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STONE CIRCLE

LITTER

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"*Somewhere on this planet must be a few thousand people who care enough for our oceans to take action and help conserve them*" - Jaques Cousteau.

LITTERING

Litter is an important environmental issue. It is amazing that 94% of people identify litter as a major environmental problem and yet people still litter. Carelessly discarded garbage affects every member of society: it causes harm to people and animals, damages our waterways, costs us money and suggests that we do not care for our environment. Fortunately, we can all do something to help prevent and reduce litter.

We live in a plastic convenience culture; virtually every human being on this planet uses plastic materials directly and indirectly every single day. Our babies begin life on Earth by using some 210 million pounds of plastic diaper liners each year; we give them plastic milk bottles, plastic toys, and buy their food in plastic jars, paying with a plastic credit card.

Every year we eat and drink from some thirty-four billion newly manufactured bottles and containers. We patronize fast food restaurants and buy products that consume another fourteen billion pounds of plastic. In total, our societies produce an estimated sixty billion tons of plastic material every year.

Each of us on average uses 190 pounds of plastic annually: bottled water, fast food packaging, furniture, syringes, computers and computer diskettes, packing materials, garbage bags and so much more. When you consider that this plastic does not biodegrade and remains in our ecosystems permanently, we are looking at an incredibly high volume of accumulated plastic trash that has been built up since the midtwentieth century.

There are ten primary sources of litter:
1) Pedestrians dropping garbage in the street or gutters.
2) Motorists discarding garbage out of windows.
3) Uncovered loads. Items that are not secure can easily be blown out of trailers and cause roadside littering.
4) Household refuse disposal and collection. Animal scavengers and the wind can dislodge unsecured items placed out on the corner for collections. Litter can also result from overloading containers.
5) Commercial refuse and disposal. Poorly secured commercial refuse can easily become litter.
6) Construction projects. Litter can come from uncontrolled building waste and workers' lunchtime refuse.
7) People at leisure.
8) Entertainment events. Events create a large amount of litter, which can overflow onto neighbouring areas when measures to control it are not carefully planned.
9) Illegal dumping.
10) Intentional or habitual littering, for reasons such as laziness or acts of rebellion.

WHAT ARE THE EFFECTS OF LITTER?

Litter can cause a whole range of problems for everyone in the community. Litter discarded in streets and parks can travel through the storm water system to our bays and oceans, where it can cause harm to wildlife.
-Litter costs money. Removing litter from the environment costs everyone money.
-Litter is a threat to public health. Litter attracts vermin and is a breeding ground for bacteria. Items such as broken glass and syringes can be a health hazard in public places.
-Litter can be a fire hazard. Accumulated litter and carelessly discarded cigarette butts are potential fire hazards.
-Litter looks bad. Litter negatively affects the image of places, especially tourist locations.
-Litter attracts litter. Litter sends out a message that people do not care for the environment and that it is acceptable to litter.
-Litter can harm or kill wildlife. Plastic litter can choke or suffocate birds and marine life. Carelessly discarded containers can trap small mammals.
-Litter harms our waterways. Organic matter, such as dog poo, leaves and grass clippings, pollutes our waterways.

WHY DO PEOPLE LITTER?

If we can understand why people litter we can help stop the litter problem. The reasons people might litter include:

-Not everyone agrees on what is litter. Organic items are least likely to be regarded as litter. Over one third of people do not regard an apple core as litter, and roughly a quarter believe that dog droppings are not litter either. However, virtually all people regard bottles, cans and food wrappers as litter.

-Laziness. More than half of all littering occurs within five meters of a garbage can.

-Deliberate action. Often litter is not simply left behind, but placed carefully in chosen locations by wedgers or undertakers.

-The design and location of garbage cans. People are more likely to leave objects in the open beside an overflowing garbage can.

-Insufficient garbage cans. Often there is no garbage can nearby and it is inconvenient to hold onto the waste.

-Habit and forgetfulness.

-Unavailability of ashtrays. No ashtray or garbage can is available for cigarette butts.

Wedgers, undertakers and foulshooters

When people litter they often exhibit unusual behaviour. Have you ever seen these litterers in a public place near you?

Wedgers: Litterers that stuff or wedge their litter in small places, such as a gap between seats, so it will not be seen.

Undertakers: Litterers that cover or bury their litter under soil, sand or leaves.

Foulshooters: People who aim for the garbage can, miss and leave the object on the ground.

WHAT'S THE SOLUTION?

There are a number of simple ways to help prevent littering.

-Use garbage cans properly if provided. Make sure your waste goes in the garbage can, not beside it.

-Take your litter home when visiting parks and gardens. Wind and animals scavenging in garbage cans can often lead to littering in our parks.

-Pick up garbage, do not flush it away. Sweep paved areas and pick up all the garbage, rather than hosing it down into gutters and drains. All the garbage in gutters works its way into the water.

-Pack a garbage free lunch with reusable plastic containers and water bottles rather than bags and drink boxes.

