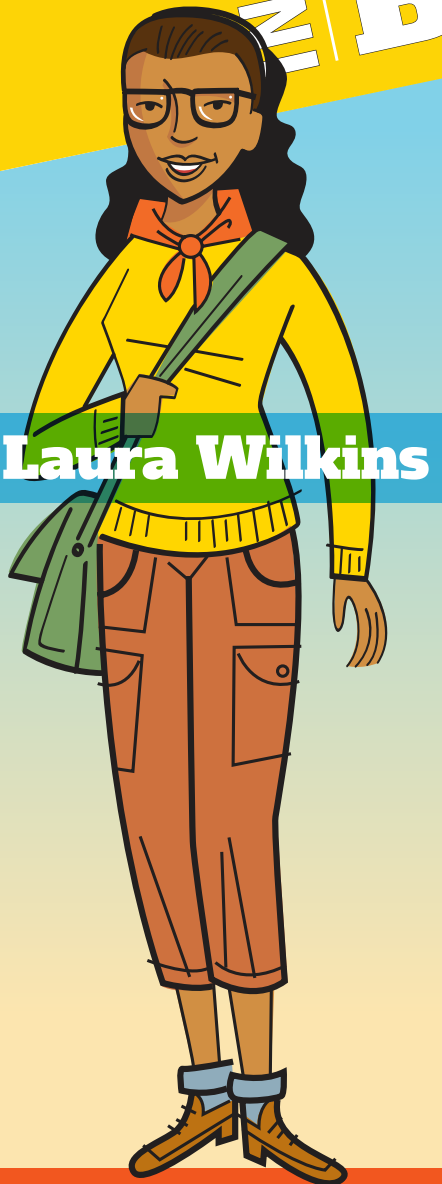




Help the Plant Heroes protect our forests  
by slowing the spread of pests and diseases!

**INSECT** | **REDBAY  
AMBROSIA  
BEETLE**

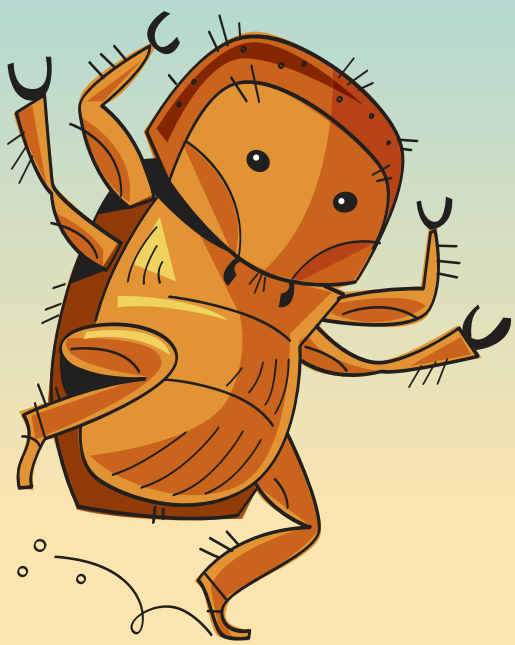
**PLANTHEROES.ORG**  
**BEGINNER  
ACTIVITY  
BOOK**



**Laura Wilkins**



**BE A PLANT HERO!**  
Help Laura slow the  
spread of the redbay  
ambrosia beetle!



# Meet the PLANT HEROES!



## LAURA WILKINS

From: Athens, Georgia  
Hobbies: playing the trumpet,  
gardening, studying ecology

## FRANKIE BARKER

From: Shrewsbury, Massachusetts  
Hobbies: climbing trees, camping

## NATE GREEN

From: Tacoma,  
Washington  
Hobbies: going on  
adventures, learning  
about fungi

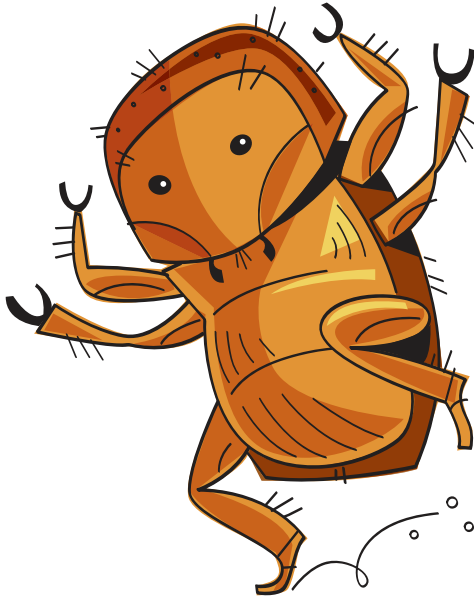
## APONI STAR

From:  
Southeast  
Illinois  
Hobbies:  
learning  
more about  
entomology  
(the study of  
insects)



