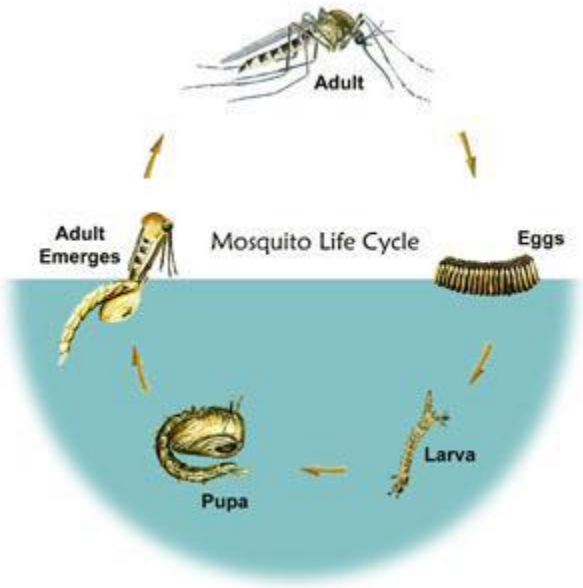
The Life Cycle of Insects

One of the negatives for some with living in a semitropical or a tropical climate is biting insects. Since Hurricane Hanna, the insect which is the biggest problem is the mosquito. The reason is that after a large rainfall and wind damage; there are substantially many more locations for mosquitos to bred. However, the positives, most of the time, outweigh these negatives. As much as they are a nuisance insects are mostly beneficial, even the ones we consider our greatest pests.

Mosquito Life Cycle

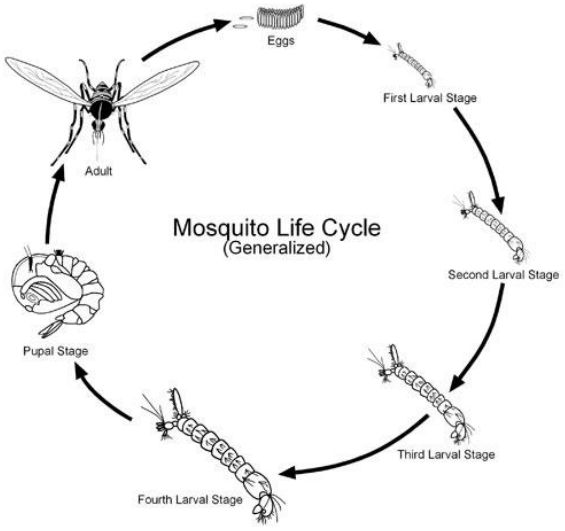
Knowing the different stages of the mosquito's life will help you prevent mosquitoes around your home and also help you choose the right pesticides for your needs, if you decide to use them. All mosquito species go through four distinct stages during their life cycle:



- Egg - hatches when exposed to water.
- Larva - (plural: larvae) "wriggler" lives in water; molts several times; most species surface to breathe air.
- Pupa - (plural: pupae) "tumbler" does not feed; stage just before emerging as adult.
- Adult - flies short time after emerging and after its body parts have hardened.

The first three stages occur in water, but the adult is an active flying insect. Only the female mosquito bites and feeds on the blood of humans or other animals.

- After she obtains a blood meal, the female mosquito lays the eggs directly on or near water, soil and at the base of some plants in places that may fill with water. The eggs can survive dry conditions for a few months.
- The eggs hatch in water and a mosquito larva or "wriggler" emerges. The length of time to hatch depends on water temperature, food, and type of mosquito.
- The larva lives in the water, feeds, and develops into the third stage of the life cycle called, a pupa or "tumbler." The pupa also lives in the water but no longer feeds.
- Finally, the mosquito emerges from the pupal case after two days to a week in the pupal stage.
- The life cycle typically takes up two weeks, but depending on conditions, it can range from 4 days to as long as a month.

