

PUGET SOUND COASTAL CLEANUP 2016



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PUGET
SOUNDKEEPER®





WHAT IS THE ICC?

In partnership with volunteer organizations and individuals around the globe, Ocean Conservancy's International Coastal Cleanup (ICC) is the largest volunteer project in service to our oceans. Volunteers remove trash from the world's beaches and waterways, document the sources of debris and promote behavior changes to prevent marine litter in the first place.

Globally, over 800,000 volunteers participate in the ICC annually and remove millions of pounds of derelict debris.

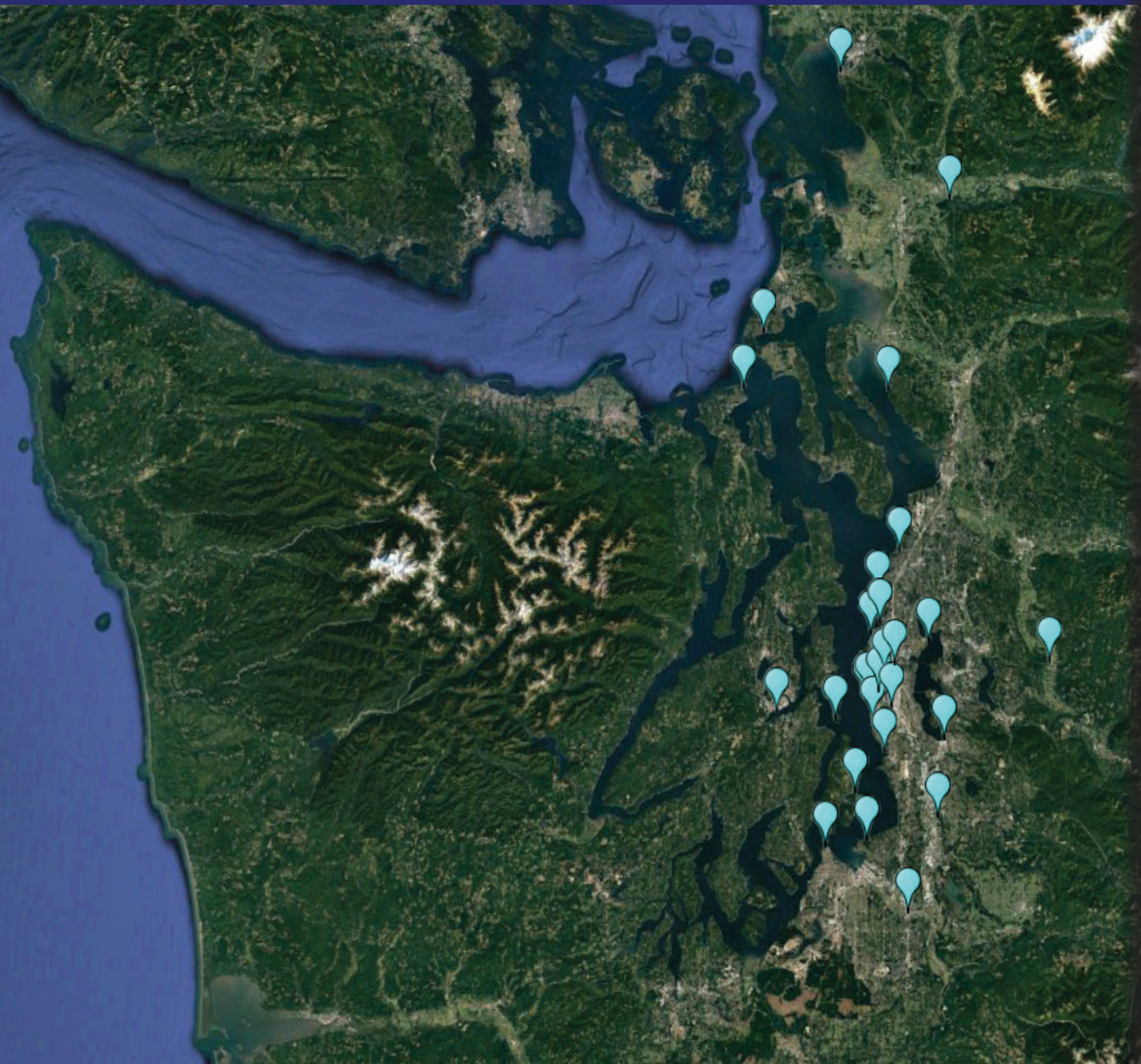
At each cleanup, information on the amount and type of debris collected is recorded on detailed data cards. These data are compiled into a global report that shows trends in data accumulation and can inform specific solutions. Visualizing cleanup data also helps educate the public on the pervasive problem of marine trash.

