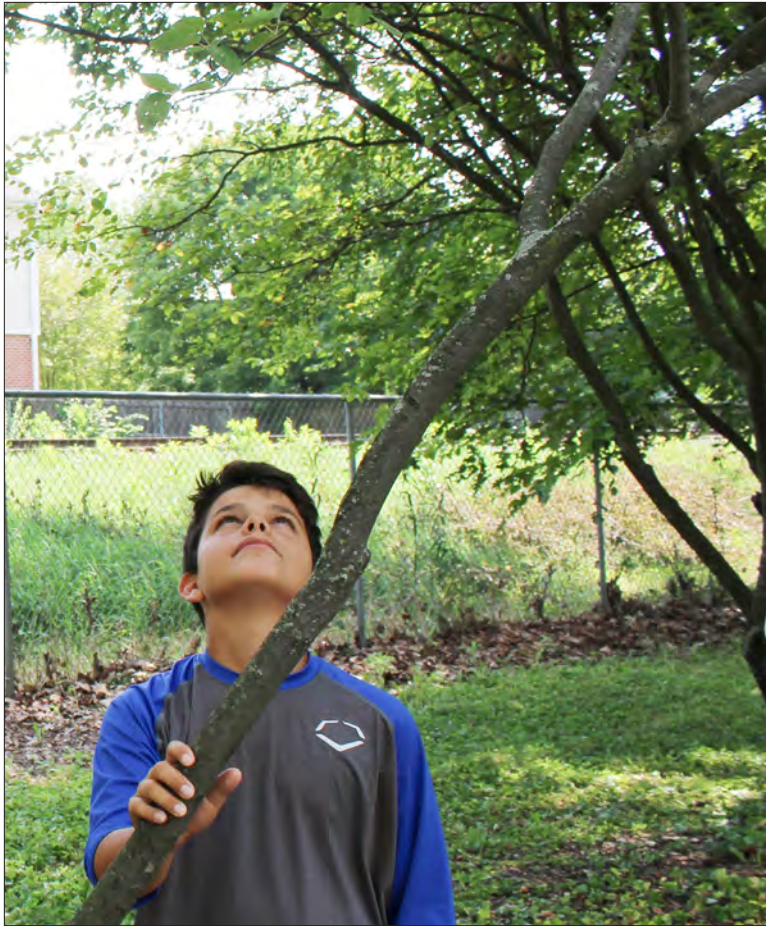


Taking Action Against Invasive Species

Using hands-on exploration and media as an educational tool in schools



Jennifer Brooks

By **Jennifer Brooks**

EVERY FRIDAY, my 7th graders and I spend the last few minutes talking about what they learned this week, what they liked, what they didn't like, and what they look forward to learning next. We also talk about exciting weekend plans. As a science teacher I always hope students say they are going to do something science related such as gardening, camping, or going to the arboretum. Yet, sadly many of their plans involve shopping, organized sports, and television. I sometimes wonder what ever happened to going outside and getting dirty. Two things are for certain: the way we learn about the environment, and how we experience nature, have both shifted.

Since students are not spending as much time in nature as in past generations, they often do not realize what is happening outside their door. Most are not aware of key environmental concerns, such as the growing threat of invasive species. None of my students were familiar with the concept of invasive species. They were familiar with the terms "invasive" and "species" but not in the context of science, nor when the two words were combined. To address the growing concern about invasive species, I decided to create a unit in which students would learn about the topic, educate others, create an action plan, and then implement it.

This two-and-a-half-week unit is designed to teach middle school students about the invasive species in their area.

You are welcome to change aspects of the unit to suit the neighborhoods of your students. All readings, informational packets, and suggested projects can be differentiated as needed. Having taught this unit multiple times, I have revised it to suit the needs of new discoveries and exploration for middle school students. Give it a go with your students!