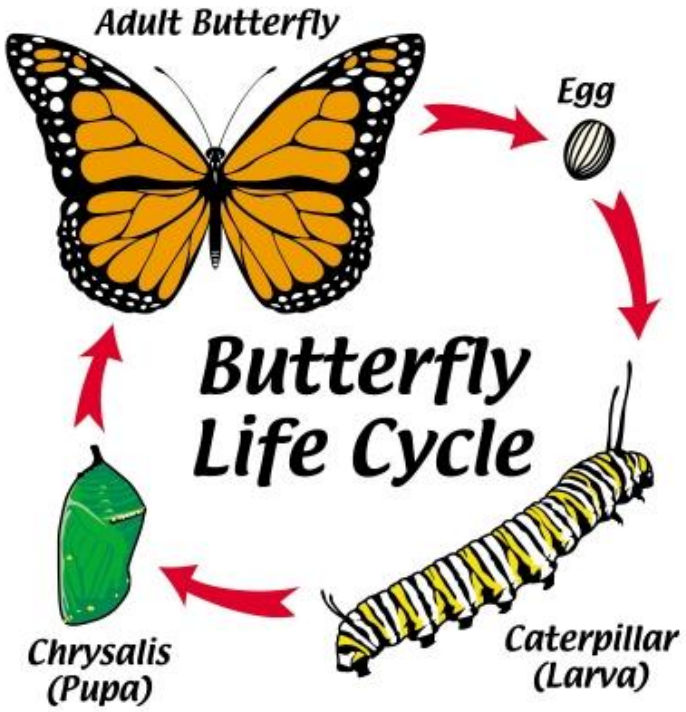


The adult mosquito emerges onto the water's surface and flies away, ready to begin its lifecycle.

https://www.epa.gov/mosquitocontrol/mosquito-life-cycle

https://extension.entm.purdue.edu/publichealth/insects/mosquito.html

WHAT IS THE LIFE CYCLE OF AN INSECT?



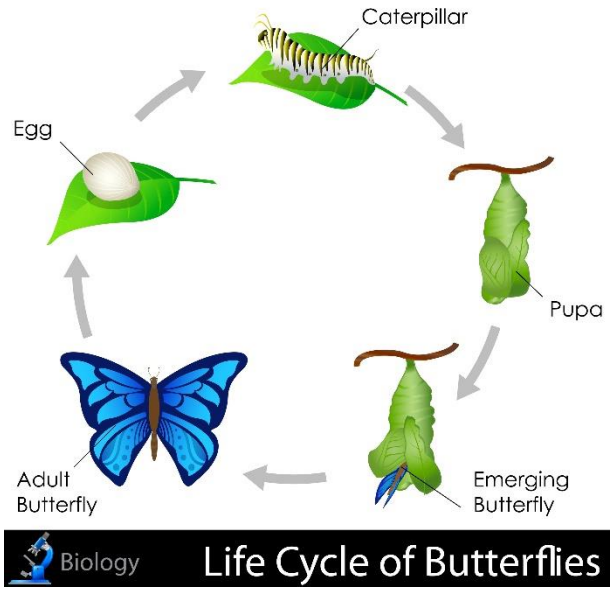
Young insects develop in two main ways. In some species, such as grasshoppers and locusts, the young that hatch from eggs look rather like small adults, and are called nymphs. As they grow, the nymphs shed their skins, looking more and more like adults each time.

Other insects, such as butterflies, bees and beetles, go through a process called metamorphosis. Their eggs hatch into larvae or caterpillars. Later these become a pupa or chrysalis, within which an imago, or adult insect, develops. The larvae may live in a different habitat from the adult and require different foods.

All insects start their life cycle as eggs after which there are two different life cycles that can take place dependent on the insect species. The main difference between the two life cycles is the development of a pupa or complete metamorphosis. One life cycle is called Hemimetabolous and only has three stages, the other type of life cycle is Holometabolous and has four stages. Most insect life cycles have four distinctive stages which can be observed just by looking at the physical condition of the insect.

