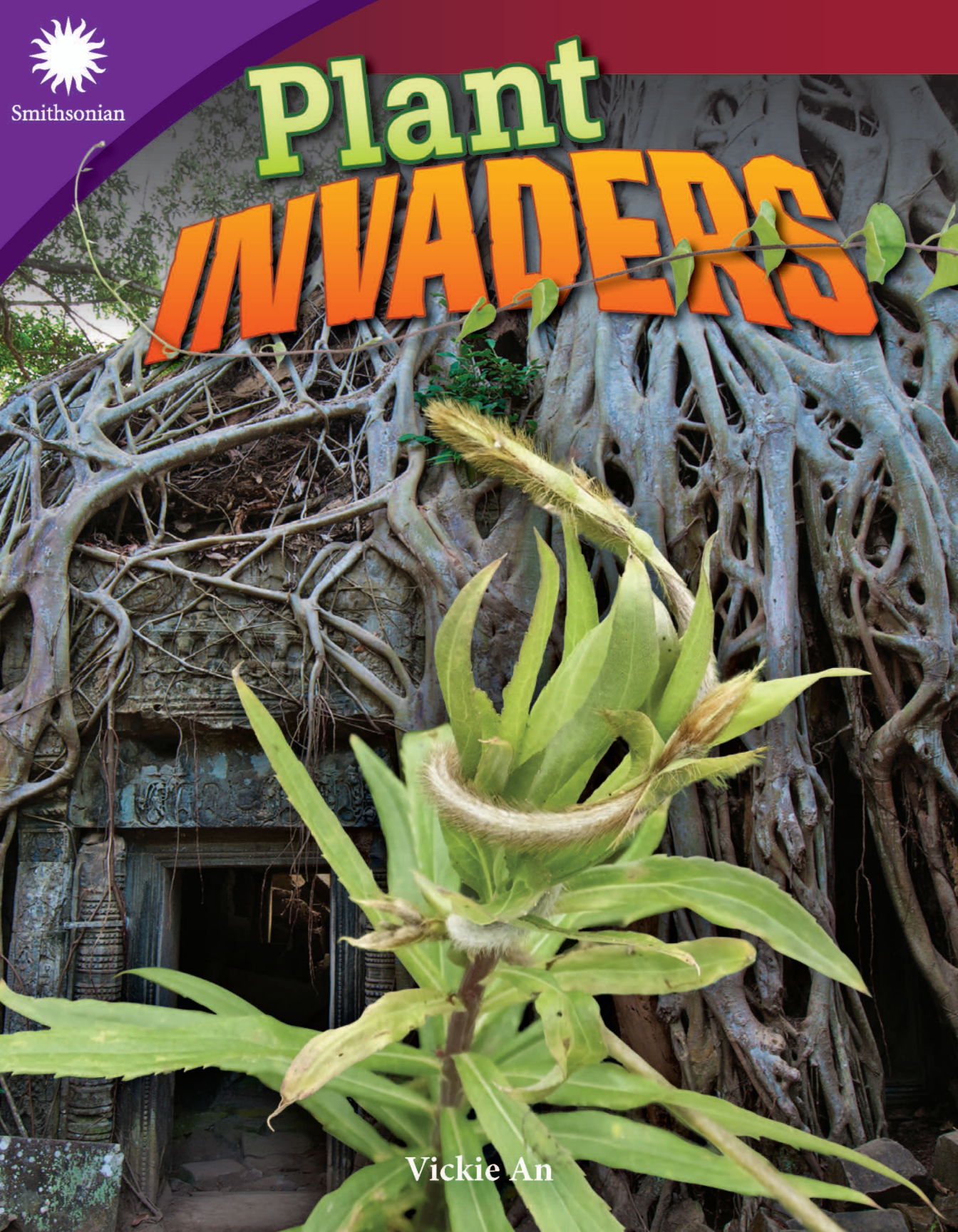




Smithsonian

Plant INVADERS



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Table of Contents

An Alien Invasion	4
Pushy Plants	6
Altering Nature.....	10
Fighting Back	18
A Second Chance at Life.....	22
Stop the Spread	26
STEAM Challenge.....	28
Glossary	30
Index	31
Career Advice	32

An Alien Invasion

You probably do not realize it, but there are green **invaders** everywhere. They live in our lakes. They call our parks home. They may even be in your front yard right now. These intruders have taken over many corners of the globe. But they are not space aliens...they're plants!

