU Fullerton from 2009-2012 quantify the amount of plastic pellets on beaches with two main objectives. The first objective was to provide baseline information on the distribution and amount of plastic pellets on beaches throughout the state of California. The second objective was to conduct an intensified study in areas the</p>

	<p>pellets were found in from the baseline study to provide more detailed information on the distribution and amount of pellets in these areas.</p> <p><a href="http://www.sccwrp.org/ResearchAreas/MarineDebris/DebrisOnBeaches/PlasticPelletsOnBeaches.aspx">http://www.sccwrp.org/ResearchAreas/MarineDebris/DebrisOnBeaches/PlasticPelletsOnBeaches.aspx</a></p>
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<b>United States Coast Guard (USCG)</b>	
	Waterways Management Division will notify the public through a Broadcast Notice to Mariners to warn mariners of marine debris.
	Removal will be coordinated with US Army Corps of Engineers if necessary.

<b>Ventura Countywide Stormwater Quality Management Program (VCSQMP)</b>	
	The cities, the County, and VCWPD participate in the Stormwater Monitoring Coalition (SMC) of Southern California, Southern California Coastal Water Research Project (SCCWRP), and California Stormwater Quality Association (CASQA).
	The cities, the County, and VCWPD participate in all watershed organizations within Ventura County, including Ventura County Watersheds Coalition, Calleguas Creek Watershed Council, Santa Clara Watershed Council, Ventura River Watershed Council, and Malibu Creek Watershed Management Council.

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This section contains information provided by **non-governmental organizations** on their regional coordination efforts related to marine debris.

<b>Bay Area Stormwater Management Agencies Association (BASMAA)</b>	
	In 2010, BASMAA constituted a new Trash Committee to provide a forum for Bay Area stormwater management agencies to share information on their trash load reduction efforts, develop regional guidance, and conduct regional projects.

<b>California Coastkeeper Alliance</b>	
	Participates in the Clean Seas Coalition.

	Works with California Waterkeepers to develop uniform data collection methods and forms so that local cleanup and volunteer monitoring efforts can be used to determine regional trends.
	Collaborates with California Waterkeepers to develop and participate in the Southern California Coastal Water Research Project's (SCCWRP) 2013 Bight Regional Monitoring Program to conduct regional debris monitoring in conjunction with existing monitoring efforts. Several Southern California Waterkeeper groups serve on the Bight debris committee to identify sites for marine debris monitoring, and mobilize volunteers and partners to conduct the monitoring. For example, San Diego Coastkeeper will collect data from more than 30 sites for ingestion analysis and tissue contaminant transfer.

<b>Californians Against Waste</b>	
	Collaborates with other environmental organizations in California and beyond via Clean Seas Coalition.
	Tracks and supports work by West Coast Governors Alliance on Ocean Health Marine Debris Action Coordination Team.

<b>Clean Seas Coalition</b>	
	Generally, participates in international policy initiatives and/or legislative review.
	Advocates for regional efforts to incorporate target reductions.

<b>Heal the Bay</b>	
	Participates in the Clean Seas Coalition (administered by Leslie Tamminen): <a href="http://www.cleanseascoalition.org/">http://www.cleanseascoalition.org/</a>
	Participates in West Coast Governors Alliance Marine Debris Action Team: <a href="http://www.westcoastoceans.org/index.cfm?fuseaction=content.display&amp;pageID=81">http://www.westcoastoceans.org/index.cfm?fuseaction=content.display&amp;pageID=81</a> Works on WCGA development of a west coast marine debris database.
	Conducts surveys on two local LA beaches (Carbon Beach, Malibu and Malaga Cove, Palos Verdes) as part of the NOAA Japanese Tsunami Marine Debris Baseline Monitoring Surveys:

<http://marinedebris.noaa.gov/tsunamidebris/monitoring.html>

### **Ocean Conservancy**

Collaborates with existing volunteer conservation organizations (e.g., sea turtle volunteer groups) to maximize resources and conduct debris monitoring in conjunction with existing monitoring efforts. Analyzes data to estimate probability of interactions between animals and marine debris.

### **Oikonos**

Oikonos and Berkeley Yacht Club are working with the Shorebird Park Nature Center and Berkeley High School students from the Sea Stewards on doing regular coastal cleanups at the Berkeley Marina.

### **Natural Resources Defense Council (NRDC)**

Tracks and supports the work of the West Coast Governors Alliance on Ocean Health Marine Debris Action Coordination Team.

### **Save Our Shores**

Created the Central Coast Sanctuary Alliance in response to the failure of the bag ban to pass at the state level. This alliance is made up of 50 businesses and 50 NGOs in support of local bag bans. We started in 2011 and meet in person monthly to strategize which jurisdictions to tackle and when. We have representatives from both Monterey and Santa Cruz Counties so that we can attend city council and board of supervisor meetings, conduct outreach at local events and farmers markets, and hand out free reusable bags on the days the bag bans go into effect. We led the charge to ban plastic bags in Santa Cruz County and City, Capitola, Watsonville, City of Monterey and Carmel.

### **Surfrider Foundation**

	Participates in the Clean Seas Coalition.
	Participates in the West Coast Governors Alliance on Ocean Health (Angela Howe is a member of the Marine Debris Action Coordination Team).
	Works with Coastal Commission on tsunami debris clean ups and Coastal Clean Up Day; also beginning to coordinate with NOAA more.

<b>Turtle Island Restoration Network</b>	
	Quarterly reporting of large marine debris and potential Japan Tsunami debris to project partners at National Parks, NOAA, National Marine Sanctuaries, and California Coastal Commission.
	Communicating marine debris density database needs to multiple partners and stakeholders to ensure future data compatibility.