



Investigating Insects: Threats and Misconceptions

Teacher Instructions

Overview:

In this lesson, students will discuss the facts and misconceptions about mosquitoes, crane flies and dragonflies (mosquito hawks). They will learn about the insects' life cycles and habitats, as well as threats to the insects, to better understand insects' roles in our wetlands.

Learning Objectives:

The students will:

- Compare and contrast mosquitoes, crane flies and dragonflies and their roles in Louisiana wetlands.
- Analyze body structures, habitats, eating habits and threats/predators of mosquitoes, crane flies and dragonflies.
- Create a "foldable" to represent each student's understanding of facts.
- Understand the lives of mosquitoes, crane flies and dragonflies through a life simulation.

Materials:

- Glue
- Hole punch
- Index cards
- Large poster paper for class T-chart (**teacher provides**)
- Markers
- Scissors
- Why Mosquitoes Buzz in People's Ears, by Leo Dillion (**teacher provides**)
- Yarn

Grade Level Expectations:

Third Grade

English

ELA.3.48. Use keywords to take notes from written sources.

Grade Level:

Upper elementary

Subject Areas:

Science, English

Duration:

Two class periods

Setting:

Classroom or outdoors

Vocabulary:

Diet
Habitat
Larvae
Metamorphosis
Misconception
Predator
Prey
Threat

Fourth Grade

Science

- 41. Describe how parts of animals' bodies are related to their functions and survival. (LS-E-A3)
- 50. Explain how some organisms in a given habitat compete for the same resources. (LS-E-C1)
- 53. Identify the habitat in which selected organisms would most likely live and explain how specific structures help organisms to survive. (LS-E-C2)

English

- ELA.4.44. Use keywords and phrases to take notes from oral, written and electronic media sources.
- ELA.4.45. Paraphrase or summarize information from a variety of sources.

Fifth Grade

Science

- 27. Compare common traits of organisms within major ecosystems. (LS-M-C3)
- 28. Explain and give examples of predator/prey relationships. (LS-M-C4)

English

- ELA.5.4. Develop specific vocabulary (e.g., for reading scientific, geographical, historical and mathematical texts, as well as news and current events) for various purposes.
- ELA.5.12. Demonstrate understanding of information in grade-appropriate texts using a variety of strategies, including summarizing and paraphrasing information, identifying stated and implied main ideas and supporting details for each, and making simple references and drawing conclusions.
- ELA.5.41. Participate in group and panel discussions.

Common Core State Standards:

Third Grade

Science

- LS2.C. Ecosystem Dynamics, Functioning and Resilience.
- LS2.D. Social Interactions and Group Behavior.
- LS4.D. Biodiversity and Humans.

English

- SL.3.1. Engage effectively in a range of collaborative discussions (one-on-one, in groups and teacher-led) with diverse partners on grade 3 topics and texts, building on others' ideas and expressing their own clearly.

Fourth Grade

English

- SL.4.1. Engage effectively in a range of collaborative discussions (one-on-one, in groups and teacher-led) with diverse partners on grade 4 topics and texts, building on others' ideas and expressing their own clearly.

Fifth Grade

- Science*LS2.1. Develop a model to describe the movement of matter among plants, animals, decomposers and the environment.

English

SL.5.1. Engage effectively in a range of collaborative discussions (one-on-one, in groups and teacher-led) with diverse partners on grade 5 topics and texts, building on others' ideas and expressing their own clearly.

Vocabulary Definitions:

Diet – The kind of food a living organism habitually eats.

Habitat – An ecological or environmental area that is inhabited by a particular species of animal, plant or other type of organism.

Larvae – The immature form of an insect (wormlike stage).

Metamorphosis – Transformation from an immature form to an adult form in two or more stages.

Misconception – An incorrect opinion that is based on faulty thinking or understanding.

Predator – An animal that naturally hunts or kills another for food.

Prey – An animal hunted and killed by another for food.

Threat – Something that can harm a living thing.

