

Marine debris

From Wikipedia, the free encyclopedia

"Ocean dumping" redirects here. It is not to be confused with Environmental dumping.

Marine debris, also known as **marine litter**, is human-created waste that has deliberately or accidentally been released in a lake, sea, ocean or waterway. Floating oceanic debris tends to accumulate at the centre of gyres and on coastlines,^[1] frequently washing aground, when it is known as *beach litter* or *tidewrack*. Deliberate disposal of wastes at sea is called *ocean dumping*. Naturally occurring debris, such as driftwood, are also present.

With the increasing use of plastic, human influence has become an issue as many types of plastics do not biodegrade. Waterborne plastic poses a serious threat to fish, seabirds, marine reptiles, and marine mammals, as well as to boats and coasts.^[2] Dumping, container spillages, litter washed into storm drains and waterways and wind-blown landfill waste all contribute to this problem.



Marine debris on the Hawaiian coast

Contents

- 1 Types of debris
 - - 1.1 Ghost nets
 - 1.2 Nurdles and plastic bags
 - 1.3 Plastic
 - 1.4 Deep-sea debris
 -
- 2 Sources of debris
-
- 3 Great Pacific Garbage Patch
-
- 4 Environmental impact
- 5 Debris removal
 - - 5.1 Plastic-to-fuel conversion strategy
- 6 Laws and treaties
 - - 6.1 European law

- 6.2 United States law
-

6.3 Ownership

- 7 Activism
-
- 8 See also
-
- 9 References
-
- 10 External links

Types of debris

Researchers classify debris as either land- or ocean-based; in 1991, the United Nations Joint Group of Experts on the Scientific Aspects of Marine Pollution estimated that up to 80% of the pollution was land-based.^[3] A wide variety of anthropogenic artifacts can become marine debris; plastic bags, balloons, buoys, rope, medical waste, glass bottles and plastic bottles, cigarette lighters, beverage cans, polystyrene, lost fishing line and nets, and various wastes from cruise ships and oil rigs are among the items commonly found to have washed ashore. Six pack rings, in particular, are considered emblematic of the problem.^[4]

The US military used ocean dumping for unused weapons and bombs, including ordinary bombs, UXO, landmines and chemical weapons from at least 1919 until 1970.^[5] Millions of pounds of ordnance were disposed of in the Gulf of Mexico and off the coasts of at least 16 states, from New Jersey to Hawaii.^[6]

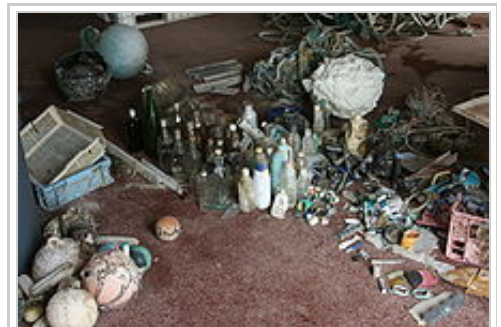
Eighty percent of marine debris is plastic.^[7] Plastics accumulate because they typically do not biodegrade as many other substances do. They photodegrade on exposure to sunlight, although they do so only under dry conditions, as water inhibits photolysis.^[8] In a 2014 study using computers models, scientists from the group 5 Gyres, estimate 5.25 trillion pieces of plastic weighing 269,000 tons dispersed in oceans in similar amount in the Northern and Southern Hemispheres, and one-hundredth of them in particles in the scale of a sand-size.^[9]

Ghost nets

Fishing nets left or lost in the ocean by fishermen – ghost nets – can entangle fish, dolphins, sea turtles, sharks, dugongs, crocodiles, seabirds, crabs and other creatures. These nets restrict movement, causing starvation, laceration and infection, and, in animals that breathe air, suffocation.^[10]



Debris on beach near Dar es Salaam, Tanzania



Debris collected from beaches on Tern Island in the French Frigate Shoals over one month

