

Study Guide – Texas 4-H Entomology ID Contest
Thysanura

1. Review the Thysanura YouTube video for your age level at the Bexar Entomology page.
2. Follow along with your 4-H Entomology Study Guide (<https://entomology.tamu.edu/extension/youth/4-h/4h-contest/>)
3. Review the definitions for the key words for Thysanura.
4. Read the Thysanura Facts
5. Answer the study guide questions
6. Quiz yourself to identify the species of Thysanura and if they are a pest/beneficial/inconsequential and where they are found in nature and/or their host.

Key Words to Know for Thysanura:

Nymph

Ametabolous

Cerci

Haustellate

Thysanura Facts:

- Thysanura are silverfish
- Thysanura have chewing mouthparts
- Thysanura are very primitive insects that do not have wings and have scales covering their bodies.
- Silverfish have cerci (three hair like projections) from their abdomen
- Silverfish are ametabolous – no metamorphosis – because there is little change from nymph to adult and adults do not have wings.

Study Guide Questions:

Are Thysanurans that are beneficial.

What do silverfish feed on?

Where do you find Thysanura?

What type of mouthparts do silverfish have?

What is the common name for Thysanura?

Study Guide – Texas 4-H Entomology ID Contest
Odonata

1. Review the Odonata YouTube video for your age level at the Bexar Entomology page.
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(<https://entomology.tamu.edu/extension/youth/4-h/4h-contest/>)
3. Review the definitions for the key words for Odonata.
4. Read the Odonata Facts
5. Answer the study guide questions
6. Quiz yourself to identify the species of Odonata and if they are a pest/beneficial/inconsequential and where they are found in nature and/or their host.

Key Words to Know for Odonata:

Hemimetabolous

Haustellate

Naiad

Odonata Facts:

- Odonata are hemimetabolous. They lay eggs in the water and naiads are aquatic. Adults are always found near water for this reason.
- Odonata are considered beneficial as naiads and adults.
- Adults can be very colorful.
- There are two species of Odonata to know.
- Odonata have chewing mouthparts.
- Odonata have front legs turned forward like baskets to catch prey on the fly.
- Odonata have strong wings for fast flying.

Study Guide Questions:

What type of mouthparts do Odonata have?

What metamorphosis do Odonata have?

Are Odonata beneficial or pests?

Where do Odonata live?

Species to Know:

Black winged damselfly

Green darner

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Blattodea

1. Review the Blattodea YouTube video for your age level at the Bexar Entomology page.
2. Follow along with your 4-H Entomology Study Guide
(<https://entomology.tamu.edu/extension/youth/4-h/4h-contest/>)
3. Review the definitions for the key words for Blattodea.
4. Read the Blattodea Facts
5. Answer the study guide questions
6. Quiz yourself to identify the species of Blattodea and if they are a pest/beneficial/inconsequential and where they are found in nature and/or their host.

Key Words to Know for Blattodea :

Hemimetabolous

Haustellate

Blattodea Facts:

- Blattodea contains both termites and cockroaches.
- There are several species of cockroaches to know.
- Termites and cockroaches are considered pests, but they can also be considered beneficial because they are recyclers.
- Termites feed on cellulose material (wood and grass and plants).
- Cockroaches can be pests indoors.
- American and smokeybrown cockroaches are large. German cockroaches are much smaller.

Study Guide Questions:

Name the species of Blattodea?

Are Blattodea pests or beneficial?

What mouthparts do Blattodea have?

What type of lifecycle does Blattodea have?

Species to Know:

Juniors: American cockroach

Intermediates & Seniors: American cockroach, German cockroach, Smokeybrown cockroach, Termites

Study Guide – Texas 4-H Entomology ID Contest
Ephemeroptera
Intermediates & Seniors Only

7. Review the Ephemeroptera YouTube video for your age level at the Bexar Entomology page.
8. Follow along with your 4-H Entomology Study Guide
(<https://entomology.tamu.edu/extension/youth/4-h/4h-contest/>)
9. Review the definitions for the key words for Ephemeroptera.
10. Read the Ephemeroptera Facts
11. Answer the study guide questions
12. Quiz yourself to identify the species of Ephemeroptera and if they are a pest/beneficial/inconsequential and where they are found in nature and/or their host.

Key Words to Know for Ephemeroptera:

Hemimetabolous
Haustellate
Subimago

Ephemeroptera Facts:

- Mayflies are hemimetabolous, but have a subimago phase which is a winged form that can molt.
- Mayflies are short lived as adults.
- Mayflies are aquatic as naiads and adults are found near water and attracted to lights.
- Mayflies are known to emerge from the water as the subimago in massive numbers.
- Mayflies have cerci on their abdomen.

Study Guide Questions:

What type of mouthparts do mayflies have?

What metamorphosis do mayflies have?

Are mayflies beneficial or pests or inconsequential?

What is a subimago?

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Plecoptera

Intermediates & Seniors Only

1. Review the Plecoptera YouTube video for your age level at the Bexar Entomology page.
2. Follow along with your 4-H Entomology Study Guide
(<https://entomology.tamu.edu/extension/youth/4-h/4h-contest/>)
3. Review the definitions for the key words for Plecoptera.
4. Read the Plecoptera Facts
5. Answer the study guide questions
6. Quiz yourself to identify the species of Plecoptera and if they are a pest/beneficial/inconsequential and where they are found in nature and/or their host.

Key Words to Know for Plecoptera:

Hemimetabolous

Naiad

Plecoptera Facts:

- Plecoptera are hemimetabolous. They lay eggs in the water and naiads are aquatic. Adults are always found near water for this reason.
- Plecoptera are called stoneflies.
- Stoneflies are inconsequential, which means they are neither beneficial or pests.

Study Guide Questions:

What type of mouthparts do stoneflies have?

What metamorphosis do stoneflies have?

Are stoneflies beneficial or pests or inconsequential?

Where do stoneflies live or where are they found?