

INVADE IT!

INVADE IT! Is a way to learn about invasive species. You may need to turn the pages around and upside down to find everything!

What you'll need:

- This document printed out
- Internet access (to watch the Cane Toad video & to look up info)
- Pen or pencil
- Scissors
- Glue or tape



HOP TO IT!!!!

1. Watch this video about voracious CANE TOADS:
<https://www.youtube.com/watch?v=tuX5vgH-Rdo>
2. Turn to the next page and begin!



Parents and Teachers: INVADE IT! is designed so that kids in grades 3-5 can complete it on their own, but they might need a little help! It can also be used as an in-class lesson. Feel free to copy and share it. INVADE IT addresses the following components of Next Generation Science Standards:

- 3-LS1-1. Develop models to describe that organisms have unique and diverse life cycles but all have in common birth, growth, reproduction, and death.
- 4-LS1-1. Construct an argument that plants and animals have internal and external structures that function to support survival, growth, behavior, and reproduction.

INVADE IT: Pre-Survey

Before completing the INVADE IT package, fill out this survey to let us know how you stand with invasive species knowledge and opinions. AGENTS/EDUCATORS: please send copies of any pre- and post-surveys to blaken@uky.edu

1. Circle all the choices below that are true about **INVASIVE SPECIES**:

- a. can be a plant or animal
- b. is from another place, such as another continent
- c. is always an insect
- d. causes problems to people or the environment

2. List any invasive species that you've ever heard of:

3. What are some ways that people, states, or other groups try to slow the spread of invasive species?

4. Name the four main life stages of the Spongy Moth

5. Name any **INVASIVE INSECT SPECIES** that are in Kentucky, or may come soon

6. Do you think invasive species are a problem in Kentucky (yes or no)?

7. Do you think that regular citizens can do anything to help slow the spread of invasive species in Kentucky (yes or no)?

INVADE IT! pt. 1: CANE TOADS

Watch this video about Cane Toads (stop at about 14 minutes): <https://www.youtube.com/watch?v=tuX5vgH-Rdo> Then complete this sheet & the next, using the RESOURCE PAGE

ANSWER IT!

After watching the Cane Toad Video, answer these questions:

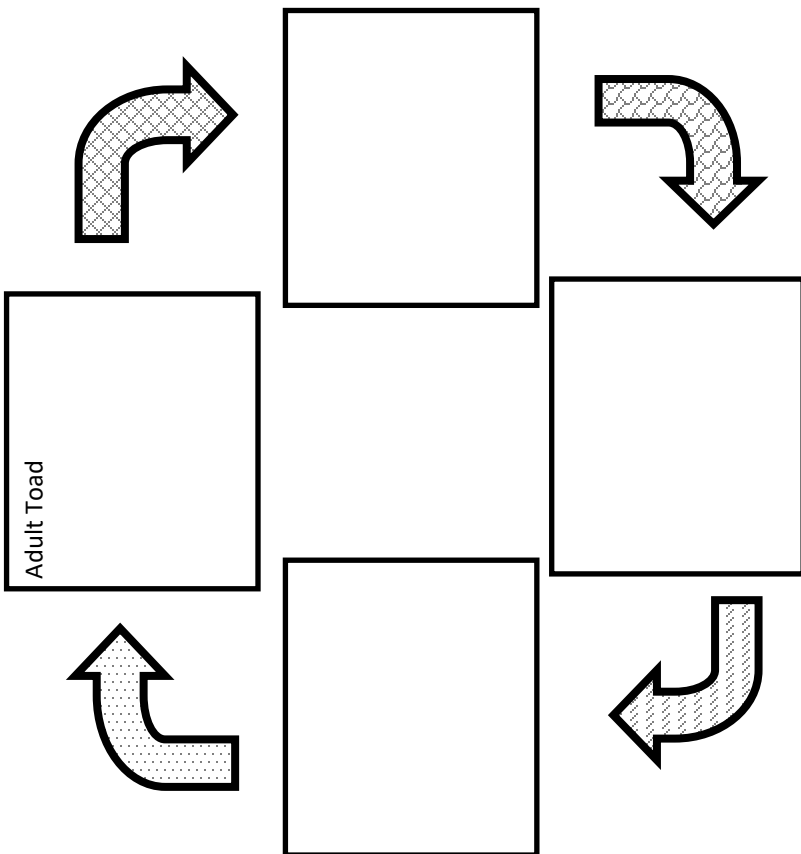
1. Why were cane toads brought to Australia?
2. What U.S. state did Australians bring the cane toads from?
3. Name any one native Australian animal that is threatened by the cane toad:
4. What are at least 2 reasons why the cane toad is so "good" at being an invasive species?