Puget Soundkeeper is the regional coordinator for cleanups that occur within the Puget Sound basin. This report details the work of the many groups who participated in the Puget Sound Coastal Cleanup effort in the fall of 2016.

For help organizing a cleanup near you, please contact us:

Puget Soundkeeper
info@pugetsoundkeeper.org
206-297-7002

CLEANUP LOCATIONS



ANDERSON ISLAND
BAINBRIDGE ISLAND
BELLINGHAM
BLAKE ISLAND
BREMERTON
BURIEN
CARNATION
CHERRY POINT
CYPRESS ISLAND
DASH POINT
EDMONDS
KAYAK POINT
KENT
PENN COVE
PICNIC POINT
POINT DEFIANCE
POINT NO POINT
PORT TOWNSEND
PROTECTION ISLAND
RENTON
SEATTLE
SHORELINE
SMITH ISLAND
SOUTH PUGET SOUND
TACOMA
TUMWATER
VASHON ISLAND

MICROPLASTICS: THE SMALL BUT MIGHTY THREAT TO PUGET SOUND

Plastic items like cigarette filters, beverage bottles and food wrappers are found at every beach cleanup around Puget Sound. Cleaning up these plastics prevents animals from eating them or becoming entangled. And it is crucial to remove them before they break up into “microplastics,” fragments of plastic smaller than a pea that threaten the health of our waterways and the life that inhabits them.

There are two categories of microplastics. **Primary** microplastics are made for a purpose, like microbeads in facial scrubs and toothpaste. **Secondary** microplastics form from the breakdown of larger plastic items. Plastic is a material that doesn’t decompose. In water, it breaks into smaller and smaller pieces but never disappears.



There are microplastics in the dust emissions from construction projects. Synthetic fabrics like fleece shed tiny plastic fibers in the washing machine. Most wastewater treatment plants can’t capture microplastics. Plastic particles in wastewater either pass directly into the waterway or end up in sewage sludge that’s been treated for use as fertilizer, which is later washed into the water.

According to the 2016 World Economic Forum, there will be more plastic in the ocean than fish by 2050. Currently, we are adding plastic to the ocean at the volume of one garbage truck per minute. Many people believe this trash gathers in ocean gyres, areas with circular water currents that trap debris. But these “convergence zones” look less like a floating landfill and more like an area of plastic smog. They are made of microplastics too small to see with the naked eye. And microplastics aren’t limited to these patches. Today they are found in water samples collected from virtually anywhere on earth.

Larger plastic items can only be consumed by bigger animals. But even very small organisms can eat microplastics. Polystyrene beads have been found in the guts of zooplankton, the base of the aquatic food web. Researchers find microplastics in all layers of the water column as well as in the sand and mud at the bottom of waterways.

