

# 10 Things YOU can do to Protect our Oceans



(Vlada, N. d.)

**GEOGRAPHY 6250:  
CONSERVATION AND SUSTAINABILITY  
OF NATURAL RESOURCES**

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## Overview

The world's marine ecosystem has come under intense stress as humans harvest natural resources at alarming rates, expand cities and towns, put pressure on the world's food and water supplies and increase industrialization to support a growing and expanding population. This anthropogenic approach has significantly affected the world's oceans with climate change, pollution and overfishing having a detrimental effect on marine ecosystems around the world.

Many people in the world, including Newfoundlanders and Labradorians, depend on the ocean for their livelihood. The province's evolution has been shaped by its dependence on the ocean and marine health affects the social, economic and cultural well-being of its people. Despite a lack of effective global marine protection regulations and oversight by governing bodies, can individuals make a difference by practicing and encouraging responsible marine stewardship to support conservation and sustainability of the planet's ocean environments? This booklet presents ten recommendations that can be practiced by individuals, businesses, communities and the population in general to encourage and foster sound and responsible marine environmental health.



(Barrett, 2017)

## 1. Control what you flush

When disposing of waste, such as feminine hygiene products, medication (liquid, pills, etc.), and chemicals or cleaning agents, placing it in the proper disposal unit will reduce the chances of these waste materials ending up in a water system like the ocean. During 2009, 39% of Canadian residents had leftover or expired medication and 8% flushed the medication down the sink or toilet (Statistics Canada, 2015). These flushed medications can have drastic outcomes. In 2001, Karen Kidd, a Biology professor from the University of New Brunswick (Kidd, N. d.), and her colleagues demonstrated the harmful effects that increased estrogen levels from flushed birth control could have on aquatic life (SeaWeb, 2008). In northwestern Ontario, Kidd and her colleagues inserted the hormone into the tested lake. The test results showed male fish starting to produce eggs while the female fish had 115 times higher estrogen levels than normal. The following summer, the fathead minnow population decreased by 99%. In the following two years, 86% of the pearl dace and 30% of the trout population decreased. However, Kidd reported, once the estrogen was out of the system, fish populations eventually went back to normal. Although this occurred in a lake, increased estrogen levels in the ocean will have the same effect on marine life.

### What can you do?

- ❑ Bring unused and expired medications to your local pharmacist.
- ❑ Be aware of different take-back programs, such as the Multi-Materials Stewardship Board's (MMSB) Household Hazardous Waste (HHW) program.
- ❑ If throwing out medication in garbage, remove from container, hide medication, and close it in a bag to prevent leaking or breaking out of garbage bag.



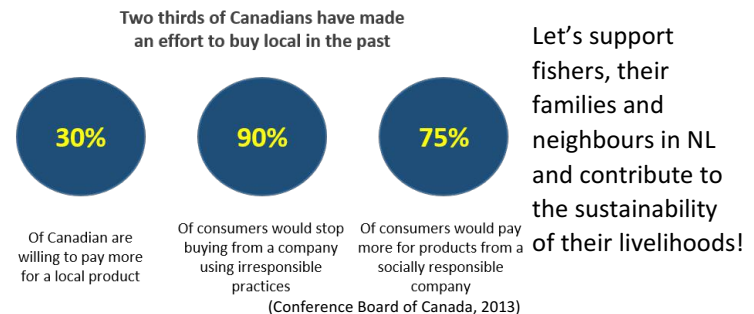
## 2. Buy local

Fish and seafood are part of a healthy diet, and eating locally-caught fish from a reputable source is healthier, safer, and more responsible than buying fish from the store. At the same time, you support the local economy and get environmental benefits.

In the USA, more than 90% of seafood consumed does not come fresh from the ocean, or even from closely-regulated fish farms (NOAA, 2011a). Irresponsible fishing techniques and methods have harmed fish populations and environment while illegal, unreported and unregulated (IUU) fishing is a big problem. Even when your fish come from reputable countries of origin, a sizable portion of it may have bypassed these regulations.



Furthermore, when the place of origin is uncertain, the probability that your fish might be exposed to unsanitary conditions, antibiotics, or artificial colour (when it comes from a farm) increases. So, when you buy products from fishermen you can be more confident that this product comes from ecologically-friendly fishing methods and, at the same time support the local economy. In addition, you contribute to profit increases of fishers by eliminating middlemen (Fresh Catch, N. d.).



### 3. Start composting

Composting involves taking advantage of an organic material's natural decomposition process in order to create nutrient rich soil (Epstein, 1997). Microorganisms rely on nitrogen, carbon, oxygen and water in order to decompose the organic materials, which can be further accelerated by fungi and worms.



