

Invasive Species

Subject: Science	Grade: 4-6	Duration: 1-2 hours
Lesson Overview	Students will learn about invasive species, how they are introduced, how they spread, and what can be done to combat them. They will explore the ecological impact of invasive species and engage in creative, collaborative activities to deepen their understanding.	

Curriculum Ties (in addition to satisfying multiple core competencies):

Science:

- Biodiversity in the local environment
- Big Ideas: All living things sense and respond to their environment.

Curricular Competencies (All Grades)

- Questioning and Predicting
- Planning and Conducting
- Processing and Analyzing Data and Information
- Evaluating
- Communicating

Content Objectives

Students will be able to:

- Learn how invasive species adapt to a new ecosystem that they invade.
- Learning how we can respond to invasive species within our own ecosystems to save the local species.

- Understanding the interdependence of certain species within an ecosystem and learning how an invasive species can interrupt the interconnectedness of the ecosystem.


Materials & Equipment Needed

<p>Consumables:</p> <ul style="list-style-type: none"> • Paper • Tape • Clay • Felt paper • Sponge (optional) • Stick-on eyes (optional) 	<p>Non-Consumables:</p> <ul style="list-style-type: none"> • Styrofoam balls (small and large) • Popsicle sticks (6 per student) • Skewers • Pencils, markers, crayons, scissors • Print outs of the matching games
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Lesson & Activity

Lesson Stages	Learning Activities
<p>Introduction</p>	<p>Begin with a class discussion: What is an invasive species?</p> <ul style="list-style-type: none"> • Definition and key traits (fast growth, lack of predators, disrupt ecosystems). • Distinguish between non-native vs. invasive species. <p>An invasive species is an organism that causes ecological or economic harm in a new environment where it is not native.</p> <p>Not all non-native species are invasive. For example, most of the food crops grown in the United States, including popular varieties of wheat,</p>

	<p>tomatoes, and rice, are not native to the region.</p> <p>To be invasive, a species must adapt to the new area easily. It must reproduce quickly. It must harm property, the economy, or the native plants and animals of the region.</p> <p>Intro video: https://www.youtube.com/watch?v=W4Ds8aFh8hM&ab_channel=ProvinceofBC</p>
<p>Activity</p>	<p>Activity 1:</p> <p>Play the online or printed version of the “Know Your Invasive Species” game: https://bcinvasives.ca/games/knowyourinvasivespecies/</p> <ul style="list-style-type: none"> • Print out 7 images and the associated word bank <ul style="list-style-type: none"> ○ Laminate and velcro them (Optional). • Have students try to match the picture to the name of the species • Can also give students hints • Discuss as a class: <ul style="list-style-type: none"> ○ Where are these species found? ○ What harm do they cause? <p>Activity 2:</p> <ul style="list-style-type: none"> • Students invent a superhero creature to combat an invasive species: <ul style="list-style-type: none"> ○ Choose one of the species from the game. ○ Design a predator with specific adaptations to stop it. ○ Draw it using markers, or build a model with clay/styrofoam/felt. • Present their creations and explain: <ul style="list-style-type: none"> ○ What problem does the invasive species cause? ○ How does your superhero solve it? ○ If multiple students picked the same invasive species, hold a “debate” on which superhero is most effective.

	<p>Activity 3:</p> <ul style="list-style-type: none"> Print the worksheet: https://bcinvasives.ca/wp-content/uploads/2021/01/Who_am_I_-_Most_Unwanted_Activity.pdf <div data-bbox="711 506 1268 1087" style="border: 1px solid black; padding: 10px; text-align: center;"> <p>I look like a barnyard animal, but can destroy crops, spread disease, dig up roots and even attack goats and sheep!</p>  <p>5</p> </div> <ul style="list-style-type: none"> Students research the descriptions and try to figure out the name of the species. In the end have them compare answers as a class and say which answers we think are correct.
<p>Closure</p>	<ul style="list-style-type: none"> Reflect as a group: <ul style="list-style-type: none"> Have any students seen invasive species locally? What actions can we take at home or school to prevent their spread? Optional reflection journal: “One thing I learned about invasive species is...” “One way I can help is...”
<p>Step Ups & Step Downs</p>	<p>Step Down:</p> <ul style="list-style-type: none"> Focus only on the matching game and basic definitions. Use fewer species examples and provide simplified visuals.

