

## BUG SAFARI

### Introductions:

**Upcoming Programs:** CNC – Evening Stream Walk at 8 PM; Gorge Tours

### Today:

- Briefly talk about the 8 major orders (or kinds) of insects;
- Volunteers to help demonstrate an aspect of each order;
- Pictures;
- See how many we can find!

**About 1 million different kinds of known animals in the world – ¾ of them are insects. Scientists say that there are from 10-30 million additional species that haven't been discovered yet!**

*First, can someone tell me what makes an insect and insect? What do insects have?*

- 6 legs
- Exoskeleton – no bones;
- 3 main body parts: head, thorax (where legs & wings attach), abdomen
- Antennae
- Wings

*Do insects have hearts?*

- Yes, in fact most insects have several hearts
- No veins; open circulatory system

*What about lungs?*

- Instead of lungs, insects have little tubes along the sides of their bodies where they get air

*Can an insect smell things?*

- Yes, but they don't have "noses"
- They "smell" with their antennae

*What do insects eat?*

- Most eat plants
  - Some eat other insects and some drink blood
  - And some (like the adult mayfly) don't eat at all, in fact, they don't even have mouths! **(Visual)**
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**Volunteers:**

**1. (Coleoptera)**

I think **beetles** are some of the coolest insects, because there are so many different kinds. In fact, almost half (40%) of all the different kinds of insects in the world are beetles!

*Can you name a kind of beetle?*

- Ladybug (Ladybird Beetle)
- Japanese Beetle
- Firefly

*How can you tell a beetle from other kinds of insects?*

- 2 sets of wings
- Elytra meet in a straight line down the back
- Thin under-wings that fold up underneath (Used for flying)
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Another beetle: Weevils – “Gonzo” (see picture)

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**2. (Lepidoptera)**

**Butterflies & Moths:**

- Complete metamorphosis (baby looks much different from adult)
- *What’s a “baby butterfly” called?* Caterpillar.

*Does anyone know what kind of plant monarch caterpillars like to eat?* Milkweed.

- Monarch butterfly egg (tiny jewel) on a milkweed plant.
- Hatch into black, white & yellow caterpillars
- Milkweed poisonous
- Spin a chrysalis (cocoon) 2 days emerge as adult butterflies
- Boy because it has 2 spots

**Gypsy Moths** (show picture)

- Male & female moths look different
  - Female laying eggs
  - Male’s antennae are bigger – Finds female by smelling for her. She makes a special perfume called a pheromone.
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### 3. (Diptera)

Now I'm going to talk about **some people's least favorite insect: True Flies.**

**True flies have only 2 wings**

- **House Flies** – have a sponge-like mouth
- SMALL FLIES ARE NOT “BABY FLIES” maggots.
- **Mosquitoes** – only the female sucks blood

*What are mosquitoes good for?* Bats. **Little brown bat can eat 500 per hour!**

- **Cranefly** – looks like a giant mosquito but it's not.
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### 4. (Hymenoptera)

Another group of insects are the **Bees, Wasps and Ants.**

They have 2 pairs of clear wings.

**Honey Bee:**

*You know bees make honey, but did you know they dance?*

- Round dance (nearby)
- Waggle & run (far & direction)
- If it's really good food, they wiggle a lot

**Show Paper Wasps**

**Ants have BENT or angled antennae**

**Ants take care of aphids:**

- Honeydew
    - Aphids eat plant juices and excrete (or poop) a sweet fluid called “honeydew.”
    - Ants like to eat honeydew and can be seen drinking the fluid right from the abdomen of the aphid.
    - Ants also protect the aphids from predators; in this way, both the aphids and the ants benefit.
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### 5. (Homoptera)

**Another group of insects all hold their wings at an angle (like a roof) over their bodies.**

- Examples of these are the **aphids** we just talked about that make honeydew
  - Big **Cicadas** that you hear buzzing (Sometime you can find their old empty skin)
  - And **spittle bugs** make bubbles that look like spit to hide from predators
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## 6. (*Odonatoa*) – Tooth

These are the **dragonflies and damselflies** (show difference)

- VISUAL PREDATORS (GOGGLES)
  - What's cool about them is that they spend the first part of life in the water as nymphs and look like this (show picture & specimen)
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## 7. (*Hemiptera*) – Half Wings

These are considered the **True Bugs**

TRIANGLE on their back.

- Stink bugs (see on screen doors)

The triangle is caused by the way they fold their wings. Their wings are half hard and half soft, and when they fold them up, it makes a little triangle.

- Adult water scorpions too – have you seen these walking on water, they look like spiders but have only 6 legs (*How many legs do spiders have again?*) 8.
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**And last but not least - the Grasshoppers and Crickets (Also Praying Mantis and Cockroach)** (pass visuals)

## 8. (*Orthoptera*) – Straight Wings

PRAYING MANTIS HAVE SPECIAL ARMS TO CAPTURE OTHER INSECTS FOR FOOD

*What's cool about crickets?* They sing!

Snowy crickets can be used to tell the temperature.

- Count how many times they chirp in 15 seconds, then add 37 degrees Fahrenheit.

*What is a popular thing to do with grasshoppers in Mexico? Ever hear of Chapulines?*

- Fried grasshoppers
- Very popular in Mexico

Before you think “gross”

- If you compare grasshoppers with chicken:
- Insects have 3-5x more calories
- About the same amount of protein and niacin
- Insects have more iron, thiamin & riboflavin!

**Any questions??? Let's go Safari!**