



Invasive Species

Organization

Title: Invasive Species

Summary: Students review different types of invasive species and their impact on ecosystems.

Inquiry Question: Inquiry Question 3 What are some threats to the plant species used to construct these tools and technologies?

Duration: 1 class period

Learning Environment: Classroom, online

Season: All

Materials:

- TED talk on invasive species: https://www.youtube.com/watch?v=spTWwqVP_2s
- Invasive Species Impact on Ecosystems.pptx
- Materials for students to construct models of an ecosystem (could be as simple as markers and whiteboards or more complex depending on time.)

Curriculum Links:

Grade 7 Science and Technology: A1.1, A1.4, A1.5, A3.3, B1.2, B1.3, B2.1, B2.2, B2.3

Grade 9 Science: A1.1, A1.5, A2.5, B1.3, B2.1, B2.4

Grade 9 Academic Geography: C1.4

Meta Data:

Content Type: Activity

Bundle: Tools

Theme: Invasive Species

Subject Area: Biology, Environmental Education, Geography, Outdoor Education, Science,

Curriculum Focus: 7, 9

- Invasive species threaten many of the plants species (relatives) Indigenous groups have entered into holistic and interdependent relationship with. This includes plant species utilized for harvesting food, medicines, building materials etc.
- Explain to the class that students will learn about these invasive threats and strategies for combating them.

Review of invasive species

- *Native species:* fulfill their responsibilities and allow other plant and animal species to survive.
- *Naturalized species:* Even though they are not originally from that place, find a way to fit into the ecosystem in a manner that ensures that the other species continue to thrive.
- *Invasive species:* Take over and can push native species out entirely. They can destroy an ecosystem.



Discussion:

- Ask students how they feel they interact with the natural world? For instance, do they act like a native, naturalized, and/or invasive species? If they do operate like an invasive species, what can they do to ensure that they are living in reciprocity with the natural world?
- Review different types of invasive species with students:

Invasive plants: can be very harmful to an ecosystem by out-competing native species for resources such as light, moisture and soil nutrients needed by all species to survive and thrive. As a result, species composition can change, affecting wildlife that depend on native plant communities. For example, red-winged blackbirds require cattails for food and nesting, however, cattails are in decline as they are out-competed by phragmites, an invasive species. Invasive plants can damage the natural environment by altering the intricate web of biodiversity that allows an ecosystem to flourish.

Invasive insects: can cause severe damage to the ecological integrity of an environment. Absent of natural predators to inhibit population growth, non-native insects can spread quickly, feasting on native plants and trees. Deforestation is the result and habitat for native species is then severely diminished. A weakened forest ecosystem is vulnerable to additional invasive species, which further disrupts the delicate balance of biodiversity needed for the overall health of the forest ecosystem.

Invasive Aquatics: species such as fish, invertebrate, viruses, bacteria, parasites, and plant species that have been introduced to an aquatic environment that they are not native to. These species can grow or reproduce quickly and outcompete native species for resources, like light or food. They can harm native species, either directly or indirectly. They can also severely alter habitats which can make it unlivable for native species.

Invasive Animals: For students who need to develop deeper understanding teachers can play the following TED talk on Invasive Species: https://www.youtube.com/watch?v=spTWwqVP_2s

- Have students examine images of an ecosystem found in **Invasive Species Impact on Ecosystems.ppt** before and after an invasive species was introduced to see the severity of the potential impacts on biodiversity.

The teacher breaks the class in half. Working in groups of 2-3 students one half of the class designs a model showing a healthy ecosystem. The first ecosystem is balanced, sustainable and biodiverse. Students should show that there is food for everything in their ecosystem to eat, that there are diverse producers, consumers, and decomposers and that the population is stable. The students should demonstrate the complexity of a healthy ecosystem by including



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arrows that link plants and animals together and represent the transfer of energy within an ecosystem ie: from producers to consumers to decomposers. The second half of the class will design a model of an ecosystem impacted by an invasive species. The model should show how the ecosystem is unbalanced, unsustainable, and lacking in biodiversity. Students should show how has a result of the invasive species many producers, consumers, and decomposers have been pushed out of the ecosystem, thereby, decreasing the ecosystems biodiversity.