

INVASIVE PESTS

Activity Book



KEEP OKLAHOMA
INVASIVE-FREE!



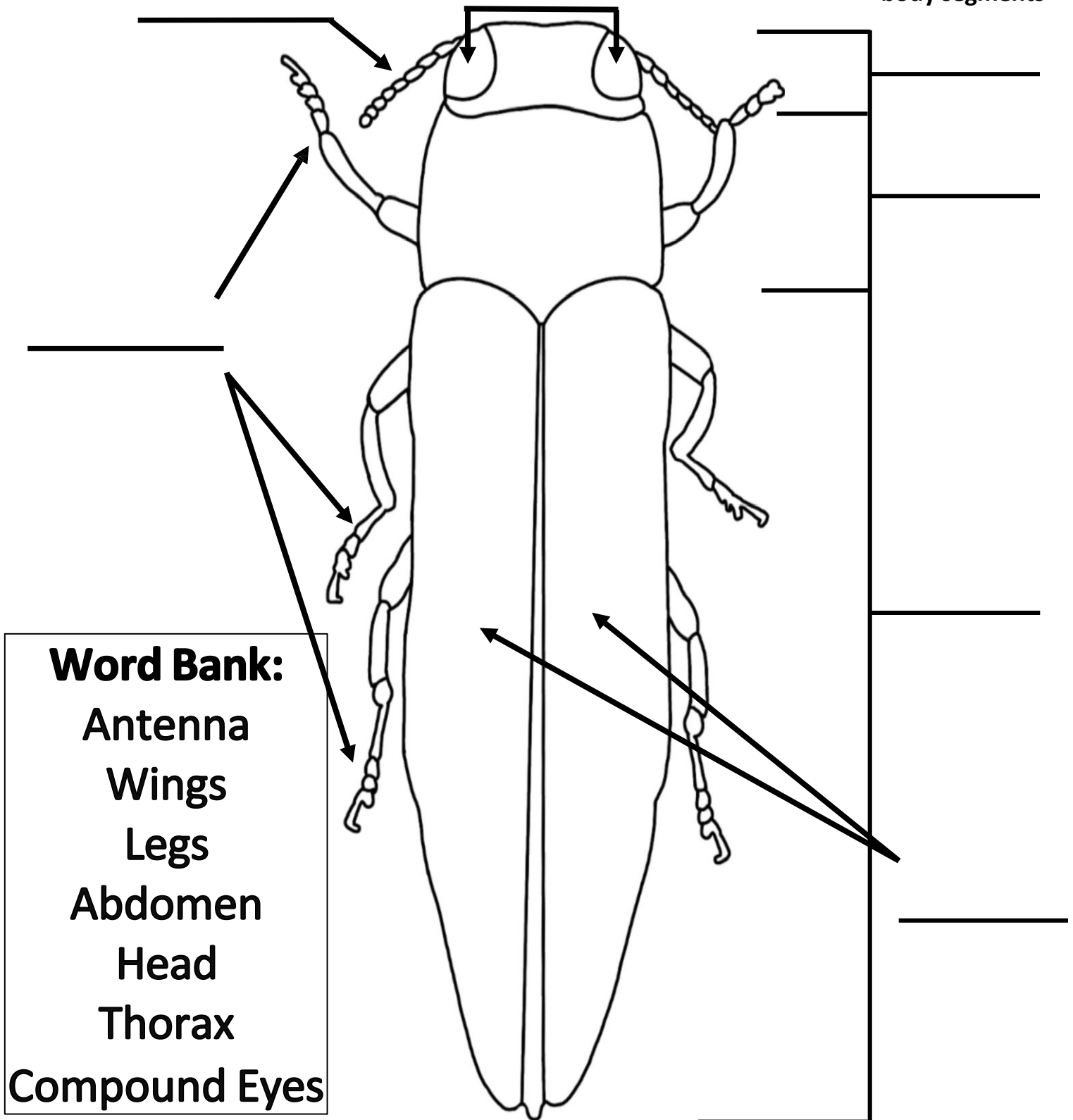
OKLAHOMA
**Agriculture, Food
and Forestry**

Developed by Jerome Grant and Megan Tipton
University of Tennessee Institute of Agriculture
Modified for Oklahoma by Joe Rackley, Oklahoma Department of Agriculture, Food and
Forestry

What is an Insect?

An insect is a member of the Phylum Arthropoda, which means 'jointed appendages'. Some other arthropod groups include spiders, ticks, and millipedes. All arthropods have an exoskeleton (hard outer body coverings). Insects are distinguished by five characters: 1) one pair of large, compound eyes, 2) one pair of antennae, 3) three body parts (head, thorax, and abdomen), 4) six legs, and 5) adult insects usually have 1 or 2 pair of wings. Can you identify these five characters below?

**Label the 3
body segments**



INVASIVE SPECIES

What are invasive species? A government agency (USDA APHIS) defines invasive species as “A species whose introduction (from another country) causes or is likely to cause economic harm, environmental harm or harm to human health (or to animal health)”. These invasive species can be insects, plants, snails, fish, birds, snakes, plant or animal pathogens, and more! Once they establish in a new area, they can become an important problem (a few examples in Oklahoma are Japanese beetle, Emerald Ash Borer, and tree-of-heaven). Invasive species can impact pollinators and insects in several ways! Invasive plants can outcompete native plants that serve as hosts for butterflies, caterpillars, bees, etc. They can alter habitats and plant species, compete for resources, replace native species and more. Invasive species threaten our native species, our pollinators, our crops, our trees, and our way of life, affecting agriculture, urban areas, forests, and even our health and the health of our animals!

For more information on invasive pests, visit hungrypests.com.

10 FUN FACTS ABOUT INSECTS

1. More than one million insect species have been described by science.
2. Scientists estimate there may be 5 to 30 million insects that are yet to be discovered and described.
3. There are about 250 million insects for every human.
4. There are 300 pounds of insects for every 1 pound of human.
5. Ants can lift and carry more than 50 times their weight.
6. A bee's wings beat 190 times/second (that is 11,400 times/minute!).
7. Butterflies can taste with their feet!
8. The state butterfly of Oklahoma is the Black Swallowtail, *Papilio polyxenes*; the state agricultural insect is the Honeybee, *Apis mellifera*; and our state wildflower is the Indian Blanket, *Gaillardia pulchella*!
9. Insects comprise about 10% of the Earth's weight, about 80 to 85% of all life on Earth, and about 75 to 90% of all known species of animals!
10. Beetles are the largest group of insects and comprise about 25% of all known animal species.

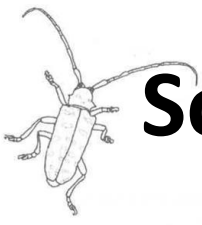
Non-native and Invasive Insects Around the Home



Match the name to the image of the household pest:

- ___ German Cockroach
- ___ Asian Multicolored Lady Beetle
- ___ Japanese Beetle
- ___ Brown Marmorated Stink Bug
- ___ Imported Fire Ant
- ___ Spotted Lanternfly





Some of the More Threatening Invasive Insects Include:



EMERALD ASH BORER kills ash trees. This invasive pest has been found in 36 states, including 5 counties in Oklahoma. Across the United States infested area, emerald ash borer has killed millions of ash trees.

BOX TREE MOTH is a small moth that attacks boxwood shrubs. It was first detected in Canada in 2018. BTM larvae (caterpillars) chew boxwood leaves and can kill the plants. Boxwoods are an important landscape plant around the US. This invasive pest has not been found in Oklahoma, but is documented in OH, MA, MI, NY, and PA.

IMPORTED FIRE ANT is closely related to bees and wasps and can sting repeatedly, causing pustules on the skin. It is established in 14 states, predominantly in the southeastern U.S. This pest is well established in Oklahoma, where it is found in the southern half of the state.

BROWN MARMORATED STINK BUG feeds on many types of fruits and vegetables. It also is a home invader but has not become a problem in Oklahoma, yet.

KUDZU is an invasive plant in the Southern US that can be found in Oklahoma.

