



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

PLANTHEROES.ORG
BEGINNER
ACTIVITY
BOOK

INSECT

ASIAN CITRUS PSYLLID

Laura Wilkins



BE A PLANT HERO!
Help Laura slow the
spread of the
Asian citrus psyllid!



AMERICAN PUBLIC GARDENS ASSOCIATION

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)



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The Plant Heroes are four friends who love spending time in nature more than anything else! They enjoy climbing trees, walking trails, and camping.

The heroes are learning about why our forests are in danger. There are insects and fungi that can impact trees, sometimes affecting the health of whole forests. Trees may become sick or die when they are weakened by an invasive species, a living thing that can cause damage to existing organisms when it is introduced to a new environment.

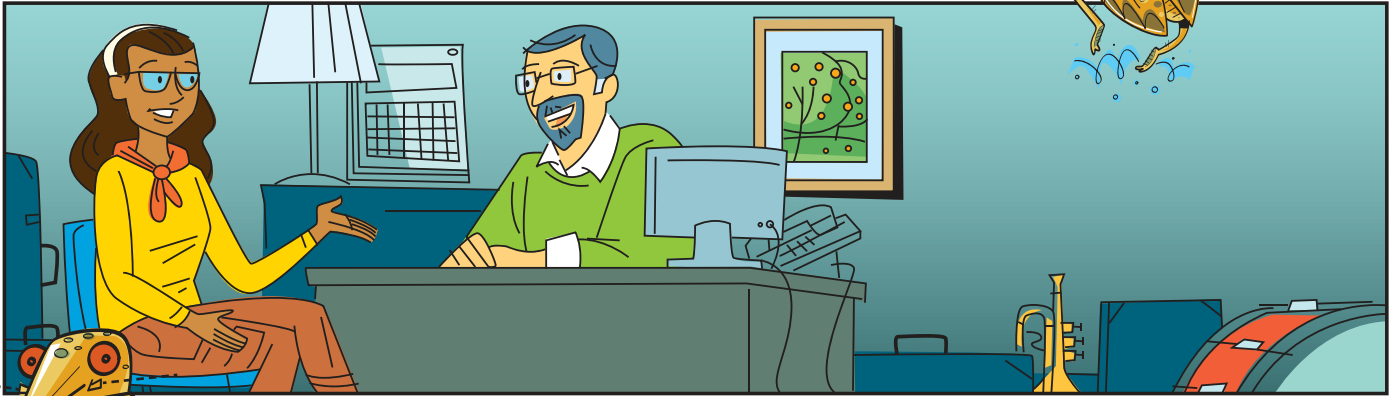
Follow Laura to learn the story of how she helped slow the spread of the Asian citrus psyllid...



ORANGE YOU GLAD YOU ASKED?



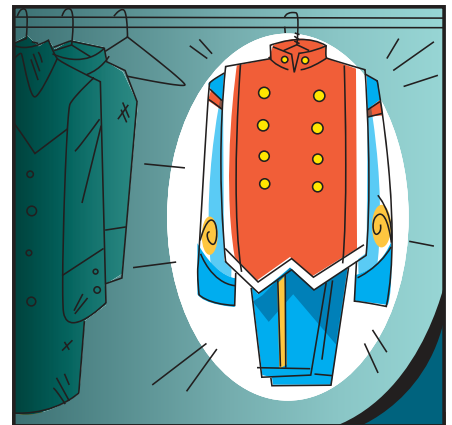
PLANT HEROES



Laura plays trumpet in her high school band in Athens, Georgia. Their band director, Mr. Mason, has been talking about doing a fundraiser to upgrade their band uniforms. He mentions that he's spending Thanksgiving with a cousin in Florida who lives on an old orange farm.

The farm's been out of business for several years...

... but his cousin said he could get a truckload of oranges anytime, so long as "he did the pickin'."



Mr. Mason suggests that they could easily sell the fruit at their winter holiday performance and use the money to get new uniforms!