Invasive species are categorized as plants, animals, or pathogens that are foreign to the area. Invasive species can cause harm to native species and disrupt the biodiversity of an area. When a foreign species is introduced into a new area, the balance of the area can be disrupted and native species can go extinct. By the time humans are aware of non-native species, too much damage may have occurred for recovery to be possible. The damage from invasive species can cost billions of dollars to remove and to restore the previous level of biodiversity.

This is a topic about which students have very little knowledge. Conservation sciences are not discussed, especially in the younger grades. To make the most of the lessons a background knowledge on biodiversity conservation topics such as recycling, climate change, and limiting water/energy usage should be discussed in advance. If your students lack knowledge on conservation and biodiversity, I would simply find out what prior knowledge they have and spend a day addressing those topics and correcting misconceptions.

In this unit, students will identify invasive plant species and explore their impacts in their local area. They will construct a plan in which to rid the area of invasive species, and



write an informational and persuasive letter to encourage others to learn more about invasive species and ultimately convince them to help. Students will become more aware of the neighborhood's environmental concerns. Each day, make observations and track data through formative assessments, discussions, worksheets, and projects. This will allow students to make authentic connections and gain knowledge in understanding and identifying invasive species.

Lesson Plans

Day One

Ask students what they know about invasive species. Give them 10 minutes to fill out a T-chart, with what they think they know about Invasives on one side, and any questions they have on the other. Then discuss some of the items they wrote down. Filling out the T-chart on day one and coming back to it throughout the unit is a great way to track improvement.

After the discussion, give students a packet containing information about invasive species, especially those that are present in your community. Visit your county's forest preserve website to gain this information. Working through the packet, which can be found at greenteacher.com/students-take-action-against-invasive-species/, prompt your students to see if they have heard of any of the invasive species before. At the end the students answer the questions at the bottom of their packet independently. Then they will share in a Timed Round Robin (each student gets two minutes to summarize their answers on the questions with their tablemates). Students can add to their responses based on what their peers have said. Then we have a whole class discussion.

Day Two

After reviewing the previous day's discussion, students partake in an online BrainPop simulation.¹ This game focusses on Asian Carp making their way into Lake Michigan. Prior to starting the simulation, it is important to discuss Asian Carp, or *Cyprinus carpio*, due to multicultural students you may have in your room. As the name suggests, Asian Carp originated in Asia. Make sure to make the connection that it is not because this carp comes from Asia that the United States does not want it in the waterways.

Once logged onto the BrainPop simulation there are two

sections. In the first of two sections, students control the carp's actions, such as eating and swimming. This increases their understanding of this animal's behavior and nature. In the second part, students become aware of the carp's negative impacts. Their job is to stop the species from spreading throughout Lake Michigan. Introducing students to an invasive animal ensures that they will appreciate that invasive species are not just plants. Since students love to use technology, it is a great motivating tool to keep them engaged.

Once students participate in this simulation, they will have a better understanding of how one species can affect an ecosystem. Students partake in Think, Write, Round Robin with their table. Students are asked one question and they write their response and then share their response with tablemates. After students hear their classmates' ideas, they can add to their response

before sharing as a whole class in discussion.

Day Three to Six

Students get into small groups and research a specific invasive plant species in their province or state. The worksheet I provided my students with can be found at greenteacher.com/students-take-action-against-invasive-species/. Here in Illinois, a list of species options could include: autumn olive, buckthorn, a species of honeysuckle, black locust, winged burning bush, garlic mustard, bull thistle, tall fescue, oriental bittersweet, flowering rush, hydrilla, purple loosestrife, zebra mussel, Asian carp, Eurasian collared dove, and Asian longhorned beetle.

As part of their research, students determine their species origin, appearance, where it is found, any positives/negatives of its presence, and how to get rid of it. With this information, they will create a brochure, PowerPoint, or video and present it to the class and parents. If your school has a parent's night you could show the presentations during it. Otherwise, you can simply just send out an invitation and invite parents in on a set school day. Make sure to check the students' template for accuracy and to give feedback prior to the students creating their final presentation. Also, run through the presentations to work on any issues prior to the parents coming.

