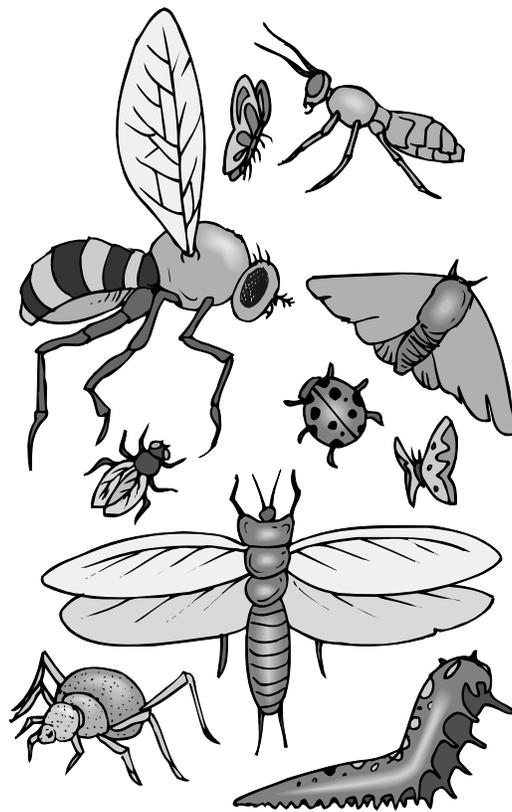


MONSANTO INSECTARIUM

Scavenger Hunt

GRADES 4-8



Saint Louis Zoo

Animals Always®

Scavenger Hunt

Monsanto Insectarium (4–8)

Teacher's Guide



Updated Summer 2017
APPROXIMATE TIME: 60-75 Minutes

Suggestions for Teachers:

1. The questions on this hunt take you through the Monsanto Insectarium building. The Insectarium is a popular exhibit and can get very crowded; allow extra time.
2. There is no admission charge to the Monsanto Insectarium.
3. Divide your students into groups of six or less with an adult to help each group.
4. Your students will need colored pencils and a calculator to complete this scavenger hunt.

Pre-visit activities:

1. Review these pages ahead of time with your students so they will have an idea of what they will be doing at the Zoo.
2. Be sure that your students are familiar with the terms **adaptation**, **camouflage** and **habitat**.
3. Review with students that an insect is characterized by six legs, three body segments: head, thorax, and abdomen and two antennae. They usually have wings and large compound eyes.

Post-visit activities:

1. Contact the Zoo's Library and Teacher Resource Center for resources including the ones listed below:

Library Resources

DVDs:

| | |
|--|------------|
| Bill Nye, The Science Guy: Insects | 26 minutes |
| Bill Nye, The Science Guy: Invertebrates | 26 minutes |
| Insects & Other Arthropods | 23 minutes |
| Life: Insects | 44 minutes |

Zoocases:

Arthropods Zoocase
Insects Zoocase

See www.stlzoo.org/education for a complete list of zoocases

Scavenger Hunt

Monsanto Insectarium (4-8)

Answer Key

Because the animals at the Zoo are living creatures with very special needs, at certain times some of the animals referred to in this scavenger hunt may not be on public display. **Please remind your students to do their best to complete the hunt by carefully observing the animals they find and not to worry about any that are off display.** We update our scavenger hunts on an annual basis during the summer months to be able to provide you with the most accurate information about our animals.

Note to teachers:

Not all of the animals in the Insectarium are *insects*! In addition to insects, there are other arthropods and other invertebrate phyla represented.

