

Ecosystem Tag Instructions

Materials:

Balls, frisbees, crumpled paper, or any other objects that can be tossed around.

Directions:

1. Participants form three groups:
 - Decomposers** – e.g., insects, bacteria
 - Consumers** – e.g., animals/humans (about twice the number of decomposers)
 - Producers** – e.g., plants (about twice the number of consumers)(each group should be easily identifiable [e.g., using head bands or pinnies])
2. Set a boundary for the playing area which represents the environment. Players must remain in the playing area. Objects such as soft balls represent abiotic components (i.e. nutrients, sunlight, water). The number of balls equals the number of producers. Place balls in two or more piles within the playing area.
3. The game involves the basic food chain:
 - Starting with abiotic components → taken up by producers → producers being eaten by consumers → consumers broken down by decomposers → decomposers return abiotic components to the environment.The overall idea is to maintain the ecosystem while each group fulfills its goal.
4. **Producers** are the only players who can take balls from the piles. A safety zone (which represents the soil) around the pile protects the producer from being tagged only when he or she is picking up a ball. Their goal is to get all the balls out of the safety zone and keep the balls in the hands of the producers only. Producers must always be holding the balls they collect.
Consumers' goal is to obtain and hold on to as many balls as possible. They can only get balls by making a two-handed tag on a producer holding a ball.
Decomposers can only get balls by making a two-handed tag on a consumer holding a ball. They return balls to the safety zone and their goal is to get all the balls back to safety.
5. When the players are tagged, they must give up all the balls they are holding. Players can toss and pass balls to members of their own group. Balls cannot be intercepted during a pass.
6. Players continue as long as you wish (producers keep taking balls, decomposers keep returning them).

Questions for Debriefing the Game:

How are all the groups dependent on one another?

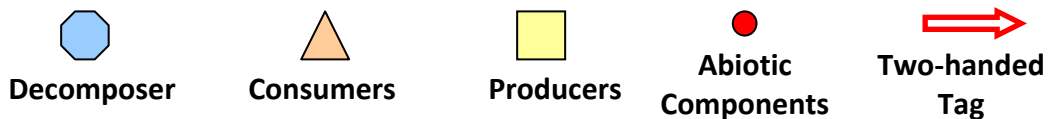
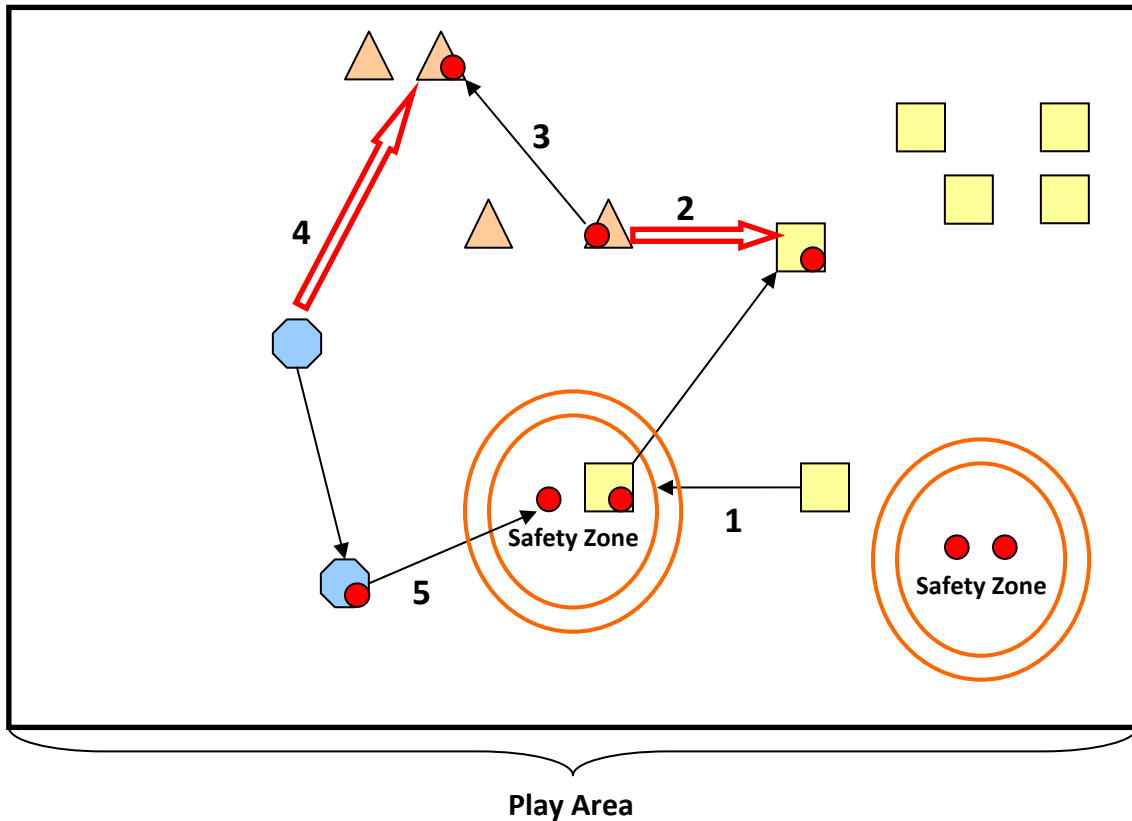
- Consumers need producers to take the nutrients out of the safety zone
- Decomposers need consumers to take nutrients from producers
- Producers need decomposers to put nutrients back in the safety zone

How does each group contribute to the continuous functioning of the ecosystem?