FIND IT! From the cane toad video and from your own research and experience, name any 5 invasive species found anywhere in the world.

- 1.
- 2.
- 3.
- 4.
- 5.

LIVE IT!

Using the images from the LIFE CYCLE section of the resource page, cut out the steps of the cane toad life cycle and glue or tape them in the cycle below, in order, with the adult toad at the top.



PICK

one of the life stages above. Describe at least one **ADAPTATION** of that life stage that helps the cane toad **INVADE** new environments:

READ IT!

And then complete the other sections on this page.

What Are Invasive Species?

Sometimes, animals or plants move from one part of the world to another. When this new plant or animal becomes a problem, it's called an invasive species. Invasive species sometimes move by accident, sometimes people move them on purpose (like cane toads!).

Invasive species often have a few of the following characteristics:

FAST Reproduction: invasive species often lay lots of eggs or make lots of seeds. Since local animals are not adapted to eating the eggs or seeds, LOTS of babies survive, causing the invasive species to spread rapidly.

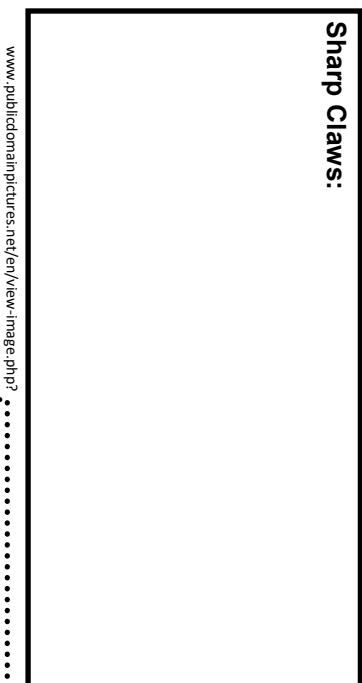
BIG Eaters, FAST Growth: Invasive species often eat a LOT & grow fast. Invasive plants may grow roots quickly, which can allow them to spread and take over other plants. Sometimes they grow OVER other plants.

Toxic: Many invasive species have poisons inside them that kill animals who try to eat them, or they may have defenses like thorns, spines, or shells that protect them from predators.

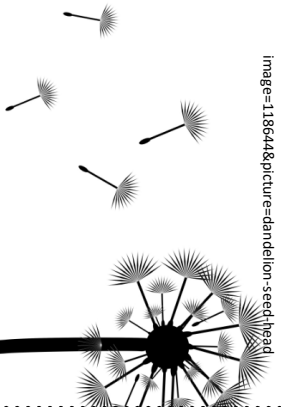
INVADE IT!

Explain how the structures or traits below might be adapted to help a species INVADE a new environment.

Sharp Claws:

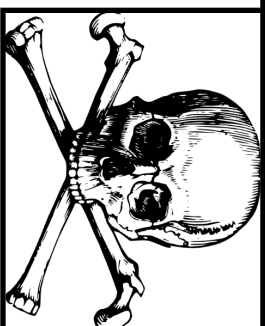


www.publicdomainpictures.net/en/view-image.php?image=118644&picture=dandelion-seed-head

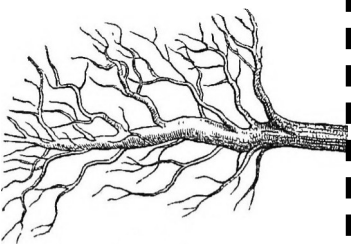


Seeds:

Poison or Venom:



Roots:



DRAW IT!