Background Information:

What Is an Insect?

Insects belong to the scientific class Insecta, a group of invertebrates with exoskeletons, compound eyes, three pairs of joined legs, antennae, one to two pairs of wings and a segmented body made of three parts –head, thorax and abdomen. Insects have many roles in our environment as pest, parasites, **predators**, **prey**, pollinators, nutrient recyclers and key pieces of food webs. These relationships also can present **threats** to insects, especially when other insects are the **diet** of a larger insect.

Insects are among the most diverse groups of organisms on the planet. Many insects undergo a multistep life cycle called **metamorphosis**, where they begin from an egg and develop in different stages to become an adult. There are two main types of metamorphosis: incomplete and complete. Complete metamorphosis includes four steps: egg, **larvae**, pupa and adult. Incomplete metamorphosis includes three steps, skipping the pupa stage, and in it the larvae is called a nymph. The different stages in development often occur in different habitat types, such as land or water, and minimize competition between adults and offspring.

Mosquitoes

Mosquitoes are members of the order Diptera, the true flies. There are more than 3,000 species of mosquitoes, and 160 of those are found in the United States. Mosquitoes most often are found near wet environments or water, since it is crucial to their reproduction. Mosquitoes often are considered a pest and a disease carrier, or vector, transmitting diseases such as malaria, encephalitis, West Nile virus, yellow fever and heartworms. Despite that, however, mosquitoes still play an important role in ecosystem food webs, providing food for bats, birds and other insects like dragonflies.

Mosquitoes are small insects with compound eyes, long antennae, one pair of wings and three pairs of long legs. The mosquito's second set of wings has evolved into a short, clublike structure called a haltere, which helps the mosquito balance in flight. For food, both male and female mosquitoes feed on plant nectar. Only females "drink" blood, which they use in development of their eggs. Females use a sharp mouthpiece called a proboscis to puncture skin and suck blood. Females locate blood sources (animals, people, etc.) by using sensory hairs on their antennae. They also are able to detect carbon dioxide, body odors and temperature changes. Once the blood source is found, female mosquitos can drink up to four times their body weight in blood. The irritation of the bite is caused by a reaction to the mosquito's saliva, which contains a chemical to prevent blood from clotting.

The average life span of an adult mosquito is only two to three weeks, but a mosquito sometimes can live up to three months. Mosquitoes undergo complete metamorphosis in four life stages – from egg to larva, to pupa and then adult. Eggs are laid in water, where they hatch into aquatic larvae in 24-36 hours. The larvae feed on micro-organisms and decaying matter in the water for seven to 14 days until they become pupa. Pupae also live in the water, a stage lasting about two days before they emerge as adults. The average time from egg to adult is about 10 to 14 days.

Crane Flies

Crane flies also are members of the order Diptera, the true flies. They sometimes are called leatherjackets or mosquito hawks, although they do not feed on mosquitoes or bite. The name "mosquito hawk" is a **misconception**. Approximately 1,500 species of crane flies exist in North America and are often found near water or moist woodlands. Although sometimes considered an agricultural pest in larval stage, crane flies are important in food webs, serving as food for bats, bugs and birds as adults and skunks, moles, fish, turtles and water bugs in larval form. In addition, adult crane flies and their larvae commonly are used as bait by fishers.

Crane flies can reach up to 2 ½ inches, with long slender legs, one pair of wings, compound eyes and long antennae. Like mosquitoes, crane flies also have halteres that help them balance in flight. The average life span of an adult crane fly is 10 to 15 days, a time span in which they focus on reproducing and laying eggs. Crane flies undergo complete metamorphosis, beginning when they lay their eggs in water or soil. Eggs then will hatch into larvae that eat decomposing matter in the water or soil, where they will overwinter for several months. The larva becomes pupa while wintering, developing legs that it uses to climb out of the water or ground to become an adult.

