

# 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: Discussion

Ask students:

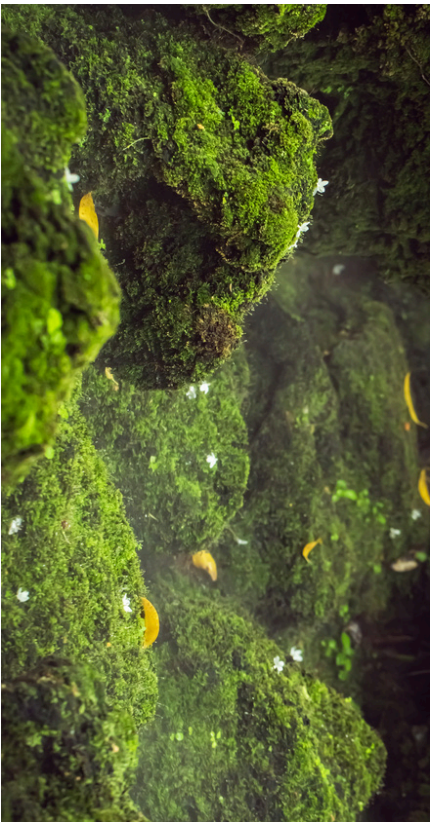
- **What would happen if the Apex Predator was removed from an ecosystem?**
  - Seals would overpopulate and over hunt the fish population.
- **What would happen if an organism on the bottom row was removed?**
- The pyramid will collapse because the primary consumers lose a food source.

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.



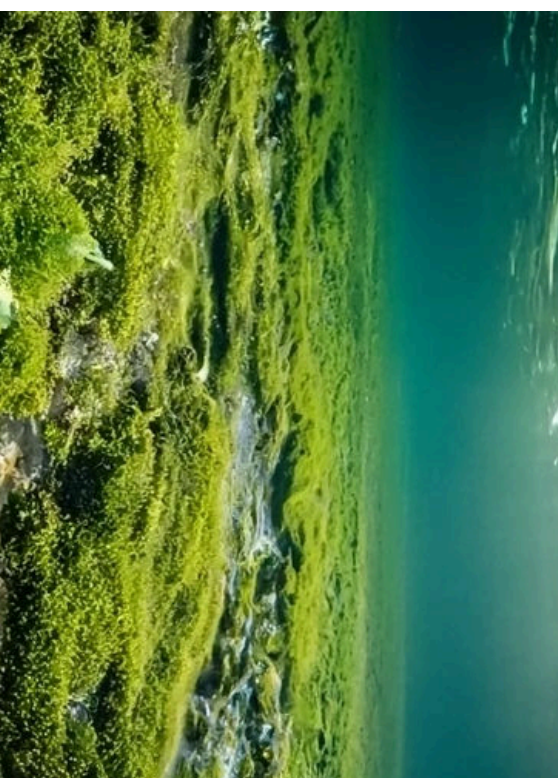
*Algae*



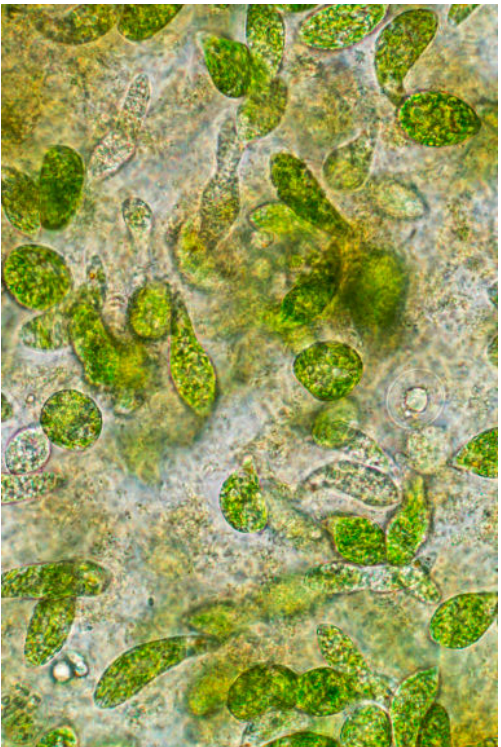
*Sea Grass*



*Seaweed*



*Arctic Moss*



*Phytoplankton*



*Arctic Shrimp*



*Copepods*



*Zooplankton*



**Krill**



**Arctic Grayling**



**Arctic Char**



**Arctic Cod**



*Ringed Seal*



*Harp Seal*



*Polar Bear*