

Graphing Exotic Plants *Teacher's Guide*

Students find the percent of exotic and native plants in lakes and compare and analyze with graphs.

GRADE LEVEL: 5th

SUBJECT AREA/COURSE: Math/Science

SUNSHINE STATE STANDARDS:

- The student describes a wide variety of patterns and relationships through models, such as manipulatives, tables, graphs, rules using algebraic symbols. (MA.D.1.2.1)
- The student analyzes real-world data to recognize patterns and relationships of the measures of central tendency using tables, charts, histograms, bar graphs, line graphs, pictographs, and circle graphs generated by appropriate technology, including calculators and computers. (MA.E.1.2.3)
- The student knows that living things compete in a climatic region with other living things and that structural adaptations make them fit for an environment. (SC.G.1.2.2)
- The student knows that data are collected and interpreted in order to explain an event or concept. (SC.H. 3.2.2)

ACADEMIC OUTCOMES/LESSON OBJECTIVES:

- The students will increase their understanding of percents and circle graphs in real life situations by using computer-generated data to gather, interpret and create a percentage circle graph.
- Students will see how these plants compete with native species.

BACKGROUND INFORMATION: Exotic plants are plants that have been brought to Florida by people. Some may have arrived with the first European explorers (water lettuce) and more arrive yearly. Exotic plants become invasive when the insects and other animals that eat them are not here, and they flourish. The plant may have toxins or other factors that are tolerated by species that eat them and keep them in check back home, but no Florida species are adapted to eat them. Plants are always competing for space, minerals, water, and sun. The invasives have an unfair advantage!

Invasive plants may produce a toxin that keeps other plants from growing around them, creating monocultures, like the malaluca in south Florida. The plants that should be there for a Florida habitat aren't there and the animals have no food. They die, move away, or don't raise any young.

There may be fungi or bacteria that keep the plant in check in its home range that are missing here.

Invasive aquatic species can cover the surface of the water and shade out the eelgrass that is food and shelter (substrate) for both fish and macroinvertebrates, or they can form dense growths that even fish can't get through. Fish can't find a place to lay eggs, and food supply is diminished. Waterways may become clogged so that boats can't get through.

Many invasive plants were first introduced as landscape plants or grown for aquariums and released into streams and lakes. Invasive plants are often spread from place to place as hitchhikers on boat trailers.

In preparation for this activity, preview the exotic plants. Go to www.Seminole.WaterAtlas.org > The Atlas > Lake Name > (Select a lake. Lake Jesup is a good one to try.) > Ecology tab > List of Plant Species. At the top are the reports by date. Some lakes have only one report; some have none. Two sources of information are cited under the word, Key. Click on them to reach the home page of each

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website. At the University of Florida's IFAS Center for Aquatic and Invasive Plants home page, scroll down to the notice for four large murals FREE TO TEACHERS! Send off for these large murals!

MATERIALS NEEDED: Computer with Internet access, and WWW.Seminole.Wateratlas.org bookmarked, student access to a printer, Chart paper, note paper

SAFETY: N/A

VOCABULARY: invasive, aquatic, exotic, native, pie graph, percent

TEACHER HAND OUT:

The following lakes will yield a variety of graphs for comparison:

- Lake Brantley
- Little Bear Lake
- Lake Jesup
- Lake Monroe
- Prairie Lake
- Puzzle Lake
- Lake Orienta
- Lake Howell
- Banana Lake
- Bear Gully Lake
- Lake Catherine
- Lake Harney

PROCEDURE:

1. Students will choose from the list of lakes provided for the teacher.
2. Go to WWW.Seminole.Wateratlas.org >Atlas > Lake Name and scroll to the lake, or type the lake name in the upper right-hand corner. Students may have to select the name again from a chart. Click on the Ecology Tab > Plants > Plant List.
3. Record the information on percentages of exotic plant life in that lake.
4. Create a circle graph using this data on paper or with a computer graphing program.
5. Repeat for the other lakes that are chosen.
6. Students will then compare the graphs and decide which lakes are in the most trouble.

EXTENSION: Groups of students may be assigned different lakes. They can then present this information to the class. Power Point presentations can be another way to present this information to the group and increase use of technology.

ASSESSMENT: Completion of the activity will serve as an assessment.

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