[plantheroes.org](http://plantheroes.org)

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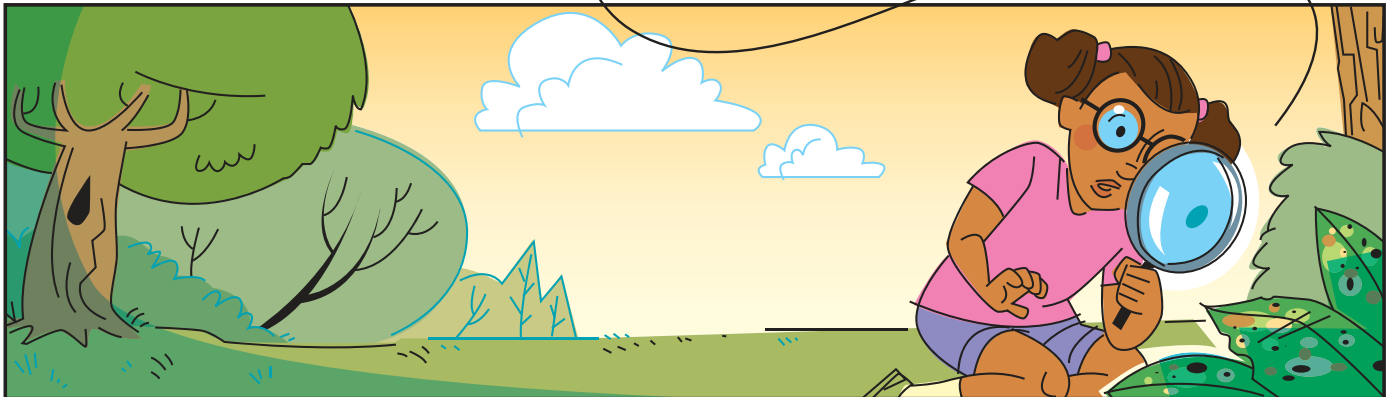
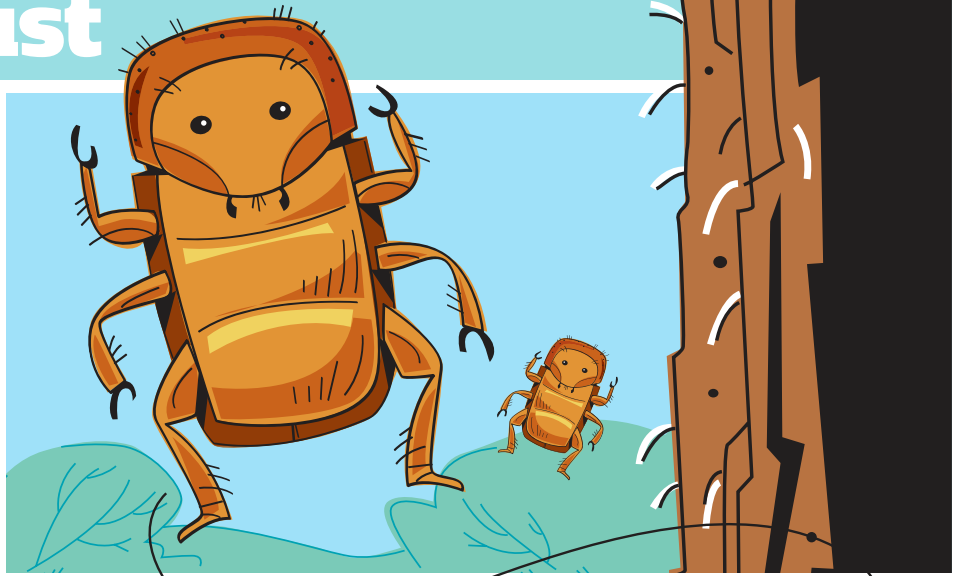
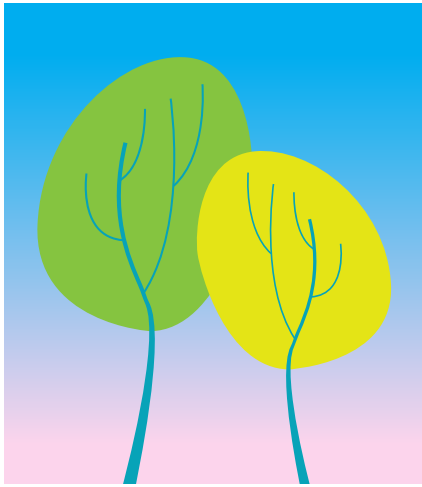


