

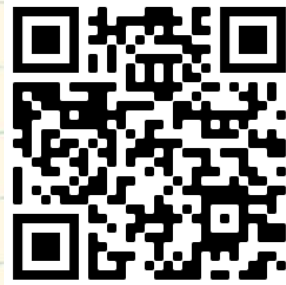
# WE NEED YOUR HELP!



We are glad to provide these materials for free. In order for us to continue receiving funding for new materials, we need to collect information on how they are used.

Thank you for taking the time to answer the following one-minute survey.

There are three ways to complete the survey:



- 1** Scan this code with your smartphone camera
- 2** Type the following link into your web browser:  
<https://plantheroes.org/educator-survey>
- 3** Email your answers to:  
[plantheroes@publicgardens.org](mailto:plantheroes@publicgardens.org)



- 1) Job title
- 2) Name of organization you belong to
- 3) What kind of educator are you?
  - Teacher
  - Summer camp counselor
  - Home schooler
  - Public garden educator
  - Informal educator
  - Other (please describe)
- 4) What grade level do you teach?
  - Elementary (K-5)
  - Middle School (6-8)
  - High School (9-12)
  - Other (please describe)
- 5) Specify what subject area you teach:
  - Science
  - Math
  - Language Arts
  - Social Studies
  - Other (please describe)
- 6) How many students do you teach in a school year?



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

# ARMILLARIA SHOESTRING ROOT ROT

PLANTHEROES.ORG  
**BEGINNER  
ACTIVITY  
BOOK**



**BE A PLANT HERO!**  
Help the Plant Heroes  
slow the spread of  
the Armillaria  
Shoestring Root Rot!



Plant  
Protection  
Program

AMERICAN PUBLIC GARDENS ASSOCIATION

# Untangling the Mystery of Shoestring Root Rot



SUMMER BREAK has been great and the Plant Heroes (Aponi, Frankie, Laura and Nate) have been busy, but before starting the new school year they meet up for their annual camping trip reunion! After they pitch the tents, they start exploring the rest of the surrounding clearing and nearby forest...

Aponi discovers big clusters of honey-brown mushrooms growing and sprouting out of several old stumps.



Nate finds a few fallen trees nearby, some snapped near the base and others with roots pulled out of the ground.



Laura sees some trees around the edge of the clearing that are clearly dead but still standing.

Laura chips some bark off of one and, underneath, finds some freshly decayed wood that is unusually white. Curious, she uses her hatchet to chop out a few pieces and puts them in a plastic bag in her backpack.

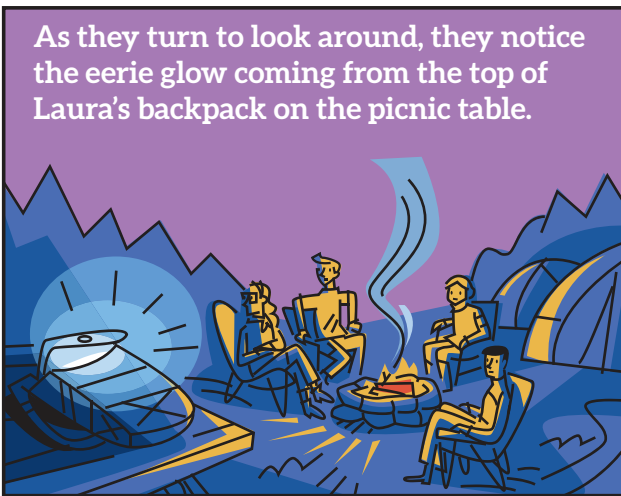


Frankie is practicing his climbing skills on some trees just outside the clearing and notices that a few have some yellowing needles and dead tips.

**Over the campfire that evening...  
the Heroes trade stories about what each of them saw and where.**



Pretty quickly they see the pattern ... trees in the middle of the clearing have been dead the longest and that whatever killed them is **GROWING INTO THE FOREST!**



As they turn to look around, they notice the eerie glow coming from the top of Laura's backpack on the picnic table.



