The Arctic's Marine Refuges - Discussion Questions for Teachers

This supplementary material is to be used only with the video, The Arctic's Marine Refuges. Explanation of terms should not be used as official definitions.

1. **How do the Arctic's marine refuges impact northern communities?**

   The Arctic's marine refuges create safer areas for marine mammals to spend the winter. These animals depend on these areas throughout their lives. Protecting these areas for the marine mammals means they will have more chances to survive and reproduce. These marine mammals are likely to end up in waters near coastal communities where community members depend on harvesting. However, harvesting is not likely to happen in the refuges themselves, since they are so far from the shoreline.

2. **The Arctic's Marine Refuges video talks about how the marine refuges support species abundance and population health. What do these terms mean?**

   Species abundance refers to the number of individuals of each species in an area. For example, if the abundance of narwhal in Disko Fan marine refuge is 100* individuals, by protecting their habitat, and contributing to better population health, the abundance may increase to more than 100* in the area. This can be from narwhal moving into and using the area, or because it provides habitat that allows new narwhal to be born. So, the species abundance increases.

   * *Values are not reflective of actual species abundance values, they were selected purely for example purposes.*

   Population health refers to the collective heath of a group of individuals. Many factors can influence population health, such as access to good habitat, nursing areas, and food. For example, if more human activity happened in Disko Fan and created a poor narwhal winter habitat, then the population health of narwhal may decrease. This could result in the species abundance decreasing (meaning, a lower number of narwhal) in the area.

3. **Marine Refuges promote biodiversity. What does that mean?**

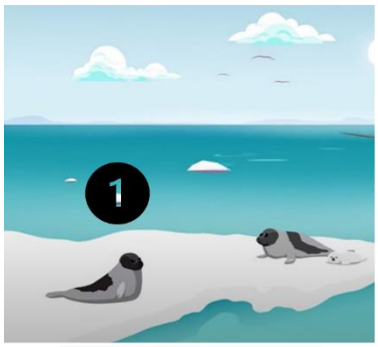
   Biodiversity refers to the variety of living things in an area. This includes:

   - plants
   - animals
   - microorganisms
   - and more

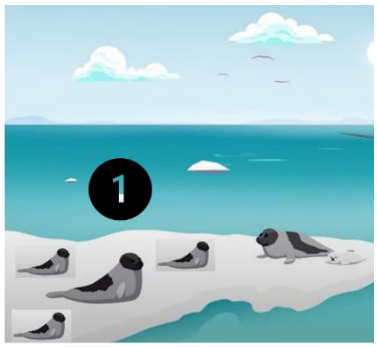
Across the Arctic's marine refuges, there are many species including:

- corals
- sponges
- sea pens
- Greenland halibut
- narwhal
- northern shrimp
- and many more living things

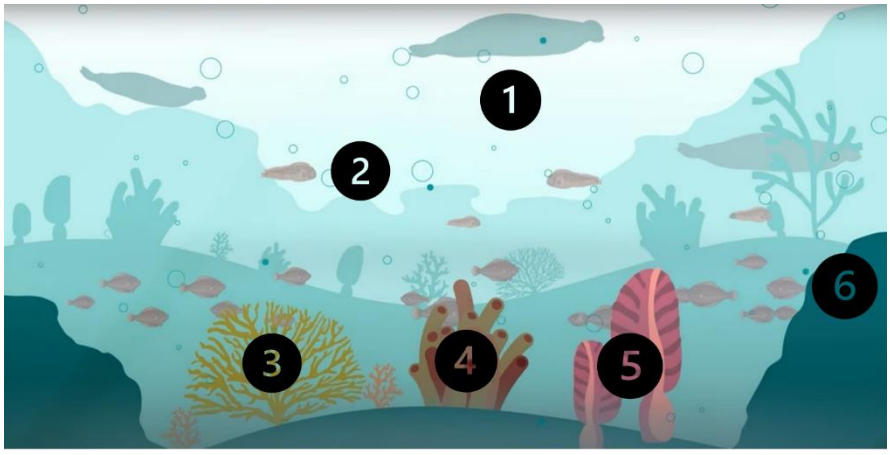
That means biodiversity is high in these areas! An area that only has 2 or 3 species using it would be an example of low biodiversity, even if there are a lot of each particular species there.



Low biodiversity



Low biodiversity



High biodiversity

Figure 1. High and low biodiversity scenarios. Numbers represent different species. Top images show that the number of an individual species (in this case, harp seals) does not change the level of biodiversity. Bottom images show a high biodiversity situation since there are multiple different species, such as:

1. harp seals
2. wolffish
3. corals
4. sponges
5. sea pens and
6. Greenland halibut

4. Can human activity impact biodiversity?

Yes, some human activity, such as bottom-contact fishing, can threaten biodiversity. Bottom-contact fishing is when fishing equipment touches the bottom of the ocean and this can break or damage corals, sponges, and sea pens. The Arctic's marine refuges contain large groups of coral, sponges and sea pens that live on the sea floor. These all provide homes for other important species, such as shrimp and halibut. All of these species contribute to the biodiversity of the area. Some of the corals are hundreds of years old! Preventing bottom-contact fishing in marine refuges can help protect this biodiversity.

