

ANS Onslaught!

An introduction to aquatic nuisance species that threaten the Columbia River



Activity

Students quickly record their observations of several aquatic nuisance species on display in the classroom, research one of the species in more detail, and present their findings to the rest of the class.

Grade level: 6-8 (can be adapted to any grade or age level)

Subjects: Biology, Ecology, Science

Setting: Classroom

Duration: 1 -2 class periods (depending on depth of research)

Key Terms: native, non-native, invasive, aquatic nuisance species

Objectives

- Students will learn about 13 aquatic nuisance species that threaten the Columbia River aquatic ecosystem.
- Students will identify the distinguishing characteristics of the aquatic nuisance species on display.
- Students will research one aquatic nuisance species in detail and present information to the class.

Materials

- Invasive species specimen and laminated photos
- Aquatic nuisance species *Fact Sheets* at each station
- *ANS onslaught* worksheet
- *ANS research* worksheet

Background

Every organism is **native** to some region in the world. **Non-native** species are those species that have moved outside their natural range into an area where they would not normally be found. Those non-native species that cause harm to their new environment once they become established and spread quickly from their point of introduction are called **invasive** species. Invasive species threaten the diversity and abundance of native species through competition for resources, predation, parasitism, interbreeding with native populations, transmitting diseases, or causing physical or chemical changes to the invaded habitat. **Aquatic nuisance species** are non-native aquatic species that pose a significant ecological and economic threat to aquatic ecosystems.

The majority of non-native species introduced to a new location never become invasive and/or do not cause a significant problem in their new environment. In fact, most introduced species do not survive or are unable to produce enough offspring to maintain a viable population. Some introduced species however, are able to thrive and even flourish at their new location often to the detriment of the native species, habitats, and the natural ecosystem. Invasive species (including aquatic nuisance species) tend to share a number of biological characteristics that enable them to reproduce, grow and spread quickly in their new environment, overwhelming and out-competing native species for food and space.

- Many invasive species are habitat or food generalists, meaning they can live in a wide variety of habitat conditions (or adapt to changing environmental conditions) and consume a broad range of food types.
- Invasive species tend to grow rapidly, reproduce quickly and/or have a high number of offspring.
- Invasive species may compete more aggressively or are more efficient at acquiring important resources than are native species.
- Invasive species often lack natural predators or other population controls (e.g., diseases, parasites) in a new ecosystem so populations can grow out of control more quickly.

Preparation

- Make a copy of the *ANS Onslaught* and *ANS research* worksheet for each student.
- Set up each ANS station with an invasive species specimen and Fact Sheets for the students to read and answer the questions on the worksheets.

Directions

- Begin the activity with a short introduction to invasive species and the common traits that many invasive species share.
- Divide students into small groups and assign each to an ANS station.
- Students should use the pictures or specimen to answer the *ANS Onslaught* questions on the left side of the worksheet.
- After 1 minute at the station, ask students to rotate to a new station.
- Once students have passed through all of the stations, assign or allow students to select one aquatic nuisance species to research in more detail.
- Students will use the Fact Sheets available at the station to research and summarize the answers to the questions on the *ANS research* worksheet.
- When each group is finished, have them present their aquatic nuisance species to the rest of the class using the *ANS research* questions as a guide.
- Students can complete the questions on the right hand side of the *ANS Onslaught* worksheet as others are presenting their information.

Evaluation

Wrap up the exercise by discussing the following questions:

- What are some of the characteristics/adaptations that help make the aquatic nuisance species so successful?
- Have the students heard of or observed any of these aquatic nuisance species? Did they know they were invasive?
- What is the most interesting fact the students learned about each species?
- Are all of the aquatic nuisance species currently found in the Columbia River? If not, why is it important to learn about them?

Extensions

- Using the Fact Sheets and the internet, students research one of the 13 Columbia River aquatic nuisance species and write a creative short story about the nuisance species from the nuisance species point of view. The autobiography might include the species:
 - Distinguishing characteristics
 - Origin
 - How it was introduced to the Columbia River
 - How it might be spread
 - How it impacts the aquatic ecosystem
 - Solutions being used to control its population.

Resources:

- <http://nas.er.usgs.gov/>

Source

This activity is an adaption of “Bio-Blitz” which was developed by the Oregon Sea Grant as part of the “Aquatic Invasions! A Menace to the West” curriculum. Contact: Tania Siemens, AIS and Watershed Health Research Assistant, tania.siemens@oregonstate.edu.

Washington State Science & Environmental Science Standards:

6-8 INQC - Collecting, analyzing, and displaying data are essential aspects of all investigations.

6-8 LS1E - In classifying organisms, scientists consider both internal and external structures and behaviors.

6-8 LS2B – Energy flows through an ecosystem from producers (plants) to consumers to decomposers. These relationships can be shown for specific populations in a food web.

6-8 LS2E – Investigations of environmental issues should uncover factors causing the problem and relevant scientific concepts and findings that may inform an analysis of different ways to address the issue.

6-8 LS3E – Adaptations are physical or behavioral changes that are inherited and enhance the ability of an organism to survive and reproduce in a particular environment.

ESE Standard 2; The Natural and Built Environment – Students engage in inquiry and systems thinking and use information gained through learning experiences in, about, and for the environment to understand the structure, components, and processes of natural and human-built environments.

ANS Onslaught *worksheet*

Name: _____

Instructions: quickly rotate through each station and answer the questions on the left side of the data sheet using the pictures or specimen provided. As others present their information to the class, record your notes on the other invasive species on the right side of the data sheet.

Quickly fill out this side of the chart for the species below			Fill this out as others present their information				
Common Name	Scientific Name	Note one distinct characteristic	Native range?	Invaded range?	How did it get here?	How is it spread?	What are its impacts?
1	Nutria						
2	Mitten Crab						
3	New Zealand mudsnail						
4	Zebra Mussel						
5	Quagga Mussel						
6	American Bullfrog						
7	Red-eared slider turtle						
8	Hydrilla						
9	Didymo						
10	Viral Hemorrhagic septicemia						
11	Asian Carp						
12	Purple Loosestrife						
13	Red swamp crayfish						

ANS Onslaught Research worksheet

Name: _____

Your aquatic nuisance species: _____

Instructions: Use the information provided at the research station to answer the questions below. Be prepared to share what you learned with the rest of the class.

Common Name	
Scientific Name	
What is its native range?	
What is its invaded range?	
How did it first get here?	
How is it spread?	
What might its impacts be?	
Have you ever seen this species before? Where?	
What is an interesting fun fact about this species?	