



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

INSECT | WALNUT TWIG BEETLE

PLANTHEROES.ORG
BEGINNER
ACTIVITY
BOOK

Aponi Star



BE A PLANT HERO!
Help Aponi slow
the spread of the
Walnut Twig Beetle!



Plant
Protection
Program

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, fishing, and camping.

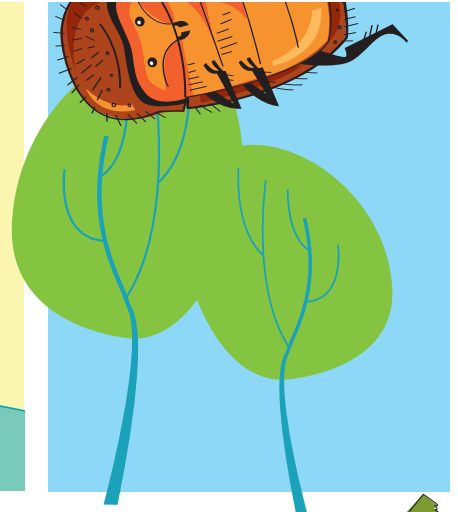
Soon the heroes discovered that our beautiful forests are in danger! Some bugs and fungi were brought to the United States from other countries, and they are causing our trees to die. These bugs and fungi are called “invasive pests”. Invasive pests are insects or fungi that are far from their homes, and are causing a lot of damage to our forests.

Follow Aponi to learn the story of how she slowed the spread of the walnut twig beetle...





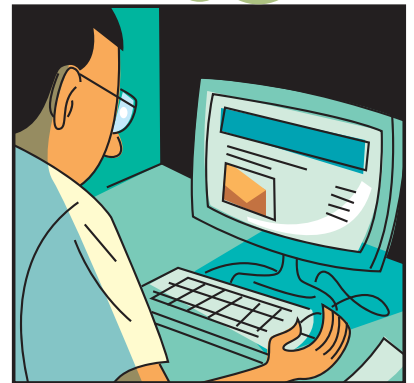
TO CATCH A THOUSAND CANKERS



Aponi is spending the summer helping her dad, Ben, remodel their kitchen.



Ben loves making furniture!



He has spent weeks searching the internet for rough-sawn walnut and has finally found a supplier in Ohio for the last item on their project list—a new kitchen table and chairs!



Ben realizes that the seller is located near Aponi's cousins in Hamilton, Ohio, and suggests that they make it into an end-of-summer ROAD TRIP!

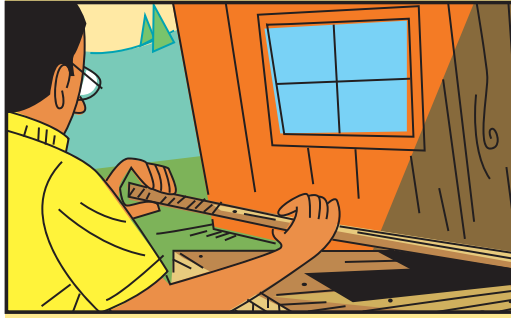


Aponi and her dad drive the family pickup truck up to Hueston Woods State Park and spend the weekend camping with the family.

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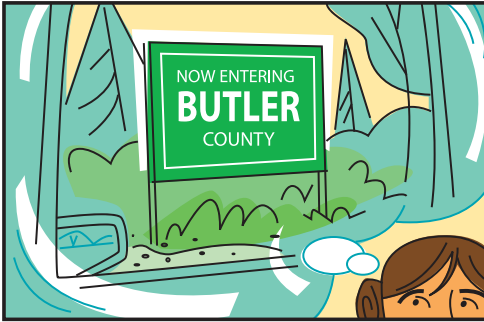
On their way home, they stop in the nearby town of Oxford to visit the man that was selling the walnut lumber.



LOOKS GOOD ENOUGH TO EAT!



Ben inspects the wood and everything looks good... the bark is still on the edges but the lumber looks straight and the price is right!



WAIT DAD!

"Illinois has an exterior quarantine to prevent raw walnut from being brought in from places known to have walnut twig beetle and thousand cankers disease. I don't think we should risk it! Can we look at some other type of wood instead?"



"Good catch, Aponi. I forgot about the fact that you folks were coming from out of state! Why don't I show you some of the redoak timber I just milled?"



Aponi and Ben load up and head home. They spend the last few weeks of her vacation together in Ben's woodshop and before school starts have finished the kitchen table and chairs. The grain looks beautiful and they can rest easy knowing that they didn't accidentally introduce a new forest pest!



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A Small Beetle and a Harmful Fungus



Walnut twig beetle is a teeny tiny beetle—about the size of a poppy seed! It is not the beetle but the fungus it carries that 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.



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

HANDY TIP:
Fungi means more than 1 fungus;
fungus means just one 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 a tree). Some common fungi that you might recognize include mushrooms and molds.



PHOTO CREDITS: A: Steven Valley, Bugwood.org; B: Ned Tisserat, Bugwood.org; C: Karen Snover-Clift, Bugwood.org



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Lifecycle Maze

The walnut twig beetle goes through several changes, or life stages, during its lifetime. Adult beetles lay eggs inside walnut trees, and larvae hatch out of those eggs. After a long snack on a tasty walnut tree, the larvae changes into a pupa, and finally into an adult. Can you solve the maze below and help the walnut twig beetle complete its lifecycle?



1. EGGS

A female adult beetle lays her eggs inside a walnut tree.

START



2. LARVA

The egg hatches into a white larva. The larva begins to chew tunnels inside the tree.

HANDY TIP!

Add an "e" at the end of larva or pupa if you are talking about more than one larva or pupa!