**THAT'S FOXFIRE!**



Nate explains to the others that he's heard lots of different kinds of fungi glow but that some of them are **REALLY BAD** for the forest and they need to try to find out what kind it is.



The next morning they take a closer look at some of the dead trees and, under the bark, find thick mats of dark stringy fibers. "UH-OH!" says Nate, "THAT LOOKS LIKE SHOESTRING ROOT ROT!"



The Heroes rush to the park headquarters and tell the local forester what they've seen. She runs some tests to be sure and then brings in excavators to remove all of the dead and dying trees. It's a mess, but at least they've stopped the fungus from spreading further into the woods!

After all the stumps are gone, the Heroes help restore the forest by replanting the area with trees that are resistant to the fungus.

# PLANT HEROES





Name \_\_\_\_\_

Date \_\_\_\_\_



**Find and circle the following words:**

**Mushroom  
Forest  
Roots**

**Shoestring  
Grow  
Trunk**

**Tree  
Spore  
Fungus**

Z **F U N G U S** S T U G R Y

N H M U S H R O O M S B M

W X W R G R O W G L G O T

W G U S P O R E E R R K R

R O O T S U S H T Y O W O

F G S B M E F O R E S T Z

N X U I J T R U N K P B S

Q E E S W A T T R E E E U

E K S H O E S T R I N G O

# PLANT HEROES





Name \_\_\_\_\_

Date \_\_\_\_\_



**Complete the maze and then find the words. The words can only be found along your maze path.**

Bark  
Spread  
Honey

Gills  
Mushroom  
Glow

Fan  
Cap  
Roots

Foxfire  
Rot  
Stump

QCMUSHROOMOPVBDSFTIBNHIVNSJPDONNEQKUSXQAV

K  
Q  
J  
K  
C

G  
C  
H  
R

◀ START

END ◀

KXKMWYTRPMQTCLTR      GNDQDJ      R      X

F      E      B      D      W

O      R      A      M      G

X      C      R      S      B

F      A      K      P      P

C      I      S      P      OROTB      OQGSYR      V

Y      R      N      F      P      E      J

H      E      N      A      D      A      Q

W      H      N      N      Y      D      U

M      O      N      U      A      P      J

A      N      WROOTSKMYSTUMPGNXIIRT      K      C

B      E      S

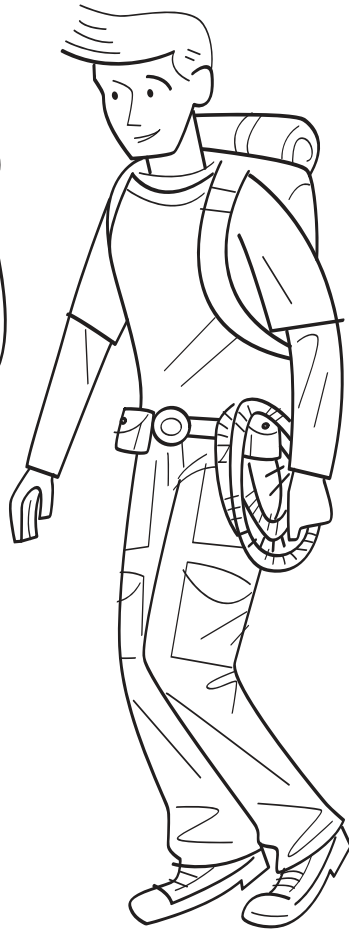
A      Y      C

G      H      P

B      A      V

UJGUCGYNDINWSLHWGLOWIAJGVVWRFXTTGILLSOQNH

# PLANT HEROES



# Coloring Page



# Plant Heroes Pledge

This Certifies That

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is an Official Member of the Plant Heroes Team and pledges to:

**Learn about the  
pests and diseases  
that affect the  
plants in my region**

**Be on the lookout  
for symptoms of  
pests and diseases  
on trees in my  
neighborhood**

**Report any suspicious  
findings to an adult  
who can notify the  
local extension agent**

**Refrain from  
moving firewood**

Awarded by the  
American Public  
Gardens Association





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.



**American  
Public Gardens  
Association**

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



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