Dragonflies

Dragonflies belong to the order Odonata, or "toothed-ones," which also includes damselflies. There are more than 5,000 species of dragonflies and damselflies, whose ancestors have been traced back 325 million years to fossils with 30 inch wingspans. Modern dragonflies and damselflies have two pairs of wings, small antennae, large compound eyes and three pairs of legs. Dragonflies lay their wings flat when perched, and damselflies, which often are smaller and more delicate, perch with their wings together or touching.

Dragonflies are found in many freshwater habitats, where they lay their eggs and hunt. Dragonflies undergo incomplete metamorphosis, excluding the pupa stage from their development. Once the eggs are laid, they develop into larvae, also called nymphs, which spend the next one to two years in the water, molting and feeding on smaller invertebrates. After six to 15 molts, the larval dragonflies crawl out of the water and emerge from their last molt as adults. Adult dragonflies catch insects like mosquitos, leading to their nickname "mosquito hawks." Due to their sensitivity to

pollution, the presence of dragonflies can indicate a healthy ecosystem. Predators of the dragonfly include larger dragonflies, birds, lizards and frogs.

Advance Preparation:

1. Make a three-column chart on large poster paper. Write mosquitoes at the top of the left column, crane flies at the top of the middle column and dragonflies at the top of the third column.
2. Make copies of the following blackline masters:
Trifold Notebook Foldable (one per student)
Mosquito Fact Sheet (4 copies)
Crane Fly Fact Sheet (4 copies)
Dragonfly Fact Sheet (4 copies)
Insects Misconceptions and Truths Assessment (one per student)
3. Cut segments of yarn for neck tags (one for each student).
4. Locate a YouTube version of Why Mosquitoes Buzz in People's Ears if the book is not available.

Procedure:

Guiding Questions:

- What are the differences and similarities between mosquitoes, crane flies and dragonflies?
- What are some misconceptions and myths about these insects?

Day 1:

1. Review the background information and lesson content before beginning the lesson.
2. Tell students you will be discussing three wetland insects – the mosquito, crane fly and dragonfly (sometimes known as the mosquito hawk).
3. Allow students to come up, and in a graffiti-type of thought recording, write in colored marker their knowledge of each insect on the chart.
4. Once all students have had a chance to record their thoughts, read the students' ideas out loud so everyone is able to hear the class's thoughts. But do not discuss the validity of their comments yet!
5. Read Why Mosquitoes Buzz in People's Ears to the whole class. If the book is not available, play the online reading at [video.nhptv.org/video/1689064464].
6. After reading, discuss the students' feelings about mosquitoes now. Did they change? Do they still see mosquitoes as "pests"?
7. Explain to students that some of their comments for all three insects are accurate and some are misconceptions.
8. Define the term misconception for students. (*An incorrect opinion that is based on faulty thinking or understanding*)
9. Explain to students that in the wetlands mosquitoes, crane flies and dragonflies have vital and important roles, even though we may sometimes see them as pests. Like the lies the mosquito told in the story, we have misconceptions about these insects. Today, we will separate myths and misconceptions from the truth – which means we first need learn the facts!
10. Have students take out their science notebooks/journals.
11. Pass out scissors and glue.
12. Pass out the *Trifold Notebook Foldable* (one for each student). (See blackline masters.)

