Science Learning Packet
Grade 7:
Populations & Resources, Lesson 9

science learning activities for SPS students during the COVID-19 school closure.

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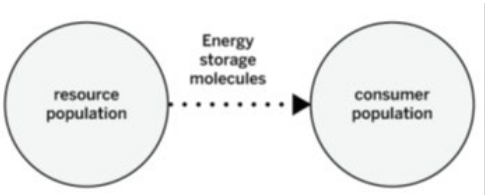
Due to the COVID-19 closure, teachers were asked to provide packets of home activities. This is not intended to take the place of regular classroom instruction but will help supplement student learning and provide opportunities for student learning while they are absent from school. Assignments are not required or graded. Because of the unprecedented nature of this health crisis and the District's swift closure, some home activities may not be accessible.

If you have difficulty accessing the material or have any questions, please contact your student's teacher.

Lesson 9

Key Concepts

- Within a population, organisms are always being born and dying.
- A system can be stable even as things are being added to and removed from it. If the amounts being added and being removed are not equal, then the system will change.
- If the number of births and deaths in a given time are equal, then the population size will be stable.
- If there are more births than deaths in a given time, then the size of the population will increase. If there are fewer births than deaths, then the size of the population will decrease.
- Organisms need to release energy from energy storage molecules in order to reproduce.
- Organisms in **consumer populations** get energy storage molecules from eating organisms in **resource populations**.
- The more energy storage molecules available to a population, the more the organisms in that population can reproduce.

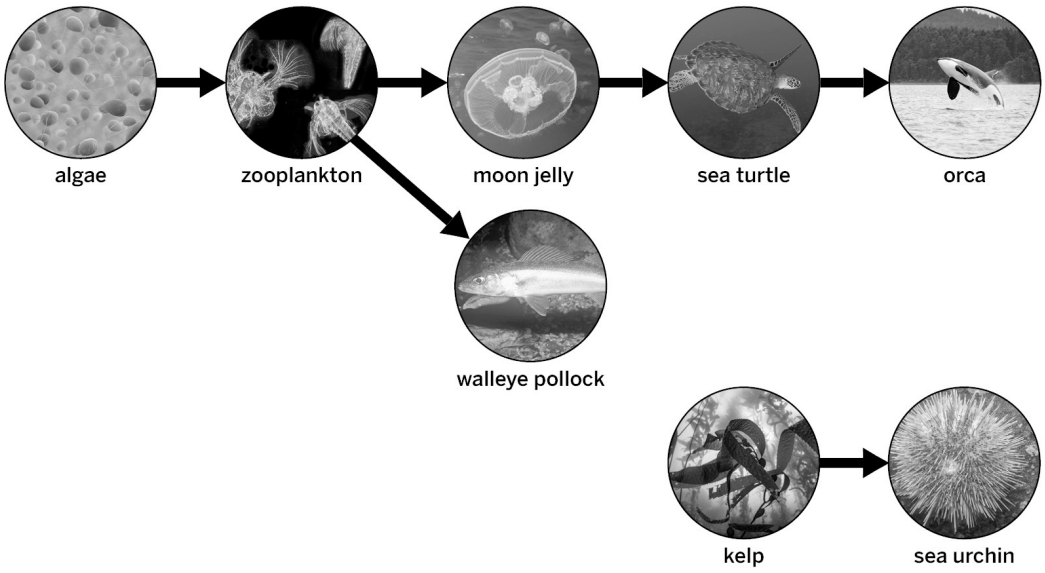


The diagram above is a food web. It shows what eats what. The arrow points towards the thing that is **eating and gaining energy storage molecules.**

- Two populations can compete for the same resource population. A change to one of these populations affects the size of the other.
- The size of a population can be affected by any population that is connected to it in a food web, even if they are not directly connected.

