HOW CAN WE HELP PROTECT OUR WATER RESOURCES?

Litter and Debris in Our Waterways

Adapted from: http://www.vaswcd.org/documents/Education/NRCW/Sec3.litterinwaterways.pdf

WHAT IS LITTER AND DEBRIS?

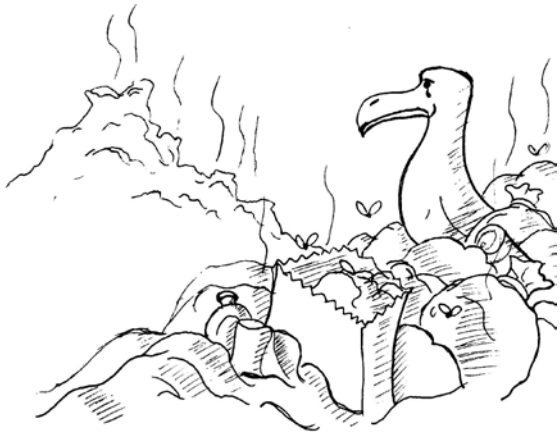
Aquatic litter and debris are any manufactured or processed solid waste that enters the aquatic environment from any source. In short, it is our misplaced waste and trash. It is a highly pervasive and visible form of pollution that has harmful impacts on wildlife and human health.

Aquatic ecosystems – streams, rivers, wetlands, and estuaries – are under considerable pressure from human activities, including incorrect disposal of trash. While the world's oceans are vast, they do not have an infinite ability to safely absorb our wastes. Preserving and restoring the quality of freshwater and marine environments requires that we understand how much trash we create, what we do with that trash, and how we can prevent it from entering our waterways.

SOURCES OF AQUATIC DEBRIS

According to The Ocean Conservancy, all the trash in our water shares a common origin: "…at a critical decision point, someone, somewhere, mishandled it, either thoughtlessly or deliberately."

The debris we find in our waterways comes from land-based sources, including people who litter, landfills, and storm drains. Another source of land-based debris is from combined sewer overflows. The water that enters a storm drain during a rainstorm enters the same pipes that take wastewater from homes and businesses. This mixture of wastewater and storm water travels to the cities' wastewater treatment plants. During times of heavy rain, the volume of this water coming into the wastewater treatment plant can overwhelm the capacity of the plant, thereby causing an overflow. In combined sewer overflow situations, untreated wastewater (including raw sewage and untreated pollutants) directly enters the receiving stream or river. Therefore, items flushed down the toilet can end up in our waterways. Millions of dollars are being spent in Mississippi and across the U.S. to eliminate this problem.



It should be noted that in most towns and cities, storm drains flow directly to streams and rivers. Litter on sidewalks and streets and in gutters is swept into the storm drain system when it rains. Just as a drop of rain can travel from a small stream to a river to the Mississippi Gulf Coast, so can a piece of litter. According to The Ocean Conservancy, 60% to 80% of debris found on beaches is washed, blown, or dumped from shore.

BEHAVIOR BEHIND THE DEBRIS

Deliberate littering and illegal dumping contribute debris to our waterways, as do other non-deliberate actions – such as having a piece of debris blow out of your car window or off your boat. Sometimes our trash cans will be knocked over by animals or the wind, resulting in more accidental litter. One important idea to understand is that there is a behavior and a person behind every piece of debris we find in our waterways. Some of these behaviors are:

Litter from Recreational Activities
This category includes trash from fast-food restaurants that is littered by people in cars, or is left behind after a picnic. People who litter fast-food items contribute a significant amount of debris to our waterways. Other items include bags, balloons, beverage containers, clothing, and toys.

Debris from Waterway Activities
This category includes fishing-related items from recreational and commercial fishermen like nets, fishing line, and bait boxes.

Illegal Dumping Activities
This category includes household waste, refrigerators and other appliances, building and construction waste, tires and sometimes entire cars.