Below or on another sheet, draw a real animal or plant & change its body or behavior to make it better at **INVADING** new places (use the WORD BANK on the resource page for ideas).

INVADERS! Visit this page...
<https://entomology.ca.uky.edu/content/invasive-species-4-h-ky-keepers>
...and fill in the missing info below about some invasive species that threaten Kentucky

KENTUCKY KREEPERS!

Asian Longhorned Beetle

From: Asia

Found in USA: 1996

In Kentucky Yet? No, but found in southern Ohio

Life Cycle: egg-larva-pupa-adult

Invasive traits of the Asian Long-

horned Beetle: larvae protected inside trees

Problems caused by Asian Longhorned Beetle:

Cut out and attach picture from the "Kentucky Invaders" section of the resource page

Spotted Lanternfly

From: Asia

Found in USA: _____

In Kentucky Yet? _____

Life Cycle: egg-nymph-adult

Invasive traits of the Spotted Lanternfly:

Cut out and attach picture from the "Kentucky Invaders" section of the resource page

Problems caused by Spotted Lanternfly: feed on grape, soybean, many other plants

KENTUCKY KREEPERS!

Visit this page...

<https://entomology.ca.uky.edu/content/invasive-species-4-h-ky-keepers>

...and fill in the missing info below about some invasive species that threaten Kentucky

Spongy Moth

Cut out and attach picture from the "Kentucky Invaders" section of the resource page

From: Europe

Found in USA: _____

In Kentucky Yet? Yes, but there are no large populations yet

Life Cycle: _____

Invasive traits of Spongy Moth protected eggs, fast growth, can feed on many kinds of tree leaves

Problems caused by Spongy Moth:

Imported Fire Ant

Cut out and attach picture from the "Kentucky Invaders" section of the resource page

From: South America

Found in USA: before 1950

In Kentucky Yet: Yes, many colonies were found in southern Kentucky in 2022

Life Cycle: _____

Invasive traits of the Imported Fire Ant:

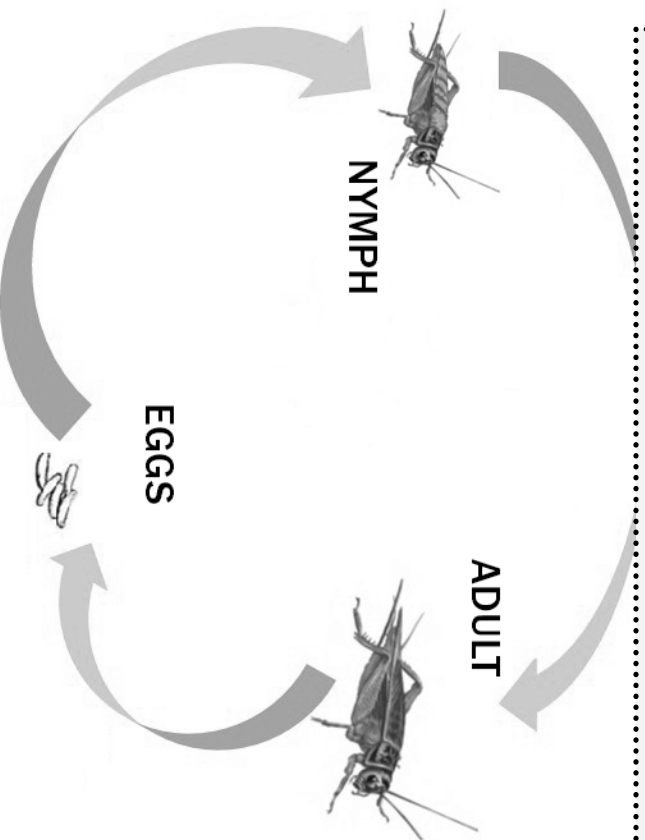
Problems caused by the Imported Fire Ant:

Do Invaders Love Their Children, Too?