(Gardening Know How, 2017)

In Newfoundland and Labrador, composting (and other waste management programs) is organized by the MMSB, which is active in 51 communities and distributed 20,000 backyard compost bins between 2005 and 2007.

#### Did you know?

In 2011, over half of Canadian households (61%) had participated in some form of composting (household and/or gardening waste). However, households in Newfoundland and Labrador were the least likely to participate in composting programs (only 43%).  
(Statistics Canada, 2013)

The benefits of composting include (University of Illinois Extension, 2017):

- ❑ Reduction in the amount of garbage and waste that will end up in a landfill.
- ❑ Addition of much needed nutrients and air to the soil.
- ❑ Reduction in the need for chemical fertilizers.
- ❑ Increases of good bacteria and fungi in the soil.
- ❑ Reduction of methane produced by garbage in landfills.

Composting reduces the amount of pollutants and toxins that are leaked into our waterways. When organic materials are left to decompose in landfills, contaminants such as nitrates, nitrites and sulfates can be leached into groundwater and end up in the ocean (SFGate, N. d.). These molecules can also cause algal blooms, which deplete the water column of oxygen, creating "dead-zones" where oxygen-dependent species cannot survive.

### 4. Don't pollute

From plastic bags to pesticides - most of the waste we produce on land eventually reaches the oceans. Marine pollution caused by humans produces significant consequences for both marine and human life, harming resources as well as our own health, interfering with marine activities such as fishing and reducing the quality of seawater (OECD, 2001).

Marine pollutants can end up floating in the ocean or resting at the bottom of the sea for years, wash up on beaches or might be eaten by marine and other wildlife. There are three main ways in which pollutants enter the marine environment:



(Launay, 2015)

1. Direct discharge of effluents and solid waste such as sewage and industrial and municipal waste into the ocean;
2. Pollution carried by rivers; and
3. Airborne pollution (Patin, N. d.).

#### Did you know?

- ❑ *Oil: oil spills are extremely harmful to the ocean environment. According to the US National Research Council, oil spills account for approximately 12% of oil entering the oceans each year, while 36% of oil entering the oceans comes from drains, rivers and municipal waste runoff (WWF, 2017).*
- ❑ *Fertilizer: fertilizer runoff from residences and farms causes eutrophication, enriching water with extra nutrients which can result in algal blooms that deplete oxygen levels and suffocate marine life (NOAA, 2011b).*
- ❑ *Ghost fishing gear: hundreds of kilometers of nets and lines get lost or abandoned every year and because of the durable materials used to produce this equipment, fishing gear can continue fishing unattended for years and years (Ghost Fishing, N. d.).*
- ❑ *Marine debris: if not handled properly, almost everything we throw away can reach the ocean.*



## 5. Reduce plastics



(CBC News, 2017)

Plastics are not always visible, but have a large negative impact on the marine environment. Plastics in the ocean affect ecosystem health, from direct harm to species to poisonings through bioaccumulation. Marine plastics affect the entire ocean and are solely introduced into the waters by humans,

and are often shown by the media as aggregating in massive gyres in the Pacific. Newfoundland, although remote in the North Atlantic has not escaped this plague. A study by MUN researchers showed plastics present in cod fish, a historically and culturally significant resource in the province. Although the prevalence of plastics in cod is relatively low, it is still of concern (Liboiron et al., 2016).

### What can you do?

- Buy reusable shopping bags.
- Reduce use of disposable plastic items.
- Buy in bulk (individual packaging adds to the amount of plastic used).
- Recycle (but don't only rely on this, recycled plastics tend to get back into the ecosystem). Water bottles for example are often recycled into clothing.

### Marine litter: A mammoth challenge for our oceans

By 2050, an estimated **99%**

of seabirds will have ingested plastic

Marine litter harms over **600**

Marine species

**15%**

Of species affected by ingestion & entanglement from marine litter are endangered

(UN Environment, N. d.)

## 6. Purchase biodegradable

There are major benefits with purchasing biodegradable products. Biodegradable products are made from plants which result in significant reductions in greenhouse gas emissions due to a less taxing manufacturing process. As well, bio-plastics are not made from non-renewable oil. Examples of non-biodegradable products are diapers, plastic bags, body care creams and lotions, toys, disposable dishes and detergents.

Biodegradable sunscreen is an environmentally friendly example given that it lacks the harmful ingredients that are destroying the world's coral reefs. These sunscreens are eco-friendly as they break down naturally, minimizing damage to the environment (Bratkovics, 2012).