Personal Hygiene and Medical Debris
This category includes items from sewers that overflow, diapers, needles, and other related items.

Litter from Smoking
This category includes cigarette butts, cigar tips, lighters, and the wrappers on cigarette packs. Smoking-related activities account for a tremendous amount of litter—in some places cigarette butts make up more than 85% of all littered items.

CIGARETTE BUTTS—A SPECIAL PROBLEM

During the International Coastal Cleanup, sponsored by The Ocean Conservancy, cigarette butts are the #1 most frequently found litter item. Trillions of cigarette butts are disposed of yearly, many directly tossed into the environment. Cigarette filters are made out of cellulose acetate, a plastic that takes several years to degrade.

Cigarette butts accumulate outside of buildings, on parking lots, and in streets where they can be transported through storm drains into streams and rivers. In addition to being unsightly, the chemicals that leach out of cigarette butt litter present a toxic threat to aquatic animals. The compounds in discarded cigarette butts (the filters and remnant tobacco) are biohazards to the water flea, *Daphnia magna*, a small crustacean at the lower end of, but important to, the aquatic food chain. Cigarette butts in the environment are an important litter issue – not a smoking issue.

Whether these items enter the aquatic environment from dumping, litter, or accidental routes, debris not only looks ugly, but it can harm the animals and plants that make their homes in stream, lake, wetland, and coastal environments.

TYPES OF AQUATIC DEBRIS

Every year, volunteers across the world participate in the International Coastal Cleanup, picking up aquatic debris and collecting data about the quantity and types of litter they find. The top ten list from these cleanups gives us a tremendous amount of information about the behaviors and activities that contribute most to the aquatic debris problem. The Top Ten items vary little year-to-year.

Any trash that is improperly disposed of can potentially enter a waterway and have negative impacts on aquatic animals, plants, and humans. Aquatic debris can be categorized in several ways:

- By material (plastic, metal, glass, cloth, paper)
- By source or by the activity which led the trash to be in the water. Some activities include fast food consumption, smoking, fishing, illegal dumping, sports/ games, balloons used in advertising, etc.
- By impact the items have on the environment and wildlife
- By biodegradable / non-degradable (Much of our solid waste contains synthetic materials that do not degrade quickly, if at all.)
- By recyclable / non-recyclable

PLASTICS — A SPECIAL PROBLEM

Plastic is widely used due to its light weight, strength, durability, versatility, and low cost. We use plastic bags, bottles, cups, forks, spoons, straws, and six-pack rings. Many toys are made from plastics, as are tools including strapping bands, and plastic sheeting. Plastic is also used in making packing materials and fishing gear. Plastics can take hundreds of years to break down, so they may continue to entangle and kill animals year after year. One study found that almost 90 percent of the debris floating on our oceans is plastic. The filters on cigarettes are also made from plastic fibers.

Top Ten Litter Items in the United States

In the 2001 International Coastal Cleanup, these items comprised 82% of all debris found in the U.S.

1. Cigarette butts/cigarette filters
2. Bags/food wrappers
3. Caps, lids
4. Beverage bottles (glass)
5. Beverage cans
6. Cups, plates, forks, knives, spoons
7. Plastic bottles 2 liters or less
8. Straws, stirrers
9. Fast food Containers
10. Cigar tips

IMPACTS OF AQUATIC DEBRIS

Litter not only detracts from the beauty of a riverside park or beach, but also can be a health and safety hazard for humans, and aquatic wildlife. Another big impact of litter is the cost to society. Millions of dollars are spent every year in Mississippi by state and local governments, parks, schools, and businesses to pick up litter.

Impacts on Aquatic Habitat

Habitat destruction or harm is caused when submerged debris (for example, a piece of plastic sheeting) covers water grass beds, or smothers bottom-dwelling species. Some debris can also cause physical damage.

