Natural Resources – Exploring Your Environment

SALDO ISLAND: AN UNFAIR GAME

Activity Plan – Understanding Invasive Species ACTpa062

Project Skills:
- Understanding the effect of non-native species on an ecosystem.

Life Skills:
- Learning to learn

Academic Standards:
This activity complements these academic standards:
- National Science Content Standards Table 6.3 Life Sciences. Level K-4, Organisms and environments; Levels 5-8, Populations and Ecosystems.

Grade Levels: 3-5

Time: 45 minutes

Supplies Needed:
- Permanent marker for writing on stones
- 5-7 hats or small bowls to use as bases (4-6) and 1 cache (exact number depends on number of players – see rules)
- 12-30 youth
- Field or clearing: basketball court-sized for 12 players, baseball diamond-sized for 30. The game is intended to be played on a field or other natural setting, where players can reflect on their surroundings.
- Watch to mark 15 minutes of play
- Game pieces to be gathered on site

Do Ahead:
Before starting the game, set up a playing field of bases, with 1 base for every 4 players (minimum of 4 bases). The bases can be large, flat stones or someone's hat, but should

BACKGROUND

This activity would work well at a summer camp and/or as part of an after school program. It could be something that youth leaders could bring back to share with their younger 4-H club members. Involving youth leaders in co-teaching this would be a plus!

An invasive species is one that puts an ecosystem out of balance because it has a competitive advantage (usually a lack of natural enemies) in its new location. The addition of an invasive species to an ecosystem results in a decrease in biodiversity, not an increase. You will need four "flowers" and four "seeds" for every player, plus two for every base along with one cache for collecting the seeds and flowers collected. The number of pieces varies by the number of players. Here's a sample grid to help you figure this out.

Players	Bases (caps or flat stones)	Flowers and/or weeds	Small stones to represent "seeds"
16	4	40	40
20	5	50	52
30	6	52	52

Key vocabulary words:
- *Biodiversity* is when there are lots of different kinds of life in one ecosystem.
- *Ecosystem* is a community of organisms.
- *Species* is one kind of animal or plant, such as dog or grass.
- *Cache* is a hidden treasure, or small collection.
- *Cassies* represent mice.
- *Volos* represent birds.
- The *Fleecer* represents a cat.
- *Invasive* is a tendency to take over, to out-compete or push out the creatures that were there originally.
- *Morphed* is to have changed form.
- *Non-native* is an animal or plant that has been imported from its native area somewhere else.

WHAT TO DO:

This game is played in two phases.

Phase One:

1. Players are divided into two groups – the *Volos* and the *Cassies*. The Volos and Cassies live on a beautiful island. Each Volo starts the game with four seeds (the stones) and each Cassie with four flowers (the braided strands). Phase One is timed to last 15 minutes.
2. To survive, Volos need flowers. They get them by leaving a seed on a base and taking a flower. Cassies need seeds to survive and, to get them, they must leave one flower on the base and take one stone, then find another base where they can make an exchange. No player can visit the same base two times in a row.
3. To move, Cassies must hop from place to place. Volos must flap their wings as they walk or run. When a player has exchanged all four seeds or flowers for the other kind, they have made it through one *season*. At the end of a season, a Volo becomes a Cassie, and vice versa. The player shouts "Season One!" and starts to work on season two.

be able to hold a few stones flowers spaced 10-20 feet apart. You'll need 4 "flowers" and 4 "seeds" for every player, plus 2 for every base. (See table in Background section.)
- Ask players to help gather game pieces from small stones, flowers and weeds nearby. For 12 players, gather 32 small stones, each 1 about the size of a player's thumb (they should be able to hold 4 stones in 1 hand comfortably). Using a permanent marker, draw a star or other mark on each stone.
- For 12 players, you'll need 32 strands of flowers or weeds to make into strands. Ask players to help braid or knot these together into strands, so they are easily distinguishable from other flowers or weeds, and so that 4 are easily carried in 1 hand. Place 2 seeds and 2 flowers on each base before starting the game. Each player holds 4 flowers or 4 seeds to start.