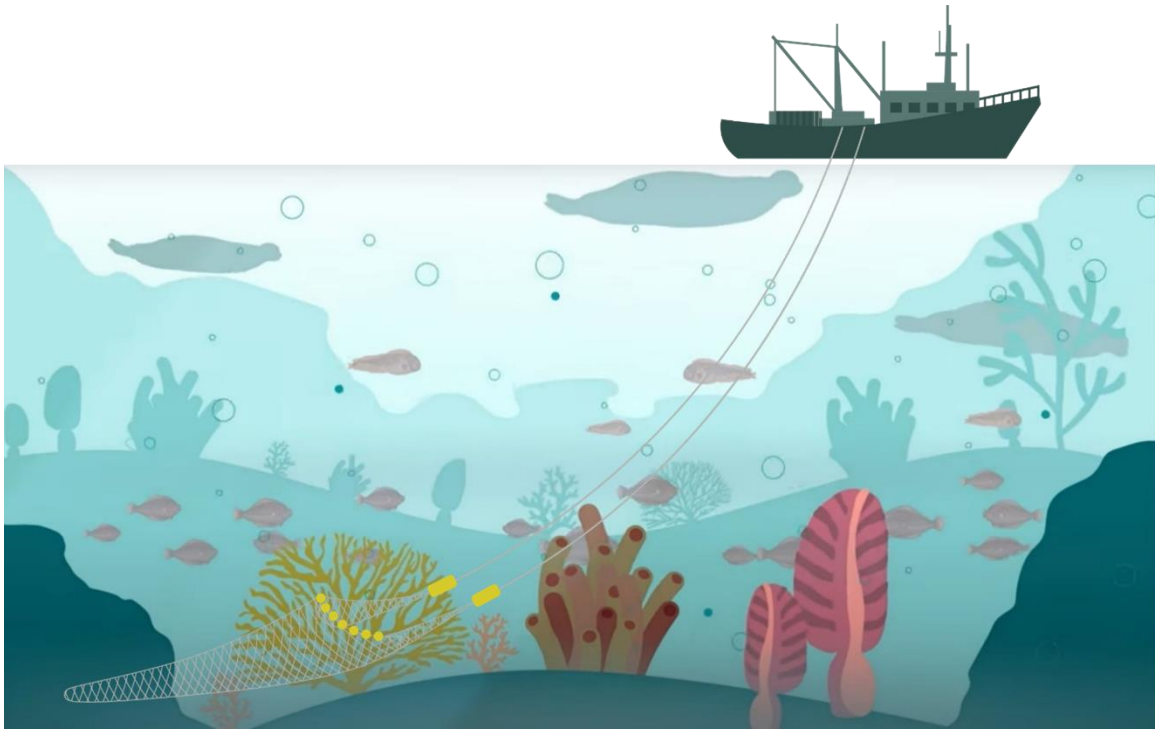


Figure 2. Corals, sponges and sea pens with a bottom trawl moving across the sea floor.

5. What is the Fisheries Act?

The *Fisheries Act* is a piece of legislation (i.e., written law) that protects fish and fish habitat in Canada. The act includes laws to support the sustainability of Canada's marine resources, such as fish, for generations to come. The *Fisheries Act* was first introduced in 1868. Sustainability: "Meeting the needs of the present without compromising the ability of future generations to meet their own needs" – *United Nations Brundtland Commission*

6. What does monitoring and management of the marine refuges include?

Monitoring includes observing and reporting on marine life. This could include whether the number of corals and sponges has increased or decreased from year to year. Monitoring can also involve enforcement and making sure illegal activities are not taking place within the marine refuges, such as fishing where fishing is not supposed to occur. Management includes agreeing upon what can and cannot happen within the areas. This could include stopping activities like bottom-contact fishing and reviewing the boundaries of the marine refuges.

7. Why is monitoring and management important?

Different groups and partners monitor and manage the marine refuges and other conservation areas. These partners can include:

- Inuit and Indigenous organizations
- industry partners (such as fishing companies)
- governments
- researchers
- Fisheries and Oceans Canada
- others

By monitoring, partners can see if the marine refuges are successful at protecting biodiversity. By regularly discussing management agreements, partners can ensure they are meeting the conservation objectives (the goals) of the areas. They can also consider what else they may need to do to reach their goals for these areas.

Conservation objective: a desired environmental goal for an area. It describes something (often a species or habitat) that is important in the environment and needs to be protected in a particular area. For example, the conservation objective of the Hatton Basin marine refuge is:

- To conserve (protect) sensitive benthic areas (like corals and sponges)

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Catalogue Number: Fs134-26/1-2024E-PDF
ISBN 978-0-660-72567-3

Fisheries and Oceans Canada. 2024. The Arctic's Marine Refuges – Discussion Questions for Teachers. 5 pp