

Arctic Food Web Game

Bio-accumulative pollutants

General Overview

The game requires a six-sided die and the printable player cards. Arrange classroom desks or chairs into a circle formation. Pass out one card to each player. Students must keep their identity confidential. Each player will assume the role of the plant or animal(s) found on their card. Each animal or plant has its own level of intelligence, speed and strength. The goal of the game is for each individual to find edible food and stay alive.

For each player's turn they may either ask one yes or no taxonomy question to one other player (with the purpose being to figure out the identity of the other player) OR they can attack prey by saying "*I want to eat (student's name)*". The taxonomy question must be in reference to Kingdom, phylum, class, order, genus, and species (ex: Are you classified in the Plant Kingdom?). Each player must ask a different player a question until all players are asked, then continue starting from the last person first. Each time the entire group completes a full circle, this counts as one turn. Remind the students to never share their identity with any other player, even if being attacked.

Finding Food

An animal must find food within 3 turns or they will become sick. If you are sick for 2 turns and you do not find any food to eat, you will not survive. If your card is more than one animal, each time you eat you will gain an extra animal. But if you eat contaminated food, you can no longer gain an extra animal (cannot reproduce). If an animal eats something not found on their card they will become sick. If they eat something not found on their card a second time, they will not survive. This does not mean that the dead animal is out of the game, a predator may still be able to eat it. The teacher will announce the dead animal.

Eating Contaminated Food

If you eat contaminated seaweed or phytoplankton you have 10 parts per million of dioxin (chemical pollutant). If you eat any contaminated food, then you will have 10 times the amount of dioxins they had. 1000 = you are sick, 10,000 = you do not survive. Example: A seal eats contaminated krill. The krill had 10 parts per million of dioxin, so the seal now has 100 parts per million. If you are sick, you divide all of your numbers (speed, strength, intelligence) in half.

Intelligence, Speed and Strength

Intelligence= Number of times an animal can roll to escape an attack. If the prey has a higher intelligence than the predator subtract the predator intelligence from the prey intelligence. The result is the number of bonus rolls for the prey to help it escape. Also, if the prey is smarter than the predator, the predator can only attack if it has higher strength or speed than the prey. If the prey does not have a higher intelligence than the predator, then the prey can roll one time to defend itself from each attack. Subtract the prey intelligence from the predator intelligence to find the number of times the predator can attack.

Speed= decides whether the animal escapes an attack from a predator. The potential prey species rolls first. For example, if a lemming has a 3 for speed, and is being attacked by an arctic fox: the lemming rolls a 1, 2, or 3, then it has escaped that turn. If the lemming rolls a 4, 5, or 6 the fox gets to roll.

Strength= Once you catch up to an animal does not mean you can just eat it! The animal with the higher strength gets to roll. If you are the prey and have a higher strength than the predator, this is your last chance to escape the attack. You must roll a number lower than your strength. If you are a predator and have a higher strength than the prey, then you must roll a number lower than your strength to eat the prey!

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*This game may seem complicated, but after one game students get to know how it works, and will be asking to play it again! This is great to play during lessons for biological classification and taxonomy, ecology, environmental science, biomes, food webs, and more! One game takes approximately 45 - 60 minutes. Some teachers have used this same lesson plan for an entire week!

Example of a Predator Attack

For example, student A (an arctic fox) says "I want to eat student B". Student A thinks student B is a lemming. The fox with a 5 for intelligence attacks the lemming with a 2 for intelligence. The fox can attack 3 times and the lemming can defend itself with one roll for each attack. Look at speed; the fox has a 5 and the lemming has a 3. The prey rolls first. The lemming needs to roll 1-3 to outrun the fox. The lemming rolls a 5 and does not outrun the fox. Now the fox rolls. If the fox rolls 1-5 it can catch up to the lemming. If the fox rolls a 6, it does not catch up to the lemming and the turn is over. Roll 1: the fox rolls a 5, so it has caught up to the lemming. Look at the strengths for the two animals. The fox has a 3 and the lemming has none. The fox has eaten the lemming! Neither player should reveal their identity.

Advanced Options

Advanced Option 1: There is one oil spill card. If a player directs a question towards the oil spill card holder, then that player is automatically sick.

Advanced Option 2: After every 3 turns for all players, secretly the teacher will ask one student with a plant card to exchange with a phytoplankton card.