Nurdles and plastic bags

Nurdles, also known as "mermaids' tears", are plastic pellets, typically under five millimetres in diameter, that are a major component of marine debris. They are a raw material in plastics manufacturing, and enter the natural environment when spilled. Weathering produces ever smaller pieces. Nurdles strongly resemble fish eggs.^[11]

Plastic

8.8 million metric tons of plastic waste are dumped in the world's oceans each year. Asia was the leading source of mismanaged plastic waste, with China alone accounting for 2.4 million metric tons.^{[12][13]}



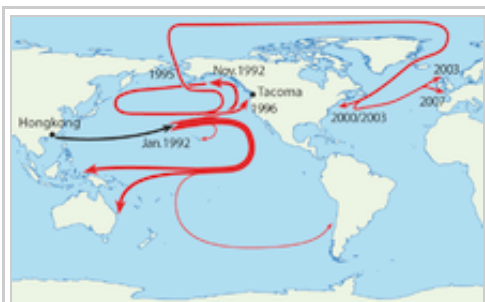
A handful of nurdles, spilt from a train in Pineville, Louisiana

Plastic waste has reached all the world's oceans. This plastic pollution harms an estimated 100,000 sea turtles and marine mammals and 1,000,000 sea creatures each year.^[14] Pelagic plastic pieces in the center of our ocean's gyres outnumber live marine plankton, and are passed up the food chain to reach all marine life.^[15] Plastic shopping bags can clog digestive tracts when consumed^[16] and can cause starvation through restricting the movement of food, or by filling the stomach and tricking the animal into thinking it is full. A 1994 study of the seabed using trawl nets in the North-Western Mediterranean around the coasts of Spain, France and Italy reported mean concentrations of debris of 1,935 items per square kilometre. Plastic debris accounted for 77%, of which 93% was plastic bags.^[16]

Deep-sea debris

Litter, made from diverse materials that are denser than surface water (such as glasses, metals and some plastics), have been found to spread over the floor of seas and open oceans, where it can become entangled in corals and interfere with other sea-floor life, or even become buried under sediment, making clean-up extremely difficult, especially due to the wide area of its dispersal compared to shipwrecks. Research performed by MBARI found items including plastic bags below 2000m depth off the west coast of North America and around Hawaii.^[17]

Sources of debris



Travel of the Friendly Floatees

An estimated 10,000 containers at sea each year are lost by container ships, usually during storms.^[18] One famous spillage occurred in the Pacific Ocean in 1992, when thousands of rubber ducks and other toys (now known as the "Friendly Floatees") went overboard during a storm. The toys have since been found all over the world, providing a better understanding of ocean currents. Similar incidents have happened before, such as when *Hansa Carrier* dropped 21 containers (with one notably containing buoyant Nike shoes).^[19] In 2007, MSC Napoli beached in the English Channel, dropping hundreds of containers, most of which washed up on the Jurassic Coast, a World

Heritage Site.^[20]

In Halifax Harbour, Nova Scotia, 52% of items were generated by recreational use of an urban park, 14% from sewage disposal and only 7% from shipping and fishing activities.^[21] Around four fifths^[22] of oceanic debris is from rubbish blown onto the water from landfills, and urban runoff.^[2] In the 1987 Syringe Tide, medical waste washed ashore in New Jersey after having been blown from Fresh Kills Landfill.^{[23][24]} On the remote sub-Antarctic island of South Georgia, fishing-related debris, approximately 80% plastics, are responsible for the entanglement of large numbers of Antarctic fur seals.^[25]

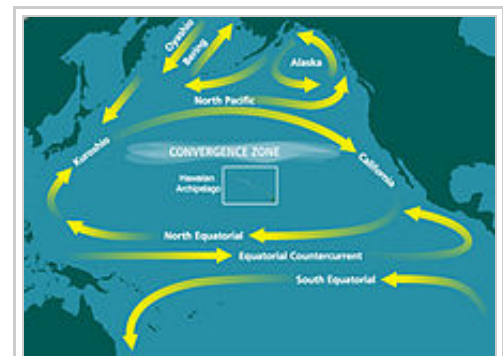
Marine litter is even found on the floor of the Arctic ocean.^[26]