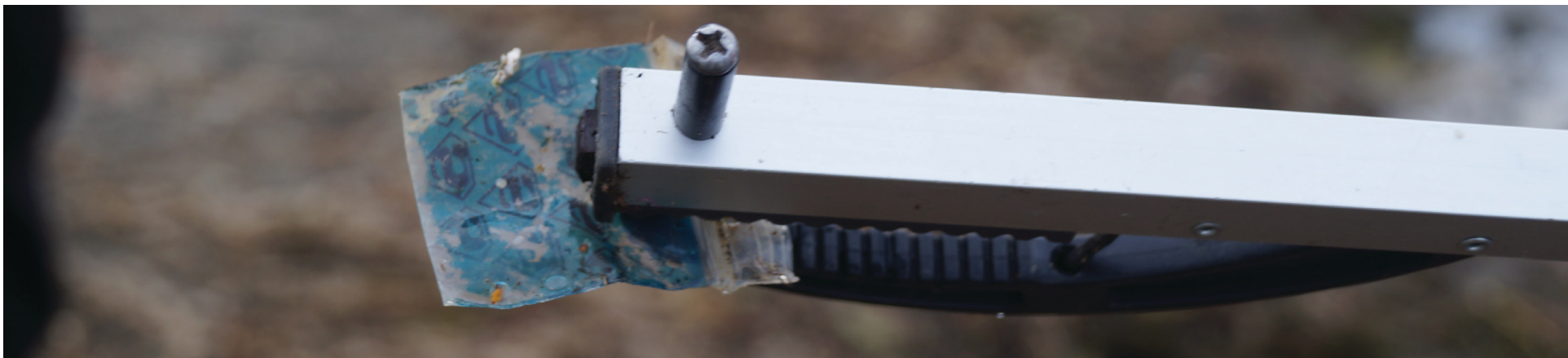
Plastics have the added ability to absorb other pollution. In water, they soak up toxic compounds like DDT, PCBs, heavy metals, and pesticides, acting like tiny chemical sponges. If an animal eats contaminated plastic, these chemicals can transfer to its body and build up over time. Animals high on the food chain eat the contaminated organisms, allowing these toxics to become biomagnified in the food web.

We don't know much about the effects of consuming microplastics on human health. But research on the toxics contained in these plastics has linked them to cancer and hormonal disruption. This greatly affects people who consume a lot of seafood, or rely on seafood as a food source. Tribal communities and communities where fishing is highly valued are most at risk.

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A study published in Nature in 2015 found microplastics in at least a quarter of fish and shellfish sold for people to eat in both the United States and Indonesia. We directly ingest plastic, particularly when eating shellfish like oysters and mussels. Toxins or additives absorbed by the plastic can become bioavailable to people after consumption.

Ultimately, we all have a role to play in the movement towards trash free seas. The solution involves a commitment from all of us to reduce plastic consumption, strengthen scientific understanding of the effects of plastic to the environment, and build good policies that engage individuals, government and industry leaders.



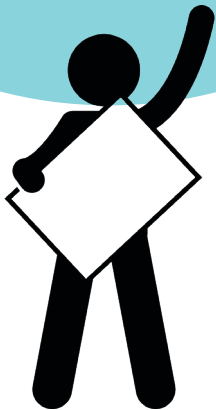
CLEANUPS BY THE NUMBERS



212 MILES
CLEANED



1,002
VOLUNTEERS



11,013 LBS
OF TRASH



PLASTIC AND ANIMALS



If you see a marine mammal stranded on a beach near you, call **1-866-767-6114**

The cold oxygen-rich waters of Puget Sound support an abundance of marine life. Perhaps most iconic are the many marine mammals that inhabit the area. It is common to spot a harbor seal or sea lion hauled out on a local beach, and for those looking hard, the smooth backs of Dall's porpoises are often silhouetted against grey skies. Resident orca pods traverse the Sound in search of prey and occasionally you can even spot a sea otter hanging around the San Juan Islands.

Marine debris, particularly plastic debris, poses many hazards to wildlife. Animals can easily mistake manmade debris for food. As plastic pieces accumulate in their guts, they can induce a feeling of false satiation, resulting in

starvation. Sharper pieces have the potential to puncture organs and cause fatal internal damage. The problem is widespread; plastic is now found in the stomachs of 90% of seabirds worldwide. Additionally, ropes, bags, nets and six-pack holders can strangle or entrap animals, and derelict fishing gear continues to catch prey long after it is thrown away.

The Sno-King Marine Mammal Response network is a group working to educate residents about local marine mammals and how to best protect them. Join them at a cleanup nearly every month to learn about marine conservation and clear trash from shorelines: www.skmmr.org.

CLEANUP HIGHLIGHTS - BAINBRIDGE ISLAND



Bainbridge Island encompasses 52 miles of shoreline in the middle of Puget Sound. This year, local Bainbridge Islanders got together and decided to undertake a cleanup of the entire circumference of the island – all in one day!

This was no small undertaking, as much of the shoreline is not easily accessible by land. After a year of planning, the island community staged a successful cleanup.