	<p>Step Up</p> <ul style="list-style-type: none"> • Explore local outdoor examples of invasive plants (e.g., Himalayan blackberry). • Do the Amazing Adaptations Hunt or Fuzzy Invader Takeover from BC Invasives Educator Resources (https://bcinvasives.ca/for-youth/for-educators/) • Assign student research projects on one local invasive species and potential interventions.
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Background Knowledge

- Intro video:
https://www.youtube.com/watch?v=W4Ds8aFh8hM&ab_channel=ProvinceofBC
- What is an invasive species?
 - An invasive species is an organism that causes ecological or economic harm in a new environment where it is not native.
 - Not all non-native species are invasive. For example, most of the food crops grown in the United States, including popular varieties of wheat, tomatoes, and rice, are not native to the region.
 - To be invasive, a species must adapt to the new area easily. It must reproduce quickly. It must harm property, the economy, or the native plants and animals of the region.
- How invasive species spread
 - Invasive species are primarily spread by human activities, often unintentionally. People, and the goods we use, travel around the world very quickly, and they often carry uninvited species with them.
 - And some invasive species are intentionally or accidentally released pets. For example, Burmese pythons are becoming a big problem in the Everglades. Watch video : [Coastal Invasive Species - Burmese Pythons - FISAW 2020](#)

- Characteristics of Invasive Species :
 - Not native to the environment
 - Fast growing and reproducing
 - Lack of natural predators in the environment
 - Lack of defense mechanisms in the native host

- Species Threats of invasive species :
 - The direct threats of invasive species include preying on native species, outcompeting native species for food or other resources, causing or carrying disease, and preventing native species from reproducing or killing a native species' young.
 - There are indirect threats of invasive species as well. Invasive species can change the food web in an ecosystem by destroying or replacing native food sources. The invasive species may provide little to no food value for wildlife. Invasive species can also alter the abundance or diversity of species that are important habitat for native wildlife.

- Examples of invasive species in BC:
 - **Asian Giant Hornet:** Asian giant hornets are the largest hornet in the world. They are found throughout South and East Asia and were likely brought to North America accidentally on container ships. Asian giant hornets typically nest in underground cavities, or above ground in tree stumps of forested areas. They feed on insects and are particularly dangerous to honeybee hives. If they establish in BC, they may pose a serious threat to our beekeeping and commercial pollination industries, which in turn will have serious consequences for BC agriculture.
 - **Feral Pig:** Feral pigs are the descendants of domestic pigs that have escaped to the wild and may or may not have mated with wild pigs. Feral pigs are large omnivores, and threaten amphibians, ground-nesting birds, crustaceans, small mammals, mollusks, and reptiles. They damage crops, prey on livestock and can transmit diseases to livestock.

- **Himalayan Black berry:** Himalayan blackberry is valued by humans for its delicious berries; however, it easily invades disturbed sites, pastures, roadsides, streambanks, and forest edges. This plant crowds out low-growing vegetation and can create thickets so dense it limits the movement of large animals.
- How can we combat invasive species?
 - Six easy ways to combat invasive species:

Make sure the plants you are buying for your home or garden are not invasive. Contact your state's native plant society for a list of native plants.

When boating, make sure to clean your boat thoroughly before putting it into a different body of water.

Clean your boots before you hike in a new area.

Don't take home any animals, plants, shells, firewood, or food from different ecosystems.

Never release pets into the wild.

Volunteer at your local park, refuge, or other wildlife area to help remove invasive species. Most parks also have native species restoration programs.

Additional Resources

- More activities related to bc invasive species (<https://bcinvasives.ca/for-youth/for-educators/>)
- Some examples:
 - [Amazing Adaptations Hunt](#) is 45 min and outdoors activity
 - [The Cute and Fuzzy Invader Takeover](#) is 1-hour indoor fun activity