Sources:

- Created by Ann Nordby, University of Minnesota Extension, with assistance from Trudy Dunham, University of Minnesota Extension, and Jay Staker, University of Iowa Extension.

4. The winner(s) is the animal that has made it through the most seasons/morphed species the most times during the 15 minutes of the game. If there is a tie, it is permissible to have an overtime session for the tied winners. In the overtime session, players start with the seeds and flowers they were holding when the first session ended and play for another five minutes. If these players still have the same number of seasons at the end of overtime, then there is more than one winner. How many Cassies and how many Volos are there now? Move on to Phase Two.

TALK IT OVER

Reflect:

After Phase One:

- What was happening between the Cassies and Volos?
- Were there more Volos or Cassies left at the end of the game?
- Was the number about the same, or much different than at the start?

Phase Two:

1. There is a newcomer on the island – a *Fleecer*. The winner of Phase One will play the Fleecer. Cassies and Volos follow the same rules as they did in Phase One – flapping and hopping as they move, exchanging two flowers for two seeds as before. There is only one Fleecer, but the Fleecer plays by a different set of rules.
2. Fleecers can run as fast as they like and bring nothing to trade. They eat seeds and they eat a lot! They collect two seeds each time they visit a base, leaving nothing in trade. No player, including Fleecers, may visit the same base two times in a row – they must change bases every time.
3. Fleecers may take two seeds at a time and when they have collected eight seeds, they put those eight seeds into their cache outside the boundaries and tap one of the Cassies on the shoulder. That Cassie is now a Fleecer.
4. Volos continue as before, flapping their wings and exchanging two seeds for two flowers whenever they can. When Volos have no seeds to give, they are unable to trade and must leave the field; they are out of the game. Fleecers must continue collecting seeds as long as they can. If they cannot find any seeds to collect, they are out of the game.

TALK IT OVER

Reflect:

After Phase Two:

- Who won? Who lost? Why?
- Did you think the game was fair? Why or why not?
- Which part of the game was the most fun?
- Why were there so many Fleecers at the end of Phase Two?
- Why didn't the Fleecers win the game in the end?
- What things surprised you in this game?

Apply:

In nature, animals are born and die, but the number of animals in a forest, lake or field doesn't usually change much from year to year unless a disruption occurs.

- Can you think of situations in nature that are like this game?
- Were the Fleecers an introduced species? An invasive species? Why?
- In this game, how did you learn about invasive species?
- Why was this a good way to learn?
- How else could you learn more about invasive species?
- When would playing a game like this help you better understand something?

ENHANCE

- Biodiversity is a word that means "many kinds of living things." When the Fleecers were added to the island, there was one more kind of animal living there. Did their arrival result in more biodiversity or less?

- Here is a real-life example of an island ecosystem that lost biodiversity. The islands of New Zealand had no native mammals except for bats when the first humans (the Maori people) arrived there 1,300 years ago. European settlers arrived about 400 years ago. Humans have changed New Zealand's ecosystems very much, by hunting the birds and animals they found there and by importing hunting animals, such as foxes, cats and rats. Today, there are a lot fewer ground-dwelling birds in New Zealand. Some have disappeared. New Zealanders are working hard to protect the remaining species, but it is very expensive and complicated. Are humans an invasive species? Why or why not?

HELPFUL HINTS

- *Safety Note:* The players will be running toward the same bases and stooping over – try to keep them from bumping heads. In Phase One of the game, ensure that the teams are evenly matched. The goal is for the two species to remain in balance ("saldo" means balance in Spanish). At some point, a player may say something like "It's impossible to win this game," an opinion that should be highlighted and examined during post-game discussion. In most games, the goal is to beat the other team, but in biodiversity, the goal is balance of numbers, so that everyone stays in the game.

ADDITIONAL WEB LINKS

- The Nature Conservancy's Global Invasive Species Team provides additional resources and tools: http://tncweeds.ucdavis.edu/methods.html.
- The National Invasive Species Information Center provides extensive information on all kinds of invasive species in North America: http://www.invasivespeciesinfo.gov/.

Reviewed by Wisconsin 4-H Curriculum Team: June 20, 2008