This effort brought together residents, businesses, government groups, harbor patrol and over 200 excited volunteers including Washington's governor, Jay Inslee. In total, they collected thousands of pounds of debris and are excited to do it again next year.



IS THERE TSUNAMI DEBRIS IN PUGET SOUND?

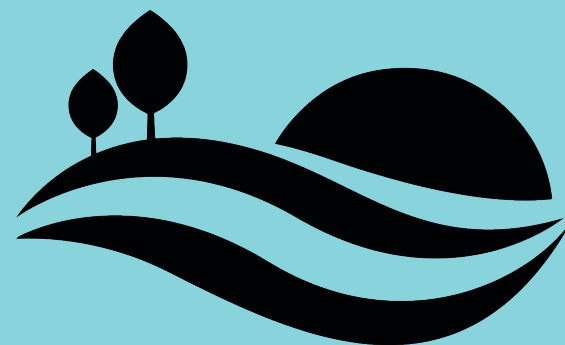
While the Puget Sound basin is connected to the Pacific Ocean through the Strait of Juan de Fuca, incoming saltwater enters relatively slowly through Admiralty Inlet, a narrow and shallow passage. Because of this constraint, Puget Sound does not flush readily with the greater ocean, meaning the debris found here is mostly local in origin.

In contrast, the outer coast of Washington borders the Pacific Ocean, directly connecting it with the many nations that make up the Pacific Rim. Outer coast beaches have received tsunami debris from Japan after the magnitude 9.0 earthquake that devastated a huge area of the country and claimed nearly 16,000 lives in 2011.

While natural disasters can cause acute pulses of debris into oceans and waterbodies, the largest source of marine debris worldwide continues to be consistent inputs of trash from land based sources. Debris generated on land can be blown, swept, or washed out to sea. Inadequate waste disposal infrastructure, littering, dumping into rivers and streams, stormwater discharges and loss of material during shipping are typical sources.

Washington CoastSavers organizes regular cleanups of the outer coast and Strait of Juan de Fuca. Since 2007, their work has removed tens of tons of trash from Washington's extensive coastline, including some tsunami debris. Find more info at www.coastsavers.org.

80 PERCENT of
ocean plastic comes from
land



75 PERCENT
comes from waste
that was never
collected



25 PERCENT
was collected, then
leaked to waterways



Seattle has only one river, the Duwamish. It flows north through the southern part of the city and empties into Elliott Bay, adjacent to downtown. Today, its 5 short miles are artificially straightened and lined with industry, concealing what was once 12 miles of wild meandering river.

The Environmental Protection Agency (EPA) recognized the Duwamish as a Superfund Site in 2001, marking it as one of the most polluted sites in the country because it poses major risks to human health and the environment. Much of the sediment in the river is contaminated, primarily by toxic legacy pollutants that accumulated years ago and include polychlorinated biphenyls (PCBs), dioxins, furans, polycyclic aromatic hydrocarbons (PAHs), and heavy metals.

Terminal 107 (T-107) Park offers a refreshing green space on the banks of the Duwamish, and looks out on Kellogg Island, a wildlife preserve and the only remnant of the natural river before it was channelized in the early 1900s. The Duwamish Longhouse, located nearby, is an important reminder that pollution in the river not only degrades the ecosystem but also negatively impacts the cultures and practices of Seattle's first peoples.

T-107 is one of 12 sites along the length of the river that has been adopted by the Duwamish Alive Coalition, a partnership of over twenty nonprofits, community groups, municipalities, agencies and businesses, as part of a twice annual watershed wide restoration event.

CLEANUP HIGHLIGHTS - DUWAMISH RIVER

Here, the Duwamish River Cleanup Coalition/Technical Advisory Group, EarthCorps, the Port of Seattle, Alki Kayak Tours and Puget Soundkeeper worked with community volunteers to restore the banks of the river and remove accumulated debris from the water.

The Duwamish River is now an urban waterway, but signs of wildlife persist. Kayakers saw cormorants stretch out their wings to dry on old pilings and the heads of curious harbor seals surface in the distance.

