Gulf of Alaska Keeper

Marine Debris

Supported by:

Exxon Valdez Oil Spill Trustee Council
Alaska Department of Environmental Conservation
Government of Japan
Alaska Legislature
NOAA, Community Based Restoration Program

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Together we have removed over three million pounds of plastic marine debris from 1500 miles of northern Gulf of Alaska shoreline. Sadly, thousands of tons of marine debris must still be cleaned from Alaska’s coast.

For years, in an ongoing effort, GoAK crews and volunteers have cleaned mountains of marine debris from public beaches in Prince William Sound and the northern Gulf of Alaska.

GoAK is a 501c3 non-profit organization dedicated to combating marine debris. We are a diverse group of Alaskans devoted to removing this menace from Alaska’s magnificent coast.
Plastic marine debris may look harmless, even beautiful, but it is not!
Marine Debris smothers many Gulf of Alaska beaches and adjacent forest floors.
Montague Island has extreme debris densities and very difficult working conditions.
Marine debris from around the world is found on Gulf of Alaska beaches.
Immense quantities of toxic debris are deposited on northern Gulf of Alaska beaches.
Debris from the 1989 Exxon Valdez oil spill still contaminates area beaches.
Refined petroleum products from a variety of sources inundate Alaska’s Gulf Coast. Lost commercial cargo, vessel accidents, intentional dumping, and stockpiling contribute to the problem. Many of these products poison coastal habitat.
Container spills and other shipping accidents, including fishing-vessel sinkings, annually dump thousands of tons of plastic and other marine debris into the Gulf of Alaska.

Thousands of miles of sensitive and critical Alaskan coastal habitat are routinely contaminated and harmed by container spills and shipping accidents.

Nobody is held accountable.
Marine Debris comes in nearly every conceivable form. Here, a deeply embedded fabric bundle is pulled from a Prince William Sound beach in Zaikof Bay on Montague Island.
Commercial Fishing Debris from all over the North Pacific is the greatest contributor by both weight and volume to Alaska’s plastic marine-debris problem.

Derelict commercial fishing lines, nets, and packing bands are deadly to marine life and are the most difficult and expensive to remove of all the plastic marine debris. They become entangled in logs and rock and buried in the beach substrate making extraction extremely challenging.
Net and Line Nightmares

Trawl Net

Salmon Seine Net

Hawser, line and net bundle

New line from sunk vessel
Net and Line removal is difficult and time consuming
Commercial Fishing Gear litters the Gulf of Alaska coast

Styrofoam Buoys

Fish Totes

High Seas Driftnet Floats

Hard Plastic Buoys

Derelict Vessels

Crates, Baskets, Drums, Bait Containers

Pallets
An extraordinary amount of Styrofoam debris layers Gulf of Alaska beaches. The 2011 Great Japanese Tohoku earthquake and tsunami increased the Styrofoam and urethane debris volumes on northern Gulf of Alaska beaches many times. Foam debris cleanup is difficult, time consuming, and labor intensive.

Bears and other animals love to chew and shred Styrofoam. In the process, small pieces become scattered throughout the intertidal zone and adjacent forest. Many animals ingest Styrofoam and other plastics.

Storms and surf along Alaska’s high-energy coast also grind the foam debris into countless small bits which are easily ingested by fish, birds and smaller marine organisms.
Cleanup work can be dangerous

Brown bears patrol the shoreline

Dangerous surf awaits the unwary
Loading marine debris at Tonsina Bay, Kachemak Bay State Wilderness Park, Kenai Peninsula
Marine Debris removal is neither easy nor cheap.
Logistics and Transport

Because of the immense amount of marine debris fouling northern Gulf of Alaska beaches, and the distance between remote projects and ports, transport, labor, fuel, and disposal costs are high. To maximize efficiency and reduce costs, Gulf of Alaska Keeper carefully plans each project and utilizes the most efficient resources available to conduct specific cleanup projects.

Above: A helicopter and large landing craft used to remove 40 tons of plastic marine-debris from Gore Point in 2007.

Left: One of five loads of marine debris removed from Zaikof Bay on Montague Island, Prince William Sound in 2008. In 2013, after being overwhelmed by a flood of Japanese tsunami debris, GoAK transported 17 similar loads to port for disposal by mid-summer. Cost and safety considerations demanded a change in removal methodology.
The 2011 Japanese tsunami doubled debris volume on the Northern Gulf of Alaska shoreline. The outer coast holds 20 to 30 tons of plastic debris per mile. Helicopters, used in conjunction with massive barges and ocean-going tugs, are now necessary to efficiently and safely remove and transport all the collected plastic debris to recycling or disposal facilities.
Before and After: A bear-scattered Styrofoam cleanup
Before and After:
Net and line removal
Before and After:


Dense pockets of marine debris are common along the northern Gulf of Alaska coast. On many beaches, tons of debris per mile blanket sensitive coastal habitat, smothering vegetation, choking spawning streams, killing wildlife, and threatening fisheries.
**Ingestion:** Many mammals, from small rodents to bears, eat plastic debris.
Indigestion — Plastic bits in animal scat.