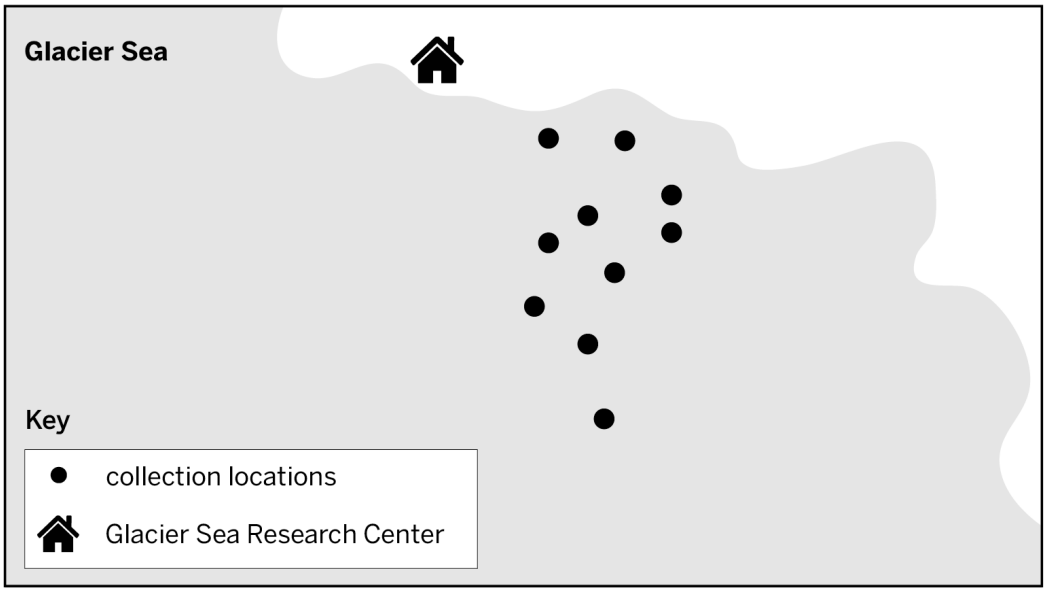
On the next page is the remaining evidence ecologists have about some other populations of organisms in the Arctic Ocean ecosystem.

Analyze and interpret the evidence using your understanding of population stability and change.



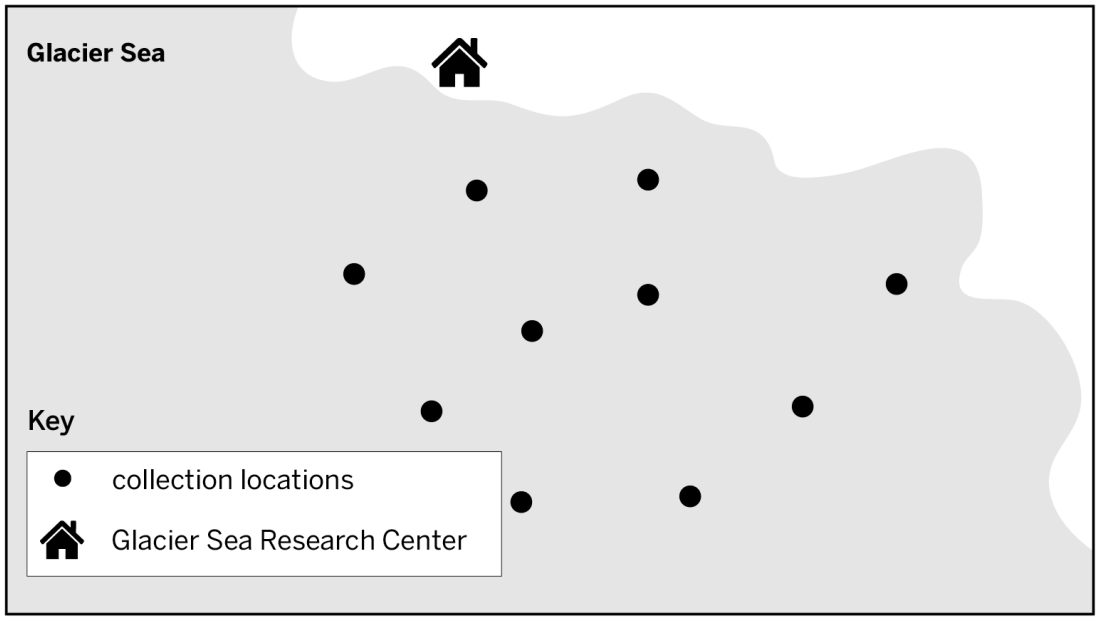
Evidence Card E: Algae

- Every year between 1980 and 2010, ecologists counted algae in 10 locations in Glacier Sea.
- They concluded that the population was stable and then started to increase around 2000.



