



GeoCivics Lesson Title: *Local Invasive Species - Take Action!*

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Teacher: Myla S. Liljemark	Lesson title: Local Invasive Species - <i>Take Action!</i>	Grade Level: 6, 7, 8
Notes: This is lesson two of two and engages students in creating and carrying out a civic action project.		
Pre-existing Knowledge: Students should know how to research using online secondary sources and how to cite sources. They should have prior instruction on identifying reliable websites.		
Overview: An invasive species is an organism that is not indigenous or native to a particular area. Invasive species can cause great economic and environmental harm to the new area. -- (Nat Geo) The introduction of plants and animal species to new areas has occurred throughout human history.. With increased globalization, however, the rate of non-native species introduction has increased. This has led to significant impacts on the environment and communities in particular regions. There are few places in the world that are untouched by introduced species. Students around the world can discover more about their natural environment by identifying invasive species in their local area, determining the impacts of those species, and learning about management approaches already in practice. There is still more that can be done, however, and a student-developed civic action project is one way that students can make a difference in their communities.		
Purpose: <i>What will students learn?</i> Students will learn to use self-guided research to learn more about the impact of invasive species on a local ecosystem and/or to a local community. Students will locate community members or interest groups already working to manage invasive species and will work collaboratively on a project to evaluate invasive species populations and impact in their community. Students will design a civic action project that tackles the issues of invasive species.		
National & State Geography Standard(s):		

Alaska State Standards:

Geography F) A student should be able to use geography to understand the world by interpreting the past, knowing the present, and preparing for the future. A student who meets the content standard should:

- 6) utilize geographic knowledge and skills to support interdisciplinary learning and build competencies required of citizens.

National Geography Standards

NSS-G.K-12.6:

- Understand how to apply geography to interpret the present and plan for the future.

National & State Social Studies Standard(s):**National Social Studies Standards:**

NCSS.10.CIVIC IDEALS AND PRACTICES.

Alaska State Social Studies Standards:

History D: A student should be able to integrate historical knowledge with historical skill to effectively participate as a citizen and as a lifelong learner. A student who meets the content standard should:

- 5) base personal citizenship action on reasoned historical judgment with recognition of responsibility for self and others

Government and Civics C: A student should have the knowledge and skills necessary to participate effectively as an informed and responsible citizen. A student who meets the content standard should:

- 7) implement ways of solving problems and resolving conflict.

ELA Standards (To teach/review and support emergent multilinguals (EMLs) English language development):

Alaska Reading Standards for Informational Text:

10. By the end of the year, read and comprehend literary nonfiction, within a complexity band appropriate to grade 8 (from upper grade 7 to grade 9), with scaffolding as needed at the high end of the range.

ISTE Teacher *and/or* Student Standard:

1.3a Knowledge Constructor:

Students plan and employ effective research strategies to locate information and other resources for their intellectual or creative pursuits.

Language Function:

- **Inquiry/Seeking Information:** Students use language to observe and explore the environment, acquire information, inquire: Students will be provided a “Who, What, When, Where, Why, How” student research guide. This will support all learners to determine what information is important as they research.
- **Summarizing and Informing:** Students use language to identify, report, or describe information.
- **Analyzing:** Students use language to separate whole into parts, identify relationships and patterns.
- **Justifying and Persuading:** Students use language to give reasons for an action, decision, point of view, convince others.

Culturally Responsive Lesson Strategies:

- **Connection:** Lesson/activity incorporates real-life connections and representations from various cultures and life experiences: Students may interview an elder or community member who has been in the area for a long time about the changes they have witnessed as a result of the invasive species. An alternative might be to invite one or more community members or elders to visit the classroom or videoconference with the students thereby providing a local perspective of changes brought on by invasive species over time.
- **Voice:** Lesson/assignment allows places for students to work together cooperatively or share their learning experiences: Students work together on a student-centered project that they design and implement.

Objective(s):

- Students will use research and collaboration with community members or interest groups to create a civic action project that responds to the threat of invasive species.

SIOP

SIOP Elements		
Preparation Adapting content Linking to background Linking to past learning Strategies used	Scaffolding Modeling Guided practice Independent practice Comprehensible input	Grouping Option Whole class Small groups Partners Independent
Integrating Processes Reading Writing Speaking Listening	Application Hands on Meaningful Linked to objectives Promotes engagement	Assessment Individual Group Written Oral

Evidence of Mastery (Measurable)

Formative - Students will do research to complete a Student Research Guide which will include information related to an invasive species with specific information about who, what, when, where, why. Then students will share out in small groups what they have learned through their research and the teacher will make note of the students' presentations for use as a Summative Assessment of student learning.