Black Bear

Coyote

River Otter
Micro Plastics and the chemicals that leach from them harm wildlife.
Research has established that phthalates and other chemicals leached from plastic marine debris threaten marine wildlife.

Juvenile salmon have dysregulated immune systems from plastic marine-debris derived phthalates.

Preparing Elizabeth Island salmon fry for scientific analysis.
Marine Debris Monitoring

Gulf of Alaska Keeper annually re-cleans 17 selected beaches. Newly accumulated debris is sorted into 150 categories, quantified by weight and item numbers, recorded and removed in an ongoing baseline data-collection effort. Each year, thousands of tons of new debris wash up on our coast.

Left: One season’s accumulation of beverage bottles on Gore Point’s 1/3-mile long East Beach.

Right: GoAK’s crew sorts marine debris on a Gore Point debris monitoring plot.

Styrofoam % of Total Weight - PWS

Japanese Tsunami

0% 5% 10% 15% 20% 25%

2007 2008 2009 2010 2011 2012 2013 2014
Marine Debris Monitoring
Sites established in 2006
Volunteers sorting marine debris
Recycling

Most of the debris that GoAK collects is shipped to landfills for proper disposal. Recycling in Alaska is generally unavailable, limited, or too expensive. GoAK donates recovered commercial-fishing gear and other items back to the fishing industry or to local communities for arts and crafts.
Recycling

In 2016, Parley for the Oceans partnered with GoAK to sort through 300 tons of the plastic debris collected in 2016 for recycling. One hundred volunteers over five days sorted fourteen shipping containers full of recyclable plastic from the debris. PET, HDPE, lines and nets, and all hard plastic including fishing buoys were recycled.

GoAK workers and volunteers sort marine debris in Anchorage for recycling.

Recycling is very difficult in Alaska because of the small population, distance to markets, and transportation costs. Without committed partners like Parley for the Oceans, recycling marine debris in Alaska would be impractical. The 2016 sorting effort recycled 60-70% of the 300 tons of marine debris removed from shorelines that summer.

Lines and nets sorted by volunteers await placement in shipping containers.
Hundreds of miles of shoreline have been cleaned on the Kenai Peninsula but hundreds more remain to be done particularly along the Kenai Fjords National Park shoreline.
Kayak Island ongoing marine-debris cleanup project

2014-2016
The Kayak Island project focused on removing as much light-weight plastic debris as possible as opposed to a more thorough cleanup. This area must be re-cleaned as more resources become available.

Naturalist Georg Steller was with the first group of Western explorers to land on Alaska when members of the Vitus Bering expedition visited Kayak Island in 1741. Kayak Island has changed little in the interim other than a light house at Cape St. Elias and the hundreds of tons of plastic debris that cover its coast.
At 50-miles long, remote Montague Island is the largest uninhabited island in the United States. In addition to the estimated 1500-2000 tons of plastic debris remaining on its shore, thousands of tons of wrecked vessels, toxic creosote-impregnated logs and timbers, and chemically-treated dimensional lumber litter its beaches.
Past and Present Valued Partners:

NOAA, Community-based Restoration Program; College of William and Mary Zwollo Lab; University of Alaska Anchorage; Chugach Alaska Native Corporation; Port Graham Native Corporation; USFS, Glacier Ranger District; National Outdoor Leadership School; Alaska Center for Coastal Studies; Alaskans for Litter Prevention & Recycling; BP; Princess Tours; Alyeska Pipeline Company; REI; Johnson Tires; Insulfoam; Nordic Viking LLC; American Seafoods; Cities and Harbors of Whittier, Seward, and Homer; Kenai Peninsula Borough; Honey Charters; PWS Sound Eco-Charters; Sound Eco-Adventures; Alaska Walkabouts Charters; Lazy Otter Charters; Dozens of private vessels; Hundreds of volunteers.
Habitat and wildlife don’t need us. We depend on them for our existence. We’d be wise to remember that and treat them accordingly.
Life’s a Clean Beach!

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Gulf of Alaska Keeper: Cleaning the Final Frontier, https://www.youtube.com/watch?v=sx7fZEKwIMo
Cleaning Marine Debris from Alaska’s Beaches, https://www.youtube.com/watch?v=XScR5Khp8MU