Invaders Galore![1]

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Invasive Species Series

Invaders Galore!

Sneak Peek
Students will be introduced to the concepts and issues surrounding invasive species. Some specific invaders are Kudzu, Australian Pine, Brown Anole and Asian Green Mussel. Students will actively simulate the fluctuations in invasive populations. They will also learn factors that lead to the increase of invasive populations. This activity incorporates graphing, data analysis, and environmental investigations.

Aligned with the following Sunshine State Standards and FCAT Benchmarks for grades 6-8:

SC.D.1.3.3 CS	SC.F.2.3.3 CS
SC.D.1.3.4 AA	SC.G.1.3.2 CS
SC.F.1.3.1 AA	SC.G.1.3.4 AA
SC.F.1.3.7 CS	

AA = annually assessed
CS = content sampled

Objectives:

Students will…

- Recognize that fluctuations in wildlife populations are natural.
- Understand factors that increase or decrease numbers of invaders.
- Analyze data and graph results.

Materials:

- Pencil.
- Graph paper.
- 5x7 note cards.
- Space.

Background:

Invasive species are plants or animals that are not ***native*** to a particular area and cause harm, often by disrupting natural ecosystems. Today, there are many invasive species thriving in Florida. Invasive species ***compete*** with native species for the fundamental requirements for survival, that is food, water, shelter and living space. A successful ***invader*** will take over space in which a native species would normally live. Eventually, invaders can reduce the variety of species in an area, which is called a loss of ***biodiversity.***

A variety of factors affects the ability of invaders to successfully increase their populations over time. Some factors that allow populations to expand are available space, rapid reproduction, stable temperature, and durability of the species. All living things, invaders and natives alike, need food, water and shelter to survive. Certain factors, such as extreme weather patterns, pollution and a sudden decrease of available food, may cause a population

to decrease over time. Those able to best cope with a negative change in these factors are more likely to survive.

Some natural factors or human activities may limit the reproduction of native wildlife populations and may enhance the survival and reproduction of non-native species. Competition for limiting factors may threaten, endanger, or eliminate native species, which opens the door for invaders to spread!

Rules of the Game:

1. Have the students choose one of the following four invaders.
    - Kudzu
    - Australian Pine
    - Brown Anole
    - Asian Green Mussel

2. Discuss, in class, the factors that increase or decrease the populations of your chosen invader.

3. Each student should receive two note cards. On one note card, each student should write one reason for the expansion of the chosen invader, and on the other note card, they should list one reason why the population of that particular invader might decrease. Divide the note cards into two piles (a pile of positive factors and a pile of negative factors).

4. Designate one student to keep track of the number of invaders on the attached chart. Keep track of the numbers of invaders, elements, and influences in each group using the attached table.

5. Separate the remainder of the class into three groups. One group represents the invaders, another group represents the elements (e.g. food, water, and shelter), and the last group represents the positive and negative influences on invaders. Try to keep the ratio for the groups at six invaders, six positive/negative influences, and ten elements. Elements can repeat.

6. Everyone in class must agree upon hand signals that will be used to represent food, water and shelter. It is very important to remember these hand signals!

7. Have the three groups spread out in the allotted space with invaders on one side and elements on the other. The positive and negative influences will be in the middle of these two other groups.

8. Pass out the positive and negative cards to the assigned students in a ratio of 1 positive to 3 negatives.

9. Once the students and cards are in place, have the elements and invaders turn so that their backs are to each other, leaving the positive and negative influences in the middle. At this time, the elements decide individually what they want to be (e.g. food, water or shelter). The invaders will also decide individually which element they need. Once everyone has decided, have the students turn around, face one another and display the hand signal for their chosen element.

10. The invaders now have a choice!

    a. They can go directly to an element that matches their hand signal. If the hand signal matches, the element becomes an invader. If there is no match, the invader becomes an element.

    b. The second option would be to take a chance at picking an influence card. If the invader chooses a positive card, it then must find an element that matches its signal. If it succeeds in getting a positive card and the correct element, all three students become invaders. If the invader chooses a negative card, it automatically becomes a positive or negative influence.

11. After each round, record the new numbers for invaders, elements and influences based on the changes that occurred in the preceding round.

12. Continue the game until the teams are too unbalanced to continue!

INVADER PROGRESS

	INVADERS	ELEMENTS	(+/-) INFLUENCES
ROUND 1			
ROUND 2			
ROUND 3			
ROUND 4			
ROUND 5			
ROUND 6			
ROUND 7			
ROUND 8			
ROUND 9			
ROUND 10			

NUMBER OF INVADERS

TURNS

ROUND

Rapping It Up!

1. List three ways in which invaders can spread.

2. All species require food, water and shelter in order to survive. Is there evidence in your results to suggest that the invaders used up a lot of resources?

3. Using the results from the charts, graph the "Number of Invaders" on the Y-axis and the number of rounds on the X-axis. Do you see a pattern?

4. How might this activity relate specifically to the state of Florida?

5. What are some ways to control or reduce the number of invaders in an area?

Glossary:

Biodiversity - The variety of plant and animal species present in an ecosystem.

Compete – The process of two or more organisms demanding limited environmental resources, such as nutrients, living space or light.

Invader/Invasive species – A plant or animal that is not native and causes harm, including disrupting natural ecosystems.

Native species – A plant or animal species that originated in a certain place. A species occurring in its natural range. Species that were present in Florida at the time the first Spanish settlers arrived.

Non-native species – A species introduced to a region intentionally or accidentally.