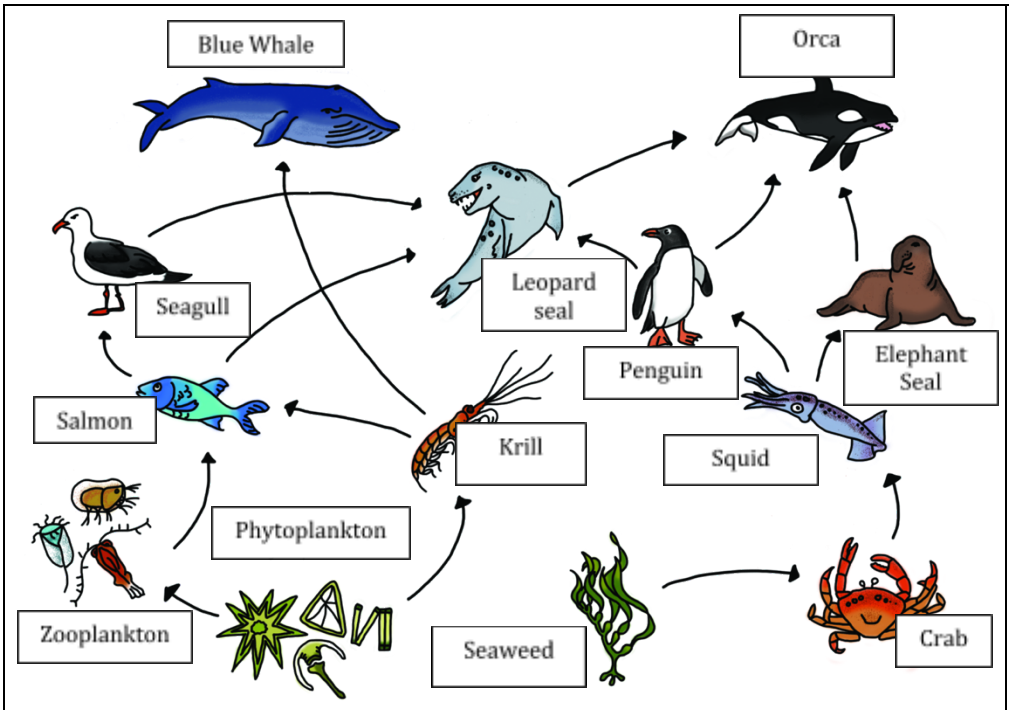
Interactions within Ecosystems | Grade 7 Biology

Handout (Answer Key)

1. Fill in the marine food web below with the list provided:



Crab
Squid
Penguin
Leopard Seal
Elephant Seal
Orca (Killer Whale)
Seaweed
Blue Whale
Salmon
Krill
Seagull

2. Fill in the scenarios below with the following options: Increase, decrease, collapse, primary producer(s), first, second, third, fourth consumer(s) and any of the above-mentioned species.

- Overfishing has caused a collapse in salmon. The population of krill will increase.

- Squid and salmon are examples of secondary consumers.

- If ocean acidification caused the extinction of phytoplankton, the food chain would collapse.

- Phytoplankton are primary producers and orcas are fourth consumers.

- More squid eggs are successful than average years, the crab population will decrease.

- The producer in the orcas food web is seaweed. The first consumer is crabs.

- Leopard seals and elephant seals are third consumers.

3. Refer to the video or lesson plan resource provided to learn how to build and play the kerplunk game. Use the scenarios below to determine how many sticks to remove.

1. Lake sturgeon typically spawn (lay their eggs) in shallow, fast-flowing water; they love areas like waterfalls or rapids with gravel or boulders at the bottom. Unfortunately, man-made barriers have restricted access to a popular spawning area.
   - Less than 5 remove **two sticks**
   - More than 5 remove **one stick**

2. In Ontario, lake sturgeon are currently classified as an endangered species. This means that intentionally catching and removing these fish without permission from the Ontario government (Ministry of Natural Resources and Forestry) is against the law. A boat of fisherman decides they want to take the risk and fish for sturgeon.
   - Less than 5 remove **three sticks**
   - More than 5 remove **one stick**

3. Sometimes natural occurrences can alter habitats. A terrible thunderstorm with violent winds caused a tree to fall over into a river, which is a popular feeding zone for sturgeon. The fallen tree has decreased the amount of water that flows into the river and one section has dried up.
   - less than 3 remove **three sticks**
   - More than 3 remove **two sticks**

4. Lake Superior is just one of the five Great Lakes. The coastal area of Lake Superior along Highway 17 in Northern Ontario is a popular camping spot for tourists. An increased level of pollution in those areas has changed the pH level of the water. This has limited the number of microorganisms that live on the lake floor. The sturgeons are not getting enough food, thus not reaching their ideal weight or length.
   - Less than 4 remove **six sticks**
   - More than 4 remove **five sticks**

5. Construction of hydroelectric facilities has limited the availability of habitat for lake sturgeon. This has been reported as one of the major factors limiting the population size of the lake sturgeon.
   - Less than 5 remove **eight sticks**
   - More than 5 remove **seven sticks**

6. Mortality rates for the lake sturgeon larval are naturally high and few survive to adulthood. Unfortunately, few measures can change the effects of natural causes.
   - Less than 2 remove **two sticks**
   - More than 2 remove **one stick**

7. Lake sturgeon typically move from shallow to deeper water during the summer to avoid warmer water temperatures. Climate change is contributing to rising water temperatures. Unfortunately, this is not good news for our sturgeon. Even though they've managed to migrate the water is too warm.
   - Less than 3 remove **five sticks**
   - More than 3 remove **four sticks**

8. Adult lake sturgeon have few natural predators. However, deposited egg sacks are preyed upon by other species such as crayfish and mudpuppies. A passing crayfish hits the all you can eat "egg" buffet.
   - Less than 4 remove **three sticks**
   - More than 4 remove **two sticks**

4. Which scenario did the majority of the population of lake sturgeon fall through in the kerplunk game? Why is it important to have a high level of biodiversity in ecosystems?
   It is important because they are more stable and are more resistant and resilient to disturbances like diseases and changes in habitats. All organisms play an important part in their ecosystem and maintain the balance.