13. Demonstrate for students how to create the foldable.
Step 1: Cut along the outside edge of the *Trifold Notebook Foldable* to remove excess paper.
Step 2: Fold the paper into thirds so the words are on the inside like a letter.
Step 3: Glue the back center section of the *Trifold Notebook Foldable* into the notebook by placing glue on the outer left and right edges of the central section.
Step 4: Fold the tabs so they overlap in the middle to make room to write on the notebook page above and below the *Trifold Notebook Foldable*.
14. Once all students have the *Trifold Notebook Foldable* glued in and set up, explain to the students that they are going to do an activity in which they are going to become experts on one of the insects we have discussed and teach their classmates about that insect. Notes will be recorded on the inside tabs of their *Trifold Notebook Foldables* in their science journals/notebooks.
15. Divide class into three 3 “expert” groups of students (mosquitoes, crane flies and dragon flies). (*Watch to see if the students make the correlation and connection between the terms “mosquito hawks” and “dragonflies.” They should make the connection and discover the misconception during their research.*)
16. Pass out the *Mosquito Fact Sheet, Crane Fly Fact Sheet, Dragonfly Fact Sheet* (See blackline masters.) to the respective expert groups. Give the students 10 minutes to complete their sections of the *Trifold Notebook Foldable*. They must include the following topics on their cards:
 - a. Body features (how insects look).
 - b. Diet (what they eat).
 - c. Habitat (where they live).
 - d. Benefits (ways the insect helps the environment).
 - e. Threats and/or predators (things that would be a danger to this organism).
17. After experts have completed their sections, divide class into groups of three students each. Each group needs one expert from each insect type.
18. Tell the students each expert needs to teach the other two group members about his or her insect, one at a time, and then fill in the appropriate sections of the *Trifold Notebook Foldable*. Give the students 10 minutes to do so.
19. After all three insect experts have shared and all three tabs on the *Trifold Notebook Foldables* are complete, return to the graffiti three-column chart from the beginning of the lesson. Discuss and identify any misconceptions and truths listed. Cross out false statements and allow students to add truths they learned during the lesson. (*This is the time when you want to guide students to the understanding that mosquito hawks actually are dragonflies, not crane flies.*)
20. Continue this discussion by asking students to compare and contrast the insects using the five topics on each tab in the foldable.
21. Have students put away their science journals/notebooks.
22. Tell the students they will further explore the threats to mosquitoes, crane flies and dragonflies and how these insects survive tomorrow.

Day 2:

Guiding Questions:

- What are major threats to mosquitoes, crane flies and dragon flies?
- What environmental situations are best for the survival and progress of these species?

1. Tell students that today they will further explore the threats to mosquitos, crane flies and dragonflies, as well as how those insects survive, by experiencing what insects might go through in the environment.
2. Break the class into three groups. Each group will represent a different wetland insect – mosquitoes, crane flies or dragonflies.
3. Pass out index cards and markers to students.
4. The students will decorate an index card with a picture of their insects. Punch two holes in the top of each card and have students string their cards around their necks, as if the cards/string were a necklace.
5. In a large area (inside or outside), have the students stand in a circle.
6. Tell students they have become the insect on their neck tag and that you will read a story line in which they are all characters. They will follow the instructions of the story and perform actions related to the events in the story.
7. Tell the students if they die in the story, they should go and sit in the middle of the circle. There will be opportunities for them to return to the story.
8. Use the *Insect Survival Script* (See blackline masters.) to narrate the story and instruct the students in specific actions of their insect roles.
9. When you complete the script, ask volunteers to tell what their journey was like to the rest of the group.
10. Lead a discussion using the following questions:
 - a. Why did some insects die earlier than others?
 - b. What is significant about their experiences? Does it reflect what you learned about these insects? (*Refer to background information.*)
 - c. How does this story represent insects in wetlands? (*They are connected through what they eat and the habitats they use.*)
 - d. Why is it important to save wetlands in Louisiana? (*Wetlands support insects, which are important to the food chain, pollination, etc.*)
11. Assessment: Pass out the *Assessment of Misconceptions and Truths About Insects* (See blackline masters.) Collect and score using *Misconceptions and Truths About Insects Key* (See blackline masters.) for student understanding.