KUDZU BUG feeds on kudzu. It has low impact on kudzu populations but is an economic concern in soybean producing states.

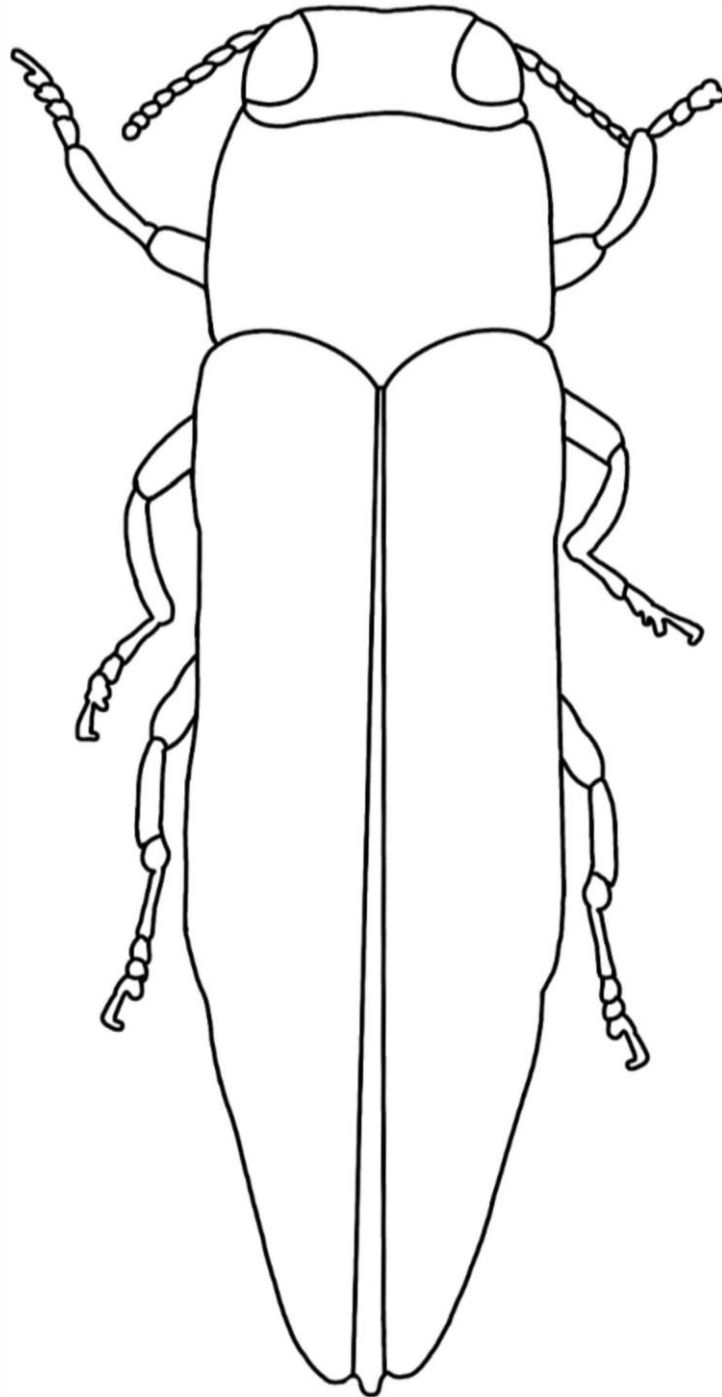
INVASIVE SPECIES “CHEWING” ON OUR BORDER:

SPOTTED LANTERNFLY is a large leafhopper that feeds on grapes, tree fruits and hardwood trees. First found in PA in 2014, populations have now spread to CT, DE, GA, IN, MA, MD, MI, NC, NJ, NY, OH, RI, VA, and WV, and TN as of 2025.

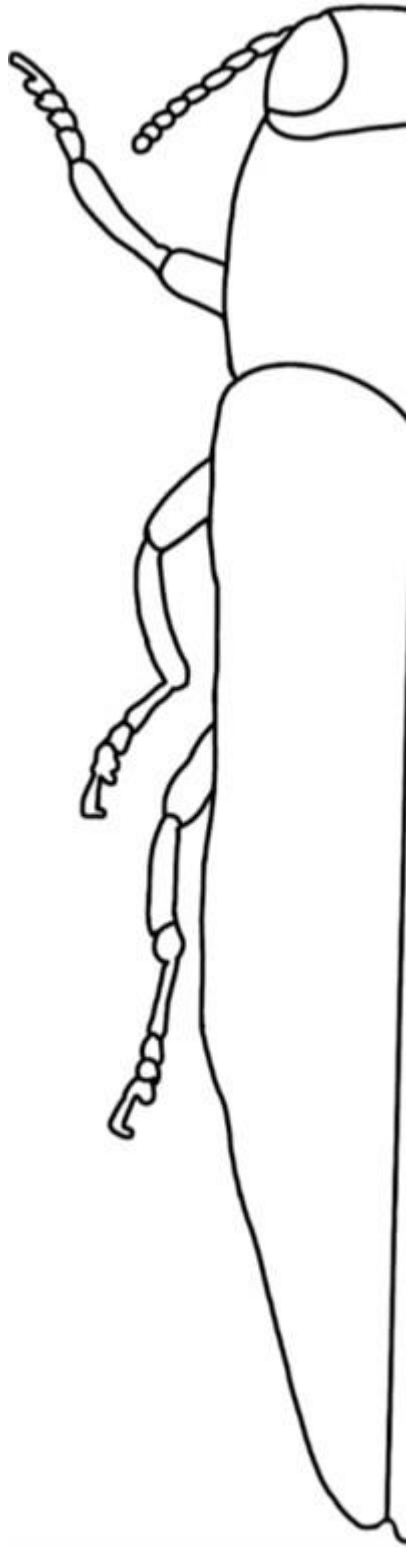
SPONGY MOTH (formerly known as gypsy moth) caterpillars can defoliate 300 species of trees and shrubs. It is established in 21 states, the closest being NC, OH, VA and WV. Spongy moth is not established in Oklahoma. Orange traps are used to monitor for this pest each year.

ASIAN LONGHORNED BEETLE attacks hardwood trees and prefers maples. It has been found in Massachusetts, New York, Ohio, and South Carolina. Eradication efforts have been completed or are underway in those states to reduce its spread.

Emerald Ash Borer



The emerald ash borer is a type of 'jewel beetle' with a metallic green color. Can you color this image to resemble an emerald ash borer? Hint: check the front cover for an example.



The emerald ash borer, native to Asia, was first found in the U.S. in Michigan in 2002. It was first found in Oklahoma in 2016 and has since killed thousands of ash trees. Larvae of this insect feed under the bark, forming easily recognizable galleries. Draw the other half of this tree-killing invasive species.

Invasive Forest Insect Pests

Word Search



The followings words are hidden horizontally or vertically in the puzzle above. Can you find these hidden words? Any others?