Great Pacific Garbage Patch

Main article: Great Pacific Garbage Patch

Once waterborne, debris becomes mobile. Flotsam can be blown by the wind, or follow the flow of ocean currents, often ending up in the middle of oceanic gyres where currents are weakest. The Great Pacific Garbage Patch is one such example of this, comprising a vast region of the North Pacific Ocean rich with anthropogenic wastes. Estimated to be double the size of Texas, the area contains more than 3 million tons of plastic.^[27] The gyre contains approximately six pounds of plastic for every pound of plankton.^[28] The oceans may contain as much as one hundred million tons of plastic.^[22]

Islands situated within gyres frequently have coastlines flooded by waste that washes ashore; prime examples are Midway^[29] and Hawaii.^[30] Clean-up teams around the world patrol beaches to attack this environmental threat.^[29]



The currents of the North Pacific Gyre spiral inwards, depositing debris in the convergence zone

Environmental impact



Remains of an albatross containing ingested flotsam

Many animals that live on or in the sea consume flotsam by mistake, as it often looks similar to their natural prey.^[31] Bulky plastic debris may become permanently lodged in the digestive tracts of these animals, blocking the passage of food and causing death through starvation or infection.^[32] Tiny floating plastic particles also resemble zooplankton, which can lead filter feeders to consume them and cause them to enter the ocean food chain. In samples taken from the North Pacific Gyre in 1999 by the Algalita Marine Research Foundation, the mass of plastic exceeded that of zooplankton by a factor of six.^{[7][33]}

Toxic additives used in plastic manufacturing can leach into their surroundings when exposed to water. Waterborne hydrophobic pollutants collect and magnify on the surface of plastic debris,^[22] thus making plastic more deadly in the ocean than it would be on land.^[7] Hydrophobic

contaminants bioaccumulate in fatty tissues, biomagnifying up the food chain and pressuring apex predators and humans.^[34] Some plastic additives disrupt the endocrine system when consumed; others can suppress the immune system or decrease reproductive rates.^[33]

The hydrophobic nature of plastic surfaces stimulates rapid formation of biofilms,^[35] which support a wide range of metabolic activities, and drive succession of other micro- and macro-organisms.^[36]

Concern among experts has grown since the 2000s that some organisms have adapted to live on^[37] floating plastic debris, allowing them to disperse with ocean currents and thus potentially become invasive species in distant ecosystems.^[38] Research in 2014 in the waters around Australia^[35] confirmed a wealth of such colonists, even on tiny flakes, and also found thriving ocean bacteria eating into the plastic to form pits and grooves. These researchers showed that "plastic biodegradation is occurring at the sea surface" through the action of bacteria, and noted that this is congruent with a new body

of research on such bacteria. Their finding is also congruent with the other major research undertaken^[39] in 2014, which sought to answer the riddle of the overall lack of build up of floating plastic in the oceans, despite ongoing high levels of dumping. Plastics were found as microfibrils in core samples drilled from sediments at the bottom of the deep ocean. The cause of such widespread deep sea deposition has yet to be determined.

Not all anthropogenic artifacts placed in the oceans are harmful. Iron and concrete structures typically do little damage to the environment because they generally sink to the bottom and become immobile, and at shallow depths they can even provide scaffolding for artificial reefs. Ships and subway cars have been deliberately sunk for that purpose.^[40]

Debris removal

Techniques for collecting and removing marine (or riverine) debris include the use of debris skimmer boats (*pictured*). Devices such as these can be used where floating debris presents a danger to navigation. For example, the US Army Corps of Engineers removes 90 tons of "drifting material" from San Francisco Bay every month. The Corps has been doing this work since 1942, when a seaplane carrying Admiral Chester W. Nimitz collided with a piece of floating debris and sank, costing the life of its pilot.^[41] Once debris becomes "beach litter", collection by hand and specialized beach-cleaning machines are used to gather the debris.