-Never sweep grass, leaves or any other waste into gutters as they degrade to form a rich nutrient source for algal blooms. Never hose paths as it will only wash your waste into the drainage system.

-Wash cars on the grass, never on the road or hard paths where it will wash detergents into the drainage system.

-Always dispose of unwanted chemicals responsibly, never pour them into gutters or drains. Gas, paints, thinners, pharmaceutical drugs, and garden pesticides and herbicides are poisonous to wildlife. Your local government can advise you of the best way to dispose of these.

-Prevent oil from leaking from your car as it could end up in the river or sea.

-Use a reusable cloth bag when you are shopping, or choose cardboard boxes instead of plastic bags whenever possible. Reuse plastic bags by taking them back to the store, where they will be recycled into items such as flower pots.

-Use washing detergents which contain no phosphates, to prevent excessive amounts of these entering the drainage system. Also avoid excessive use of chemical fertilisers as runoff from these into the waterways cause algal blooms.

-Never pour waste fats and oils down the sink, but rather throw them out with other household garbage.

-Always take a pick-up-bag when walking your dog. Don't leave its droppings in the gutter or on the footpath as they will wash into the drainage system and contaminate the water.

-Always place waste in the most appropriate place. If there are no garbage cans, take it home with you. Don't bury it in the ground or sand, as it will soon be uncovered by animals, or peoples' feet. It is best to reuse and recycle, never litter.

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OCEANS, RIVERS AND LAKES - NOT A GARBAGE CAN

Litter dumped in the street is washed down the stormwater drains, which take it to creeks, lakes and the ocean. Very little of the litter and pollution on beaches and riversides come from people dropping things in the river or by the lake. Most of the problems originate many kilometres inland and are flushed out to sea through drains, rivers and creeks. It is worse after heavy rains, when the downpour flushes everything on the roads, gutters and footpaths into the drains.

Plastic is a major source of garbage. For the past 5 years it has accounted for 38% of all the garbage. Plastic does not degrade easily, and can float great distances. It is the most common human-made item sighted at sea.

Cigarette butts are the most common item counted around the world on clean-up days. A 1997 littering behaviour survey found that people are three times as likely to litter a cigarette as they are to put it in the garbage can. More than four out of five people observed littering cigarettes said they did not consider butts to be litter.

Wherever there are large quantities of litter, there are also likely to be other hidden and more difficult to detect pollutants in the water. These include oil, grease, heavy metals, fertilisers, insect and weed poisons and E coli bacteria.

Another major source of pollution is from domesticated animals. Each day many tons of dissolved dog droppings will end up in the sea.

It is a global problem, and for seabirds there are no safe places.

For most people, the ocean is a big toilet. The belief is that garbage, sewage, and plastics are dispersed and taken away.

Unfortunately, nothing is really "taken away"; it is simply perpetually circulated. The oceans are pulsating with powerful currents, and these currents keep plastic debris in constant circulation. As a result, debris travel in what are called "gyres." The gyre concentrates the garbage in areas where

currents meet. For example, one of the largest of these movements in the Atlantic is called the central gyre and it moves in a clockwise circular pattern driven by the Gulf Stream. The central gyre concentrates heavily in the northern Sargasso Sea, a place that is also host to numerous spawning fish species.
The number of floating plastic pellets found in the Sargasso Sea has been measured in excess of 3,500 per square kilometer.The same ratio of 3,500 parts per square kilometer was found in the waters of the southern coasts of Africa. This study found that plastic pollution had increased in South African waters from 1989 to the present by 190 percent.

Birds, turtles, and fish mistake the tiny nodules for fish eggs. Garbage bags, plastic soda rings, and Styrofoam particles are regularly eaten by sea turtles. A floating garbage bag looks like a jellyfish to a turtle. The plastic clogs the turtles' intestines, robbing the animals of vital nutrients, and it has been the cause of untold turtle losses to starvation. All seven of the world's sea turtle species suffer mortality from both plastic ingestion and plastic entanglement. One turtle found dead off Hawaii carried over 1,000 pieces of plastic in its stomach and intestines. A land-based turtle recently rescued in a Florida waterway by Stephen Nordlinger was unable to submerge due to the amount of Styrofoam trapped in its body, making it permanently buoyant.

Read this report by a fisherman who has traveled all over the oceans:

"Once, on the bottom of the Mediterranean off France, I witnessed a scene that appalled me. The entire bottom was made of plastic. Bottles and plastic bags swaying with the tide, replacing the seagrasses and algae. It was especially sad to see one little fish scurry from behind a white plastic bag to take cover from me in a sunken automobile tire. Brushing aside another drifting white bag, I spied a flicker of red on the bottom. What I found was a plastic face staring up at me with a great big smile and two enormous plastic ears. It was the decapitated head of a Mickey Mouse doll. The stuff is everywhere. I have found plastic bottles with Japanese, Chinese, Russian, and English writing littering the beaches of even the most remote Aleutian islands. It's a plastic sea out there. "

CASE STUDY - NEW ZEALAND

In this section, you'll find facts and figures about their marine world. You'll also find information about some of the threats to New Zealand's marine biodiversity.