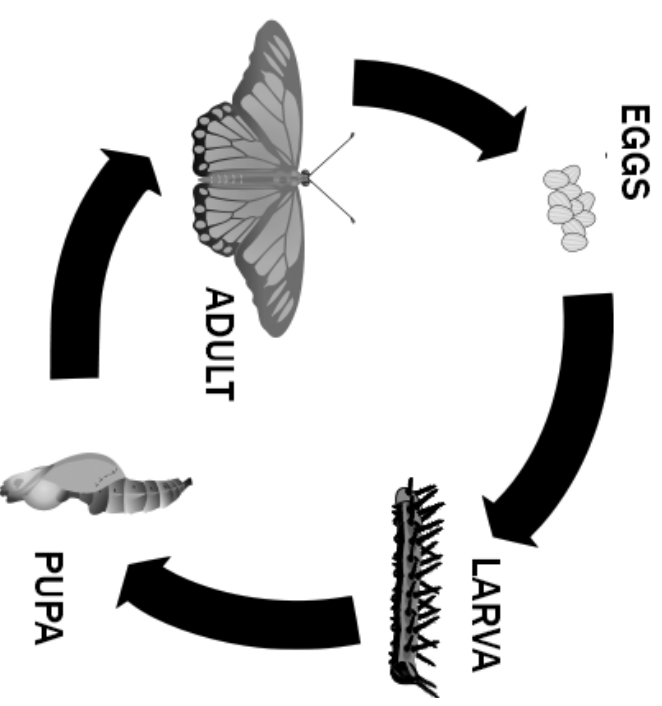
They may not be cute and cuddly, but invasive species have babies too! Like all plants and animals, invasive species have LIFE CYCLES. Many of the invasive species that threaten Kentucky are insects. You may already know this, but all insects have either INCOMPLETE or COMPLETE life cycles. Read about insect life cycles on this page and then complete the next page.

INCOMPLETE LIFE CYCLE

Insects with incomplete life cycles don't change very much as they go from babies to adults. Insects with this life cycle have 3 main stages: egg, nymph, pupa, and adult. The nymphs look a lot like the adults except that they are smaller and don't have wings (they also can't lay eggs!). Grasshoppers, crickets, roaches, walkingsticks, praying mantids, and many other insects have incomplete life cycles.



Grasshopper life cycle: [Amroan](https://creativecommons.org/licenses/by-sa/4.0/deed.en), <https://creativecommons.org/licenses/by-sa/4.0/deed.en>



COMPLETE LIFE CYCLE

Insects with a complete life cycle COMPLETELY change form when they go from babies to adults. They do this inside the PUPA (or cocoon) stage, where their body liquifies and reforms into a totally new shape! Insects with this life cycle have 4 main stages: egg, larva, pupa, and adult. Sometimes the larva have other names, like caterpillars or maggots. All butterflies, moths, beetles, ants, bees, wasps, and flies have complete life cycles.

Butterfly Life Cycle: [Bugboy52.40](https://creativecommons.org/licenses/by-sa/3.0/deed.en), [B kimmel](https://creativecommons.org/licenses/by-sa/3.0/deed.en), <https://creativecommons.org/licenses/by-sa/3.0/deed.en>

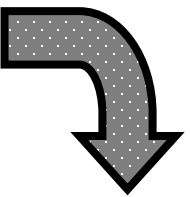
LIVE IT!

The Spotted Lanternfly is an insect with **INCOMPLETE** metamorphosis. They do **NOT** completely change form as they grow. Using

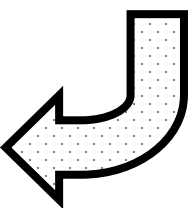
the images from the LIFE CYCLE section of the resource page and clues from <https://entomology.ca.uky.edu/content/invasive-species-4-h-ky-keepers>,

cut out the steps of the Spotted Lanternfly life cycle and glue or tape them in the cycle below, in order.