Elsewhere, "trash traps" are installed on small rivers to capture waterborne debris before it reaches the sea. For example, South Australia's Adelaide operates a number of such traps, known as "trash racks" or "gross pollutant traps" on the Torrens River, which flows (during the wet season) into Gulf St Vincent.^[42]



A turtle trapped in a ghost net, an abandoned fishing net



Skimmer boat used to remove floating debris and trash from the Potomac and Anacostia rivers

In lakes or near the coast, manual removal can also be used. Project AWARE for example promotes the idea of letting dive clubs clean up litter, for example as a diving exercise.^[43]

On the sea, the removal of artificial debris (i.e. plastics) is still in its infancy. However some projects have been started which used ships with nets (Kaisei and New Horizon) to catch some plastics, primarily for research purposes. Another method to gather artificial litter has been proposed by Boyan Slat. He suggested using platforms with arms to gather the debris, situated inside the current of gyres.^[44]

Plastic-to-fuel conversion strategy

The Clean Oceans Project (TCOP) promotes conversion of the plastic waste into valuable liquid fuels, including gasoline, diesel and kerosene, using plastic-to-fuel conversion technology developed by Blest Co. Ltd., a Japanese environmental engineering company.^{[45][46][47][48]} TCOP plans to educate local communities and create a financial incentive for them to recycle plastic, keep their shorelines clean, and minimize plastic waste.^{[46][49]}

Laws and treaties

Ocean dumping is controlled by international law, including:

- The London Convention (1972) – a United Nations agreement to control ocean dumping^[50]
- MARPOL 73/78 – a convention designed to minimize pollution of the seas, including dumping, oil and exhaust pollution^[51]

European law

In 1972 and 1974, conventions were held in Oslo and Paris respectively, and resulted in the passing of the OSPAR Convention, an international treaty controlling marine pollution in the north-east Atlantic Ocean.^[52] The Barcelona Convention protects the Mediterranean Sea. The Water Framework Directive of 2000 is a European Union directive committing EU member states to free inland and coastal waters from human influence.^[53] In the United Kingdom, the Marine and Coastal Access Act 2009 is designed to "ensure clean healthy, safe, productive and biologically diverse oceans and seas, by putting in place better systems for delivering sustainable development of marine and coastal environment".^[54]

United States law

In 1972, the United States Congress passed the Ocean Dumping Act, giving the Environmental Protection Agency power to monitor and regulate the dumping of sewage sludge, industrial waste, radioactive waste and biohazardous materials into the nation's territorial waters.^[55] The Act was amended sixteen years later to include medical wastes.^[56] It is illegal to dispose of any plastic in US waters.^[2]

Ownership

Property law, admiralty law and the law of the sea may be of relevance when lost, mislaid, and abandoned property is found at sea. Salvage law rewards salvors for risking life and property to rescue the property of another from peril. On land the distinction between deliberate and accidental loss led to the concept of a

"treasure trove". In the United Kingdom, shipwrecked goods should be reported to a Receiver of Wreck, and if identifiable, they should be returned to their rightful owner.^[57]

Activism

A large number of groups and individuals are active in preventing or educating about marine debris. For example, 5 Gyres is an organization aimed at reducing plastics pollution in the oceans, and was one of two organizations that recently researched the Great Pacific Garbage Patch. Heal the Bay is another organization, focusing on protecting California's Santa Monica Bay, by sponsoring beach cleanup programs along with other activities. Marina DeBris is an artist focusing most of her recent work on educating people about beach trash. Interactive sites like Adrift (<http://adrift.org.au/>) demonstrate where marine plastic is carried, over time, on the world's ocean currents. On April 11, 2013 in order to create awareness, artist Maria Cristina Finucci founded The Garbage patch state at UNESCO^[58] – Paris in front of Director General Irina Bokova. First of a series of events under the patronage of UNESCO and of Italian Ministry of the Environment.^[59]



A sign above a sewer in Colorado Springs warning people to not pollute the local stream by dumping. Eighty percent of marine debris reaches the sea via rivers.