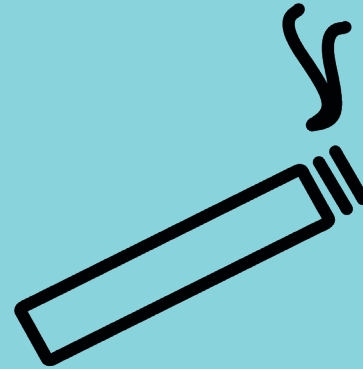
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Within the park, volunteers replaced invasive plants with native species that provide both shade and food for wildlife. Participants also kayaked across the river in search of debris trapped under docks, caught along rocky embankments and siloed into back eddies.

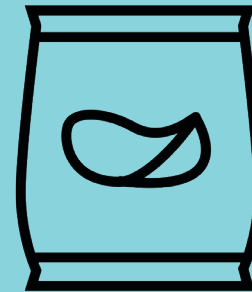
The pollution in the river disadvantages the communities and wildlife that call this waterway home, but the efforts of the Duwamish Alive volunteers remind us all of our collective responsibility to restore our urban waterways, and make the vision of a clean Duwamish River a reality.



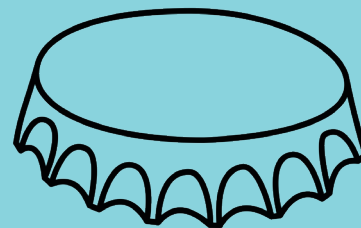
TOP ITEMS FOUND



12,809
cigarette butts



4,282
food wrappers



3,106
bottle caps

CIGARETTE BUTTS

Every year, cigarette butts are the number one item collected at International Coastal Cleanup events. In 2015, 2,127,565 cigarette butts were collected worldwide, a small sample of the trillions littered every year.

These small pieces of debris are deceptively toxic. The majority of filters are made from cellulose acetate, a plastic that does not biodegrade. In addition, they serve as a pathway for multiple toxic compounds to enter aquatic ecosystems. Nearly 7,000 chemicals are present in cigarette tobacco, including ammonia, arsenic, formaldehyde, lead and tar.

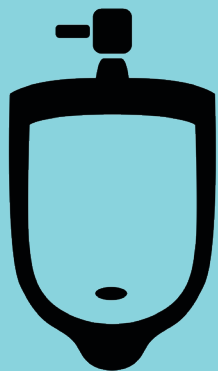
These chemicals absorb into smoked cigarette filters which then leach into the water and have documented harmful effects on aquatic wildlife.

Keep cigarette butts off the ground by installing a "Butt out of Puget Sound" receptacle at your workplace or apartment complex!



**DON'T SMOKE
OUR SALMON**
buttoutofpugetsound.org

STRANGEST FINDS



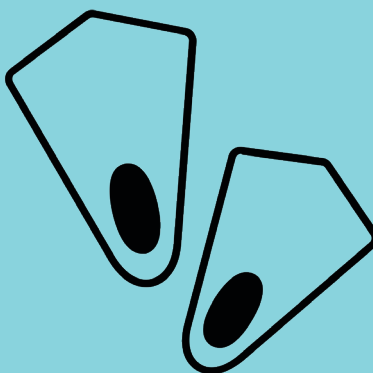
URINAL



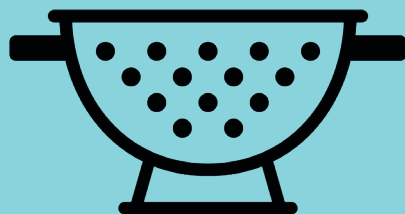
FAKE DIAMOND RING



COLANDER



SCUBA FLIPPERS



STUFFED
SANTA CLAUS



CLEANUP HIGHLIGHTS - SOUTH SOUND

Shellfish aquaculture is a major industry in the Puget Sound area. Worth nearly \$100 million annually in Washington State, growers produce a wide variety of shellfish including clams, mussels, oysters and geoducks that are sold and consumed all over the world.

Producers rely on healthy marine ecosystems for their livelihoods. Without good water quality, shellfish cannot properly grow or be harvested. To promote clean water and a healthy environment, the Pacific Coast Shellfish Growers Association (PCSGA) has organized regular shoreline cleanups of south Puget Sound since 2001.