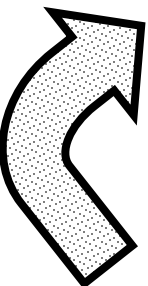
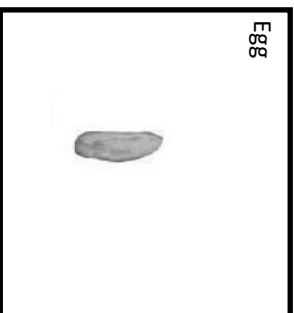
We put in the egg for you.



Adult



Nymph



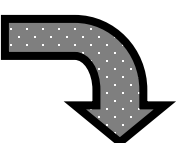
PICK one of the life stages above. Describe at least one **ADAPTATION** of that life stage that helps the Spotted Lanternfly **INVADE** new environments:

LIVE IT!

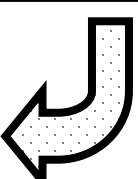
The Spongy Moth is a kind of insect with **COMPLETE** metamorphosis. They **COMPLETE**-ly change form as they grow. Using the

images from the LIFE CYCLE section of the resource page, cut out the steps of the

Spongy Moth cycle and glue or tape them in the cycle below, in order. We put in the egg mass for you.

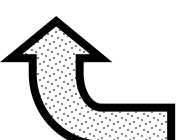
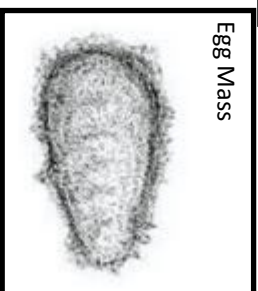


Adult Spongy Moth



Life Stage Name:

Life Stage Name:



PICK one of the life stages above. Describe at least one **ADAPTATION** of that life stage that helps the Spongy Moth **INVADE** new environments:

SLOW IT!

Listed on this page are strategies used to **SLOW DOWN** or **STOP** invasive species. Using information from <https://entomology.ca.uky.edu/content/invasive-species-4-h-ky-keepers> (or other invasive species that you know about), find an example of each strategy.

PREVENTION

Invasive species can be prevented from entering a new area by laws and regulations. For instance, it is illegal to import certain types of plants and animals into the United States, or to move them from one state to another. Sometimes, plants that get moved around from one place to another are inspected to make sure that no invasive species are tagging along.

Name an invasive species and describe a method that's being used to PREVENT it from spreading:

MONITORING

When an invasive species is very close to moving into a new area, sometimes traps or other monitoring methods are used to see if and when the invasive species starts to arrive. Once the pest is found, other steps are taken to keep it from spreading even more.

Name an invasive species and describe a way that's being used to MONITOR its arrival:

Often, the best weapon to stop an invasive species is **KNOWLEDGE!** When the public knows about invasive species they can take steps to keep from accidentally spreading them. Also, when the public knows what invasive species look like, they can report them if they see them.

Name an invasive species and describe a way that's being used to EDUCATE the public about it:

EDUCATION

Once an invasive species moves into an area, steps are often taken to **CONTROL** it, often by finding and killing the invasive species.

Name an invasive species and describe a method used to CONTROL it once it is found in a place:

