Marine Food Webs & Resiliency

United Nations Educational, Scientific and Cultural Organization

MOUNT ARROWSMITH BIOSPHERE REGION

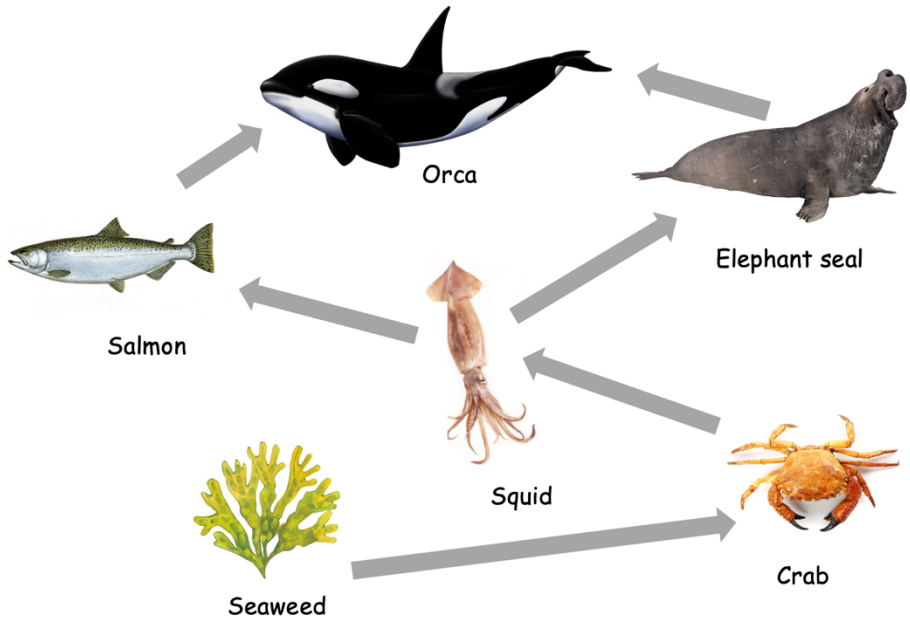
Introduction:

Animals get their energy from the things they eat. Maps of this energy movement through a habitat can be shown in two ways, using a food chain or a food web:

- A **food chain** depicts one path from bottom (producers) to top (predator):

Zooplankton → Krill → Humpback whale

- A **food web** incorporates all possible food chains, showing every way energy may move through the environment:



A complete food web can show the biodiversity of a habitat, with more species meaning there is more biodiversity.

Changes to a food chain or web can dramatically alter the ecosystem structure and flow of energy.

- For example, **trophic cascade** is when a species is added or removed from a food chain or web - which changes the relative populations of predators and prey.

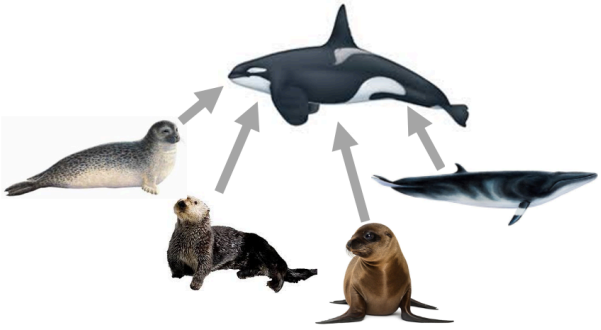
There is a connection between biodiversity and the ability to recover from loss:

- More species means more options of things to eat, so if one species disappears, those species that typically predate on them will not starve!

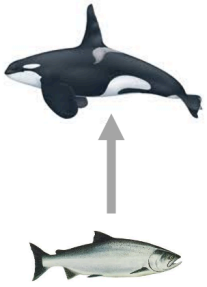
Animals with multiple food sources are more **resilient** to these disturbances.

- For example, let's look at the Transient Orcas and Resident Orcas:

Transient Orcas



Resident Orcas



- Transient Orcas eat multiple types of mammals. So, if one goes away there are more food options for the Orcas to fall back on.
- However, some predators rely on a specific food source. Resident Orcas only eat fish, with 80% of their diet being each chinook salmon. Right now, chinook salmon are in decline, which means Resident Orcas are running low on food.

Activity: Look at the food web on the following page and answer these questions!

1. What would happen to the **Chinook Salmon** if a sudden disease destroyed the **Herring** population, and why? (Would its population increase due to no predation or competition, or decrease due to increased predation/ competition).

