

Science of Habitat Protection and Restoration

Lesson 1: Invasive Species

OVERVIEW

As humans continue to explore our world and learn more about its cultural resources, they sometimes unintentionally damage it. Invasive species take over habitats because they can utilize resources not typically available to them, and because they are not threatened by their normal predators. Humans can help prevent the transportation of invasive species by following a few protocols.

OBJECTIVES

- Students will demonstrate how invasive species prosper in areas without natural predators.
- Students will describe how invasive species can negatively affect a food web.
- Students will outline ways to prevent the transportation of invasive species.

VOCABULARY habitat, invasive species, vector, food web

Engage/Explore		
Teacher Says/Does	Probing Questions	Student Responses
<p><i>We are going to play a game called Alien Invasion!</i></p> <p>Teacher will assign half the class to be humans, and the other half of the class to be aliens.</p> <p><i>This half of the room will be the aliens, and this half of the room will be humans. Humans like to eat red cards, and aliens will eat any color card they can find!</i></p> <p>The teacher will use an everyday object that has two colors (a deck of cards or checker pieces work well). Spread the objects out on the floor and have the students gather around the area in a circle.</p> <p><i>When I say, "go," everyone will try to find as much "food" as they can without running. When I say "stop," everyone will need to freeze and sit down. Ready? Go!...Stop!</i></p>		<p>Students collect pieces of "food."</p>

<p><i>Let's all return to our seats and create a data table to see who got the most food.</i></p>	<p><i>Turn to your neighbor and make a hypothesis or prediction about whether aliens or humans were able to get the most food.</i></p> <p><i>Who do you think will have the most food?</i></p> <p><i>Why?</i></p>	<p>Answers will vary.</p>
<p>Teacher/Students will create a data table on the board to tally how much food each group got.</p>	<p><i>Who got the most food?</i></p> <p><i>Which group do you think will survive the best in the future?</i></p> <p><i>Why?</i></p> <p><i>Do you think there would eventually be more humans or aliens living in our classroom?</i></p>	<p>Aliens</p> <p>Aliens</p> <p>Answers will vary. Aliens have a wider availability of food items, aren't picky, etc. The aliens will eat all of the human food leaving none for the humans.</p> <p>Aliens</p>

Explain		
Teacher Says/Does	Probing Questions	Student Responses
<p><i>What if I told you that there are plants and animals that act kind of like the aliens in our game? When a plant or an animal gets put into a habitat that it doesn't normally live, it can use up all the resources that are usually for the plants and animals already living there. We call these organisms invasive species. They invade an area, and they are able to multiply their numbers because they can use the food supply better than what is already there. They also don't have any natural predators to keep their numbers down.</i></p>		

	<i>How do you think invasive species get transported to new areas?</i>	Answers will vary.
<i>Usually an invasive species finds its way into a new area through what is called a vector. A vector is something that can carry the species to a new place.</i>	<i>Can you think of any examples?</i>	Boats, people, wind, animals, etc.
<i>A very common example of a vector is a boat. Many people like to boat for fun. They take their boat into a lake, fish for the day, and then leave. If the boat isn't properly cleaned, then it can transport small organisms into the next water environment it is placed in.</i>	<i>Turn to your neighbor and come up with other examples of vectors of invasive species.</i>	
	<i>Why do you think invasive species have the potential to harm the natural organisms in a habitat?</i>	Answers will vary.
	<i>How will it affect the entire food web?</i>	Answers will vary.
Show image of food web and demonstrate how there is a bottom up disruption from invasive species. <i>That's right. Invasive species can overtake an ecosystem by using up all of the resources. If one organism doesn't get its nutrients, then the predators of that organism won't have enough to eat either. This can continue all the way up a food chain until an entire ecosystem is disrupted.</i>	<i>How do you think we can prevent the spread of invasive species?</i>	Do not plant non-native plants in your gardens, clean boats, etc.

Elaborate		
Teacher Says/Does	Probing Questions	Student Responses
Show video of water hyacinth. Click Here for Video <i>In recent years, water hyacinth, an invasive plant species, has become a major problem in California.</i>		

	<p>Turn to your neighbor and discuss why you think this invasive plant might be causing problems.</p> <p>What did you come up with?</p>	Answers will vary.
<p><i>This invasive species has the potential to block out the sunlight for all other plant species in the water, which can then diminish the food supply for other organisms in the ecosystem. It also clogs the water ways, and boats cannot navigate easily through the plants. This slows down shipments and the economy.</i></p> <p><i>Water hyacinth is naturally found in South America, but it was brought to North America as a decorative water garden plant. It is thought it may have accidentally spread to public waterways through the wind or even on the feet of birds.</i></p>		

Evaluate		
Teacher Says/Does	Probing Questions	Student Responses
<p><i>Write a one minute paper that discusses how you think invasive species are relevant to California State Parks.</i></p> <p>Have students share their papers in groups. Make a list of how this topic relates to California State Parks.</p>		<p>Students write papers.</p> <p>Students share papers in groups and with class.</p>
<p><i>California State Parks is involved in habitat restoration efforts all over the state for areas that have been degraded due to invasive species or human activity. Our upcoming video conference will focus on the habitat restoration efforts taking place at Moro Canyon in Crystal Cove State Park.</i></p>		