Blackline Masters:

- Trifold Notebook Foldable
- Trifold Notebook Foldable Key
- Mosquito Fact Sheet
- Crane Fly Fact Sheet
- Dragonfly Fact Sheet
- Insect Survival Script
- Assessment of Misconceptions and Truths About Insects
- Assessment of Misconceptions and Truths About Insects Key

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Name _____ Date _____

Investigating Insects: Threats and Misconceptions

student activity sheet

Trifold Notebook Foldable

<p>Mosquitoes</p>	<p>Crane Flies</p>	<p>Dragonflies</p>
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provided by LSU AgCenter

Name _____ Date _____

Investigating Insects: Threats and Misconceptions

student activity sheet-KEY

Trifold Notebook Foldable KEY

Mosquitoes

Body Features: *Small bodies with long antennae, compound eyes, one pair of wings and three pairs of legs. Females have sharp proboscis for drinking blood.*

Diet: *Eat nectar from flowers and some other plants such as honeydew. Females drink blood to develop eggs.*

Habitat: *Found in wet environments or near water.*

Benefits: *Food for bats, birds and other insects.*

Threats: *Disease carriers; eaten by bats, birds, spiders, frogs, fish and dragonflies; killed by humans.*

Crane Flies

Body Features: *2 ½ inches; three pairs of long, slender legs; one pair of wings; compound eyes; and long antennae.*

Diet: *Larvae feed primarily on decomposing organic matter. Some species feed on roots of forage crops, turfgrasses and seedling field crops. Adults do not feed; they have one purpose – to mate and lay eggs.*

Habitat: *Near water in forests, streams and flood plains. Some species can live in drier habitats.*

Benefits: *They are an important part of the food chain.*

Threats: *Food for bats, bugs and birds, as adults, and skunks, moles, fish, turtles and water bugs, in larval form. They can be killed by humans as pests and used as fishing bait.*

Dragonflies

Body Features: *Two pairs of wings, small antennae, large compound eyes and three pairs of legs.*

Diet: *Adult dragonflies eat mosquitoes and other bugs. When they are in the nymph stage, they eat small fish, tadpoles, mosquito larvae, worms and aquatic insects.*

Habitat: *Dragonfly larvae, or nymphs, live in water (small streams, wetlands and ponds) and shallow freshwater habitats.*

Benefits: *Dragonflies help control the pest population. They are an important part of the food chain because of what they eat and what eats them!*

Threats: *Predators of the dragonfly include larger dragonflies, spiders, birds, lizards and frogs. Larvae also are eaten by fish.*



provided by LSU AgCenter

Mosquito Fact Sheet



Mosquitoes are small insects with compound eyes, long antennae, one pair of wings and three pairs of long legs. For food, both male and female mosquitoes feed on plant nectar. Only females “drink” blood, which they use in the development of their eggs. Females use a sharp mouthpiece, called a proboscis, to puncture skin and suck blood. Females locate blood sources (animals, people, etc.) by using hairs on their antennae. They also are able to detect carbon dioxide, body odors and temperature changes.

The average life span of an adult mosquito is only two to three weeks, but a mosquito sometimes can live up to three months. Mosquitoes undergo complete metamorphosis in four life stages – from egg to larva to pupa and then adult (like a butterfly). Eggs generally are laid in water, where they hatch into aquatic larva. The larvae feed on micro-organisms and decaying matter in the water until they become pupae. Pupae also live in the water, a stage that lasts only about two days before they emerge as adults. The average time from egg to adult is about 10 to 14 days.

Mosquitoes most often are found near wet environments or water, where they lay eggs. Mosquitoes often are considered pests and disease carriers, and they do contribute to spreading diseases like West Nile virus and malaria. Despite this, mosquitoes still play an important role in ecosystem food webs, providing food for bats, spiders, birds, frogs, fish and other insects like dragonflies.



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Crane Fly Fact Sheet

Crane flies can reach up to 2 ½ inches, with three pairs of long, slender legs, one pair of wings, compound eyes and long antennae. They also are called leatherjackets or mosquito hawks. The name “mosquito hawk” is a misconception because they do not feed on mosquitoes or bite.

The average life span of an adult crane fly is 10 to 15 days, a time span in which they do not eat but instead focus on reproducing and laying eggs. Crane flies undergo complete metamorphosis (like butterflies), beginning when they lay their eggs in water or soil. Eggs then hatch into larvae that eat decomposing matter in the water or soil, where they will overwinter for several months. Larvae become pupae while wintering, developing legs that are used to climb out of the water or ground as they become adults.