Individual producers conduct these cleanups in addition to what is required for environmental compliance. All material collected primarily by boat is brought to designated offloading sites. Once on shore, the aquaculture debris is separated from the general debris, itemized, and recycled or disposed. PCSGA uses the information gathered to identify the source of aquaculture debris and work with growers to reduce future releases of gear from their farms.

This September, the group covered over 100 miles of shoreline and collected approximately 4,200 pounds of debris. Of this, 11% was determined to be aquaculture related. The majority was generalized marine debris including tires, polystyrene, floats and abandoned patio furniture. In addition, growers were able to reuse over half of the aquaculture material they reclaimed.



THE DATA

COUNTY	PEOPLE	POUNDS COLLECTED	MILES CLEANED	TOTAL ITEMS COLLECTED	CIGARETTE BUTTS	FOOD WRAPPERS	BOTTLE CAPS	
Island	9	85	2.57	438	67	34	12	
Jefferson	26	224	12.2	974	13	26	26	
King	561	2250.61	20.73	36717	11004	3470	2510	
Kitsap	219	3736.39	60.97	5223	172	178	135	
Pierce	9	63	3.88	197	50	26	9	
Skagit	4	70	0.78	1079	3	268	38	
Snohomish	33	158.7	4.34	1879	767	146	84	
Thurston	95	4246.11	103	739	212	29	62	
Whatcom	46	179.15	3.43	2283	521	105	230	
TOTALS	1002	11012.95	211.9	49529	12809	4282	3106	



For more detailed data visit: www.coastalcleanupdata.org

	BEVERAGE CANS	GLASS BOTTLES	PLASTIC BOTTLES	PLASTIC LIDS	STRAWS	PLASTIC BAGS	TAKEOUT CONTAINERS
	8	0	5	11	7	4	0
	31	17	17	4	12	25	6
	923	710	567	228	617	507	172
	116	207	69	60	29	63	41
	8	0	15	0	4	24	13
	7	3	49	31	17	92	23
	105	68	35	16	18	21	30
	109	43	52	2	8	25	3
	93	62	64	30	61	41	52
	1400	1110	873	382	773	802	340



THANK YOU!

ISLAND COUNTY

Puget Sound Corps
Whidbey Camano Land Trust

JEFFERSON COUNTY

Port Townsend Marine Science Center
Puget Sound Corps
Washington CoastSavers

KING COUNTY

Burien Parks, Recreation & Cultural Services
City of Renton Community Services
Duwamish Alive Coalition
Duwamish River Cleanup Coalition/Technical Advisory Group
EarthCorps
Environmental Science Center
Evergreen School
International Community School
King County Parks
Lil Ripperz
Northwest Outdoor Center
Port of Seattle
Puget Sound Corps
Renton Sailing Center
Seattle Academy
Seattle Parks & Recreation
Shoreline Parks, Recreation & Cultural Services
Sno-King Marine Mammal Response
Sound Salmon Solutions
US Department of State
Vulcan
Washington State Parks
Waterkeeper Alliance
Windermere Real Estate in Ballard

KITSAP COUNTY

Argosy Cruises
Bainbridge Island Land Trust
Bainbridge Island Metro Park & Recreation District
Bainbridge Island Police Department
Bainbridge Watershed Council
Beach Naturalists
City of Bremerton
COBI Marine Access Committee
IslandWood
Parks Foundation
Puget Sound Corps
Seattle Aquarium
Sustainable Bainbridge
Washington State Parks
Zero Waste

PIERCE COUNTY

Citizens for a Healthy Bay
Point Defiance Marina

SKAGIT COUNTY

Puget Sound Corps

SNOHOMISH COUNTY

Snohomish County Parks
Sno-King Marine Mammal Response

THURSTON COUNTY

Pacific Coast Shellfish Growers Association
Pacific Shellfish Institute
Tumwater Parks & Recreation

WHATCOM COUNTY

Community Boating Center
Puget Sound Corps

SPONSORS



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AVEDA

THE ART AND SCIENCE OF PURE FLOWER AND PLANT ESSENCES

GARYmanuel



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3: Will Parson/Chesapeake Bay Program

9,10: Bainbridge Island Cleanup

1, 4-8, 11-22: Puget Soundkeeper

Icons: The Noun Project



“Water is our most
precious and
interconnected
natural resource.”
– Alexandra Cousteau