(The Financial Express, 2017)

Another example of a smart biodegradable practice is the use of phosphate-free detergents. Although conventional detergents may seem the less expensive cleaning option, non-eco-friendly detergents are more likely to be a mixture of synthetic chemicals and additives and, unlike traditional soap, they are generally liquids rather than solids. Eco-friendly cleaning products are as effective as other soaps and detergents but are free from any harmful chemicals or pollutants and are devoid of harmful toxins. Apart from that, impact on the ocean is minimized by preventing

### How long until it's gone?

Estimated decomposition rates of common marine debris items:

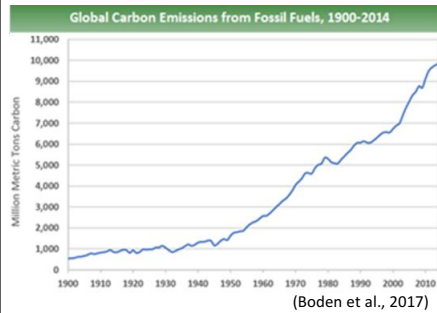
- ❖ Plastic bottle – 450 years
- ❖ Tin can – 50 years
- ❖ Plastic beverage holder – 400 years
- ❖ Disposable diaper – 450 years
- ❖ Aluminum can – 200 years
- ❖ Cigarette butt – 1 to 5 years
- ❖ Plastic grocery bag – 10 to 20 years
- ❖ Styrofoam cup – 50 years
- ❖ Fishing line – 600 years

(Moynihan, 2016)

algal blooms and, at the same time, ensuring that these products are not animal tested and are packaged in recyclable containers (Donnelli et al., 1998).

More than 8 million tonnes of plastic end up in the ocean each year (UN Environment, 2017).

## 7. Change your transportation regime



In 2015, 24% of Canada's total greenhouse gas (GHG) emissions came from transportation. This figure does not include aviation emissions as well as freight trucks, so it does not only represent personal vehicles but is still a staggering percentage

that needs to be addressed. GHGs emitted into the atmosphere interact with and are absorbed into the ocean. When ocean water interacts with these gases, specifically carbon dioxide, carbonic acid is produced which has many deleterious effects on the health of the ocean and the organisms within it. The threat of a more acidic ocean, as well as broader effects of climate change show the importance of reducing personal GHG footprints.

### What can you do?

- Walk.
- Take the bus.
- Carpool.
- Obey speed limit.
- Tire upkeep.
- Purchase power: purchase vehicles, such as sedans, which emit less GHGs than passenger trucks.

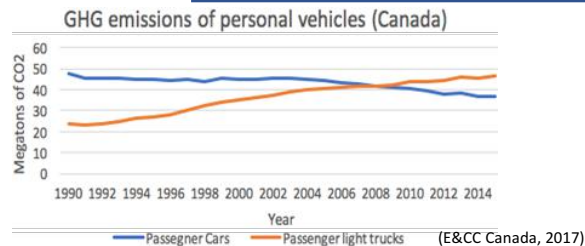
Most popular car in Canada in 2016  
-Honda Civic-

- ❖ 20 km commute: 3.24 kg CO<sub>2</sub>
- ❖ 5 day week: 16.2 kg CO<sub>2</sub>
- ❖ 52 weeks: 842.4 kg CO<sub>2</sub>

Walking or taking the bus one day weekly for a year will save 168 kg of CO<sub>2</sub> emissions annually.

If 100,000 NL residents (roughly the population of St. John's) did this, it would be equivalent to taking 3,304 cars off the road.

(Government of Canada, N. R. C., N. d.)



## 8. Prevent runoff

When there is excess water from rainfall or melting snow, this water travels through different water systems leading to the ocean, contaminating it with pollutants such as fertilizers, manure, chemicals and cleaning agents (e.g., car wash soap, pesticides) (Greenpeace, 2008; Statistics Canada, 2015; Yarr, 2017). It also increases sediments in the ocean (Government of Canada, 2013). These contaminants cause negative impacts to the ocean through algae blooms, dead zones (Statistics Canada, 2015), increasing mortality rates and decreasing birth rates of fish, and overall destruction to habitats (Government of Canada, 2013).



(Archer, 2011)

Since the 1950s, Canada's use of nitrogen fertilizers has increased approximately 75-fold (Greenpeace, 2008). Due to this, there has been an increase in phosphorus and nitrogen pollution, with 82% of phosphorus and 49% of nitrogen pollution directly caused by Canada's agriculture.

### What can you do?

- Buy eco-friendly chemicals and cleaning agents.
- Think green ways to protect crops instead of using pesticides.
- Limit the use of fertilizers.
- Develop buffer zones around water systems.
- Be aware of water systems located near your area.



