Reading 10.1 – Your space or my space?

Getting Ready

Look at the purple flowers in this photo. This is a population of purple loosestrife. Most people probably think they are pretty. They are, but people who work hard to save wetlands are upset about purple loosestrife. They think, "Stop this dangerous invader!"

You have learned a lot about ecosystems. First, you learned that invaders can affect populations of animals. Second, you learned about how organisms compete for the same resources. The examples in class were about animals, but plants compete for resources too.

What resources do you think plants compete for in an ecosystem?

Highlight the answer to this question:

How Did Purple Loosestrife Get to the U.S.?

The purple loosestrife is not a native plant in North America. It originally grew in Europe and Asia. In the 1800s, people who came from other places brought the plant to North America with them. They thought purple loosestrife would be pretty in their gardens. But the plant quickly began to compete with native wetland plants.

Highlight the answer to this question: Hint - there is more than one answer!

Why Is This Plant Such a Good Competitor?

Purple loosestrife is often called the "Purple Plague." It spreads very quickly. Its strong stems and roots form deep mats that stop other plants in the area from growing. One purple loosestrife plant can produce almost three million seeds a year! One year there may be a few purple loosestrife plants, but by the next year, the area will be filled with many, many plants. In a few years, native plants have no space left to grow. The purple loosestrife quickly wins the competition for space.

When native plant populations can no longer survive in an area, other organisms are affected. Native wetland animals like ducks, geese, frogs, toads, and turtles no longer have the food and the nesting sites that the native plants provided. Wetlands are swampy areas where there is very wet soil. The land is often covered with water. The purple loosestrife's knotted, thick stems and roots can block creeks, rivers, and streams that are connected to the

wetland. When this happens, many other aquatic populations are affected in harmful ways.

What Can Be Done?

In Europe and Asia, some insects use the purple loosestrife for food. These insects are natural enemies that control the growth of the plant by eating its leaves quickly before they flower and produce seeds. In North America, there are no natural enemies for the plant.

Do you think bringing insects into the United States is a good idea? Explain your thinking.

If you look at the Environmental Protection Agency's website, you will see that the purple loosestrife is considered a major problem in North America. The plant was brought here, but its natural enemies did not come with it. So, there is no native way to stop the plant from taking over wetlands. But, some students are investigating a natural way to control the plant. They are raising beetles that are supposed to eat only purple loosestrife. Working with a museum and a park, students are engaged in a project to raise beetles and then to release them into an area overgrown by purple loosestrife. First, students grew the plants under lights. Then, they received a shipment of the beetles. With a food source and other right conditions, the number of beetles has increased. Without predators in the classroom, more beetles are reproducing than would happen in nature. The next step is to release the beetles in the lake to see what happens.

Are There Other Solutions?

Highlight the answer to this question: What are other solutions to control the purple loosestrife?

Pulling the purple loosestrife out by its roots is another way to control the plant. Putting chemical substances that kill plants, called herbicides, on them is another way to control growth. Both of these methods work to control the spread of individual plants and very small populations of purple loosestrife. The students you read about used the galerucella beetle, a biological control. Sometimes other plants or animals that feed on the plant are used to slow down the spread of the purple loosestrife.

Do you think using the galerucella beetle is the best way to control the purple loosestrife? Explain your ideas.

Return to the Getting Ready question at the beginning of this reading and compare the list of things plants compete for to what you read about in the reading. Does the purple loosestrife compete for any of the things on your list? What did you learn about the purple loosestrife that makes it a strong competitor?