Crane flies often are found near water in forests, streams and flood plains, but some species can survive in drier habitats like deserts. Although they sometimes are considered an agricultural pest in the larval stage, crane flies are important in food webs, serving as food for bats, spiders, bugs and birds as adults and skunks, moles, fish, turtles and water bugs while in larval form. In addition, adult crane flies and their larvae commonly are used as bait by fishers.



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Dragonfly Fact Sheet

Dragonflies have two pairs of wings, small antennae, large compound eyes and three pairs of legs. Dragonflies are found in many freshwater habitats, such as streams, wetlands and ponds, where they lay their eggs and hunt.

Dragonflies undergo incomplete metamorphosis, experiencing only three of the four stages of metamorphosis. Dragonflies do not have a pupal stage in their development. Once the eggs are laid, they develop into larvae, also called nymphs, which spend the next one to two years in the water, molting and feeding on smaller invertebrates. After anywhere from six to 15 molts, the larval dragonflies crawl out of the water and emerge from their last molt as adults.

Adult dragonflies are carnivorous and catch insects like mosquitos, leading to their nickname "mosquito hawks." Due to their sensitivity to pollution, the presence of dragonflies can indicate a healthy ecosystem. Predators of the adult dragonflies include larger dragonflies, spiders, birds, lizards and frogs. Larvae are eaten by fish.

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Insect Survival Script

Follow the script to illustrate experiences of wetland insects to your students. The students will follow the directions of the script, acting as the insects they are assigned. In each step, students will take the "Action" directed for their assigned insects. Upon completion, use the discussion questions in the lesson and let the students share the significance of their experiences. After you read the scenario, say "1,2,3 Action!" and give the students 3 seconds.

You are all bugs living in Louisiana. Louisiana has many different habitats, including wetlands, forests, streams and neighborhoods, but there are many dangers to insects here, and we must be careful to survive!

- 1. The sun is rising in Louisiana. All the insects wake up and stretch their wings in the morning light!**
Action: All students stretch and yawn as if they are waking up.
- 2. The mosquitoes are hungry and go out in search of flowers in the neighborhood gardens.**
Action: Mosquitoes flap their arms and buzz aloud.
- 3. The crane flies, unconcerned with eating, head to the wetlands to lay their eggs.**
Action: Crane flies flap their arms and hum aloud.
- 4. The dragonflies zoom off on the hunt for food, making their way to the wetland, as well.**
Action: Dragonflies flap their arms and make "zooming" noises aloud.
- 5. While the mosquitoes are looking for flowers, a truck spraying chemicals drives by. The chemicals poison the mosquitoes and they die.**
Action: Mosquitoes cough and move to sit in the center of the circle.
- 6. While the crane flies lay their eggs, the dragonflies hone in and attack, eating the unsuspecting crane flies.**
Action: Crane flies grasp and move to the center of the circle. Dragonflies make eating/chomping gestures with their hands.
- 7. Rainwater fills an old bucket by a house. Since mosquitoes took the opportunity to lay eggs and create more mosquitoes earlier, there are more mosquitoes!**
Action: Mosquitoes in the center of the circle return to the edges and do a celebratory dance.
- 8. Sleepy from a big meal, dragonflies accidentally fly too low over a road and are smashed on the windshields of vehicles.**
Action: Dragonflies clap their hands once and move to sit in the center of the circle.
- 9. There is a sudden rainstorm, providing plenty of habitats for the aquatic larva of the wetland insects to survive. There is a population explosion of insects.**
Action: All students in the center of the circle return to the edges and do a celebratory dance.

Investigating Insects: Threats and Misconceptions

Insect Survival Script
(continued)

10. A Fisherman tries to catch crane flies as bait, but you escape. Unfortunately, the fisherman catches your larvae and puts them on a hook and casts out into the stream.