Summative - Students will complete written responses to a set of Reflection questions given by the teacher that reflects on their experience and learning through creating a civic action project plan. The teacher will use the Summative Assessment Rubric below to assess students' responses with a score of 15 or higher indicating mastery.

Summative Assessment Rubric

Exceeds Expectations	Responses provide a deeply thoughtful reflection on the civic action project experience, and provides insight into their learnings, their citizenship, their collaboration, and on their personal growth.	20
Meets Expectations	Responses show a thorough reflection on the civic action project experience and on some learnings and insights on topics that may include citizenship, personal growth, and collaboration.	15
Approaches Expectations	Responses offer limited reflection on the civic action project and lacks meaningful insights on topics related to citizenship, personal growth, and collaboration.	10
Fails to Meet Expectations	Reflection on the civic action project and learning is superficial or lacking.	5

Key Vocabulary:

- **invasive species** - An invasive species is an organism that is not indigenous, or native, to a particular area. Invasive species can cause great economic and environmental harm to the new area. -- Nat Geo
- **eradicate** - To get rid of something completely from an area to keep them from causing more problems.
- **collaboration** - Working together with different groups of people, like scientists, community members, and organizations.

Materials:

- YouTube Video: *Rat Island: Behind the News*: (3.26 minutes): Link in Sources
- YouTube Video: *Weird Ways We've Fought Invasive Species*: (9.08 minutes) (Link in Sources)
- Teacher created list of invasive plants and animals of their local area or region.
- Teacher obtained images, videos, text, story, or other forms to introduce the local invasive species to the class.

<ul style="list-style-type: none"> ● stewardship - Taking care of the environment by being responsible and making good choices. ● mitigate - taking actions to make a problem or situation less bad or harmful. 	<ul style="list-style-type: none"> ● Teacher created list of reliable websites on the internet for students to use to do their research of the invasive species listed on the teacher's list of local invasive species. ● Copies of Student Research Guide handout: 1 per student: (In Lesson Materials Document) ● Student require access to computers/technology to do their research of invasive species. ● Teacher list of local community members, or interest groups for students to contact regarding their civic action project to eradicate an invasive species or mitigate its effects in a particular local place or region
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Sources:

- Video: *Rat Island: Behind the News*: [Rat Island - Behind the News](#)
- Video: *Weird Ways We've Fought Invasive Species* [SciShow: Weird Ways We've Fought Invasive Species](#)
- Vocabulary definitions and sample reflective questions generated using ChatGPT, an AI language model developed by OpenAI. (OpenAI, 2021). [ChatGPT](#)

Engage

<p>Teacher Will: (Hook)</p> <ol style="list-style-type: none"> 1. Ask students to think about what they learned in the first lesson. Show one or both of the videos listed below. The shorter video introduces just one invasive species. The longer video introduces many. After watching the video with the class, the teacher will ask comprehension questions. The discussion that follows watching the video can take place in small groups, with groups of 2-4 students answering the questions in preparation for a larger class discussion. The question, “<i>What is an invasive species?</i>” is the first introduction of this word in this lesson. <u>Videos:</u> 	<p>Students Will:</p> <ol style="list-style-type: none"> 1. Watch the videos and participate in the full class discussion answering the questions prompted by the teacher. If the teacher chooses to use small group discussion first, students will discuss each question in their group. One or more students will then volunteer to share their answers in the larger group discussion. (NOTE) The smaller group discussion will allow all students of all ability levels to perform at their potential. The group discussion will allow ELL and SPED students to listen and speak rather than rely on reading
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- [Rat Island - Behind the News](#) (YouTube) (3 minutes)
- [SciShow: Weird Ways We've Fought Invasive Species](#) (YouTube) (9 minutes)

The teacher can reinforce the definition of the word invasive species by writing it on the board or displaying it on a slide. (Definition: An invasive species is an organism that is not indigenous, or native, to a particular area. Invasive species can cause great economic and environmental harm to the new area. -- Nat Geo) **Small and Large Group Discussion**

Questions:

- *What is an invasive species?*
- *Why or how was the invasive species introduced to the region?*
- *How is the invasive species negatively impacting the environment?*
- *What are people trying to do to manage the invasive species?*
- *Is/Was it successful? Why or why not?*

and writing.