-New Zealand's marine environment covers 430 million hectares - more than 15 times its land area - and covers more than one percent of the earth's surface.
-New Zealand's oceans are teeming with life. To date, some 8000 marine species have been identified in their oceans, including:
- 61 seabirds
- 41 marine mammals
- 964 fish species
- 2000 molluscs (snails, shellfish and squid)
- 350 sponges
- 400 echinoderms (kina, starfish)
- 900 species of seaweeds and
- 700 species of micro-algae.

-Around seven new species are discovered each month - that's about one fish and six new invertebrate species.
-Marine scientists estimate that as much as 80 percent of New Zealand's biodiversity could be found in the sea.

-While many of their fish are found elsewhere in the world, many of their bottom dwelling marine species are unique to New Zealand.
-More than 700 seamounts are estimated to exist in the waters around New Zealand. Seamounts are like underwater mountains, submerged hundreds of meters beneath the ocean's surface. Many are larger and higher than Mt Cook.
-The coastline stretches over 15,000 kilometres.
-About one fifth of their coast is sheltered harbours and estuaries. Around two-thirds of their shoreline is rocky and the rest is soft mud or sand.
-Although most of the coastline is static, an estimated 20% is eroding, while about 15% is extending, or accreting, into the sea. The accreting areas are near river mouths where large sediment flows accumulate. The eroding areas tend to be on exposed beaches of sand and gravel with no sources of new sediment.

The marine environment is a key part of New Zealand life. None of them live more than 140 kilometres from the sea. The majority live in cities with access to harbours and beaches. New Zealand manages the world's fourth largest fishing zone. Last year, more than three quarters of a million tonnes of fish and shellfish were taken from their oceans earning the fishing industry around $1.5 billion.

To help protect their marine environment, New Zealand has established 17 marine reserves. These reserves cover just four percent of their territorial waters. In comparison, around 30% of its land area is protected in parks and reserves. Human activities can have significant adverse effects on coastal and marine environments. As far as we know, in the last 700-800 years changes in the marine environment has caused the extinction of 18 percent of New Zealand seabirds and one species of fish. Understanding the human impact is important if we are to ensure the conservation of unique marine habitats and inhabitants.

Fishing

Fishing not only affects commercial fish stocks but it also impacts on marine ecosystems. For example, some fishing methods can have a major impact on underwater habitats. Fishing trawlers and dredges repeatedly scraped along the ocean floor can damage marine habitats and destroy large numbers of benthic or bottom dwelling organisms. Significant damage can also be done to seamounts. These underwater mountains are known to be rich in biodiversity, home to nearly 200 fish species and over 150 species of "macro-invertebrates" - corals, starfish, sea eggs, crustaceans and barnacles. When seamounts are routinely trawled, these treasure troves of biodiversity are turned into rock and rubble. At present, only about 20 seamounts are protected from trawling and dredging.

Recreation and Tourism Activities

The marine environment is the focus of numerous recreational and tourism activities. For hundreds of thousands of New Zealanders, a holiday at the beach is a fundamental part of life. For a growing number of international tourists, The marine environment is a key attraction. However, recreational and tourism activities can impact adversely on the coastal and marine environment in a number of ways.

Marine Pollution

Around the world, many people view the oceans as a convenient means of waste disposal. In 1997, a survey by the American Academy of Science estimated that 6.4 million tonnes of garbage enters the world's oceans each year. Around 60-80 percent of the garbage floating on ocean surfaces is estimated to be land sourced. Plastic items are one of the most common marine pollutants. Around the world, it's estimated that 100,000 marine mammals and one million seabirds die each year of plastic entanglement or ingestion. The New Zealand Ministry for the Environment says plastic may be a greater cause of death among the world's marine mammals than other marine pollutant.

Oil spills are another cause of marine pollution. Oil slicks can present a serious threat to marine habitats and inhabitants. The Ministry for the Environment's estimates that around 104 oil spills occurred in New Zealand in 1996. Sewage and stormwater is also a significant marine pollutant. Stormwarer run-off from towns and cities and sewage from both rivers and coastal outfalls flows into New Zealand's harbours, estuaries and coastal waters. In some areas, coastal water near river mouths, in harbours and estuaries, and near outfall pipes is unsuitable for shellfish gathering and, in rare cases, may be unsuitable for bathing.

ACTIVITIES

The activities for this issue of Stone Circle are simple. Go out into your community and clean it up. Organize your class, get some garbage bags and pick up the litter you see. Be sure to get areas near drain pipes, rivers and lakes. Be sure to wear plastic gloves to protect your hands and wash your hands and clothes thoroughly afterwards.

Try and make it a monthly event and try to get other people in your community involved. You'll be amazed at how beautiful it can be.
Get out there and pick it up.

GET INVOVLED

Stay up to date with the global fight against litter:

http://www.planetark.com
http://www.earthsky.com

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