Enemies in Plain Sight

Usually, plants are good for the planet. But sometimes when plants are not **native** to a particular region, they can do a lot of damage. Some of these plants are called invasive species. An invasive species is a plant or animal that is moved into a new area and then spreads quickly. Sometimes, they are taken to a place by accident. Other times, they get introduced on purpose.

Invasive plants **thrive** in their new environments. They adapt so well that they end up pushing out other plants that grow there naturally. This can cause a ripple effect on everything else. They can destroy surrounding environments. They can affect the **economy**. They can even affect people's health.



English ivy

Poison ivy looks similar to English ivy, but poison ivy can cause a painful rash.

Workers remove water hyacinth from a clogged river in Thailand.



water hyacinth



Not all non-native plants are invasive. To be invasive, plants have to freely reproduce so much that they **outcompete** native plants.

Pushy Plants

There are many ways invasive plants end up where they do not belong. Some begin as decorative plants. One of the most widespread weeds is the purple loosestrife. These pretty buds come from Europe and Asia. Settlers took the plant to the United States in the early 1800s. They used them to add color to gardens. They also made medicine from the flowers.

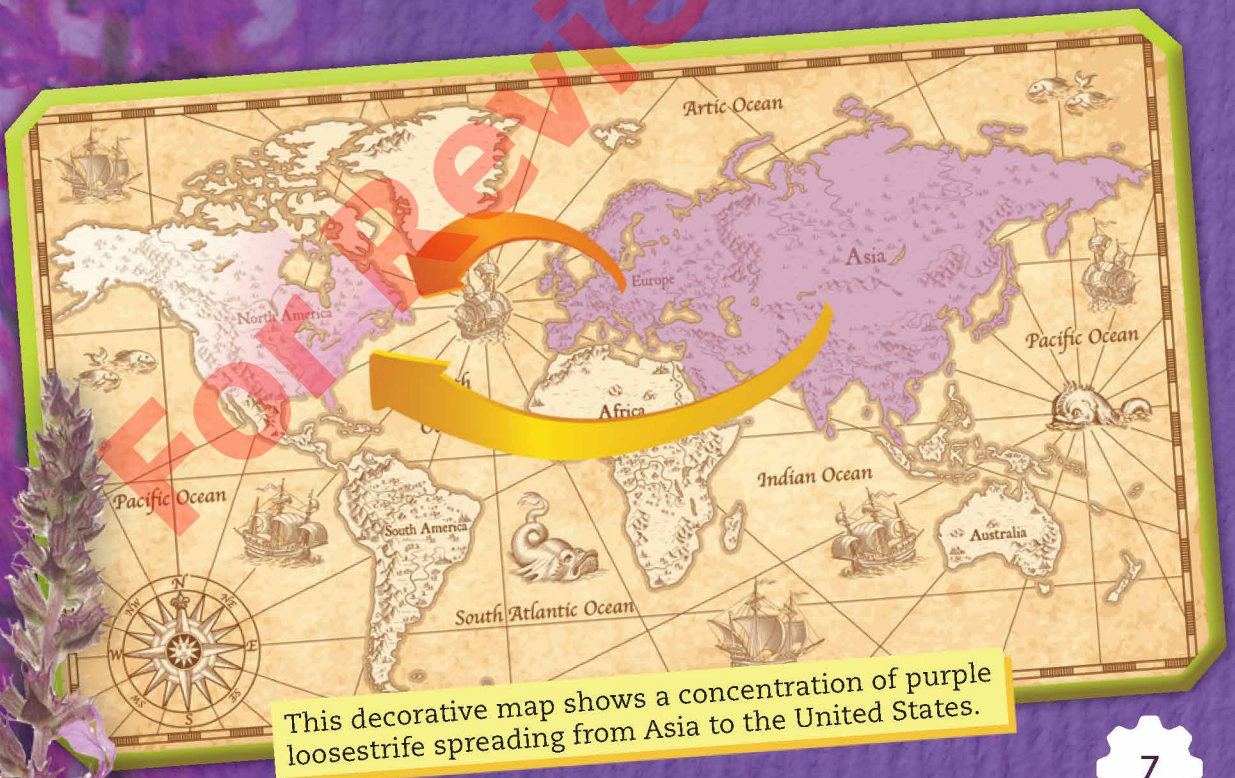
Today, the blooms grow wild in most states. The plants thrive in damp places. Purple loosestrife grows fast and has no natural **predators** in North America. So, it pushes out native plants as it spreads.