Emerald Ash Borer

Forest

Exotic

Spotted Lanternfly

Invasive

Report

Pest

Spongy Moth

A Bug's Life (Cycle)

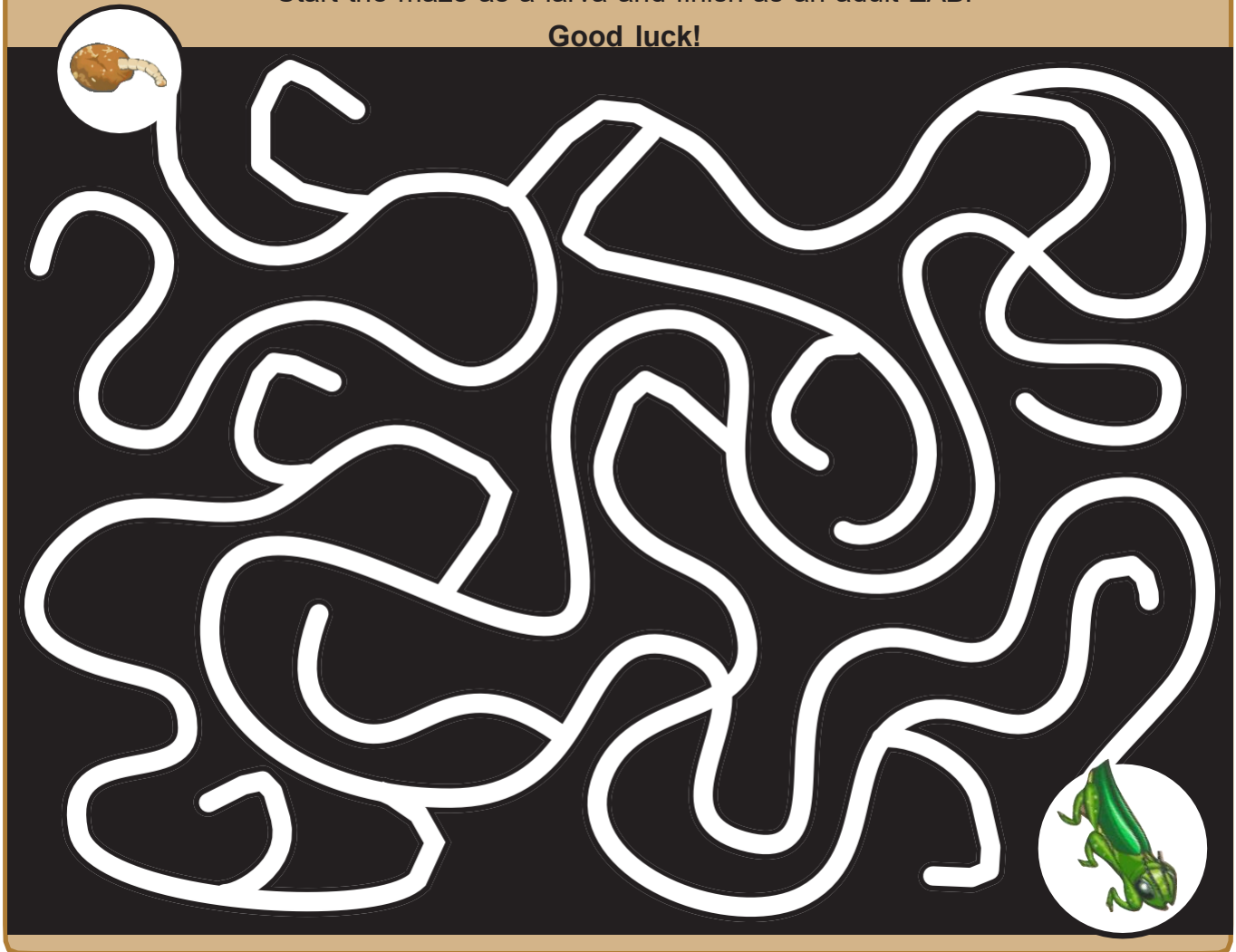
Can you follow the Emerald Ash Borer Beetle (EAB)'s life cycle?

The female EAB lays an egg . When the egg hatches, a larva  emerges. The larva burrows into the tree, where it begins to feed and develop under the bark. As it feeds, it makes S-shaped tunnels  that damage the tree. Eventually the larva turns into a pupa  and then an adult EAB . The adult EAB chews through the bark and escapes , leaving behind a D-shaped exit hole .

When the egg hatches, a larva emerges and burrows under the bark.

Start the maze as a larva and finish as an adult EAB.

Good luck!



**YOU can help stop the EAB. Tell your family:
Don't move firewood ... and burn it where you buy it.**

Dot-to-Dot Detective!

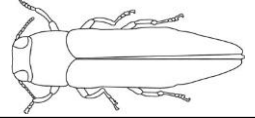
Something bad might be hiding under the bark of your firewood!
Connect the dots to see ...



This tiny pest can destroy ash trees ... but YOU can help stop the Emerald Ash Borer Beetle (EAB). Tell your family:
Don't move firewood – burn it where you buy it!



EMERALD ASH BORER?

[illegible]

Stop the Hidden EAB



You can't see the Emerald Ash Borer Beetle (EAB) when it is hidden under the bark ... but see if you can find the EAB words hidden inside this grid!

Word List:

- ☐ Adult
- ☐ Ash
- ☐ Beetle
- ☐ Borer
- ☐ Burn
- ☐ Buy
- ☐ EAB
- ☐ Egg
- ☐ Emerald
- ☐ Family
- ☐ Firewood
- ☐ Help
- ☐ Larva
- ☐ Message
- ☐ Move
- ☐ Pupa
- ☐ Spread
- ☐ Stop
- ☐ Tree
- ☐ USDA
- ☐ You

h	w	e	a	b	u	r	n
e	z	f	a	m	i	l	y
l	m	z	f	e	o	g	b
p	p	e	i	s	g	v	e
o	u	t	r	s	e	g	e
s.	p	r	e	a	d	n	t
t.	a	e	w	g	l	a	l
o	s	e	o	e	a	d	e
p	h	y	o	u	r	u	b
g	u	s	d	a	v	l	u
b	o	r	e	r	a	t	y

Undercover Beetles...

The EAB is hard to spot in nature ... but don't be fooled!
They may be hidden, but they can kill trees if we don't stop them.

Can you find the Emerald Ash Borer Beetles (EABs) hidden in this picture?

There are 5 larva , 5 pupa  and 5 adult EABs .



Remind your family: don't move firewood!