The Plant Heroes are four friends who love spending their free time in nature climbing trees, fishing, and camping. They've teamed up together because they've heard that the forests they love are in trouble. Insects and fungi who live overseas are often introduced to the United States accidentally. Unfortunately, these insects and fungi sometimes become invasive (spreading rapidly and causing harm to other insects and plants) because they are not in their native habitat. The plant heroes are working to stop the spread of these invasive pests.

**Follow Laura to learn the story of how she slowed the spread of the redbay ambrosia beetle...**



# The Redbay Ambrosia Beetle Bust



**Laura grew up on the Georgia coast,** so she was very familiar with the symptoms of laurel wilt decline and mortality in redbay, *Persea borbonia*. When she finished high school, she decided to study this problem at the University of Georgia.



While on a camping trip with some college friends in nearby Oconee National Forest, she observed some sawdust-like threads coming out of the bark of a redbay and knew that it could be symptoms of the disease.



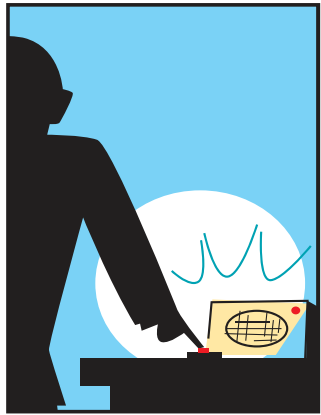
The Plant Heroes are brought to you by the American Public Gardens Association. This comic was developed with financial support from the USDA – Animal and Plant Health Inspection Service and reproduced with financial support from the USDA – Forest Service. Play games and learn how you can protect plants at [plantheroes.org](http://plantheroes.org).



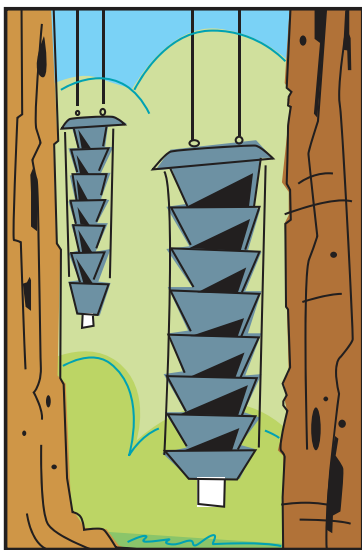


Concerned and ever curious...

Laura asked her teacher back at school about what she saw. Her teacher said that it might be the first documented case of laurel wilt in that part of the state. She put Laura in touch with their state's pest survey coordinator...



...who alerted the Plant Heroes team about the problem. They helped Laura put up redbay ambrosia beetle traps and lead a survey throughout the park.



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# A Small Beetle and a Fast-Growing Fungus



Redbay ambrosia beetle is a teeny tiny beetle. It was accidentally brought to the US from its home in Asia. It is not the beetle but the fungus it carries that really can hurt trees. The beetle carries the fungus inside special pouches in its mouth, so when it chews tunnels into another tree, the tree will also become infected with the fungus.



## WHAT IS A FUNGUS?

A fungus is a living being that is neither a plant nor an animal. Fungi feed on organic matter (like an animal or tree). Some common fungi that you might know include mushrooms and molds.