Some invasive plants are brought in to help solve problems. For example, ranchers in Australia purposely introduced gamba grass to **their lands**. They hoped this African grass could be used as a substitute for native **pasture** grass. Now, however, it has overrun large areas of the country and has been declared a weed. One problem with invasive **species** is that people don't know a plant will be invasive until it's too late.

It is easy to see why the purple loosestrife can spread so quickly. Each mature plant can produce more than two million seeds each year!



gamba grass
in Australia



This decorative map shows a concentration of purple
loosestrife spreading from Asia to the United States.

Japanese honeysuckle is another invasive plant in the United States. This flowering vine is from Asia, and like the purple loosestrife, it was brought there in the early 1800s. Some people grow the vine to provide food in the winter for animals, such as deer.

Parks and governments also use the vines to control **erosion**. The vines help protect the top layer of soil from harsh weather. The top layer of soil has the most nutrients. If that gets washed away, it is hard for new plants to grow there. So, the thick vines and flowers **help keep** the top layer in place.

Japanese honeysuckle grows year-round, with **flowers in the** spring and berries in the fall. It thrives in all sorts of **habitats**. Hummingbirds enjoy the sweet blossoms, and **many people** like to taste the honey-flavored nectar. What is so bad about that? For one, the flowers' nectar isn't harmful, but the **berries can** be poisonous. Also, honeysuckle vines spread fast. They **climb tree trunks** and form thick mats. This cuts off other plants from **light and water**. After time, these plants die.



A deer eats Japanese honeysuckle flowers.

A hummingbird with iridescent green and brown feathers is hovering in front of a green background. It has a long, thin beak. Above it are yellow honeysuckle flowers with long, spidery petals. To the right, there is a circular inset showing a cluster of small, round, red berries on a dark stem. A yellow text box is next to the berries, and another yellow text box is next to the hummingbird.

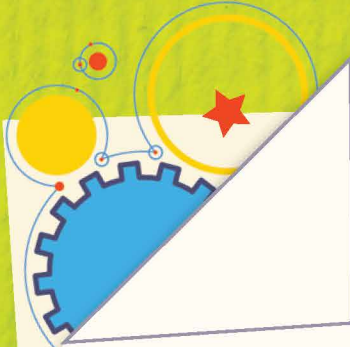
Honeysuckle berries can be poisonous to humans.

A hummingbird drinks nectar from Japanese honeysuckle.

SCIENCE

Longer Growing Seasons

Invasive plants thrive because they adapt quickly. This trait gives them a big advantage over native plants. That's especially true when it comes to climate change. A warmer climate is creating longer growing seasons. Invasive plants have begun blooming earlier in the year. Native plants have not been able to adapt. Early flowering gives invasive plants a chance to soak up more sun, water, and nutrients. This allows them to grow bigger, which also leaves fewer resources for native plants.



STEAM CHALLENGE

Define the Problem

The invasive flowering vine Japanese honeysuckle has started to appear along the edge of a forest ecosystem. By taking over vital resources, including sunlight, space, water, and nutrients, the plant is a growing threat to native species. Scientists are removing the vine but want to use it to create sun shades for people to use when it is hot outside. Your task is to design and build a model of a sun shade for two people.



Constraints: Your design must be made using only plant materials.



Criteria: A successful model will be able to shade two people while one person uses a handle to hold up the shade.





Research and Brainstorm

Why are scientists concerned about invasive species? What are some fun and original uses of plants people have discovered?



Design and Build

Sketch your sun shade. What purpose will each part serve? Where will the handle go? Build the model.



Test and Improve

Have two people stand underneath the sun shade. One person must use the handle to hold the shade for at least one minute. Did it work? How can you improve it? Modify your design and try again.



Reflect and Share

What did you discover about your team's design during the testing phase? Can you use your sun shade for another purpose? How would you modify your sun shade to shade more people?