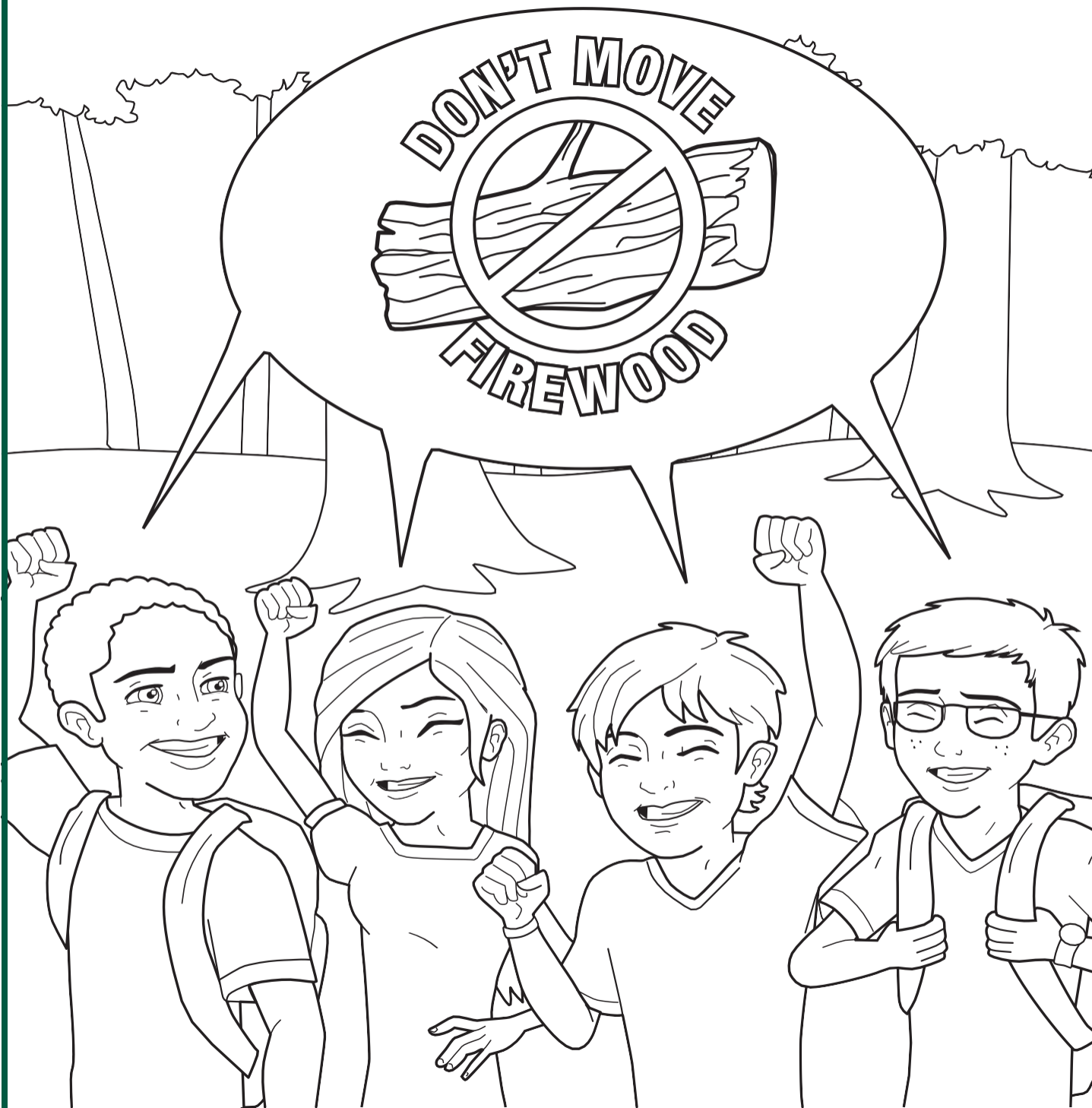
www.HungryPests.com

View the animated EAB lifecycle video at www.hungrypests.com/eab/video/

 **United States Department of Agriculture**
Animal and Plant Health Inspection Service

Stop the EAB!

The Emerald Ash Borer Beetle (EAB) kills ash trees.
It likes to hide under the bark of firewood.



Help protect trees, and remind your family:
burn firewood where you buy it.

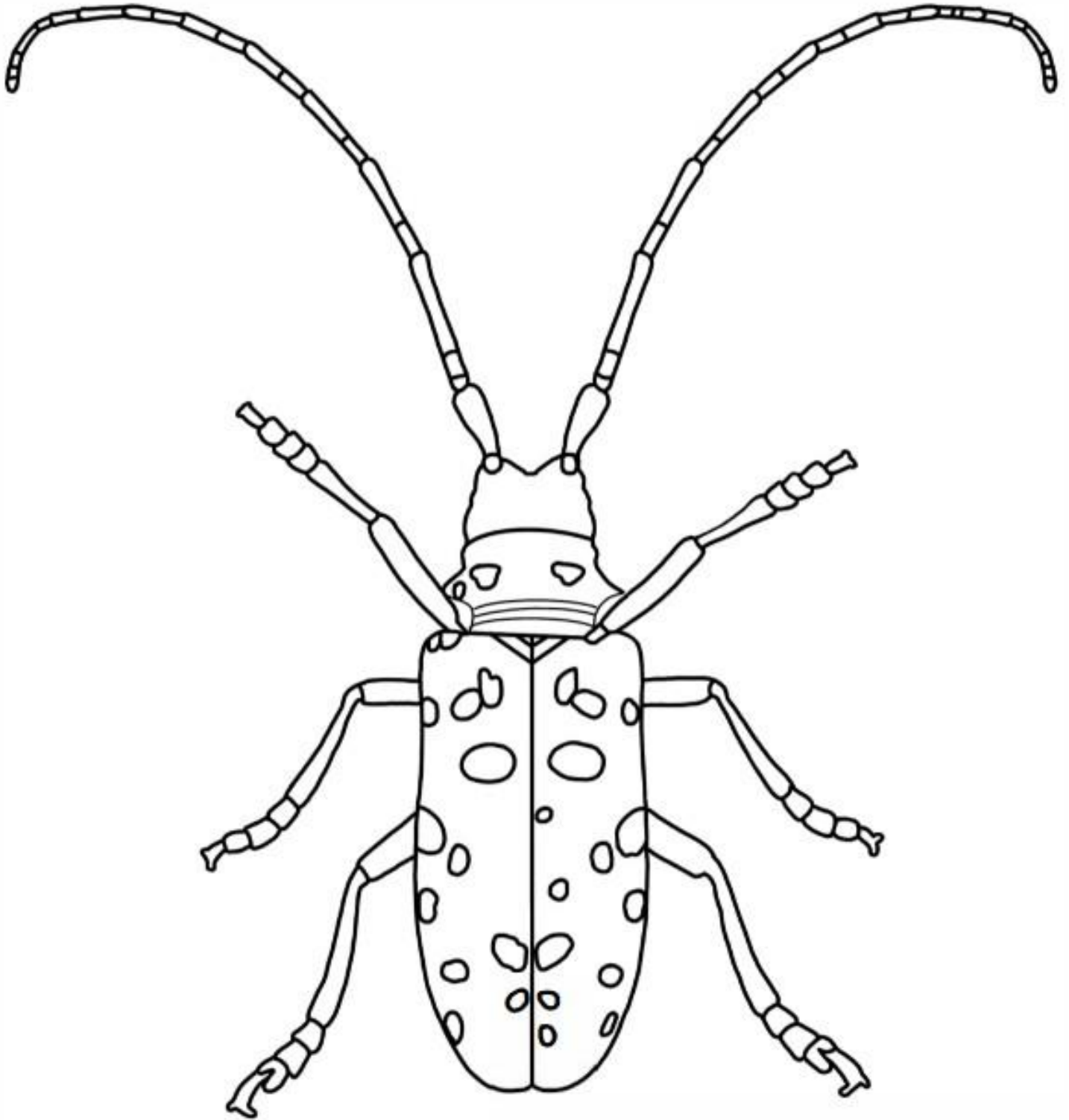