CONTROL

RESOURCE PAGE

Use this page to help complete the other pages

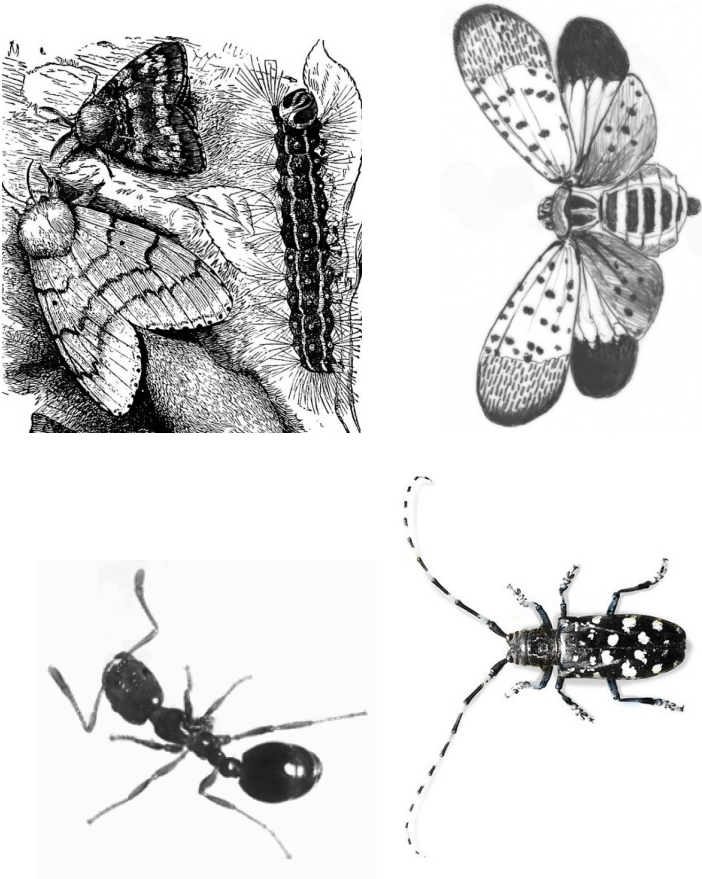
LIFE CYCLE IMAGES



Frog egg image: used with permission under Creative Commons Attribution-Share Alike 3.0 Unported: https://commons.wikimedia.org/wiki/File:Frog_spawn-Rana-temporaria-11d.svg

WORD BANK INVASIVE SPECIES ADAPTATIONS

- Thorns Poisonous Leaves Shell Floating Seeds
- Protected Eggs Lots of Eggs Fast Growth
- Poison Glands Jumping Legs Bad Tasting
- Spikes Protective Seed Case Hidden Babies
- Poisonous Skin Creeping Vine Venomous Spines
- Claws Wings Fast-Spreading Roots Camouflage
- Waxy Leaves Venomous Fangs Poisonous Eggs



KENTUCKY INVADERS

ALB: <https://www.flickr.com/photos/usdagov/>, <https://creativecommons.org/licenses/by/2.0/>

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INFORMATION INVASION!

One of the best ways to **SLOW THE SPREAD** is to **SPREAD THE WORD!** You can share what you've learned about invasive species with other people, like at your school or in your neighborhood. Use this sheet to plan an **INFORMATION INVASION** of your own! (Maybe this can be part of another project that you already have to do for school, like a poster or a presentation)

1. **PICK A PEST!** Pick one of the invasive pests that currently threaten Kentucky, like the Asian Longhorned Beetle, Imported Fire Ant, Spongy Moth, or Spotted Lanternfly, or pick another invasive pest that you are interested in.

NAME OF INVASIVE SPECIES:

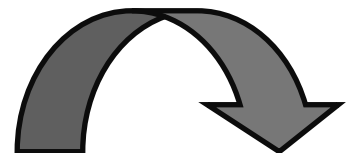
2. Think of a way to teach people about your pest. You might try a live presentation with an audience, social media (like a Facebook post, a YouTube video, a TikTok, or a website), a poster, or even a work of art. Be creative!

TYPE OF PRESENTATION:

3. **Learn about your pest.** Some of the information that you need is in this book, but you may want to learn more. Wikipedia has accurate information about all of these creatures. And check the "Hot Topics" section of UnluckyforKentucky.com to learn how these creatures threaten Kentucky.



Continued....



4. What do people need to know about your pest? Make an **OUTLINE** to plan your presentation using these questions as a guide:

How did it get to the United States? Is it in Kentucky yet?

What does it look like?

What is its life cycle?

What harm does it cause to people, animals, or plants?

What adaptations helps it **INVADE** new places, and how does it spread to new places?

What is being done to stop it?

What can regular people do to help slow the spread of this species?

(Be sure to share our ReportAPest@uky.edu email, where people can send their photos of suspected invasive insects!)

5. **Share your information with the world!** And let us know what you did by sending us a message at “**Kentucky Office of the State Entomologist**” on Facebook (<https://www.facebook.com/KyStateEnt>).