3. PUPA

This stage is called a pupa. The pupa is a resting stage during which the larva changes into an adult.

END

4. ADULT

An adult walnut twig beetle chews its way out of the tree, and flies away to search for a mate!



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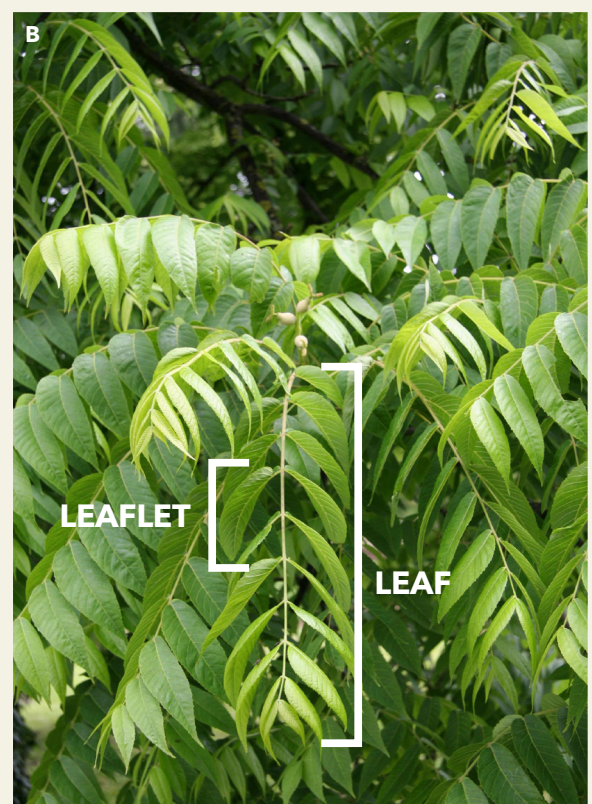
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The Beetle's Favorite Trees

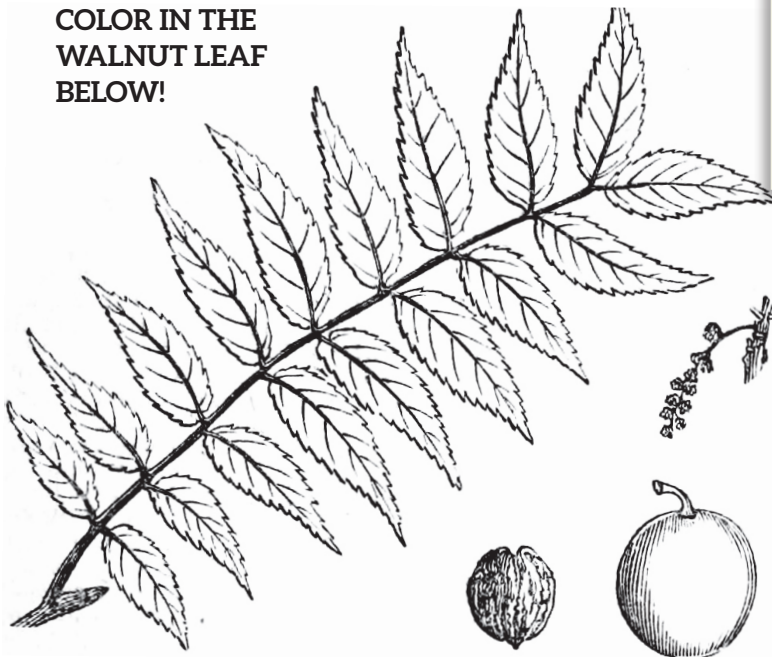


The walnut twig beetle lives in and feeds on walnut trees. Look around in the woods or garden near you and see if you can find a walnut tree. Use the handy checklist below to identify your tree—can you check all the checkboxes? If so, it's probably a walnut!

- Walnut trees have several smaller leaves (called leaflets) that together make up one leaf!
- Walnuts have round fruits that look like green tennis balls! They turn brown after ripening



COLOR IN THE WALNUT LEAF BELOW!



- If you remove a leaf from a twig, the place where the leaf joins the twig is large and looks a little like a smiling monkey!
- The bark of the tree has deep grooves in it.
- The buds of the tree are fuzzy and grey.



Trees in Trouble

Walnut trees give us several clues that they are suffering from thousand cankers disease. If you found an unhealthy walnut, here is what you would see:

1. Yellow leaves
2. Dead branches towards the top of the tree
3. Thin spots where the tree is missing leaves

In the photo below, circle what you see that shows you that the tree isn't healthy.



A



For more photos of thousand cankers disease, see page 6 & 7 in your field guide!



The Importance of One Tree

Every tree in a forest is important for providing food and shelter to many different animals. Many animals visit black walnuts for food. Find all the animals that rely on the black walnut tree in the word search below!

WORD BANK:

HUMANS

SQUIRRELS

BEARS

MICE

TURKEYS

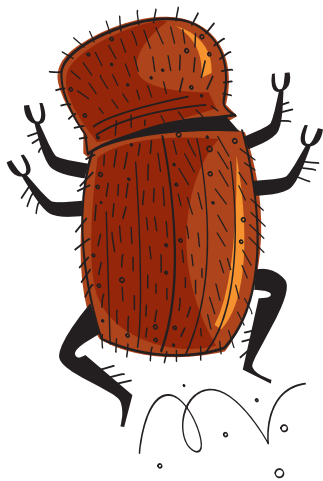
WOODPECKERS

CHIPMUNKS

RACOONS

FOXES

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



Do you think black walnut trees are important for our forests? If so, can you think of some other things they might provide to humans or animals?





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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This publication was developed with financial support from the US Forest Service and the USDA Animal and Plant Health Inspection Service.