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2. Which animal is more **resilient**, the Zooplankton or the Humpback Whale? Why do you think so?

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Send us feedback on how this activity went and we'll enter you into our weekly draw!

Show us your results! Snap a picture and share it with us on social media, or email it to the MABR Coordinator, at mandy.hobkirk@viu.ca

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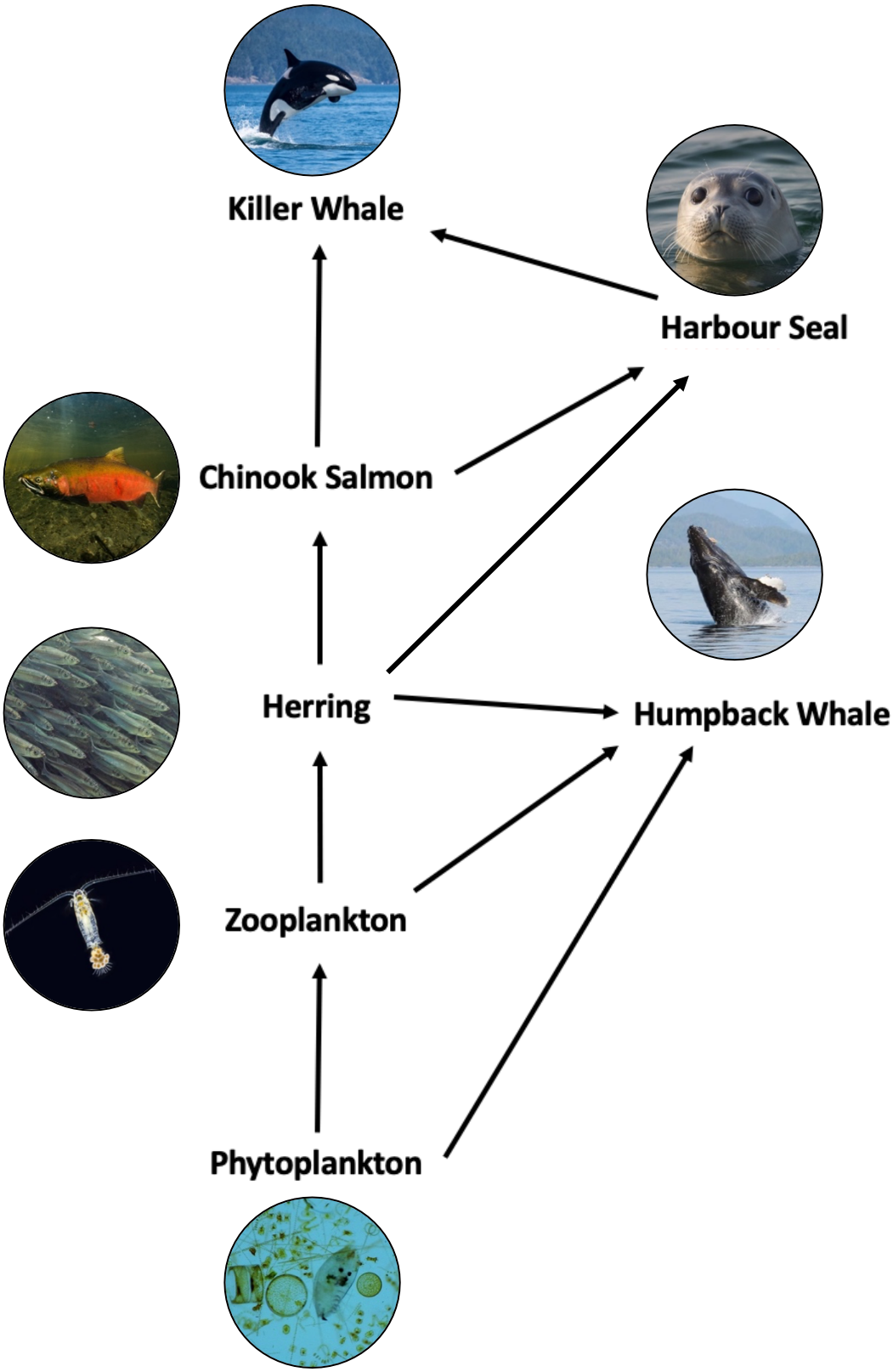
Activity


Killer Whale
Harbour Seal
Chinook Salmon
Herring
Humpback Whale
Zooplankton
Phytoplankton