**HANDY TIP:**  
Fungi means more than 1 fungus; fungus means just one fungus.



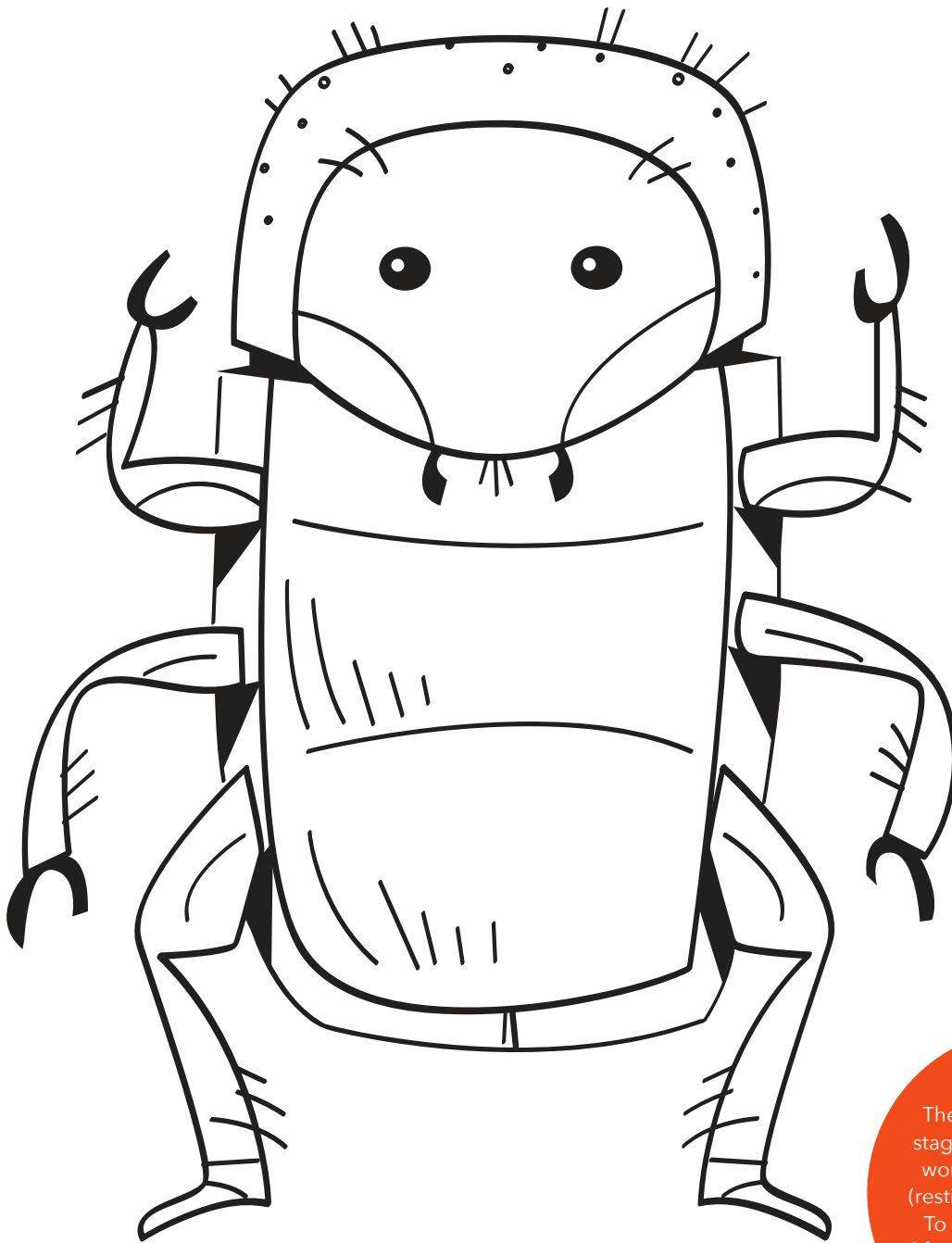
This fungus was grown in this petri dish in a lab for scientists to study it more closely.

**BE A SCOUT!**  
Look around in a park or garden near you. Can you find any fungi? They will probably be growing on rotting logs near the forest floor. **Be sure not to touch or eat any fungi you find outside—some fungi are very poisonous!**



# The Beetle Behind It All...

It's hard to believe that a beetle smaller than a grain of rice can hurt a tree. These beetles are so harmful because many beetles attack a tree all at once. Mature redbay ambrosia beetles are dark brown and shiny. Color in the redbay ambrosia beetle below!