Hemimetabolous life cycles have three stages – egg, nymph then adult – which form the adult insect out of an incomplete metamorphosis. The nymph hatches out of the egg and feeds on plants or roots underground for an extended period of time. As the nymph grows, it sheds its skin, and in the final growth stage, the skin sheds to reveal wings and a fully formed adult.

Holomeaboleous life cycles have four stages – egg, larvae, pupa then adult – forming the adult insect out of complete metamorphosis. The egg hatches into larvas, which resemble fat, short worms with tiny legs and sheds its skin during new growth. Once the larvae are large enough, they wrap themselves in a hardened shell or cocoon/chrysalis. During this pupa stage the insect is completely contained and does not eat any food. The pupa moves slightly as it grows and once it forms a new shape it breaks out of the shell as a fully formed adult insect.



The most common types of hemimetabolous insects are cicadas, cockroaches, grasshoppers or locusts and the most common types of holomeabolous insects are butterflies, true flies, or beetles.

http://myscienceschool.org/index.php?/archives/11044-WHAT-IS-THE-LIFE-CYCLE-OF-AN-INSECT.html

https://kidspressmagazine.com/wp-content/uploads/2014/04/dreamstime_xl_31606493-21.jpg

All About Insects
https://www.exploringnature.org/db/view/All-About-Insects

There are more insects on Earth than all other kinds of creatures combined – over 900,000 known species. They are animals in the big group (or Phylum) **Arthropoda**, which includes crabs, spiders, scorpions and centipedes. Their group (or Class) is called **Insecta** has many smaller groups (Orders) that break insects down into like insects, like: beetles (Coleoptera), butterflies and moths (Lepidoptera) and grasshoppers (Orthoptera). for a list of insect orders: **LINK**

Classification of Insects:
Kingdom: **Animals**
Phylum: **Arthropda**
Class: **Insecta**
Orders: **Orthoptera (Grasshoppers and Kaydids)**
The study of insects is called ***entomology*.**

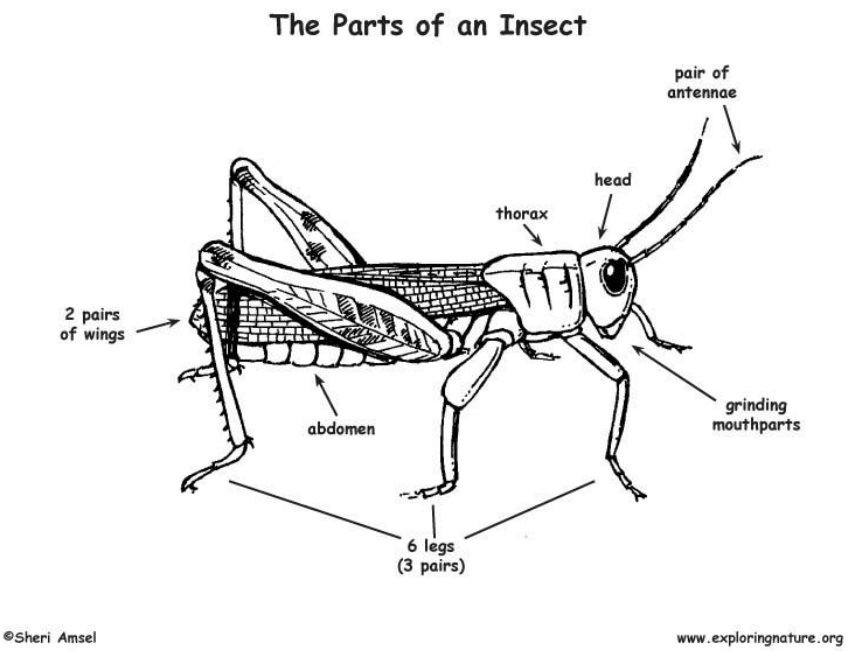
Insect Pests: Insects can hurt people by damaging food crops and forest trees, spreading diseases like malaria and yellow fever, or just biting and stinging painfully. Examples of insect pests are mosquitoes, caterpillars and fire ants.

