



What is that? A Louisiana Invasive Species

By: Madalyn Culpepper Wynn

Focus on Inquiry

Students will observe Giant Salvinia and study their growth patterns. By observing their growth patterns, students will map potential growth over time on Lake Bistineau.

Lesson Summary

In this lesson, students engage with the concept of invasive species through a series of interactive activities centered around Giant Salvinia in Lake Bistineau. The teacher begins by facilitating a discussion about photographs of the lake covered in Salvinia, prompting students to observe and hypothesize about the changes in the ecosystem. They then explore the growth and reproduction rates of Giant Salvinia by completing a chart and mapping its spread over several weeks using diagrams. Following data analysis, students identify the negative impacts of Salvinia on the environment and brainstorm potential solutions for controlling its growth and preventing the spread of invasive species. The lesson concludes with an exit ticket assessment to gauge understanding and group discussions to assess students' grasp of the concepts.

Lesson Content Overview

- Subject: Giant Salvinia / Louisiana Invasive Species
- Duration: 92 minutes
- Setting: Classroom
- Grouping: Various groupings with different parts of lessons
- Grade Level: High School, 9th-11th grade

Louisiana Standards (Use the Louisiana Student Standards from the Academic Standards Library. Identify the code and full verbiage for the standard(s) used).

Standard	Description
HS-EVS2-3	The exotic organisms introduced in Louisiana include plants such as Chinese tallow, kudzu and water hyacinth and animals including nutria, Asian tiger mosquitoes and zebra mussels. These organisms can have impacts on scales ranging from the level of the individual (e.g. competition) to that of the landscape (e.g. the destruction of coastal marshes by nutria).
HS-LS2-1	Emphasis is on quantitative analysis and comparison of the relationships among interdependent factors including boundaries, resources, climate and competition. Examples of mathematical comparisons could include graphs,

	charts, histograms, or population changes gathered from simulations or historical data sets.
HS-LS2-7	Biodiversity is increased by the formation of new species (speciation) and decreased by the loss of species (extinction). Humans depend on the living world for the resources and other benefits provided by biodiversity. Human activity is also having adverse impacts on biodiversity through overpopulation, overexploitation, habitat destruction, pollution, introduction of invasive species, and climate change. Thus, sustaining biodiversity so that ecosystem functioning and productivity are maintained is essential to supporting and enhancing life on Earth. Sustaining biodiversity also aids humanity by preserving landscapes of recreational or inspirational value. (HS.LS4D.a)

Student Learning Objectives

- Students will describe the changes in Lake Bistineau due to Salvinia and suggest reasons for these changes.
- Students will analyze growth data of Giant Salvinia and create a color-coded map to track its spread.
- Students will identify the negative effects of Salvinia on the ecosystem and brainstorm strategies to control its growth.

Prior Knowledge Needed by Students

- What is an invasive species
- How might invasive species be introduced to new areas
- How to use a calculator
- How to read a map
- Understanding reproduction rates of different species
- Understanding of deoxygenation of water from plant overpopulation

Background Information for Teachers

An invasive species is defined as an organism introduced into an environment to overpopulate and cause harm. Giant Salvinia is a large floating fern originating from Southern Brazil. Salvinia is causing issues in several states. When Salvinia starts to grow, it reproduces fast causing dense mat-like formations on the water. When Salvinia continues to grow it will block out sunlight and reduce the amount of oxygen available for organisms. These issues bring stress and can introduce potential dead "hypoxic" zones to native species.

Materials Needed

- Bell worksheet
- Jars with Salvinia in them (collected by teacher)
- Maps of Lake Bistineau
- Charts of Salvinia growth
- Calculators

Detailed Lesson

1. Engage (Time: 20 minutes)

Materials

- Projector
- Powerpoint of Salvinia
- Jars of Salvinia

Directions

- The teacher will review bell work. (ACT question, ACT science vocabulary, Board Question (what is an example of an invasive species?), and element of the day.
- The teacher will show PowerPoint pictures of Lake Bistineau covered in Salvinia and ask students to describe what they see, where they think the picture was taken, and what caused this change in appearance of the lake.
- The teacher will pass out a jar containing Salvinia to each row. The students will meet with their row group and discuss what they observe, ideas what it might be, if they have ever seen it before, why it doesn't have dirt compared to other plants, and characteristics of the plant.

2. Explore (Time: 45 minutes)

Materials

- Chart of growth/reproduction rate of Giant Salvinia
- Chart(s) for students to complete
- Map(s) of Lake Bistineau
- Diagram(s) of growth spread
- Yellow, blue, and red markers/colored pencils/crayons

Directions

- Students will be given a chart with the growth and reproduction rate of Giant Salvinia. The students will have to complete a chart of a set time span to observe population growth.
- After the chart is completed, students will be given a map of Lake Bistineau to diagram the growth spread of Salvinia. Each week of spread will be diagrammed in a different color. Example: week 1- yellow, week 2- blue, week 3- red, etc.

3. Explain (Time: 10 minutes)

Materials

- Maps
- Pencils
- Charts

Directions

- Students will analyze their data and their maps to determine the negative effects of Salvinia growth.
- The students will write their negative effect ideas below their charts and locate areas they think are most affected.

4. Expand (Time: 10 minutes)

Directions

Students will work with another group to brainstorm ideas to:

- Lower the growth rate
- Prevent spread
- Eradicate Salvinia
- Rules or procedures to prevent other invasive species

5. Evaluate + Extension (Time: 7 minutes)

Materials

- Exit ticket assessment

Directions

- Students will complete a short exit ticket assessment to check for understanding.
- Students will turn in completed charts with maps.
- Students will be monitored and verbally evaluated during group work by the teacher.
 - Why did this happen?
 - Why is it so harmful?
 - Why does it spread so quickly?
 - What will happen if humans do not intervene?

Extension

Future lessons will include:

Research into methods and procedures being done/studied with *Salvinia*.

The teacher will also ask a researcher to be a guest speaker for the class.

The students will research other major invasive species in Louisiana.

References

Louisiana Department of Education (2021). *Academic standards + grade level expectations*. Louisiana Believes - Louisiana Department of Education. <https://www.louisianabelieves.com/resources/library/academic-standards>.

Map provided by Landmark Land Surveying.