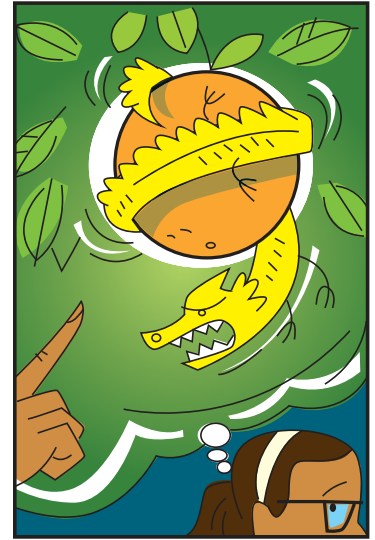
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The story makes Laura think about her family's visit with her Aunt Linny in Mobile, Alabama last winter.



She remembers enjoying all of the citrus in her aunt's garden and her disappointment to learn that she couldn't bring any home because it hadn't been inspected and might be carrying Asian Citrus Psyllid and the deadly citrus greening disease, also called "yellow dragon disease".



Her aunt explained they can't move the fruit because they would risk introducing this pest to a new area...

WAIT, how would this be any different?



Laura suggests to Mr. Mason that they look for a more "official" supplier of fruit, and after a little searching online, they discover a fruit association that has a fund-raising program and guarantees all of its produce is inspected by the USDA. They put together their order and start marketing the band's fruit sale event.



It was a huge success! They got new uniforms, and knowing that they did it without introducing a new pest makes the whole school proud. They even had enough extra money to take an end of the year

FIELD TRIP!!!



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The Tiny Insect Behind it All

The Asian citrus psyllid is TINY— about the size of a grain of rice! It feeds upside down with its abdomen sticking up, almost as if it is standing on its head. Inside its body, the psyllid carries a bacteria that causes a disease in citrus trees called Huanglongbing.



WHAT IS A PSYLLID?

Psyllids are tiny flying insects related to aphids that feed on plants by sucking the sugary liquids from leaves and stems. Too many of them can hurt the plant!

Can you be a psyllid detective?
Circle and count how many adult psyllids you see in the image below. How many did you see? Write it here



Want to learn more about them? Check out page 2 of your field guide!



Look around you. Can you find an insect near you that is as small as the psyllid? Did you find one? Draw it below:

MY TINY INSECT



Delicious Citrus



The Asian citrus psyllid has a mouth that acts like a straw, and uses it to drink the sugary liquids inside leaves and stems of citrus trees. But, what are citrus trees? They are a type of plant that produces food (such as lemons, limes, and oranges) and also other products humans use every day (such as vitamin C, essential oils, cleaning products, etc.) They have shiny green leaves, grow in warm climates, and often have nice-smelling flowers.

Use arrows to match the description of the citrus tree with the citrus fruits below!

1. I am a tree with sweet-smelling white flowers. People crush my round fruit to drink as a juice for breakfast.

2. I am a tree with sharp spines and oval fruits. My fruits are green and often squeezed to make a delicious pie.

3. I have whitish-purple flowers and my yellow fruit is extremely sour!

4. I have short thorns, evergreen leaves, and large fruits with pink flesh that is both sour and sweet.

Can you think of any other citrus fruits?
Name them in the space below!

.....



The Psyllid's Favorite Trees



Asian citrus psyllids eat the liquid inside the leaves and stems of citrus trees, and when they suck these juices out of the tree, the bacteria moves from their mouth into the plant. This can hurt the citrus trees!

My favorite citrus fruit is:

.....

My favorite food or drink that comes from a citrus fruit is:

.....

I also like citrus because:

.....

What does the bacteria Huanglongbing do to citrus trees? Check out some of the clues that a tree was visited by psyllids in the diagram below. Can you draw arrows connecting each clue to the correct part of the tree?