Insect Helpers: Insects can also help people by pollinating food crops, making products like honey, supplying animals with food (like songbirds, turtles, frogs and bats) and ridding us of other pests like aphids and such. Examples of helpful or ***beneficial insects*** are honeybees, praying mantis, and predatory ladybugs.

Looking at Insects: It is fun to collect insects that you find (that are already dead) and study them. Or just see insects outside and watch what they do. To understand insects and make watching them more interesting, there are some things you should know about them.

What Makes a Bug an Insect?

- 3 body parts; a head, thorax, and abdomen
- 1-2 pairs of wings attached to the thorax
- 3 pairs of legs attached to the thorax
- 1 pair of antennae attached to the head
- Mouth parts that bite, suck, pierce, lap, sip, or rasp.



Creatures that are NOT Insects: Some things may be "bugs," but are not true insects. These include spiders, millipedes, and centipedes – who are in a bigger group (called a Phylum) with insects called **Arthropoda**. Other animal groups in Arthropoda are crabs, lobsters, scorpions, and barnacles.

Look for the insect traits you have learned to decide whether or not a bug is really an insect:

Circle the True Insects

Other Important Insect Traits

A good sample insect is the grasshopper. It has all the traits of a typical insect plus some other interesting features.

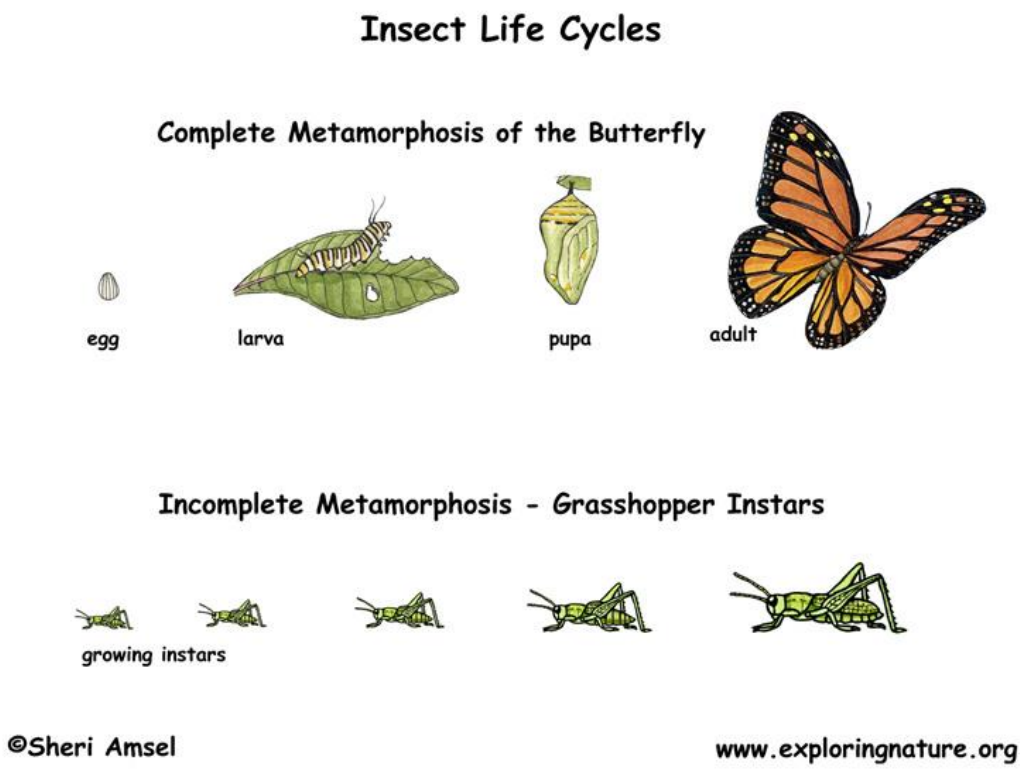
- They listen with a type of eardrum on its sides.
- They have grinding mouthparts for eating grass and a grinding gizzard to further breakdown its food.
- They have small openings all over the body called spiracles through which they breathe.
- They go through what is called **"Incomplete Metamorphosis"** which means that they hatch out looking somewhat like an adult but smaller (this is called an **instar**) and gradually shed their hard outer layer (exoskeleton) as they grow (several times) into the adult size and form.

