LETHAL LOOPS

For Grades 4-5

How are sea lions affected by loop-shaped marine debris?

Summary:

Marine debris can cause lot of problems for wildlife. In addition to ingestion and poisoning from marine debris, animals may become entangled in marine debris, making it difficulties for them to move, feed, or even breathe. The hazards associated with a particular kind of marine debris depend on physical characteristics and location of the debris, as well as the behavior and physiology of the animals that are impacted.

In this lesson, students focus on one characteristic of some marine debris – the "loop" shape – and learn how marine debris items with this shape negatively impact sea lions. While teachers may explore available resources in depth, it is not necessary to share a lot of graphic imagery of entangled sea lions with the students. A few photos can adequately convey the problem, and then the focus can turn to stewardship solutions.

Goals:

1. Marine debris can have negative impacts on wildlife.
2. Some marine debris items have "loops" in which sea lions or other wildlife can become entangled.
3. "Lose the Loop" is a campaign to help people understand the problems created by marine debris loops in the ocean, and encourages people to cut loops before discarding them in the trash.

Background:

See Lesson One in the Grade 4-5 "Impacts" section of the NOAA Marine Debris STEAMSS curriculum [link] - Students use rubber bands on their hands to demonstrate how wildlife entangled in a loop have restricted movement and cannot easily untangle themselves.

Introduction:

Ask students if they have ever seen a sea lion in nature, in a zoo or aquarium, or on video (example: https://www.youtube.com/watch?v=2eUccu5qEzw). Sea lions swim by pulling their front flippers through the water like 'wings', turning and twisting their bodies and long, flexible necks. The speed and flexibility of sea lions help them chase and capture fish they like to eat. Sea lions are curious creatures, and they playfully interact with each other and with objects in their environment, such as kelp.

Unlike kelp, however, some objects underwater aren't part of nature. Floating marine debris in the ocean might be of interest to a curious sea lion, and some individuals have been observed grasping floating debris in their mouths or under

their flippers. Unfortunately, if a sea lion pokes its head into a plastic loop, it might not be able to get the loop off its body. The loop could accidentally get stuck around the animal's neck, and unlike a person with long arms and hands, a sea lion cannot 'reach up' and take the loop off its head.

Show students select images of sea lions that have plastic bands around their necks (example: http://mmi.oregonstate.edu/sea-lion-disentanglement-capture-cage). Researchers have observed some individuals wearing bands for months or even years. Discuss with students what effects a band on a sea lion's neck might have, such as:

- Cutting into skin and causing infection
- Choking / constricting airway
- Constricting the size of food the animal can swallow
- Restricting mobility

Brainstorm with students: What type of marine debris is likely to cause this type of neck entanglement?

- Persistent material (synthetic) that does not fragment or degrade easily
- Loop-shaped, so it's hard to get off the body
- Floats in the water

Activity 1: Loop Model
Materials: Obtain a variety of small objects for students to 'pick up' with the tip of their pencils. Include objects that have loops (rubber bands, paper clips) as well as objects that do not have loops (straight pieces of yarn)
Instructions: Place the collection of small objects on a table, and see how many you can pick up with the tip of a pencil in 1 minute. Which materials stayed on the pencil best? In this model, what does the pencil represent?

Activity 2: Find the Loops
Materials: Beach Boxes or collected marine debris materials
Instructions: Sort through marine debris and categorize materials into "loop" and "not loop". Are sea lions likely to be impacted by the loops in your sample? What other types of wildlife could be impacted by loops? (Ex. birds, sea turtles, etc.)

Discussion/Reflection:
Researchers have found that plastic packing bands, nets, and rubber bands are some of the common marine debris items that cause neck entanglements in sea lions.
See Kim Raum-Suryan's PowerPoint slides: #10 – 14, #26-27 [pdf]

Why not just remove the entanglements? It is often difficult to impossible to safely capture a wild sea lion to remove entangling debris. While occasional disentanglements have been successful (see video), these few incidents are not a remedy for the problem.

What else can be done?

- Lose the Loop – cut loop in any plastic material that could end up in the ocean
- Go Bandless – engineer solutions that would eliminate the need for plastic and rubber bands
- Use paper instead of plastic bands (Example)
- Recycle monofilament line and support development of biodegradable fishing gear
- Participate in beach clean ups
- Reduce, reuse, recycle

See Kim Raum-Suryan's PowerPoint slides: #38 – 49 [pdf]

Resources:

- Reducing Marine Mammal Entanglements in Marine Debris – Presentation from Kim Raum-Suryan [pdf]
- Alaska Department of Fish and Game – Steller Sea Lion Research http://www.adfg.alaska.gov/index.cfm?adfg=marinemammalprogram.stellerentanglements
- Oregon Marine Mammal Stranding Network http://mmi.oregonstate.edu/ommsn

July 2015 – Oregon Sea Grant
Links updated January 2022