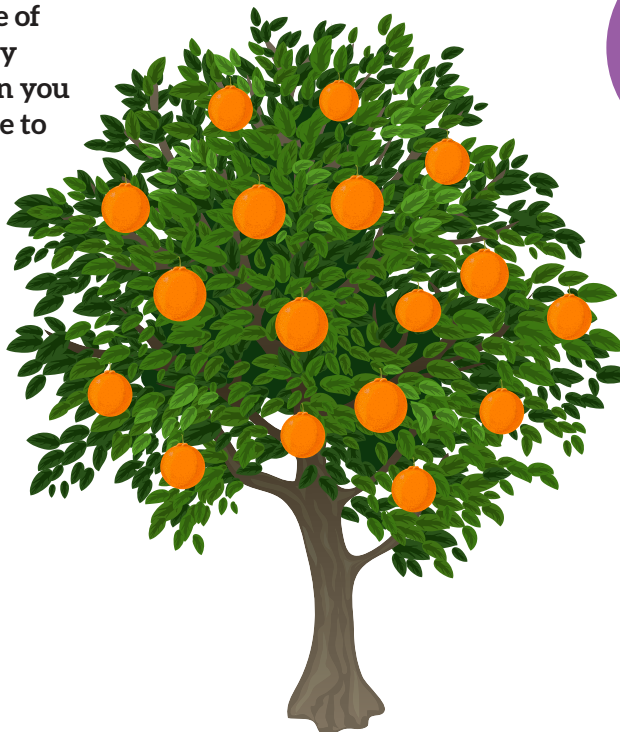
Follow along on page 6 of your field guide!



FRUITS:
bitter tasting



OLDER LEAVES:
turn yellow and fall to the ground



TWIGS:
black tips



LEAVES: covered in psyllid nymphs and adults



Lifecycle Maze



Humans change as they get older. Did you notice that you get a little taller every year? The Asian citrus psyllid starts as an egg, and then becomes a nymph, and finally transforms into an adult. Follow the life cycle of the psyllid through the maze to learn more!

START →

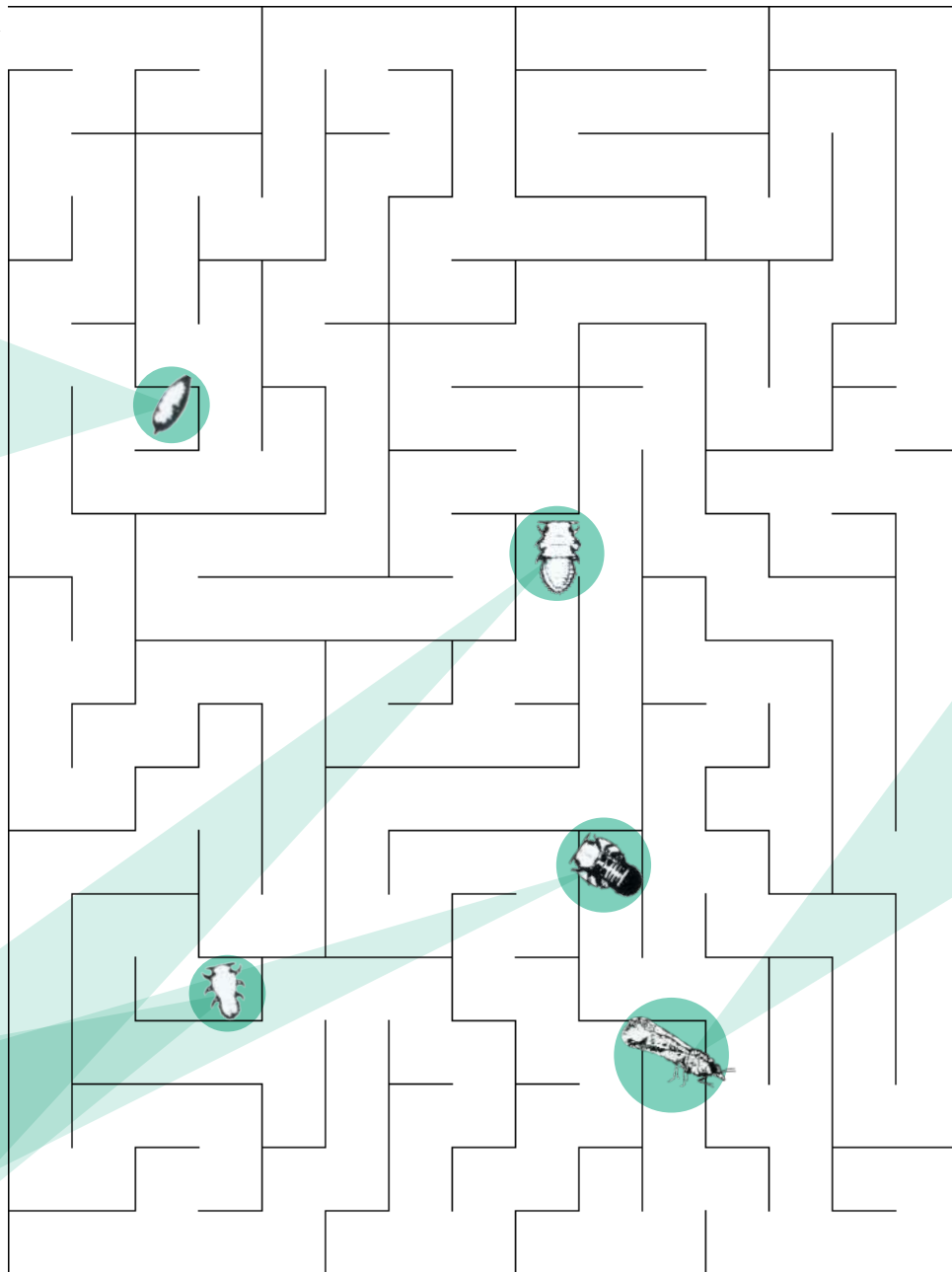
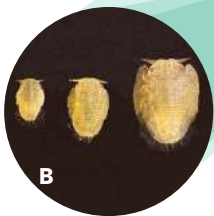
EGG