The beetle has four life stages: **egg**, **larva** (white worm-like stage), **pupa** (resting stage), and **adult**.

To see photos of these life stages, visit page 2 of your field guide!



[plantheroes.org](http://plantheroes.org)

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# Trees in Trouble



Trees have several different ways of showing us that they are in trouble. The photos below show trees infected with laurel wilt. Use your detective skills and match up the descriptions with the photo they describe.



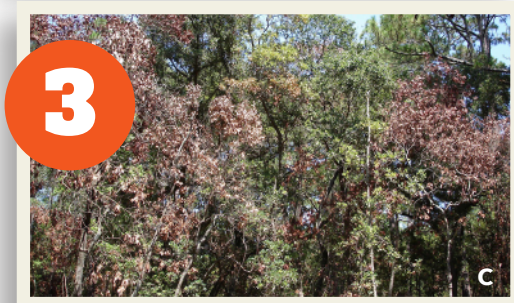
The inside of the tree in this photo has black stripes caused by the fungus.

.....



The fungus covers the inside of the tunnels and looks like white strings.

.....



The leaves on the tree turn brown because the tree cannot drink.

.....



You can see little strings of sawdust on the bark which are made when larvae dig tunnels through the tree!

## Why does the beetle carry the fungus?

Redbay ambrosia beetles eat the fungus that causes laurel wilt! The mother beetle will carry along the fungus inside her mouth to plant inside the tunnels so her larvae will have something to eat when they hatch!





# Riddle Me This

Redbay ambrosia beetles only visit certain trees to raise their young. The trees below are some of their favorites. Solve the riddles below to learn more about their favorite trees!



## WORD BANK:

**SASSAFRAS, AVOCADO, REDBAY**



I have long glossy leaves and a fruit that is used to make guacamole! What am I?



My leaves look very different from each other, even though they all come from the same tree! My stem and leaves smell spicy. What am I?



I have thick leaves that smell spicy, and blue fruit. There is a color in my name! What am I?



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PHOTO CREDITS: A: Chris Evans, Bugwood.org; B: Karen A Rawlins, Bugwood.org; C: Forest and Kim Starr, Flickr.com

# The Importance of One Tree

Every tree in a forest is important for giving food and shelter to many different animals. Many animals visit redbays to eat their spicy leaves or their blue fruits. Find all the animals that use the redbay in the word search below!

**WORD BANK:**  
**BUTTERFLIES**  
**BIRDS**  
**TURKEYS**  
**BEES**  
**BEARS**  
**DEER**  
**QUAIL**  
**HUMANS**

X	G	Y	M	R	D	I	S	N	S	L	G	X	O	B
T	N	A	O	U	O	H	H	C	Y	J	P	L	O	U
U	B	M	M	Y	O	D	V	M	J	S	Q	O	Q	X
R	J	L	O	G	H	B	R	Q	U	A	I	L	O	O
K	B	H	L	T	D	I	R	V	A	U	Z	W	N	L
E	N	U	Y	T	B	M	R	O	Z	T	R	B	A	Z
Y	C	M	T	M	Z	L	Q	P	F	I	G	I	M	O
S	F	A	H	T	B	C	K	J	A	S	C	R	M	G
M	C	N	I	G	E	A	P	V	P	S	Z	D	A	R
V	S	S	X	T	A	R	F	U	A	P	G	S	Y	E
T	F	D	Z	F	R	H	F	X	U	C	A	J	U	S
A	U	P	K	E	S	A	P	L	H	J	I	M	E	C
T	S	O	E	X	K	K	N	S	I	H	B	E	L	C
D	F	D	V	V	F	P	S	E	O	E	B	W	F	U
U	V	S	K	X	P	Y	L	M	S	V	S	M	G	Y

**TRY THIS AT HOME!**

Redbay leaves can be used instead of bay laurel leaves in the soups you make at home. Make sure you are with an adult who can point out a redbay before you pick any leaves to eat.

## Be a Plant Hero!

Please help us stop the spread of laurel wilt! To be a plant hero, follow this guide below.

**1** Promise to never move firewood (because our beetle friends may be inside and we don't want them to spread!)



**2** If you see a tree that looks unhealthy, look at it up close. Tell an adult if you see any signs that a tree might have laurel wilt.