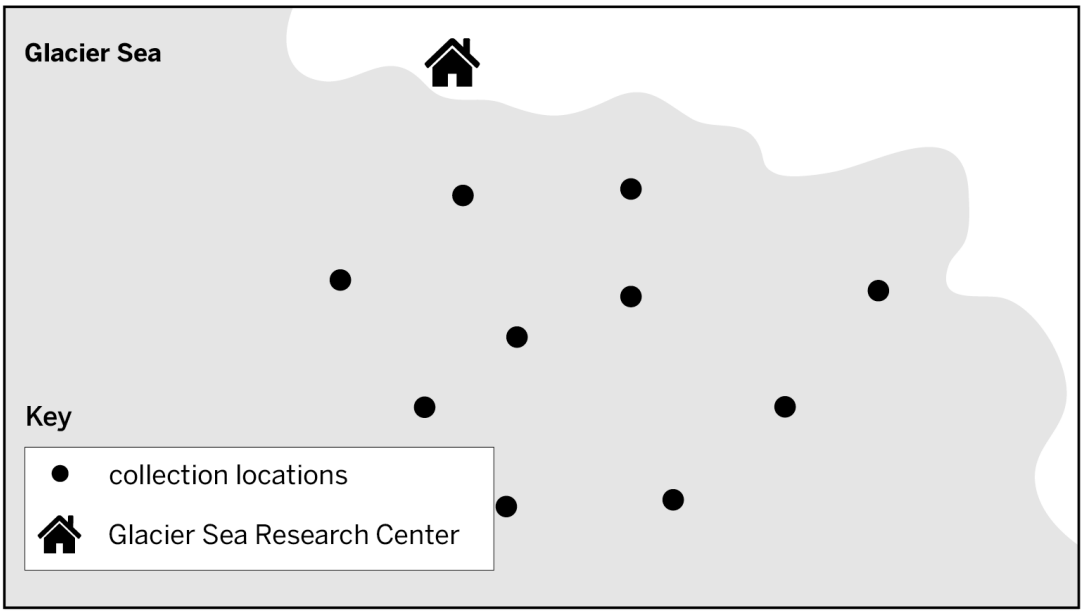
Evidence Card F: Walleye Pollock

- Every year between 1980 and 2010, ecologists counted walleye pollock at 10 different collection locations throughout Glacier Sea.
- They concluded that the population was stable and then started to decrease around 2000.



Evidence Card G: Orca

- Every year between 1980 and 2010, ecologists counted orcas at the same 10 locations they collected walleye pollock data.
- They concluded that the population stayed stable.



Refer back to lesson 3 and lesson 6 for population sample evidence for the other populations of organisms in the ecosystem.

1. What does the evidence tell you about the algae population? How might this have affected the moon jelly populations?

2. What does the evidence tell you about the walleye pollock population? How might this have affected the moon jelly populations?

1. What does the evidence tell you about the orca population? How might this have affected the moon jelly populations?

Student Ecologists,

You have done an amazing job collecting evidence to help scientists understand why there has been a sudden increase in the moon jelly population size.

Using your **analysis of the population sample data** for the different populations in the ecosystem, and the key ideas you have learned throughout our evidence collection, write a letter and include a visual explanatory model to help scientists understand what you have figured out about the moon jelly populations.

Science Vocabulary:

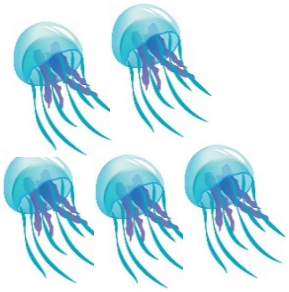
- **Births**
- **Reproduction**
- **Deaths**
- **Stable**
- **Changing**
- **Population**
- **Ecosystem**
- **Resource Population**
- **Consumer Population**
- **Energy Storage Molecules**
- **Direct Effect**
- **Indirect Effect**

Checklist: If possible, check your own writing **and** have someone else take a look!

- **Do you have a clear claim about what is causing the moon jellies to increase so quickly?**
  - *For example, _____ caused it, or _____* ***and*** *_____ caused it*
- **Have you used some of our science unit words?**
- **Have you cited evidence from the population sample data?**
  - *For example, "the walleye pollock population data shows…*

Final Model: What do you think caused an **explosion** of jelly fish **<u>population</u>** to occur? Why are the Arctic Ocean moon jellies increasing at such a rapid rate?

Draw a visual to help us understand how this change occurred!



<u>Questions I still have</u>:

_____

_____

_____

_____