(Grouping: Whole class/Small groups)
(Preparation: Linking to Background/ Strategies used) **(Integrating Processes: Reading/Listening/Speaking)**

Explore

Teacher Will:

Inquiry question #1: *How are invasive species affecting us?*

NOTES: *Prior to the lesson, the teacher will create a list of invasive plants and animals of the local area or region and obtain images, videos, text, story, or other forms that can be used to introduce the invasive species to the class. It is recommended that these are invasive species that students may have some familiarity with so as to peak their interest in the activity. Examples might include mountain goats on the Olympic Peninsula in Washington, python in Florida, or milfoil in the Great Lakes.*

1. The teacher will begin instruction by presenting Inquiry Question #1 ***How are invasive species affecting us?*** to the class and then introduce one local invasive species to the class including information about the species related to who,

Students Will:

1. Observe images or videos/etc. of a local invasive species introduced by the teacher and listen to and make note of the information given about who, what, when, why, and how about the invasive species shared by the teacher.

what, when, where, why, and how.

Sample 5 Ws Questions:

- *What is the invasive species?*
- *When was it first introduced to the region?*
- *Where was it originally from? Where is it native or indigenous?*
- *Why is the invasive species a problem?*
- *Who is it affecting? Who is trying to eradicate it or mitigate its effects?*
- *How are people working to eradicate it or mitigate its effects? How was it introduced to our local area?*

2. The teacher will use images, videos, text, story, or other forms of delivery to introduce the local invasive species to the class. This will be the first time that the vocabulary words “eradicate” and “mitigate” are used. The teacher can reinforce the definition of these words by writing them on the board or displaying them on a slide and having students write them down with their definitions. The definitions will also be included on the Student Research Guide. (Definition: **eradicate** - To get rid of something completely from an area to keep them from causing more problems. **mitigate** - taking actions to make a problem or situation less bad or harmful.)

Example for the Kenai Peninsula in Alaska:

- **What is the invasive species?** European Chokecherry
- **When was it first introduced to the region and why?** It was introduced to Alaska as an ornamental garden shrub in the 1950s.
- **Where was it originally from? Where is it native or indigenous?** It is native to Europe and Asia.
- **Why is it a problem?** Birds eat the chokecherry berries and disperse them around the forests. They grow faster than alder and willow and overshadow them in burn areas (regrowth areas after forest fires). They are toxic to moose. They grow along salmon spawning streams and disrupt the

Students will also learn the definitions of the words eradicate and mitigate when written on the board/or slide and presented by the teacher.

(NOTE: Students can be encouraged to take down notes as they listen to the presentation.)

(Grouping: Whole class) (Scaffolding: Modeling/Comprehensible input) (Integrating Processes: Listening/ Reading/ or Writing)

2. Working independently or in pairs, students will conduct internet research on one invasive species in their local area or region. They will choose the invasive species from a list created by the teacher. Students will use the Student Research Guide to guide their research and record their findings.

NOTE: All students, including ELL, SPED, and Gifted will be supported through the use of the Student Research Guide which includes structured who, what, when, where, why, and how responses. SPED and ELL students will also be supported through the option of working in pairs.

(Grouping: Independent or Partners) (Application: Hands-on/Linked to Objectives/Promotes engagement) (Integrating Processes: Reading/Writing /Listening/Speaking)

natural ecosystem, affecting the health of the salmon population.

- **Who is it affecting, and/or who is trying to eradicate it or mitigate its effects?** Because a lot of people eat moose and salmon, it affects the food source of people that subsistence hunt and fish. Kenai Invasives is a local organization that is trying to eradicate the chokecherry in our area.
 - **How are people working to eradicate it or mitigate its effects?** People are encouraged to cut down chokecherry trees in their yards. Kenai Invasives has a grant that will pay for the poison you need to kill the stumps, and, in some cases, will remove the trees for local residents.
3. The teacher will then instruct students to work alone or with a partner and choose one invasive species to learn more about. They will choose from the list of local invasive species provided by the teacher. The teacher will then pass out copies of the Student Research Guide to the students and will instruct them to use reliable websites on the internet to complete their Student Research Guide which includes the guiding who, what, why, where, when, and how questions. Sample List of Invasive Species on the Kenai Peninsula in Alaska:
- European Black Slug
 - Norway Rat
 - Rock Dove
 - Oxeye Daisy
 - Bird Vetch
 - Common Toadflax

Explain - Formative Assessment

Teacher Will:

1. Once students are finished researching their invasive species, the teacher will organize students into groups of 4-5. The teacher will instruct students to share what they learned

Students Will:

1. Students will be grouped into groups of 4-5 students. They will spend about 2 minutes introducing the invasive species they researched to the other students in the

about their invasive species with the other students in their group. There may be some repetition (two students might each have the same invasive species) but that is OK as it helps confirm their information. If students have found conflicting information, they can be instructed to go back and review the information and work together to find out what is accurate.