# Try This At Home: Fresh Guacamole!

Ask an adult to help you with chopping some of the ingredients for this recipe. Serve it with some tortilla chips for a delicious snack!

- 2 avocados, skin and pit removed, mashed
- 1 tomato cut into small pieces
- 2 limes, juiced
- ¼ red onion, diced small
- 2 tablespoon chopped cilantro
- ½ teaspoon cumin
- Several dashes hot sauce (optional)
- A bit of sea salt and fresh ground pepper

Stir all the ingredients together in a bowl. Enjoy!

Recipe amended from Fresh from Florida (<https://bit.ly/floridaguacamolerecipe>)



# Grow your own avocado!



Scan this QR code on a phone, or type in this link to view a short video about how to grow an avocado from seed. [bit.ly/growyourownavocadotree](https://bit.ly/growyourownavocadotree)



## ANSWER KEY

**Trees in Trouble:** 1. b; 2. d; 3. c; 4. a

**Riddle Me This:** 1. Avocado; 2. Redbay; 3. Sassafras

### The Importance of One Tree

X	G	Y	M	R	D	I	S	N	S	L	G	X	O	B
T	N	A	O	U	O	H	H	C	Y	J	P	L	O	U
U	B	M	M	Y	O	D	V	M	J	S	Q	O	Q	X
R	J	L	O	G	H	B	R	Q	U	A	I	L	O	O
K	B	H	L	T	D	I	R	V	A	U	Z	W	N	L
E	N	U	Y	T	B	M	R	O	Z	T	R	B	A	Z
Y	C	M	T	M	Z	L	Q	P	F	I	G	I	M	O
S	F	A	H	T	B	C	K	J	A	S	C	R	M	G
M	C	N	I	G	E	A	P	V	P	S	Z	D	A	R
V	S	S	X	T	A	R	F	U	A	P	G	S	Y	E
T	F	D	Z	F	R	H	F	X	U	C	A	J	U	S
A	U	P	K	E	S	A	P	L	H	J	I	M	E	C
T	S	O	E	X	K	K	N	S	I	H	B	E	L	C
D	F	D	V	V	F	P	S	E	O	E	B	W	F	U
U	V	S	K	X	P	Y	L	M	S	V	S	M	G	Y

PHOTO CREDITS: A: Maria Keays, Flickr.com; B: Rusty Clark, Flickr.com





Join our team of Plant Heroes and learn about trees, forests, and the natural world around you!

**PLANTHEROES.ORG**

### You can be a Plant Hero!

Are you curious about plants and animals? Do you like asking questions about nature? Do you enjoy being outdoors and having fun, climbing trees, balancing on logs, or finding a new butterfly or beetle? If so, you are already on your way to becoming a Plant Hero! We invite you to join forces with Nate, Laura, Aponi, and Frankie to protect the plants and ecosystems we all love.

### How can you become a Plant Hero?

Join our team and go on a journey with Nate, Aponi, Laura, and Frankie. As a Plant Hero, you will learn to notice when plants are in trouble. You will also find out ways you can act quickly to help find solutions in your own neighborhood. Follow their adventures and learn how they help plants and ecosystems stay healthy.

**On the Plant Heroes website, you will find** materials to help you learn about plants, forest health, and ecosystem balance. The more you know, the more you can help protect plants and ecosystems in your own yard, neighborhood, and community!

**Plant Heroes strives to spark curiosity about nature and science in all children.** Our program provides hands-on, nature-based learning materials for educators to engage children in topics of plant health, ecosystem balance, and forest health. We also spotlight the amazing work our public gardens do in protecting the plants and ecosystems we all depend on through our website and printed materials. Visit [plantheroes.org](http://plantheroes.org) today to learn more!

**Plant Heroes is brought to you by the American Public Gardens Association**, founded in 1940. Over the last eight decades, the Association has supported the work of public gardens in North America and beyond. Our mission is to champion and advance public gardens as leaders, advocates, and innovators in the conservation and appreciation of plants. Our vision is "A world where public gardens are indispensable" as they provide botanic, conservation, community, education, and economic resources to their community.

The Association is committed to increasing the knowledge of public garden professionals throughout North America through information sharing, professional development, networking, public awareness, and research, so that they have the tools to effectively serve visitors and members.



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