Impacts on Water Quality

Debris can also affect the water quality by adding chemicals to the water. Construction waste illegally dumped in a stream can include buckets that once held paints, solvents, and other chemicals that can enter the water. Cigarette butts and some other littered items contain toxic chemicals that leach into the water.

Impacts on Aquatic Animals

Aquatic debris can be particularly dangerous and often lethal to wildlife. As many as 2 million seabirds die every year due to debris ingestion and entanglement. Fishing line, fishing nets, strapping bands, and six-pack rings can hamper the mobility of aquatic animals. Once entangled, animals have trouble eating, breathing, finding food, escaping predators, or swimming, all of which can have fatal results. Entanglement can also cause wounds that can become infected. According to the National Oceanic and Atmospheric Administration (NOAA), marine debris threatens over 265 different species of marine and coastal wild-life through entanglement, smothering, and interference with digestive systems.

Birds, fish, and mammals often mistake plastic items for food. With plastic filling their stomachs, animals have a false feeling of being full, and may die of starvation. Ingested items can also block the intestinal tract and prevent digestion.

Impacts on Human Health and Safety

Trash in our waterways can also affect human health and safety. Hazards include glass and metal left on the beach. Fishermen and recreational boaters can also be endangered as nets and monofilament fishing line wrap around a boat's propeller. Plastic sheeting and bags can also block the cooling intakes on boats. Such damage is hazardous and costly in terms of repair and lost fishing time.

Economic Impacts from Aquatic Debris

A tremendous amount of time, effort, and machinery is devoted in Mississippi to cleaning up litter on the land and in our waterways. Many communities and parks have regular schedules to remove trash left behind by visitors.

In addition to costly cleanup procedures, there are other economic impacts that are harder to put a price on. Littered parks, marinas, and beaches suffer from lost tourist income, and fisheries that are full of debris can result in decreased yield of food such as crabs and fish.

SOLUTIONS TO AQUATIC DEBRIS

Cleanup

One solution to the aquatic debris problem is cleaning up the trash using paid employees and volunteers.

Cleaning up pollution after it has entered the water is important, but it can be only a temporary solution if the sources of pollution are not also addressed. As mentioned above, the costs associated with cleanups can also be high. While both pollution cleanup and pollution prevention are needed, when it comes to the very preventable problem of aquatic debris, emphasizing prevention will yield greater results.

Pollution Prevention

There are two main approaches to preventing litter and trash from entering our waterways.

1. Proper Disposal. Educate people on the need to dispose of their trash properly, and make it easy for them to do so.
2. Waste Reduction. Examine how much waste we produce, and find ways to reduce it.

Proper Disposal

What a difference proper disposal of waste can make! As seen above, the vast majority of the aquatic litter is from items we can all easily carry until we find a trash can. Fast-food wrappers, bottles, cans, and cigarette butts are more than 80% of the litter we find in our waterways.

Waste Reduction

In the United States, we have 4.6% of the world's population, but we produce about 33% of the world's solid waste. Each of us can make incredible strides in reducing the amount of waste we are responsible for creating by employing the three "**Rs**" – **Recycle**, **Reuse**, **Reduce**. For every item we recycle or reuse, there will be one less piece of trash that can become a part of the aquatic debris cycle.

People can reduce the amount of trash they dispose of by:

- Buying reusable items rather than disposable ones. This can include reusable lunchboxes, plates, cups, eating utensils, and food containers instead of disposable items.
- Reusing items several times before throwing them away.
- Recycling plastics, glass, metals, and paper, and buying recycled goods too.
- Choosing items that have the least packaging.
- Not buying helium-filled balloons, and discouraging the release of balloons. Ask communities to celebrate in a way that doesn't add these deadly balloons to our aquatic environment.
- Composting kitchen and yard waste.
- Using rechargeable batteries and recycling them when their useful life is over.
- Using a canvas or string bag to carry groceries and other items.
- Using cloth napkins, dishtowels, and handkerchiefs instead of paper ones.