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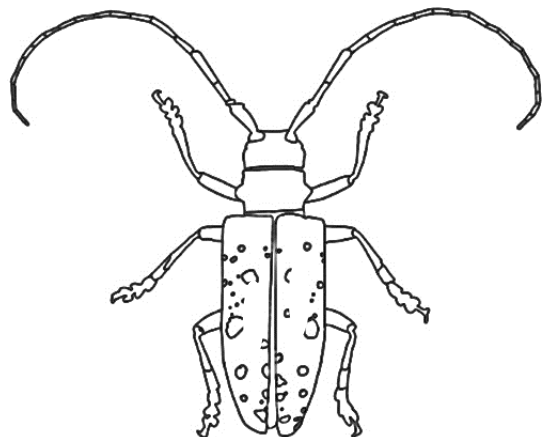
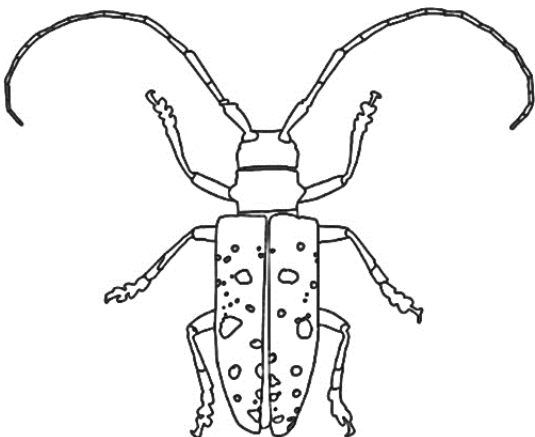
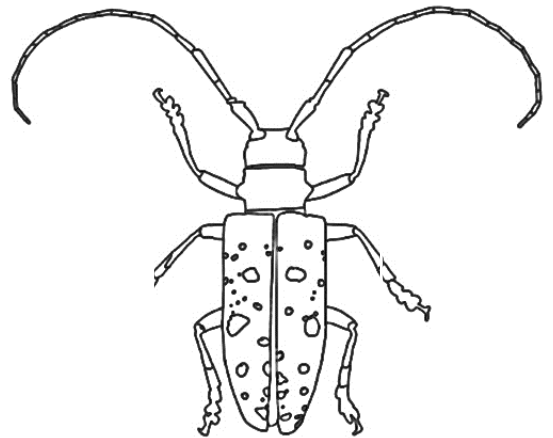
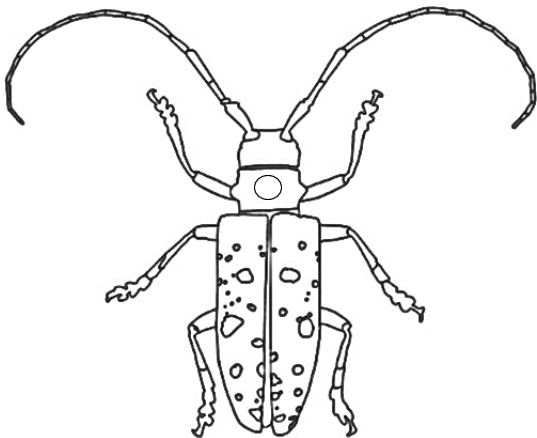
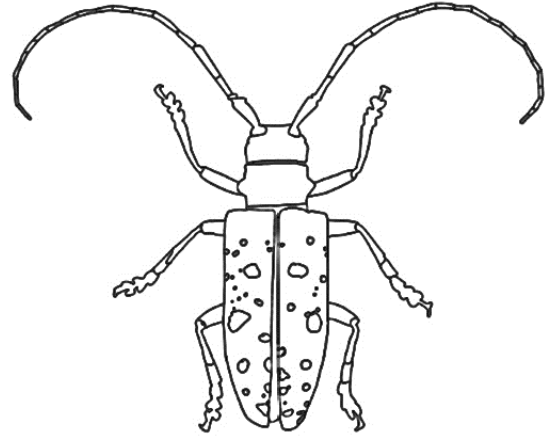
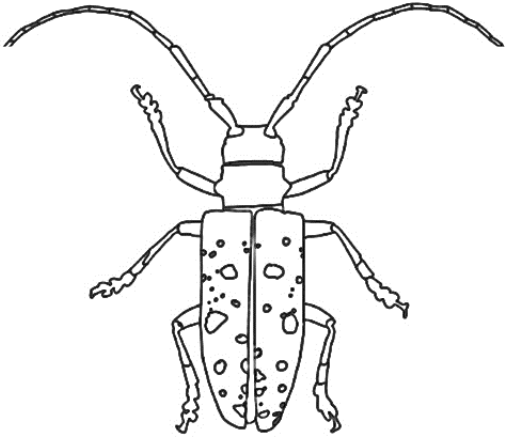
United States Department of Agriculture
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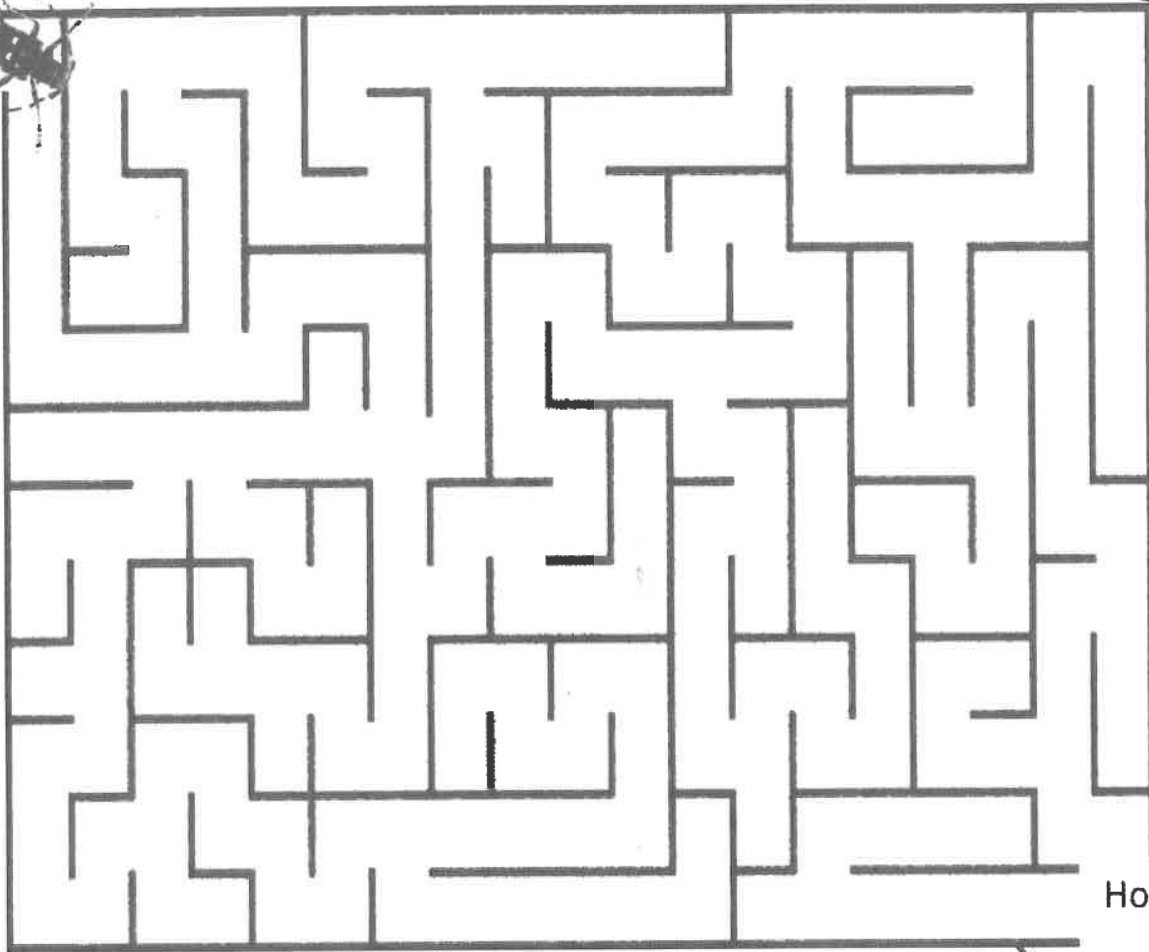
Asian Longhorned Beetle