Other Insects, like butterflies and moths, go though **"Complete Metamorphosis"** where they go through a complete change from birth to adulthood.

- A butterfly hatches as a caterpillar (wormlike ***larvae***) with mouthparts for eating.
- Then it ***cocoons*** themself up to form a ***pupa***, where it goes through a complete physical change.
- Then it emerges from the cocoon or ***chrysalis*** as an adult insect.

One purpose of this change allows the insect to use several food sources. Early on as a caterpillar, it can eat leaves. Then by the time the adult butterfly emerges, the plants have flowered and they can collect nectar. They

can also survive the winter in their pupal phase and try again next summer, though Monarch butterflies will actually migrate, flying all the way to Mexico for the winter months.

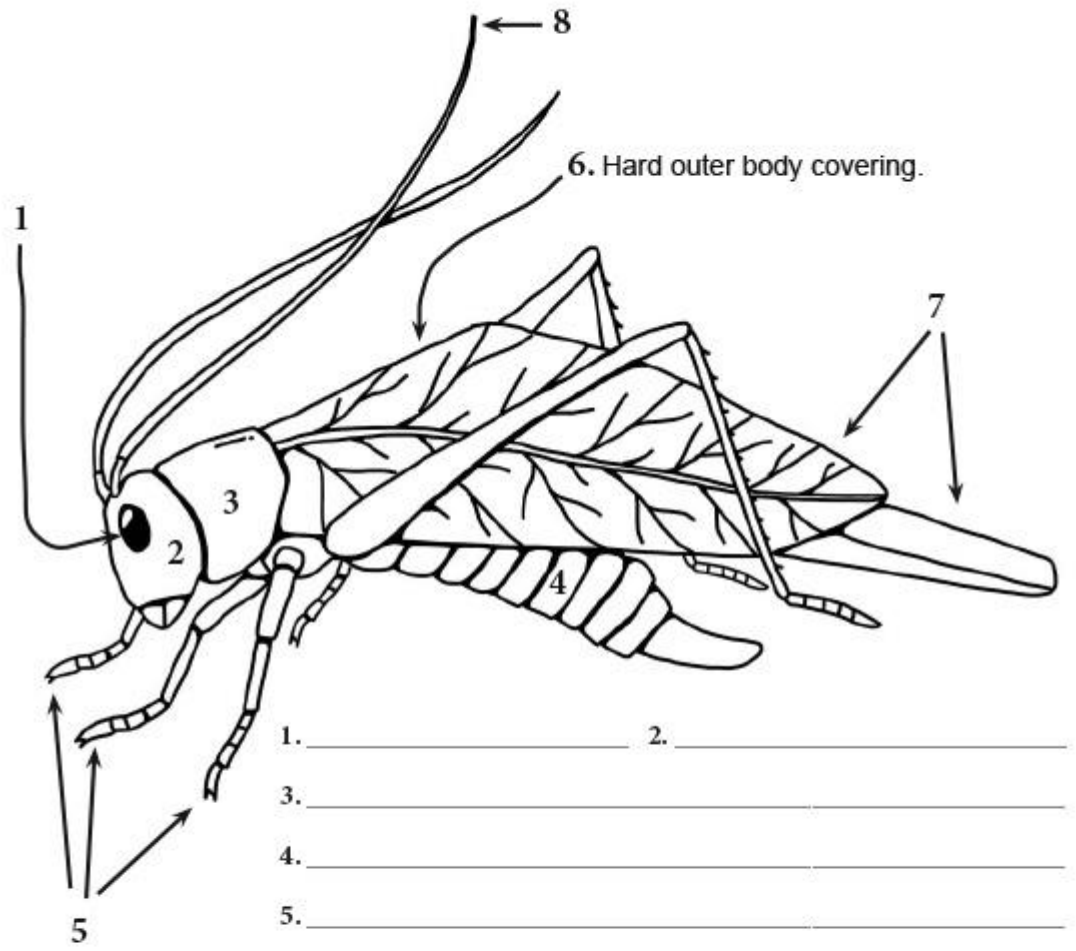


Testing
Assess **Insect Parts** - **Fill in the Blanks**.
Assess **Insect Traits** Multiple Choice Test for content comprehension: **Mutiple Choice Test**.
Assess **Insect Traits True False Quiz** for content comprehension: **Quiz**

Label the Parts of an Insect (Grade 3-6)

Label the Parts of an Insect

Using what you've learned, label the parts of an insect.



1. _____ 2. _____

3. _____

4. _____

5. _____

6. _____

7. _____

8. _____

Insect Traits – Multiple Choice Test

Name: _____ Class: _____

1 In an incomplete metamorphosis, an insect:

A hatches into a small version of adult and grows through several "instars".
B hatches out as a caterpillar, grows, pupates, becomes different adult form.
C Is born live.
D All of the above.

2 In complete metamorphosis, an insect:

A hatches into a small version of adult and grows through several "instars".
B hatches out as a caterpillar, grows, pupates, becomes different adult form.
C Is born live.
D All of the above.

3 Which of the following are "traits" of an insect?

A Six legs
B Three body parts
C Pair of antennae
D One to Two pair of wings
E Hard exoskeleton