Day Seven

Once students are well prepared, parents will come to hear the students' presentations. I found it to be a great tool to provide parents with insights about invasive species. The students can create a pre- and post-test for their parents to fill out; samples of this can be found at greenteacher.com/students-take-action-against-invasive-species/. That way the students can see what information was gained by their presentations. Ultimately this will show the students that they can help spread the word about invasive species, by informing others and persuading them to want to help make a difference in the community.

Day Eight

Now that students have multiple examples of and knowledge about local invasive species, have students either take a tour of the school grounds or a neighboring park. As the

teacher, walk around the school grounds or park prior to make sure you can locate the species. Alternatively, contact a park official to act as a guide for your students. Point out specific invasive plant species in an area or two, then have the students thoroughly examine them. By the end of the tour, ask the students to find and identify the species without any adult help in another area. Students will be able to refer back to their guide and pictures for assistance. Once students locate a plant, ask them to use facts or observations to explain why they think it is an invasive species.

Day Nine to Ten

Students will go outside in the schoolyard or to a park and work on removing the invasive species that were identified the day before. Prior to doing so, have students watch a film about how to get rid of the invasive plant species and then demonstrate the removal technique so that the students understand what they need to do. Put the students into groups of around five and assign them a specific location to work. The teacher will supervise the groups and make sure everyone is working safely and efficiently. At the end of these two days, students will fill out a reflection on their experience. A sample of the reflection can be found at greenteacher.com/students-take-action-against-invasive-species/.

Day 11

Having researched and removed local invasive species, each student will utilize their new found knowledge and experience by writing a letter to their Mayor or a newspaper. In their letter, students must show that they understand invasive species by stating which organisms are local, why invasive

species are harmful, and what the government can do to help get rid of them. You could have students talk about the unit, what they discovered, and how to solve this issue in the community. Using the newspaper can strengthen the students' voices, put pressure on local government to do something about the issue, and increase the exposure to others.

Revisit the T-chart the students filled out on day one. Discuss any lingering questions and then determine whether students believe that they have accomplished the goals you set for the unit.

Day 12

As a final part of the unit, assign each student the creative assignment of designing their own invasive species. It could be a plant or animal. Have students draw a picture of their species, give details such as description, location, origin, positive/negative aspects, and how to get rid of it. By having students create their own species they have to have a firm grasp on what invasive species are, and get to show that off in a fun way. By completing this assignment, students will demonstrate that they understand the main features and dangers that come from invasive species.

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Notes

1. <https://www.brainpop.com/games/invasion/>

Activity: Create Your Own Invasive Species

Objectives:

1. Identify the characteristics of an invasive species that makes it thrive in an area.
2. Describe what positive and negative impacts species can have on an environment.

Materials:

1. Background Informational Sheet
2. Worksheet
3. Coloring Tools
4. Pencil/Pen

This activity enforces the topic of invasive species. This activity could be added into an existing unit you teach or could be a standalone lesson. If your students have no prior knowledge on invasive species prior to this activity have the students read the 'Invasive Species Background Information' packet which can be found at greenteacher.com/students-take-action-against-invasive-species/. Make sure you discuss it after so you can clarify any misconceptions or confusions. Once students have a grasp on invasive species have them complete the activity. By completing the activity, students have to internalize what they know about invasive species and create their own species. Their species could be a plant or an animal.

Have students draw a picture of their invasive species and answer the following questions:

- What is the name of your species?
- Where is your species native to/where did it come from?
- What does your species eat?
- Where does your species live now?
- Identify growth and survival characteristics that make the invasive species survive and thrive in its new ecosystem.
- What are some negative impacts your species has on the environment?
- What are some positive impacts your species has on the environment?
- What can people do to stop the invasive species from spreading?