(CBC News, 2015)

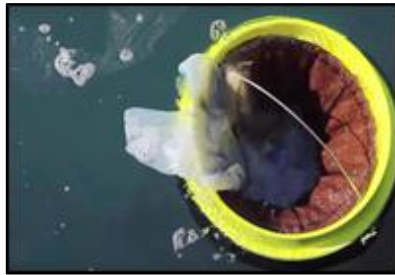
Lake Erie seen from space - toxic algal blooms can stretch for thousands of kilometres.

## 9. Innovate yourself

The current issues facing our oceans are not problems that can be solved with a single or simple remedy. Sometimes it is essential to think outside the box and search for innovative solutions. In a time of unprecedented global change, addressing problems one-by-one is inefficient and, frankly inadequate. In the list below, we suggest some ways to adopt an innovative mindset. This list is by no means exhaustive, but is a great starting point to solving our problems.

### What can you do?

- Think outside the box.
- Be flexible and adaptive.
- Take risks.
- Reflect and grow.
- Support innovation (\$).



(SeaBin Project, 2017)

Innovation is not always an invention; it can be a product, a thought, or a new way of doing things. The main purpose of innovation is to find alternative ways to solve old problems that do not have spatial or temporal boundaries. Innovation is also about creating resiliency towards the future without turning our backs on the past.

One innovation helping our oceans is the V5 SeaBin, developed by the SeaBin Project. This was created to tackle the global problem of marine debris, and it has been estimated that it can collect up to 1.5 kg of floating debris/day. This innovation is not going to solve the problem of marine debris alone; however, it presents a creative solution for addressing a seemingly insurmountable problem.

**Don't get discouraged – every innovation starts with a simple idea!**

## 10. Become aware

Preventing marine pollution is critical for the well-being of our oceans, the marine and wildlife that depend on a healthy ocean to survive and for all the planet. Humans have put great stresses on marine environments: climate change, pollution, overfishing, warming waters and transportation all have impacted oceans around the world. We have the responsibility to proactively address these concerns to ensure the sustainability of the oceans for future generations and ultimately for life on our planet. There are many international organizations that champion policies and strategies for healthy oceans, but there are many things that individuals can do as well such as:

- Recycle: recycling reduces the amount of plastic and other materials entering the waste stream and encourages a clean environment.*
- Avoid plastic bags: using reusable cloth bags for shopping greatly reduces the number of plastic bags littering the environment.*
- Use legitimate landfills: when disposing of bulk garbage, use legitimate waste disposal or landfill facilities that properly sort and process waste.*
- Clean-up a beach: by yourself or getting together with others to pick up garbage is an easy way to help reduce pollution on beaches and in the ocean.*
- Volunteer: join a local ecological or community group that focuses on keeping the environment clean and healthy.*
- Spread the word: educate others on the importance of environmental stewardship and encourage smart practices to ensure the protection and sustainability of our ocean environments.*



(US Embassy & Consulate Thailand, 2016)

## Ocean statistics

- ❑ Oceans cover 71 per cent of the Earth's surface and contain 97 per cent of its water (David Suzuki Foundation, N. d.).
- ❑ Over 80 per cent of marine pollution comes from land-based activities (WWF, 2017).
- ❑ Approximately 1.4 billion pounds of trash enters the ocean every year (NOAA, 2016).
- ❑ Over 1,000,000 seabirds are killed by ocean pollution each year (CEF, N. d.).
- ❑ 300,000 dolphins and porpoises die each year as a result of becoming entangled in discarded fishing nets (CEF, N. d.).
- ❑ 100,000 sea mammals are killed in the ocean by pollution each year (CEF, N. d.).
- ❑ Oceans have absorbed more than 90 per cent of emissions-trapped heat since the 1970s (David Suzuki Foundation, N. d.).
- ❑ By 2050, plastic in the oceans will outweigh fish (David Suzuki Foundation, N. d.).
- ❑ Lost or discarded fishing gear in the oceans makes up around 10 per cent (640,000 tonnes) of all marine litter (FAO, 2009).
- ❑ More than 205 billion litres of raw sewage and untreated waste water entered Canada's rivers and oceans in 2015. This amount would fill 82,255 Olympic-size swimming pools (CBC News, 2016).



(Newfoundland & Labrador Public Libraries, N. d.)

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## Contributors:

Jacqueline Butler, St. John's, NL  
Jack Daly, Rhode Island, USA  
Wayne Roebathan, St. John's, NL  
Alicia Saldaña Millán, Sinaloa, Mexico  
Sydney Worthman, St. John's, NL

This booklet was written by the Geography 6250 class (Conservation and Sustainability of Natural Resources) and was prepared with the intention of presenting ten recommendations of things that anyone can do to contribute to the protection of the world's oceans. This list is not exhaustive, but represents ten things that the authors felt were realistically achievable and are not the only possibilities. To download an electronic copy of this booklet, please visit [toobigtoignore.net](http://toobigtoignore.net).



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