The Asian longhorned beetle has extremely long antennae. This invasive insect is black with white spots. Can you color this image to resemble an Asian longhorned beetle?

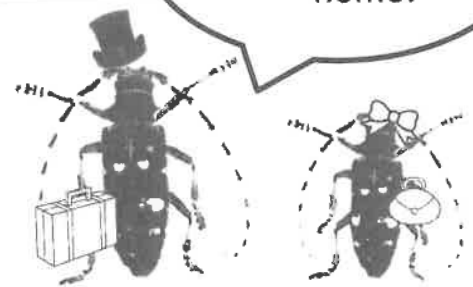
**Which two beetles are the same
(match the two identical beetles)?**





Hooray! You're home!

The Asian longhorned beetle has made its way to South Carolina, where it is impacting trees, including maple trees! In Oklahoma, we have lots of maple trees and we do not want this insect in our state. Use the maze above to help this invasive insect find its way back home to Asia, keeping it out of Oklahoma! In Oklahoma we have a large native beetle that looks similar, don't be fooled. The Cottonwood Borer is white with black spots. Sometimes people are fooled by this large native Oklahoma species.



Invasive Agricultural Insect Pests

Word Search



The followings words are hidden horizontally or diagonally in the puzzle above. Can you find these hidden words and others?

Manage

Lanternfly

Exotic

Agriculture

Invasive

Pest

Kudzu Bug

Boll Weevil

Japanese Beetle

Alfalfa Weevil

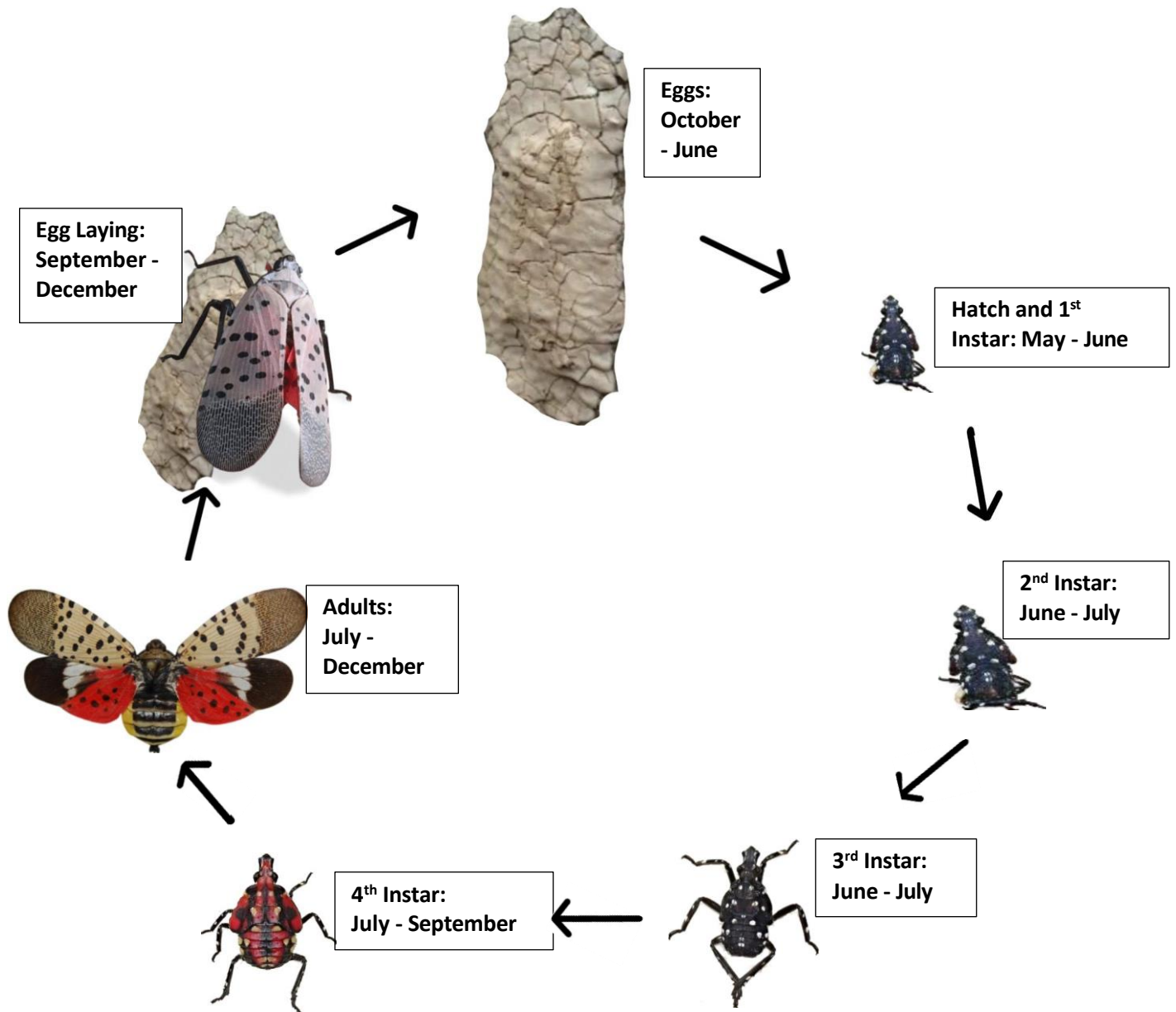
Spotted Lanternfly



See it. Squish it. Report it

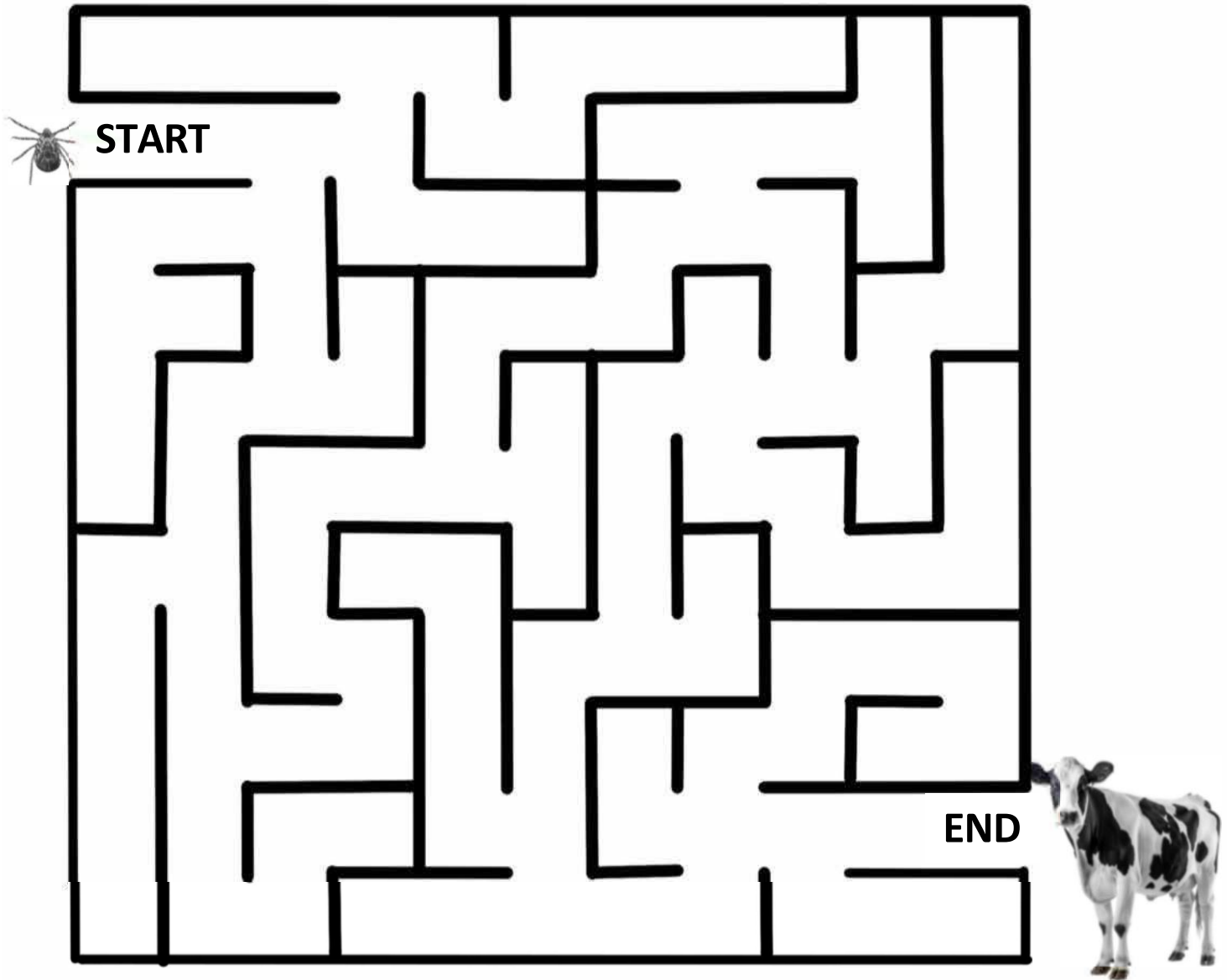
Spotted lanternfly is not in Oklahoma as of 2025. This large leafhopper insect feeds on many types of plants and loves tree-of-heaven. It produces large amounts of honeydew – a sugary substance that gets on fruit, vehicles, and other objects, often leading to the growth of a black fungus, known as sooty mold.

