

INSECT LIFE

All Levels

Purpose

To help you explore the fascinating world of insects as part of God’s creation.

Exploring

God in His wisdom has created a great variety of different animals.

In God’s Word we find many references to insects. Look up these passages and in your own words write down what God has to say about them.

- a. Proverbs 6: 6
-
- b. Proverbs 30: 25 and 27
-
- c. Matthew 3: 4
-
- d. Judges 14: 8
-
- e. Exodus 8: 21
-
- f. Psalm 78: 45
-
- g. Psalm 105: 31
-

Scientists have divided the animal kingdom into about 30 main groups. The largest of these groups is Arthropoda which includes crabs, crayfish, spiders, scorpions, centipedes and insects. Insects have the following unique features.

- a. Adult insects have three pairs of legs.
- b. The body of an adult insect is divided into three distinct parts: head, thorax and abdomen.
- c. Many insects (not all) have wings. Some have one pair, others have two.
- d. Insects have one pair of antennae.

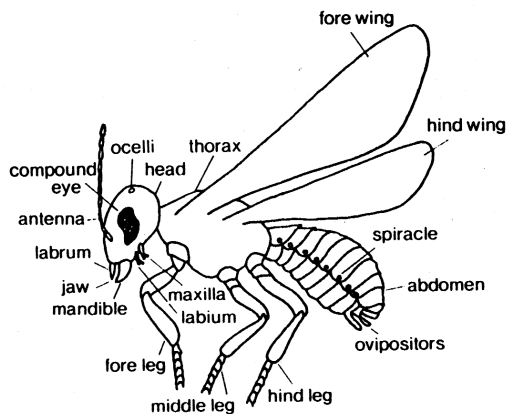
A typical insect

The diagram on the next page shows the main body of an adult insect and two pairs of wings. The legs always come from each thorax segment and the wings come from the second and third thorax segments. Antennae vary from insect to insect but there are seven main types. Legs have five distinct sections.
An insect’s body is made up of a material called chitin. This is a tough waterproof,

springy substance which can be a variety of colours and textures and is one reason that an insect's size is limited. Insects show a great variety of feeding habits and their mouth parts are adapted to their particular need.

The four types are:

1. Chewing (Cockroach and locusts)
2. Sucking (Butterfly)
3. Piercing and sucking (Mosquito)
4. Lapping and sucking (House fly)



Insects have a unique way of getting oxygen to all parts of their body. This consists of a network of tubes (trachea) which run from openings (spiracles) on their body wall to all internal parts.

There are three main variations of insect life history.

1. No Change. In this type there is no change in body shape from hatching. They simply grow larger. e.g. Silver-fish.
2. Part Change. In this type the young look similar to the adults but never have wings and are often a different colour and shape. e.g. Grasshoppers, Earwigs and Cockroaches.
3. Complete Change. The insects have four distinct stages: Egg, Larva, Pupa, Adult. e.g. Butterflies, moths, beetles and flies.

Insect Behaviour

Insect behaviour is mainly by instinct. Insects usually respond to certain sights, sounds or scents. To understand this better we will investigate the sense organs of insects.

Eyes Most insects have two compound eyes which are made up of many small units and can see a large area at one time. They also often have three or less simple eyes which are often very bright. These are very obvious in cicadas.

Hearing organs These are found on different parts of the body.

e.g. Mosquitoes have these at the base of their antennae, crickets on their legs and cicadas on their abdomen.

Feeling organs The most important of these are the antennae. If you watch an insect you can see them feel and explore with the antennae.

Smell Many insects can distinguish smells, usually with the antennae. Some insects also give off smells to: attract the opposite sex (moths), help to guide back to a food source (bees and ants), or repel enemies (stink bugs).

Taste Most insects taste with their mouth parts but others use their feet or antennae.

Doing

Read a good book on insects or a good encyclopaedia and answer the following questions.

1. Give four reasons why insects are harmful to man.

.....

.....

.....

.....

2. Give four instances where insects are useful to man.

.....

.....

.....

.....

To study insects you can either catch them and release them when you've learned all you can by observation or you can kill them and mount them in a specimen box. To kill them you need a specimen jar. Obtain a large screw-top jar with 25 mm of plaster in the bottom and some paper in the bottom and some ether or chloroform or ethyl acetate (these are available from chemist stores) and a pinning board to 'set' the insect. Most winged insects are usually set with wings extended or the wings on one side can be extended while the others are kept folded.

3. Make a collection of at least 25 insects and label each with its common name and order and when and where it was found.
4. Explore an area of two square metres listing all the insects you can find and dig up a square area, 30 cm x 30 cm, search this thoroughly for any soil-dwelling insects.
List them below.

.....

.....

.....

.....

5. Select five insects from project number one (above) and give details.

- a. Where they live
- b. Life cycle
- c. Type of mouth parts
- d. Any other interesting things you may observe.

.....

.....

.....

Reflection

From your study of insects you will have been able to see the many different types of insect life forms God has created. Even though many are very small, they survive very well and are the biggest group in the animal kingdom. Discuss what you have learned about God's creation with your Counsellor.

Ask your Counsellor to sign below and arrange for the presentation of your badge.

..... date