See also

- Flotsam and jetsam
- Kamilo Beach
- Marine pollution
- Project Kaisei
- Plastic pollution

References

1. Gary Strieker (28 July 1998). "Pollution invades small Pacific island". CNN. Retrieved 2008-04-01.
2. "Facts about marine debris". US NOAA. Retrieved 2008-04-10.
3. Sheavly, S. B.; Register, K. M. (2007). "Marine Debris & Plastics: Environmental Concerns, Sources, Impacts and Solutions". *Journal of Polymers and the Environment* **15** (4): 301–305. doi:10.1007/s10924-007-0074-3.
4. Cecil Adams (16 July 1999). "Should you cut up six-pack rings so they don't choke sea birds?". The Straight Dope. Retrieved 2008-08-11.
5. Edgar B. Herwick III (29 July 2015). "Explosive Beach Objects-- Just Another Example Of Massachusetts' Charm". *WGBH news* (PBS). Retrieved 4 August 2015.
6. "Military Ordinance [sic] Dumped in Gulf of Mexico". *Maritime Executive*. August 3, 2015. Retrieved 4 August 2015.
7. Alan Weisman (2007). *The World Without Us*. St. Martin's Thomas Dunne Books. pp. 112–128. ISBN 0-312-34729-4.
8. Alan Weisman (Summer 2007). "Polymers Are Forever". Orion magazine. Retrieved 2008-07-01.
9. "5 Trillion Pieces of Ocean Trash Found, But Fewer Particles Than Expected". Retrieved 25 January 2015.
10. "'Ghost fishing' killing seabirds". BBC News. 28 June 2007. Retrieved 2008-04-01.
11. Ayre, Maggie (7 December 2006). "Plastics 'poisoning world's seas' ". BBC News. Retrieved 2008-04-01.
12. Macrae, Fiona (12 February 2015). "Eight million tons of plastic is dumped at sea each year.". *Daily Mail*. Retrieved 21 February 2015.
13. Robert Lee Hotz (February 13, 2015). "Asia Leads World in Dumping Plastic in Seas". *Wall Street Journal*.
14. "A Ban on Plastic Bags Will Save the Lives of California's Endangered Leatherback Sea Turtles". Sea Turtle Restoration Project. 2010.
15. C. J. Moore et al. (2001). A Comparison of Plastic and Plankton in the North Pacific Central Gyre. *Marine Pollution*