The psyllid starts its life out as an egg as tiny as a grain of sand!



NYPH

As it matures, the psyllid turns into a nymph. Nymphs are like the teenage stage of the Asian citrus psyllid—they aren't quite adults, but they aren't kids either! They have not yet developed wings and they are very hungry! To learn more about nymphs, follow along on page 3 of your field guide.



ADULT

The psyllid changes into an adult. A female can lay nearly 1,000 eggs in her lifetime!



FINISH



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Slow the Spread!

The Asian citrus psyllid can be transported to new areas by people which causes the bacteria to infect new trees. You can help! Be a Plant Hero and fill in the blanks with the words below to find out how YOU can help slow the spread of the bacteria that is harming our citrus trees.

WORD BANK:

MOVE
LIMES
LEMONS
ORANGES
LOOK
PSYLLIDS
GRAPEFRUITS
TANGERINES
INSECT EXPERT

1. If you grow fruits like _____, _____, _____, _____, or _____, remember to only eat them on your property! Do not _____ any parts of a citrus plant like leaves or fruits.
2. If you see a tree with psyllids on it, contact a local _____ for help with identifying the insect and removing the tree.
3. Most importantly, remember to _____ for _____ on the trees near you! Once you start looking, you will be surprised at how much you notice!

COLOR THE PSYLLID!



Have you seen any citrus trees near where you live?
If so, draw one below!



Time to Journal



What I remember most about the Asian citrus psyllid is

The coolest thing I learned in this book is

My favorite citrus tree I want to help protect is

ANSWER KEY

The Tiny Insect Behind it All: 16 adult psyllids

Delicious Citrus: 1. oranges; 2. limes; 3. lemons; 4. grapefruits; other citrus fruits: mandarins, clementines, tangerines, pomelos, kumquats

Slow the Spread! 1) limes, lemons, grapefruits, oranges, tangerines (in any order), move; 2) insect expert; 3) look, psyllids





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

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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 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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