Action: Crane flies cry at the loss of their babies.

11. Mosquitoes are caught by an entomologist studying the transmission of diseases. They are put in a jar and brought back to the lab to be tested for the West Nile virus.

Action: Mosquitoes pretend to be in a jar and then go sit in the center of the circle.

12. While the dragonflies are perched by the stream, a frog sneaks up behind and eats them!

Action: Dragonflies cry, "Help Me!" and then go sit in the center of the circle.

13. Crane flies get stuck in a house, with no way to escape, and they die before being able to mate and lay eggs.

Action: Crane flies pretend to be trapped in a box and then go sit in the center of the circle.

14. A hurricane hits the coast, flooding the streets and waterways. Despite the damage, insects have many places for their young to mature. There is a population explosion of insects.

Action: All students in the center of the circle return to the edges and do a celebratory dance.

15. After many days of sunshine and no rain, the waterways dry up, causing all the larvae to die.

Action: All the insects cry.

16. Part of the wetland habitat has been drained and clear-cut for a new apartment complex. All the insects must move to a new area.

Action: All students spin around in a circle.

17. All the insects settle into their new habitat and fall asleep in the leaves.

Action: All students stretch and yawn, as if they are going to sleep, and sit down into their seats.



Name _____ Date _____

Investigating Insects: Threats and Misconceptions

student activity sheet

Mosquitoes, Crane Flies and Dragonflies – How Much Do You Know? An Assessment of Misconceptions and Truths About Insects

*Directions: Fill in the blank for each question. Write mosquito, crane fly and/or dragonfly.
(Hint: You will use answers more than once -- and there may be more than one answer for each question.)*

1. I eat mosquitoes. I am a: _____.
2. I live in the wetlands of Louisiana. I could be a: _____.
3. I am the only one that drinks blood. I am a female: _____.
4. My nickname is "mosquito hawk." I really am a: _____.
5. Many people think I eat mosquitoes, but I don't! I eat decomposing organic matter only when I am a larva. I am a: _____.
6. I am afraid of birds, fish and spiders because they eat me! I am a: _____.
7. People don't like me because they think I am annoying. I'm really harmless, however! I am a: _____.
8. If people knew how hard I worked to control the pest population they would love me more! I am a: _____.
9. I'm a bad insect! I spread diseases that can be harmful to animals and humans. I am a: _____.
10. Without me in the world, the natural food chain would be disrupted, and the environment would become unbalanced. I am a: _____.

Name _____ Date _____

Investigating Insects: Threats and Misconceptions

student activity sheet-KEY

Mosquitoes, Crane Flies and Dragonflies – How Much Do You Know? An Assessment of Misconceptions and Truths About Insects

*Directions: Fill in the blank for each question. Write mosquito, crane fly and/or dragonfly.
(Hint: You will use answers more than once -- and there may be more than one answer for each question.)*

1. I eat mosquitoes. I am a: **Dragonfly.**
2. I live in the wetlands of Louisiana. I could be a: **Mosquito, Crane Fly and/or Dragonfly.**
3. I am the only one that drinks blood. I am a female: **Mosquito.**
4. My nickname is "mosquito hawk." I really am a: **Dragonfly.**
5. Many people think I eat mosquitoes, but I don't! I eat decomposing organic matter only when I am a larva. I am a: **Crane Fly.**
6. I am afraid of birds, fish and spiders because they eat me! I am a: Mosquito, Crane Fly and/or Dragonfly.
7. People don't like me because they think I am annoying. I'm really harmless, however! I am a: **Crane Fly.**
8. If people knew how hard I worked to control the pest population they would love me more! I am a: **Dragonfly.**
9. I'm a bad insect! I spread diseases that can be harmful to animals and humans. I am a: **Mosquito.**
10. Without me in the world, the natural food chain would be disrupted, and the environment would become unbalanced. I am a: **Mosquito, Crane Fly and/or Dragonfly.**