15. C.J. Moore et al., 2001. A Comparison of Plastic and Plankton in the North Pacific Central Gyre. *Marine Pollution Bulletin* 42(12): 1297–1300
16. "Marine Litter: An analytical overview" (PDF). United Nations Environment Programme. 2005. Retrieved 2008-08-01.
17. "MBARI News Release: MBARI research shows where trash accumulates in the deep sea". Monterey Bay Aquarium Research Institute. 2013. Retrieved 2013-07-07.
18. Janice Podsada (19 June 2001). "Lost Sea Cargo: Beach Bounty or Junk?". *National Geographic News*. Retrieved 2008-04-08.
19. Marsha Walton (28 May 2003). "How sneakers, toys and hockey gear help ocean science". *CNN*. Retrieved 2008-04-08.
20. "Scavengers take washed-up goods". *BBC News*. 22 January 2007. Retrieved 2008-04-08.
21. Walker, T.R., Grant, J., Archambault, M-C. (2006) "Accumulation of marine debris on an intertidal beach in an urban park (Halifax Harbour, Nova Scotia)" (http://www.researchgate.net/publication/233420832_Accumulation_of_marine_debris_on_an_intertidal_beach_in_a_n_urban/file/79e4150a7c934a54d1.pdf) *Water Quality Research Journal of Canada*, **41** (3): 256–262.
22. "Plastic Debris: from Rivers to Sea" (PDF). Algalita Marine Research Foundation. Retrieved 2008-05-29.
23. Alfonso Narvaez (8 December 1987). "New York City to Pay Jersey Town \$1 Million Over Shore Pollution". *The New York Times*. Retrieved 2008-06-25.
24. "A Summary of the Proposed Comprehensive Conservation and Management Plan". New York-New Jersey Harbor Estuary Program. February 1995. Retrieved 2008-06-25.
25. Walker, T. R.; Reid, K.; Arnould, J. P. Y.; Croxall, J. P. (1997), "Marine debris surveys at Bird Island, South Georgia 1990–1995", *Marine Pollution Bulletin* **34** (1): 61–65, doi:10.1016/S0025-326X(96)00053-7.
26. CBS News, "Plastic trash invades arctic seafloor", Oct. 25, 2012 (http://www.cbsnews.com/8301-205_162-57540392/plastic-trash-invades-arctic-seafloor)
27. "Congress acts to clean up the ocean - A garbage patch in the Pacific is at least triple the size of Texas, but some estimates put it larger than the continental United States". *The Christian Science Monitor*. Retrieved 2008-10-10.
28. "Great Pacific garbage patch: Plastic turning vast area of ocean into ecological nightmare". *Santa Barbara News-Press*. Retrieved 2008-10-13.
29. Shukman, David (26 March 2008). "New 'battle of Midway' over plastic". *BBC News*. Retrieved 2008-04-01.
30. Wells, Matt (11 June 2007). "Plastic blights Hawaii's beaches". *BBC News*. Retrieved 2008-04-01.
31. Kenneth R. Weiss (2 August 2006). "Plague of Plastic Chokes the Seas". *Los Angeles Times*. Retrieved 2008-04-01.
32. Charles Moore (November 2003). "Across the Pacific Ocean, plastics, plastics, everywhere.". *Natural History*. Retrieved 2008-04-05.
33. "Plastics and Marine Debris". Algalita Marine Research Foundation. 2006. Retrieved 2008-07-01.
34. Engler, Richard E. (20 November 2012). "The Complex Interaction between Marine Debris and Toxic Chemicals in the Ocean". *Environmental Science & Technology* **46** (22): 12302–12315. doi:10.1021/es3027105.
35. "Millimeter-Sized Marine Plastics: A New Pelagic Habitat for Microorganisms and Invertebrates". *PLoS ONE*. 18 June 2014. Retrieved 2015-01-26.
36. Davet, ME; O'Toole, GA (2000), "Microbial biofilms: from ecology to molecular genetics", *Microbiol Mol Bio R* **64**: 847–867
37. "Ocean Debris: Habitat for Some, Havoc for Environment,". *National Geographic*. 23 April 2007. Retrieved 2008-08-01.
38. "Rubbish menaces Antarctic species". *BBC News*. 24 April 2002. Retrieved 2008-08-01.
39. "Where Has All the (Sea Trash) Plastic Gone?". *National Geographic*. 18 December 2014. Retrieved 2015-01-26.
40. Ron Hess, Denis Rushworth, Michael Hynes, John Peters (2 August 2006). "Chapter 5: Reefing" (PDF). *Disposal Options for Ships*. Rand Corporation. Retrieved 2008-05-03.
41. "Debris collection onsite after Bay Bridge struck". *US Army Corps of Engineers*. Retrieved 2009-02-07.
42. "Trash Racks". *Adelaide and Mount Lofty Ranges Natural Resources Management Board*. Retrieved 2009-02-07.
43. Dive clubs cleaning up litter (<http://www.projectaware.org/project/10Tips>)
44. Methods for collecting plastic litter at sea (<http://marinedebris.info/wiki/great-pacific-garbage-patch>)
45. Mosko, Sarah. "Mid-Ocean Plastics Cleanup Schemes: Too Little Too Late?". *E-The Environmental Magazine*. Retrieved 25 April 2014.
46. "Jim Holm: The Clean Oceans Project". *TEDxGramercy*. Retrieved 24 April 2014.
47. Hamel, Jessi. "From Trash to Fuel". *Santa Cruz Good Times*. Retrieved 24 April 2014.
48. West, Amy E. "Santa Cruz nonprofit hopes to make fuel from ocean-based plastic". *San Jose Mercury News*. Retrieved 24 April 2014.
49. "The Response". *The Clean Oceans Project*. Retrieved 24 April 2014.
50. "London Convention". *US EPA*. Retrieved 2008-05-29.