1. Three body segments (Head Thorax and Abdomen), Eyes, 6 Legs, Wings, Antennae
2. 5; answers to the second part of the question are listed in the table below

| | |
|--------------------|--|
| Pill bug | Too many legs and body segments |
| Giant Centipede | Too many legs and body segments |
| Red-knee Tarantula | Too many legs and only 2 body segments |
| Emperor Scorpion | Too many legs |
| Leopard Slug | No legs and only 1 body segment |

3. 1,500,000,000,000,000,000,000!!! However, since the sign says that there are 21 zeros, another answer is 1,000,000,000,000,000,000,000. While this other answer is not technically correct, the sign makes this a trick question.
4. Answers may vary
5. Malaria, West Nile Virus, Zika
6. Mealworm
7. Cockroaches
8. Termite Mound; African Termites; cools the air in the underground nest by allowing heat to rise into its chambers, cool off, and sink back down to the nest.
9. Note: The "DID YOU KNOW" sign is located on the wall next to the termite mound. $(365 \text{ days}) \times (6000 \text{ eggs a day}) \times (20 \text{ years}) = 43,800,000$

10. The sign says Yellow Jackets; however, based on the other signage and items in this exhibit area, other answers may include paper wasp and bald-faced hornet.
11. From glands inside its abdomen
12. They are not because they have too many legs, not enough body segments, and no antennae.
13. Hummingbirds build their nests out of moss and lichens and use spider webs like glue to hold all the materials together. A spider web is a good building material because it is sticky and strong.
14. Decomposition, pollination, food for other animals
15. Answers may vary
16. 9 days (Located next to Hide Beetle Exhibit.)
17. Warm to cool freshwater ponds and streams; blood of frogs, fish and sometimes humans (a leech is parasite that needs blood to survive).
18. Leeches are used as a method of eliminating extra blood after surgery that would otherwise cause some surgeries to fail. To do this, leeches suck the extra blood until normal blood flow returns. Leech saliva is used as an anticoagulant (this use includes promoting blood flow and treating heart attack and stroke victims).
19. To make vaccines for bee allergies and to treat disorders of the nervous system, arthritis, rheumatism, and joint inflammation.
20. Answers may vary
21. Answers may vary
22. Answers are listed in the table below

| | |
|-----------------------|-------------------|
| Lady Bug Beetle* | Scale Insects* |
| Common Burying Beetle | Fly |
| Midge Larvae | Aphid |
| Wheel Bug | Stink Bug |
| Wasp Larvae | Gypsy Moth Larvae |

* Depending on the season, these insects may not be on exhibit. If they are not on exhibit, have an adult note which insect is there instead and whether it is a pest controller. If it is a pest controller, have the adult note which pest(s) it eats.

23. Hissing Cockroach
24. Hears sound through its legs
25. ¼ mile
26. American Burying Beetle; endangered
27. Help decompose dead animals
28. Life cycle should contain: egg, caterpillar (larva), chrysalis (cocoon), adult (butterfly).

29. Answers may vary

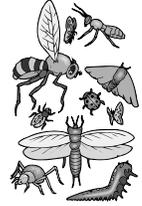
30. Pictures may vary

31. 75%

32. 400 species

33. 1. Preserve 2. Protect 3. Provide 4. Promote

Name _____



Scavenger Hunt

Monsanto Insectarium 4-8

Student Activity Pages

There are more species of insects than any other animal. Their diversity is due to the length of time they have roamed the earth. Their individual adaptations have allowed insects to inhabit and thrive in almost any area on the globe! Although many insects are considered pests, they can be very beneficial to humans, as well as to other animals. As you walk through the Insectarium, note all the facts about insects that make them so fun to learn about!

START YOUR HUNT AT THE MONSANTO INSECTARIUM

AM I AN INSECT?

1. What are the characteristics of an insect?
2. Complete the **Am I an Insect?** activity. How many were not insects? _____
How do you know? List the names of the organisms and say why they weren't insects.
3. **DID YOU KNOW sign--** An aphid will produce 1.5 heptillion offspring in one summer! Write out the number _____

THEY'RE EVERYWHERE! DESIGNED FOR SUCCESS

4. Select one habitat that you might find in Missouri and describe an insect that lives in that habitat. Have you seen this insect before?
5. **DID YOU KNOW sign--** Mosquitoes are the most dangerous insects to humans! What diseases do they spread? (Hint: more than one is in the news a lot.)

