HOW MUCH PLASTIC IS IN OUR OCEANS?
What Is Plastic Pollution?

Plastic pollution is very harmful to our environment because it is dangerous to animals, disrupts ecosystems, and it never fully disappears. Plastic does not decompose, it only breaks down into smaller pieces, called microplastics. Microplastics can be incredibly harmful to animals, when they ingest the extremely small plastics it could cause them to starve because their stomachs feel full, yet they are not receiving the proper food or nutrients they need to survive.

When we use plastic, we need to consider its consequences on our planet. Some everyday items, like plastic cups, bags, and straws, can take hundreds of years to break down; even then, microplastics can still circulate on our planet. This all begs the question; just how much plastic is in our oceans? A team of researchers from Canada and Australia wondered the same thing. Dr. Stephanie Avery-Gomm, Dr. Jennifer Provencher, Dr. Max Liboiron, Dr. Paul Smith, and Florence Poon, conducted a study that looked at how much plastic pollution was in the Labrador Sea.

Why Did Researchers Focus on the Labrador Sea?

The research team chose to examine the Labrador Sea because no one else had! The amount of plastic in the Labrador Sea was a mystery until the researchers took on the challenge. The Labrador Sea is found between Newfoundland and Labrador in Canada, and Greenland, and it is important because local fisheries depend on its ecosystem to support community and families. There are also many different species of animals which call the Labrador Sea home.

The Labrador Sea is not often travelled for leisure, so the researchers suggested that there would be minimal pollution due to the lack of human activity. The researchers still suspected that the area would be at risk of some pollution. Climate change has caused temperatures and sea levels to rise which has made it easier for garbage and harmful chemicals to travel into the Labrador Sea area. This vulnerability made the location important to study. The researchers’ efforts revealed that there is a considerable amount of plastic in the region. This information is concerning because it leads us to wonder just how much plastic there is in areas with high human activity than the Labrador Sea.

What Did the Research Team Find?

The team’s next goal was to determine how much plastic was in one of the Labrador Sea’s seabird species, the Northern Fulmar, so that they could better understand the amount of plastic pollution in the ocean. A baseline measurement, also known as the before or initial measurement, was important to gather first in order to better understand the extent of the pollution in the area.

The researchers measured the amount of plastic in the Labrador Sea through a process called biological monitoring. Biological monitoring allows scientists to measure a harmful substance, such as plastic, by examining a sample, in this case the Northern Fulmar. The amount of plastic found in the stomachs of the Fulmars helped the team determine how much plastic was in the Labrador Sea.

The Northern Fulmar is often used to detect plastic in the ocean. It is known to find its food on the surface of the ocean and belongs to the same family as the seagull. Since the team knew where the bird regularly flew, they could examine that area for plastic pollution. Most importantly, the Fulmar’s digestive system is tough. Instead of spitting up the plastic when they eat it, they swallow it just like any other food they eat.

Over two years the researchers monitored the bodies of seventy Northern Fulmars. They found that 79 percent of the birds had swallowed, or ingested, plastic with an average of 11.6 pieces. According to marine safety indicators, the birds should not ingest more than 0.1 g of plastic. The study found out that 34 percent of all Fulmars exceeded these marine safety indicators for marine litter and thus ingested more than 0.1 g of plastic.

Although the Labrador Sea has low levels of plastic pollution, efforts must be taken to reduce plastic pollution in order to keep animals safe. By understanding how much plastic is in the environment, we can be better prepared for the dangers it may cause. We can also use baselines to determine if our efforts to reduce plastic pollution is working. If we put new practices into place and plastic pollution still rises, we know they are not effective.

Northern Fulmar Fact:

When threatened, Northern Fulmars have an effective defense: a vile-smelling stomach liquid that the birds can spray out of their mouths for several yards.

It is a good reason to keep your distance from nesting birds!


4. Ibid.
What Can We Do to Reduce Plastic in Our Oceans?

One of the main things we can do to reduce plastic in our environment is to reduce our plastic usage by only choosing plastic when it is absolutely necessary. Take a second to think about how much plastic you use in your everyday lives. If you are having a hard time imagining this, take a walk through your house and take note of all the plastic you see. Remember - **reduce, reuse, or refuse**. Can you reduce the amount of plastic you are using so you are using less? Rather than throwing something out, try to think of a way to reuse it. Or, instead of using plastic in the first place, refuse it! When we are mindful about our use of plastic, we reduce the number of new plastic items circulating in our environment and the need for plastic products.

Another way to make sure that plastic avoids going into our oceans is to properly dispose of waste - **recycle**. Each neighbourhood has a different way of sorting its waste. It is important that we as citizens take the time to properly dispose of our garbage. Whenever you see plastic in nature or your neighborhood, collect it and check if you can recycle it.

Plastic pollution is not only harmful to animal life, but also to human lives too. Reducing plastic pollution in our oceans will help mitigate some impacts of climate change.

### Scientific Monitoring Activity

Recommended for Science, Primary  
(Learners will investigate materials through the senses)

Recommended with modifications: Science, Grade 1  
(Learners will analyse interconnectiveness of living things and the environment)

### Activity Summary

Learners will engage in a monitoring experience where they become playground plastic monitors. Learners will become aware of the dangers of plastic in our environment and how much plastic is on their playground.

### Learning Goals

1. To understand the impacts of garbage on local environments.
2. To understand that personal negative impact on the environment can be reduced.
3. To develop an ability to sort garbage appropriately (according to your community’s standards).

### Materials

- Plastic gloves (reusable)
- Plastic bags
- Proper garbage sorting facilities
- Chart paper and markers

### Methods

1. As a class select a portion of your school grounds or any other public area (for example, park, shopping mall area) as your sample area.
2. Over a period of four weeks, visit the selected area and collect all garbage from that area as long as it is not harmful to you.
3. Collecting garbage on week 1 will act as a baseline for that area.
4. Each week after, make a prediction as to whether there will be more garbage than the previous week. Once you get more comfortable with the activity, predict what kind of garbage will be in the area.
5. Record your observations for each week in the observation table.
6. Depending on trends in the garbage collected, you can aim to educate the school population or your community on your findings.
7. Extension: Once the garbage has been collected, you can then work as a group to sort the garbage properly.
Observation Table

<table>
<thead>
<tr>
<th>Time</th>
<th>How many pieces do you predict you will pick up?</th>
<th>How many pieces did you actually pick up?</th>
<th>What was the most common type of garbage?</th>
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</thead>
<tbody>
<tr>
<td>Week 1 (Baseline)</td>
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<td>Week 2</td>
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<td>Week 4</td>
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Discussion Questions

1. How does garbage end up in the school yard or other selected area?
2. Are you surprised by how much garbage is in the school yard or other selected area? Why? Why not?
3. How can garbage affect the environment?
4. What can you do to reduce litter in your local community?

Questions for the Future

What questions did the activity leave you with?
How could you find the answers?

**Scientific Monitoring Activity**

Name: _______________________________________________________

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