51. "International Convention for the Prevention of Pollution from Ships, 1973, as modified by the Protocol of 1978 relating thereto (MARPOL 73/78)". International Maritime Organization. Archived from the original on 2008-03-31. Retrieved 2008-05-29.
52. "The OSPAR Convention". OSPAR Commission. Archived from the original on 2008-02-12. Retrieved 2008-05-29.
53. "Directive 2000/60/EC of the European Parliament and of the Council of 23 October 2000 establishing a framework for Community action in the field of water policy". EurLex. Retrieved 2008-05-29.
54. "Marine and Coastal Access Act 2009". UK Defra. Retrieved 2008-07-29.
55. "Marine Protection, Research, and Sanctuaries Act of 1972" (PDF). US Senate. 29 December 2000. Retrieved 2008-05-29.
56. "Ocean Dumping Ban Act of 1988". US EPA. 21 November 1988. Retrieved 2008-05-29.
57. "Can you keep ship-wrecked goods?". BBC News. 22 January 2007. Retrieved 2008-05-29.
58. http://www.unesco.org/new/en/venice/about-this-office/single-view/news/the_garbage_patch_territory_turns_into_a_new_state/#.U71u8fl_u9U
59. http://www.rivistasitiunesco.it/articolo.php?id_articolo=2073

External links

 Media related to Marine debris at Wikimedia Commons

- United Nations Environment Programme Marine Litter Publications (<http://www.unep.org/regionalseas/marinelitter/publications/default.asp>)
- *UNEP Year Book 2011: Emerging Issues in Our Global Environment* (http://www.unep.org/yearbook/2011/pdfs/UNEP_YEARBOOK_Fullreport.pdf) Plastic debris, pages 21–34. ISBN 978-92-807-3101-9.
- NOAA Marine Debris Program (<http://marinedebris.noaa.gov/>) – US National Oceanic and Atmospheric Administration
- Marine Debris Abatement (<http://www.epa.gov/OWOW/oceans/debris/>) – US Environmental Protection Agency
- Marine Research, Education and Restoration (<http://www.algalita.org/>) – Algalita Marine Research Foundation
- [1] (<http://www.mcsuk.org>) – UK Marine Conservation Society
- Harmful Marine Debris (<http://www.environment.gov.au/biodiversity/threatened/publications/marine-debris.html>) – Australian Government
- The trash vortex (<http://www.greenpeace.org/international/en/campaigns/oceans/pollution/trash-vortex/>) – Greenpeace
- High Seas GhostNet Survey (http://www.highseasghost.net/index_new.html) – US National Oceanic and Atmospheric Administration
- Social & Economic Costs of Marine Debris (<http://www.ncdc.noaa.gov/oa/esb/?goal=ecosystems&file=events/marinedebris/>) – NOAA Economics
- PSA Video: "Plastics Kill" (<http://vimeo.com/9921293>) by The Surfrider Foundation's Rise Above Plastics Program (<http://www.riseaboveplastics.org/>)
- 25 years of debris collected | Visual.ly (<http://visual.ly/25-years-debris-collected>)
- How the oceans can clean themselves (http://www.youtube.com/watch?feature=player_embedded&v=ROW9F-c0kIQ) – TED Talk
- Tiny Plastic Bits Too Small To See Are Destroying The Oceans (<http://www.businessinsider.com/tiny-plastic-bits-destroying-oceans-2014-12>), *Business Insider*
- Ghost net remediation program - NASA, NOAA and ATI collaborating to detect ghost nets (https://www.nasa.gov/offices/oct/home/tech_life_buoy.html)

Retrieved from "https://en.wikipedia.org/w/index.php?title=Marine_debris&oldid=685544491"

Categories: Aquatic ecology | Waste | Water pollution | Environmental issues with fishing

- This page was last modified on 13 October 2015, at 13:15.
- Text is available under the Creative Commons Attribution-ShareAlike License; additional terms may apply. By using this site, you agree to the Terms of Use and Privacy Policy. Wikipedia® is a registered trademark of the Wikimedia Foundation, Inc., a non-profit organization.