Spotted Lanternfly Lifecycle



**If you see one, stomp it
and report it.**

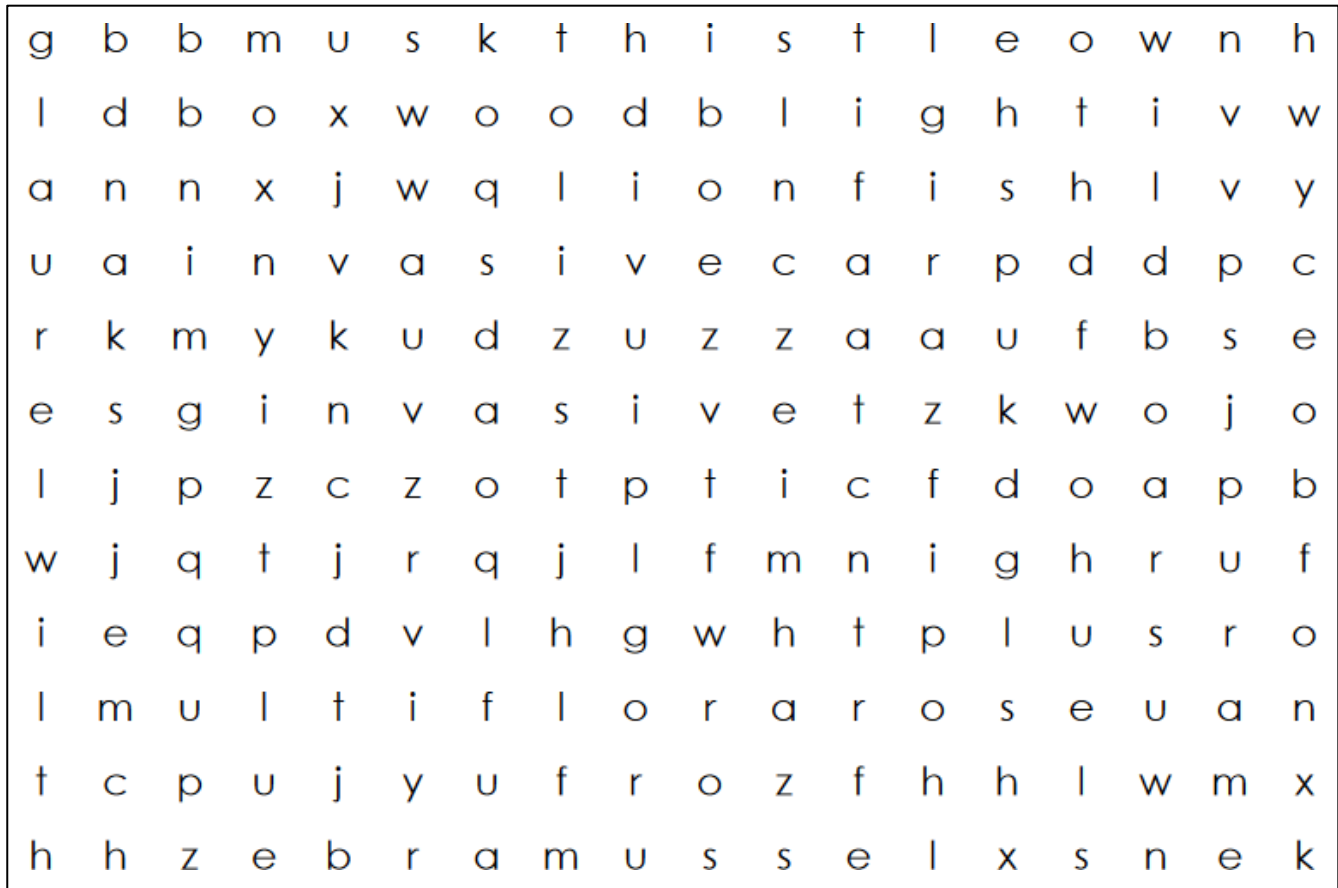
Can the Asian Longhorned Tick Find the Cow?



The Asian longhorned tick feeds on cattle, which affects their health. Can the tick find the cow in this maze? Think about ways that farmers can keep these ticks away from their cattle to protect them from this invasive tick.

Invasive Pests Other Than Insects

Word Search



The followings words are hidden horizontally or vertically in the puzzle above. Can you find these hidden words?

Zebra Mussel

Boxwood Blight

Multiflora Rose

Invasive

Musk Thistle

Wild Boars

Laurel Wilt

Invasive Carp

Kudzu

Lionfish

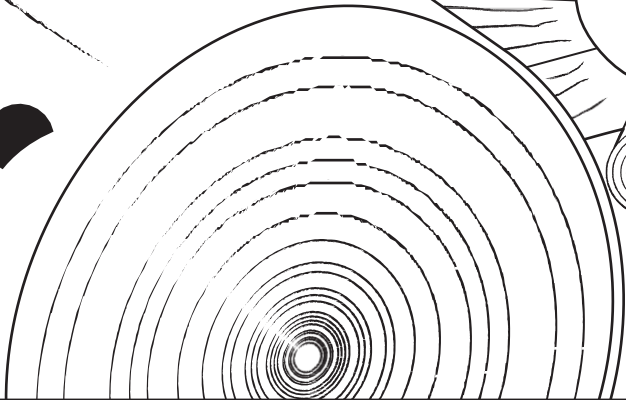
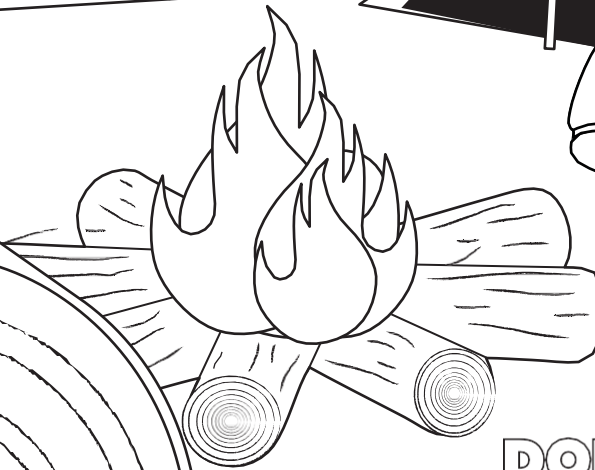
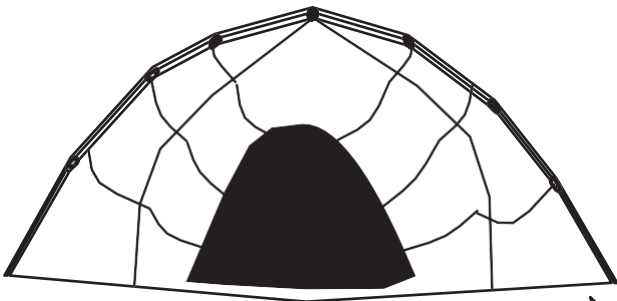


TRANSPORTING FIREWOOD CAN SPREAD PESTS.

Trees in ALL 50 STATES AND 10 CANADIAN PROVINCES ARE AT RISK of attack by invasive species if people move infested or diseased firewood. You can help; buy local or certified firewood.

Visit Dontmovefirewood.org for fun activities, coloring pages, insect masks, and more.

