Arctic Ecological Pyramid

Materials Needed:

- 15 buckets
- Printed pages

This activity can be easily adapted based on materials available.
Try:

- Putting the pictures on cups that can be stacked
- Use magnets to place them on the whiteboard

Step 1: Hand out Pictures

Give each student, or pairs of students one picture and have them look at it.

Step 2: Build the Pyramid

Tell students that they will be building a food chain pyramid with their buckets.

Ask what they believe would be at the bottom of a food chain.

- Hints:
  - They get energy from the sun, not from eating other animals
  - They will not have eyes
- Students should bring up the picture if they believe they have an example.
- The bottom row should include
  - Algae, Sea Grass, Arctic Moss, Seaweed, and Phytoplankton

These are called **primary producers**

Ask what organism would eat the primary producers.

- This row should include:
  - Copepods, Arctic Shrimp, Arctic Krill, and Zooplankton.

Continue with the third row: fish
The fourth row: seals
The top: Polar Bear

Outline the trophic level of each row:
1: Primary Producers
2: Primary Consumers/Herbivores
3: Secondary Consumers/ 1st level carnivorous consumers
4: Secondary Consumers/ 2nd level carnivorous consumers
5: Tertiary Consumer/ Apex Predator

Step 3: Dicussion

Ask students:

- **What would happen if the Apex Predator was removed from an ecosystem?**
  - Seals would overpopulate and over hunt the fish population.
- **What would happen if an organism on the bottom row was removed?**
- The pyramid will collapse because the primary consumers lose a food source.

Explain:

- All organisms in an ecosystem have a role to play in ensuring the balance and success of an ecosystem. Even something as small as phytoplankton can cause a disruption in a food web.

Bioaccumulation

- If a toxin is introduced to an ecosystem through the primary producers for example, this toxin will multiply in each organism as it continues up the food chain.
- Example:
  - If the toxin affects sea grass and a copepod eats 100 pieces of sea grass, the copepod will have 100 times the amount of toxins than the sea grass has.
    - Continue all the way up the pyramid.

CPAWS
CANADIAN PARKS AND WILDERNESS SOCIETY

Seaweed

Algae

Moss

Sea Grass

Phytoplankton

Copepods

Arcticshrimp

Zooplankton

Arctic Char

Krill

Arctic Cod

Arctic Grayling

Polar Bear

Ringed Seal

Harp Seal