DUNE BUGGIES- EXTREME SURVIVAL

6. Find and investigate the Darkling Beetle exhibit. Now find the Darkling Beetles information plaque on the wall. What is the larval form of the beetle called?

NOT HOME ALONE- WHO'S HOME?

7. What insect shares its home with us and eats our food?
(Hint: Hey mom! What's there to eat in the refrigerator?)



ARCHITECTS WITHOUT BLUEPRINTS- MASTER BUILDERS

8. Turn around and look at the huge brown structure behind you or to your left.
(Hint: It's taller than you are and is not the tree!) What is this giant structure, what made it, and what purpose does it serve?
9. ****Optional** DID YOU KNOW sign--** A queen termite lays approximately 6000 eggs a day. How many eggs will she lay in her lifetime if she lives 20 years?
(Hint: There are 365 days in a year.)
10. **DID YOU KNOW sign--**What stinging creature "invented paper"?

WHAT A TANGLED WEB WE WEAVE

11. How does a spider make silk fibers?
12. Think back to the sign at the front of the Insectarium while answering these questions. Are spiders insects? Why or why not?
13. **DID YOU KNOW sign--** What do hummingbirds use to make their nests? Give two reasons why you think this animals "glue" is a good building material.

WHO NEEDS INSECTS? WE DO! THE ROTTEN TRUTH

14. List three reasons why we need insects. (Hint: Start answering this question while standing in this area and add to it as you move around the room during the scavenger hunt.)

15. Which insect do you feel is most beneficial to humans? Why?

16. **DID YOU KNOW sign**-- How long can a cockroach live without its head?

IT'S OFF TO WORK WE GO

17. Have you ever seen leeches before? Where do they live, and what food do they need to survive?

18. How are leeches used by humans? (Hint: Look below leech display and in the middle of the room.)

19. What is honeybee venom used for? (Hint: Look for a display in the middle of the room labeled Bugs as Drugs.)

YOU GONNA EAT THAT?

20. A long time before Fear Factor, many people were eating insects as part of their daily diet. Which of the delicacies would you like to try? (Hint: Look for a display in the middle of the room.)

21. Can you think of other ways insects help to provide food for us? (hint: look at Bees Feed the World)

NATURE'S PEST CONTROL

22. Complete the following chart with information from the display and the living exhibit. Only fill out the boxes for pest controllers and their prey insects. Please note that depending on the season, one or two of these boxes may be left blank.

| Name of predatory insect | Name of prey insect |
|--------------------------|---------------------|
| | |
| | |
| | |
| | |
| | |

BLINK, BUZZ, CHIRP, HISS, SNIFF- INSECT COMMUNICATION

23. Visit the Insect Communication room. Listen to the different insect sounds. What insect creates a sound in the same way as someone blowing into a clarinet?

24. Where (on its body) does this animal hear sounds?

25. **DID YOU KNOW sign--** From how far away can a male cicada's love song be heard?

INVESTIGATING INSECTS- BUG U- A LEARNING ZONE

26. What type of native beetle is the Saint Louis Zoo trying to help conserve and what is its status in the wild?

27. What do these beetles do that is beneficial for the environment?

QUICK CHANGE ARTIST FROM EGGS TO BUTTERFLY

28. Draw a diagram of a butterfly's life cycle. Be sure to label all of the stages! What is the process called when it changes from one form to a new one?

MARY ANN LEE BUTTERFLY WING

29. Using one of the available identification cards, find as many different butterflies as you can. List them below.

30. Choose your favorite butterfly and create a drawing of it using your colored pencils.

FROM FLOWERS TO OUR FOOD (outside exhibit)

31. What percentage of plants grown worldwide for food, beverage, fibers, condiments, spices, and medicine are pollinated by animals?

Go back to the **Missouri Meadow (outside exhibit) – If you are allergic to bees, please do not visit this area**

Missouri: The Show Bee State

32. How many species of bees does Missouri have?

33. What are four simple rules (the 4 P's) you can follow to help native bees?