2. The teacher will walk around the room observing and making note of each student's presentation to their group for use as a Formative Assessment of the students' learning.
3. Afterwards, the teacher will again present Inquiry Question #1 ***How are invasive species affecting us?*** to the class and engage them in a discussion of how to answer the question based on their own research and also what they have learned from each other's research presentation.

group. They can read off of their Student Research Guide if they need that support, or they can relay the information using their Student Research Guide as a reference. This approach supports students of all ability levels as it allows students to orally communicate what they learned using their notes in any manner that is most useful to them.

(Grouping: Independent/Small groups)
(Application: Hands-on/Meaningful/Promotes engagement) **(Integrating Processes: Listening/Speaking/Reading)**
(Assessment: Individual/Oral)

3. When done presenting their research, the students will participate in a class discussion of Inquiry Question #1 by using what they have learned from their research and from hearing other's presentations about different invasive species in their local area.

(Preparation: Linking to past learning)
(Grouping: Whole class) **(Integrating processes: Listening/Speaking)****(Application: Meaningful)**

Elaborate

Teacher Will:

Inquiry question #2: *What can we do to control the species and its impacts on our community?*

1. The teacher will introduce to the class the vocabulary word **stewardship** and its definition (Definition: Taking care of the environment by being responsible and making good choices) and then will present Inquiry Question #2 to the class: ***What can we do to control the species and its impacts on our community?*** Then the teacher will tell students that what they are going to do to control a species and its impact on our community is to design a plan that will mitigate or

Students Will:

1. Listen and take note of the vocabulary word, **stewardship** and fo Inquiry Question #2 when presented by the teacher. They will then reflect on what they might be able to do to mitigate or eradicate an invasive species in a local area and begin thinking about a plan they might design to do this.

(Grouping: Whole class) **(Preparation: Linked to prior learning/Linked to background)**

eradicate an invasive species in some local location. That location could be small, like a backyard or school grounds, or large, such as an entire town. This is the first time this vocabulary is used in the lesson.

2. The teacher will instruct students to choose one invasive plant or animal that interests them or that is noticeably impacting their region. In small groups of 4-5, the teacher will guide students through a Think, Pair, Share brainstorming activity scaffolded by a slightly modified “Who, What, When, Why, Where, and How” structure. The words “Who,” “What,” and “Where” will be written on a large piece of paper, and students in the group will record their ideas on the paper guided by the Brainstorming Questions listed below.

Brainstorming Questions:

- **What** could we do to mitigate the effects of the species? or What can we do to eradicate the species? This will be the main focus of the civic action project. (Example Answers: pull weeds, post an article in the paper, create an informational guide for how to avoid spreading the species, fundraise to trap the species, etc.)
- **Where** could we manage this species? (Example Answers: Local trailhead, students’ backyards, a city park, or it could be something that affects the whole community or region.)
- **Who** could help us? Who are experts in the community that could provide information or help? (Examples: National Park Service, National Forest Service, Conservation Alliance, local radio station, local newspaper, local Tribe, Elders)

(Scaffolding: Guided Practice)

2. Reflect on and choose one invasive plant or animal that interests them which they would like to focus a project on and will then work together in small groups (4-5) to brainstorm and develop a plan to eliminate or control the spread of the species and/or to mitigate its effects on the environment. Students will use the “Who, What, Where” questions to guide their brainstorming. It is possible that they will focus on one idea or will work through many.

