

***Lesson: Impacts of Plastic on Ecosystems***  
**Worksheet – Activity 4: Plastics for Dinner**

**Sometimes animals can mistake plastic for food and eat or ingest them. Let’s explore how plastics move through a food chain by looking at microplastics!**

**1)** As zooplankton swim, they search for particles in the water column to eat as food. Many of these particles are delicious food items - like phytoplankton. Some of these particles are microplastics. Each of these zooplankton can’t tell the difference between microplastics and their food.

**What do you think happens?**

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If you guessed that the zooplankton accidentally ate the microplastic, you were right!

**Now imagine that each zooplankton eats 2 pieces of microplastic.**

**2)** Zooplankton are prey to minnows – some types of minnows can feed by making its mouth really wide and closing its gills to make a tiny vacuum to suck in all the delicious plankton. One day, 5 minnows swim by a bunch of the zooplankton described above. Each minnow eats 27 zooplankton.

**What would happen to the microplastic that the zooplankton ate?**

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**3) If a minnow eats 27 zooplankton, how many microplastics does each minnow now have in their stomach?** \_\_\_\_\_ (remember, each of these zooplankton ate 2 pieces of microplastics).

Do you know this is called **trophic transfer**? Because the microplastic was transferred from one trophic level to another.

- **Trophic level:** the position that an organism occupies in a food chain - what it eats, and what eats it. Most food chains have five trophic levels, but a chain can have fewer or more levels depending on the environment.

**4)** Now let’s say that a large salmon - a predator to the minnows - comes along and hungrily eats up all 5 minnows.

**How many pieces of microplastics are in the salmon?** \_\_\_\_\_

Again, the microplastic reached the next level in the food chain through trophic transfer!

Now, let's review the food chain! Review your answers from above and write them down again here.

Level 1 - How many pieces of plastic did each zooplankton eat? \_\_\_\_\_

Level 2 - How many pieces of plastic did each minnow eat? \_\_\_\_\_

Level 3 - How many pieces did the salmon eat? \_\_\_\_\_



5) Did the number of microplastics increase or decrease up the food chain? \_\_\_\_\_

This is called **biomagnification**. When a contaminant increases in amount as you move up the food chain.

- **Biomagnification:** is the process when the concentration of pollutants (like microplastics) increase higher up in the food chain. This typically occurs across an entire food chain but organisms at the top have a higher concentration of pollutants than lower levels. When predators eat its preys, they also consume all the pollutants within the prey.

6) Now that you have learned about food chains and trophic transfer, can you draw a food chain with your favourite aquatic animal?

**Final reflection:** Let's wrap up and reflect back on what we learned!

- **What types of ecosystems are impacted by plastics and what are the two main ways wildlife are impacted?**

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- **Can you think of some other impacts that ingestion may have on wildlife?**

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- **Share some ideas on what we can do, as individuals, to prevent plastic pollution from entering ecosystems.**

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**Answers for this activity:**

- *Level 1 - How many pieces of plastic did each zooplankton eat? **Answer = 2***
- *Level 2 - How many pieces of plastic did each minnow eat? **Answer = 54 (27x2 previously eaten microplastics)***
- *Level 3 - How many pieces did the salmon eat? **Answer = 270 (54x5)***
- *Did the number of microplastics increase or decrease up the food chain? **Answer = Increase***