F All of the above

4 A caterpillar is the _____ stage of a butterfly.

A pupal
B larval
C adult
D All of the above

5 A chrysalis is the _____ stage of a butterfly.

A pupal
B larval
C adult
D All of the above

6 Which of the following is NOT an insect?

A grasshopper
B butterfly
C beetle
D centipede

7 The monarch butterfly survives the winter by:

A migrating to Mexico.
B burrowing underground.
C staying active all winter.
D they don't survive the winter as butterflies.

8 The three insect body parts include the:

A head, neck, abdomen.
B head, abdomen, tail.
C head, thorax, abdomen.
D head, body, tail.

Insect Traits - TRUE or FALSE

Circle the Correct Answer.

Name: _____ Date: _____

1. An insect has 8 legs.
   a. true
   b. false

2. An insect has one pair of antennae.
   a. true
   b. false

3. Some insects have compound eyes.
   a. true
   b. false

4. Insects can sometimes be beneficial to man.
   a. true
   b. false

5. Insects are animals.
   a. true
   b. false

8. We don't need insects for polination, the wind can do it all.
   a. true
   b. false

9. Without insects there would be no honey.
   a. true
   b. false

10. Insects are sometimes decomposers.
   a. true
   b. false

11. Insects are food for many animals.
   a. true
   b. false

12. Insects sometimes carry disease.
   a. true
   b. false

13. Insects include centipedes and millipedes.
   a. true
   b. false

14. Insects have no vocal chords, so don't make any sounds.
   a. true
   b. false

15. Insects have 3 body parts - a head, thorax and abdomen.
   a. true
   b. false

16. Insects compete with man for some foods.
   a. true
   b. false

17. There are now more people on Earth than insects.
   a. true
   b. false

18. All insects go through a chrysalis phase.
   a. true
   b. false

19. Mosquito are one of the most dangerous (as far as killing and sickening people goes) animals on Earth.
   a. true
   b. false

20. Some insects use camouflage to escape predators.
   a. true
   b. false