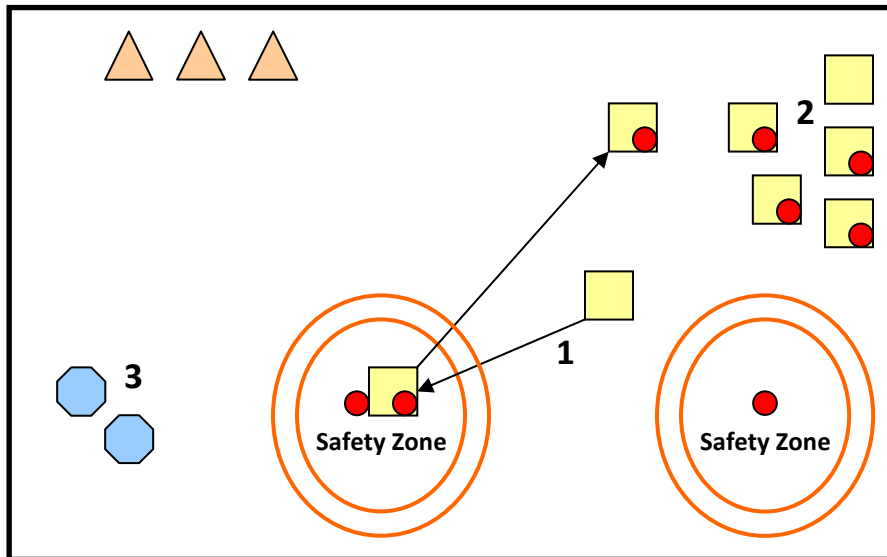
- The groups must balance their needs with each other to continue functioning

Variation

Remove some or all of the consumers or decomposers from the ecosystem half-way through the game. Can the ecosystem continue to function smoothly?



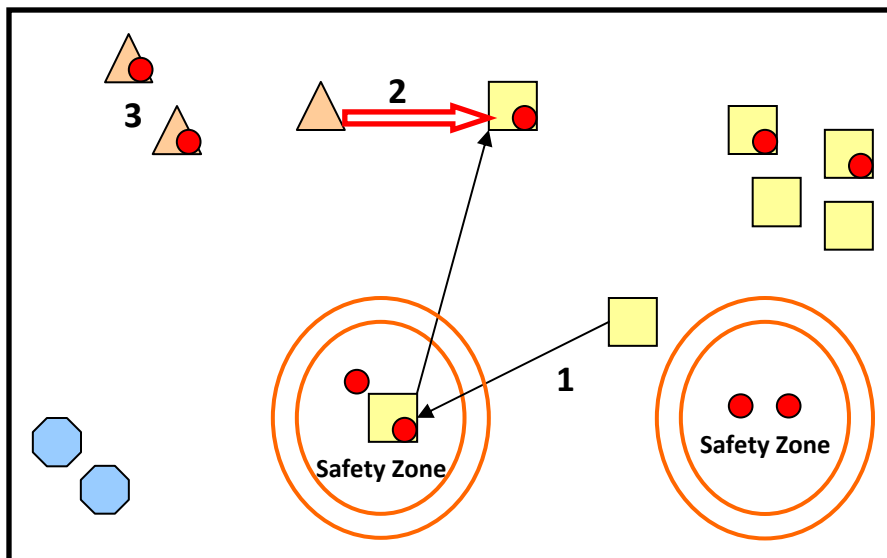
1. Producers take components out of the safety zone.
2. Consumers tag producers with objects.
 - a. Consumers will be chasing producers.
3. Consumers hoard objects from producers.
4. Decomposers tag consumers.
 - a. Decomposers only chase consumers
5. Decomposers put objects back in safety zone.



Situation #1: No Consumers

1. Producers are the only ones able to remove objects from safety zone.
2. Producers hoard all the abiotic components and win.
3. Decomposers lose as they aren't able to tag the producers.

Example: If no secondary (herbivores) or tertiary (carnivores) species are available, plant species will thrive until decomposers are unable to return nutrients to the soil through decomposition of the missing species.



Situation #2: No Decomposers

1. Producers remove objects from the safety zone.
2. Consumers tag producers and collect abiotic components.
3. No Decomposers are available to take objects and they are eventually all collected by the consumers. Plants die with the decomposition of the animals.

Example: If no decomposers exist, tertiary (carnivore) species will proliferate until soil nutrients are depleted without decomposition. Once soil nutrients are gone, plants will die, followed by secondary (herbivore) species, and finally, carnivores.