(Grouping: Independent/Small group) (Integrating Processes: Listening/Speaking) (Application: Meaningful/Promotes engagement)

<p>This is also when the teacher will also introduce the word collaboration (Definition: working together with different groups of people, like scientists, community members, and organizations) and will tell students that collaborating with people outside of the school building will support their project and efforts to eradicate the species or mitigate their effects.</p> <ol style="list-style-type: none"> When students are finished brainstorming together in their small group, the teacher will guide a class-wide sharing of ideas. The teacher will then have students choose a project that they want to work on. This could be one that they brainstormed themselves, or maybe one that they want to work on with another group or as a whole class. The teacher will then guide and support students in planning, writing out, and completing their project design, and will also include assisting them in reaching out to community members or interest groups for input, assistance, or project collaboration. Following completion of student projects, teacher will assist students in finding a location/audience to present their findings -- school science night, community meetings, libraries, environmental fair, etc. (Scaffolding: Guided Practice) 	<ol style="list-style-type: none"> After they have developed the idea(s) they will choose one that they want to share with the rest of the class. During the class discussion they will share the details of their idea. They will then choose a project or projects that they want to conduct that will eradicate the species or mitigate its effects in a particular place or region. (Grouping: Small group/Whole class) (Application: Hands-on/promotes engagement) Students will write out their project plan and will be guided by the teacher to use digital and/or non-digital resources to seek out and work with local community members or interest groups that may offer information or assistance in the civic action project. All students, including ELL, SPED, and Gifted, will be supported through the use of their “Who, What, Where” brainstorming paper. SPED and ELL students will also be supported through the option of working in pairs. (Grouping: Independent or Partners or small group) (Application: Hands-on/Meaningful/Linked to Objectives/Promotes engagement) (Integrated Processes: Listening/Speaking/Reading/Writing)
<p>Evaluate - Summative Assessment</p>	
<p>Teacher Will: (NOTE): The teacher has some options in putting together the Summative Assessment by choosing how students will complete the assessment and</p>	<p>Students Will:</p>

what Reflection Questions will be assigned to students.

1. The teacher will choose from the list of Sample Reflective Questions provided below and assign them to the students to write out their responses. The teacher will also present the Summative Assessment Rubric to the students and explain the expectations for how they are to complete the questions by including full responses that show a thoughtful reflection of their experience in creating a civic action project and how it has impacted their learning, citizenship, collaboration, and personal growth.
2. Each student will answer the reflective questions independently either in writing or orally through an interview with the teacher or through a digital video recording program such as Loom Chrome Extension, Screen Cast-o-Matic, or Flipgrid. The teacher will encourage students to take their time in answering these questions provided and to think critically about their experiences and the broader implications of their civic action project on invasive species and their community. The teacher will then provide time for students to complete their assessment, and will use the Summative Assessment Rubric to grade them with a score of 15 or higher showing mastery.

Sample Reflective Questions:

1. *What was the main goal of your civic action project regarding invasive species, and do you feel you achieved that goal? Why or why not?*
2. *How did your perspective on invasive species change throughout the course of this project? Did you discover any surprising facts or insights?*
3. *Reflect on the strategies you employed to raise awareness about invasive species.*

1. Students will complete an oral or written reflection based on reflective questions selected from the list above. This satisfies Language Function 02 of the Language Function Toolkit. Students will summarize/inform about their experiences and reflections. All students, including SPED, ELL, and Gifted are able to perform at their potential through the option of oral or written reflection.

(Grouping: Independent) (Assessment: Oral or Written/Individual)

Which strategies do you think were the most effective, and why?

4. *Were there any challenges or obstacles you faced during your project? How did you overcome them, and what did you learn from those experiences?*
5. *Describe any collaborations or teamwork that took place during the project. How did working with others enhance the effectiveness of your project?*
6. *In what ways did your project engage the local community or broader audience? How do you think your project impacted their understanding of invasive species?*
7. *Reflect on the role of science, history, and research in understanding and addressing invasive species. How did your project incorporate scientific knowledge and/or history, and what did you learn about the importance of evidence-based actions?*
8. *How has this project influenced your view of your own role in environmental conservation and civic engagement? Do you feel more empowered to take action in the future?*
9. *Imagine you could redo the project. What changes or improvements would you make based on what you've learned?*
10. *Reflect on the connections between invasive species and broader environmental issues. How do invasive species impact ecosystems, biodiversity, and human activities?*
11. *Consider the long-term sustainability of your project's impact. How can you ensure that the awareness you raised and actions you took continue to make a difference over time?*
12. *What skills did you develop or enhance through this project? These could include research, communication, teamwork, problem-solving, and more.*
13. *Reflect on any personal growth or insights you gained during this project. How did it contribute to your overall learning?*

Extension(s): Student(s) can report on their project to an authentic audience in the community. This could be the local PTSA, Site Based Council, City Council, or school's Student Council. This could also include a publication on a social media site like the school or district's Facebook page or Twitter account, or in the local newspaper.