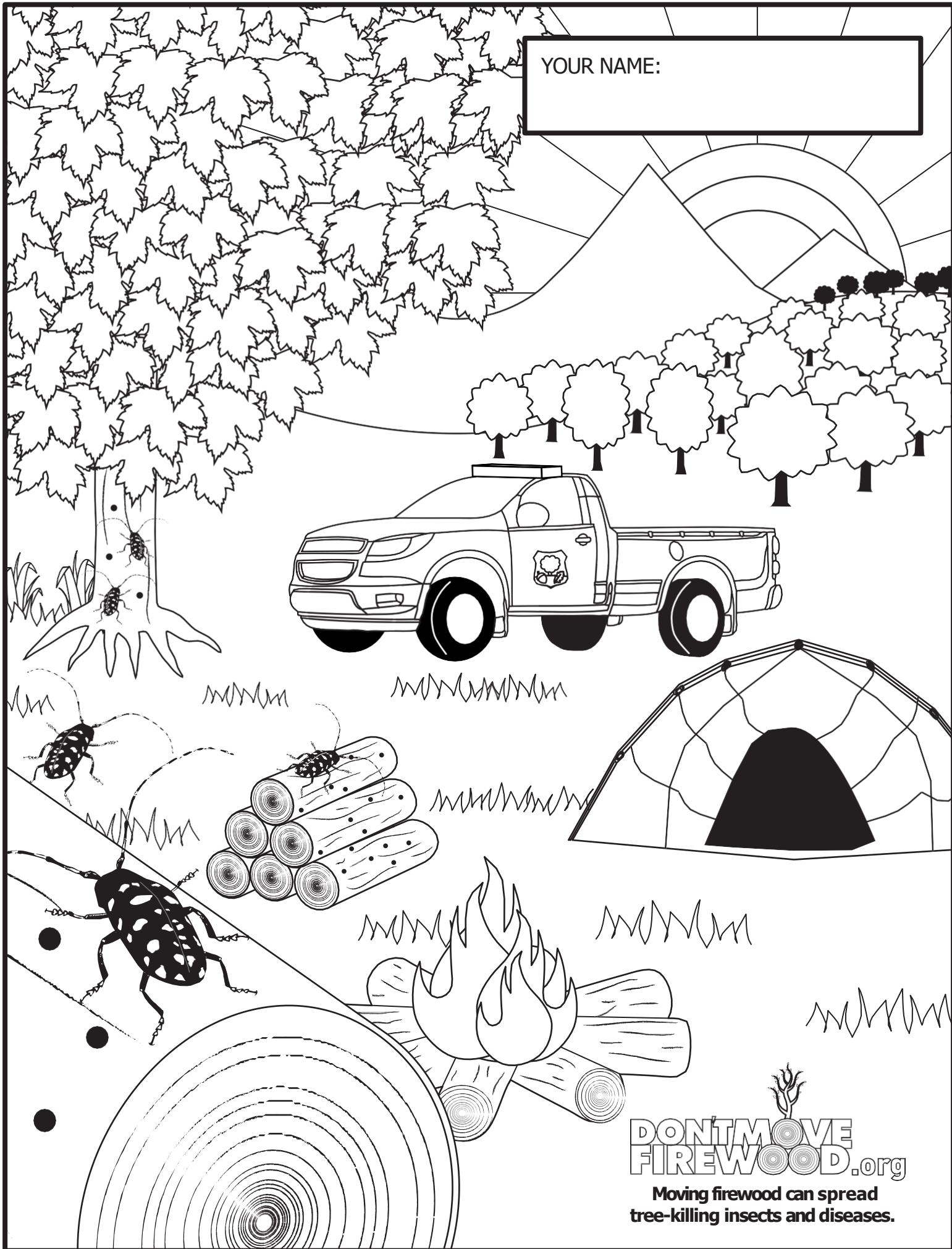
YOUR NAME:




DONTMOVE
FIREWOOD.org

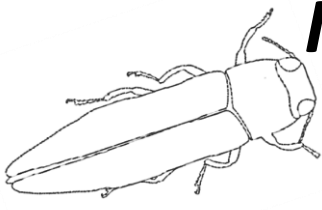
**Moving firewood can spread
tree-killing insects and diseases.**

YOUR NAME:



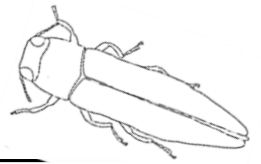

**DONTMOVE
FIREWOOD.org**

**Moving firewood can spread
tree-killing insects and diseases.**



***Invasive insect pests are
important to me because....***

***Invasive insect pests are important to
everyone because....***



ANSWERS AND DESCRIPTIONS FOR ACTIVITY ON BACK COVER

SPOTTED LANTERNFLY is an invasive insect in the U.S. that has a long, straw-like mouthpart that is used to suck 'juice' out of trees, plants, and fruits. They are closely related to aphids. This insect is not yet found in Oklahoma.

DRAGONFLIES are important native predators and one of the oldest insects for which we have records. Some fossils of dragonflies have wingspans of over 2 feet!

SPONGY MOTHS were brought to this country in the 1800's by a man who was planning to start a silk industry with their cocoons. The moths escaped, and now they are an invasive pest of oaks and other trees. The larvae eat oak leaves, weakening the tree over time, and leading to tree death with continued infestations.

JAPANESE BEETLES were accidentally introduced into the U.S. around 1916 and have been eating roses and 300 other plant types since then. Interestingly, although we are all familiar with adults, the immatures live in the soil and feed on roots.

The **ZEBRA SWALLOWTAIL** is a native butterfly species that love Pawpaw trees that occur in Eastern Oklahoma and produce a fruit like a small banana.

MAYFLIES are native aquatic insects. Adults emerge in masses, only live for about a day, and do not eat anything during their short lifetime.

CONVERGENT LADY BEETLE is a native lady beetle. It is a good insect to have in your garden, as they feed on aphids and other unwanted pests. It is a beneficial insect.

ASIAN LONGHORNED BEETLE is an invasive beetle from Asia. This insect eats the wood of maple trees, destroying the tree's ability to take up water and nutrients.

BROWN MARMORATED STINK BUG is an invasive pest that feeds on lots of crops and fruits. It also is a home invader, where it can be a nuisance.

PRAYING MANTIDS are fun to find, and many species are native. They are a predator and eat many different insects that are pests in the garden. It is a beneficial insect.

MANY THANKS to USDA for supporting efforts to publicize invasive species and providing some of the activity pages in this book, and thanks to the University of Kentucky for allowing the use of materials in this activity book.

More about the Compilers of this Booklet:

Joe Rackley is the State Survey Coordinator at the Oklahoma Department of Agriculture, Food and Forestry and he with several others edited the activity book for Oklahoma.

Dr. Jerome Grant is a Professor of Entomology at the University of Tennessee.

Megan Tipton received a B.S. in Microbiology from the University of Tennessee, where she is a Research Assistant in the Department of Entomology and Plant Pathology.

Circle the insects that are invasive



Spotted lanternfly



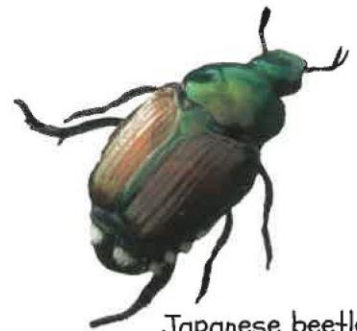
Spongy moth



Dragonfly



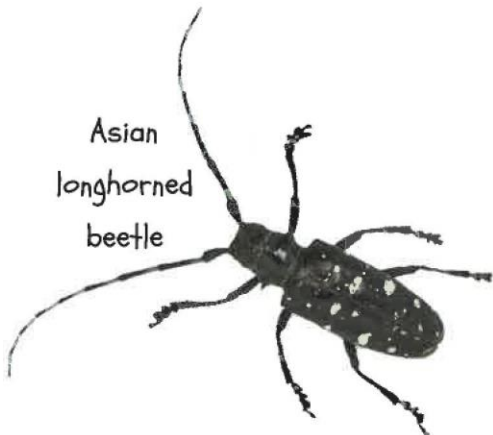
Convergent
lady beetle



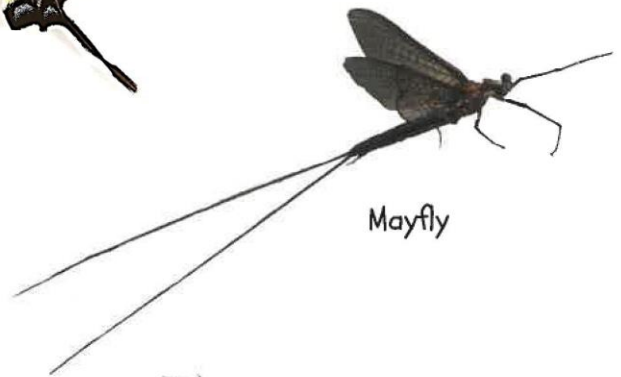
Japanese beetle



Zebra
Swallowtail



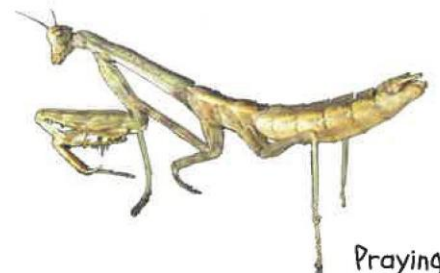
Asian
longhorned
beetle



Mayfly



*Brown Marmorated
Stink bug*



Praying
mantis

SEE INSIDE BACK COVER
FOR ANSWERS, DESCRIPTIONS,
AND ADDITIONAL INFORMATION
ON EACH INSECT.