



Insects Session Outline For the Outdoor Skills Program

- I. Welcome students and ask group what they remember or learned in the last session.

- II. Insect Lessons
 - a. Ask students to list examples of insects. Then ask “What makes an insect an insect?” List body parts of insects.
 - b. Sing Insect Song
 - c. Activity: Build a bug
 - d. Activity: Insectigator

- III. Frisbee Moment: Ask the students what they enjoyed most about today’s session and what they enjoyed the least.

The Outdoor Skills program is a partnership with Nebraska Games & Parks and the UNL Extension/4-H Youth Development Program to provide hands-on lessons for youth during their afterschool time and school days off. It provides the opportunity to master skills in the areas of hunting, fishing, and exploring the outdoors. This educational program is part of the 20 year plan to recruit, develop and retain hunters, anglers, and outdoor enthusiasts in Nebraska.

Inventory

Session: Insects

Kit Materials & Equipment

- Orders of the Class Insecta posters
- (2) Green insect viewers
- (5) Sets insect body part cards
- Insect flash cards
- (6) Bug & slug, invertebrates fields games
- Thermometer
- (12) Magnifying bug boxes
- Crayons

Supplies Instructor Provides

- Drawing paper

Session: Insects

Title of Activity: Build a Bug

Objectives: Participants will

- 1). Discuss insect body parts and how they help the insect to survive.
- 2). Create a unique insect and habitat.

Method: Students will learn about insect body parts through discussion and pictures then create their own insects and habitats in small groups.

Materials Contained in Activity Tub:

Crayons, insect body part cards, pictures and posters of insects.

Materials Needed to Conduct Activity:

Drawing paper

Duration: 30 Minutes

Group Size: up to 12 students in groups of 2-3 people

Setting: Indoors or Outdoors

Key Terms: head, thorax, abdomen, antenna, compound eye, metamorphosis, larva, nymph.

SET Abilities: draw/design, demonstrate/communicate to others

Fair Exhibit: Insect poster with habitat and labeled body parts.

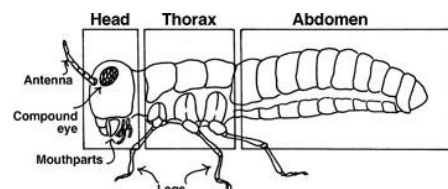
Background:

Insects are the most abundant animals on earth. They exert important effects, both positive and negative, on our lives in ways we may not even think about. While the vast majority of insects are either beneficial or harmless, we often are most familiar with those insects that cause problems. For example, the mosquito is responsible for more deaths each year than any other insect.

On the whole, insects are enormously beneficial. Insects pollinate plants and provide food for birds, fish and animals. Many beneficial insects prey on other insects that are pests. By studying insects, we gain a better understanding of their role in the web of life, as indicators of environmental quality, as predators of harmful species, and as potential threats to crops, homes and health. Also through the study of insects, we help to preserve beneficial species by understanding their behavior patterns and modifying their habitat.

Insect Basics

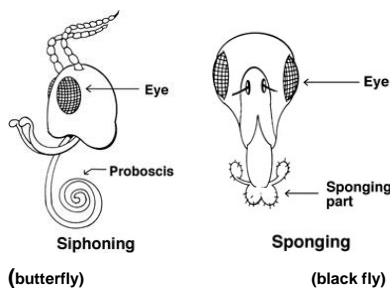
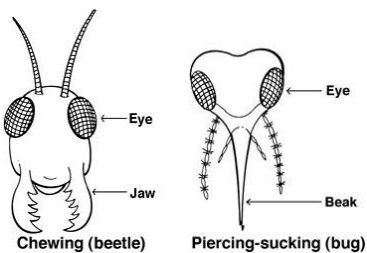
All insects have three main body segments — head, thorax and abdomen. The head contains the mouth and associated parts for food manipulation, the main sensory organs, including antennae and the compound eye, and the brain. The thorax contains the body parts used for locomotion — legs and wings. The abdomen contains the internal organs. Many females have an ovipositor for placement of eggs.



Head

The head is the hardened region at the front of the body, which includes the eyes, antennae and mouthparts. There are two types of eyes. Simple eyes are small eyes located on top of the head in adults. Compound eyes are the large eyes found on most adult insects. These eyes contain a few to several thousands of individual eye units.

Insects have one pair of antennae, which are two long, jointed feelers that grow from the insect's head. Antennae come in many forms and can be used to aid in insect identification. Antennae function as sensors to detect the odor, sound, taste and feel of the surrounding environment.

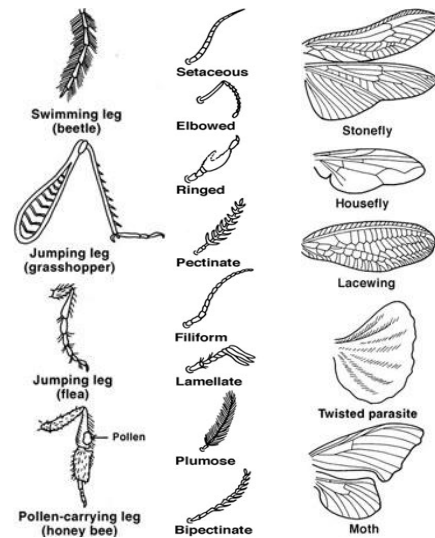


Thorax

The thorax is the second section of the insect's body and contains the muscles that control the insect's movement. Wings and legs are attached to the thorax. Insects have three pairs of legs, and each leg has five parts even though these can be hard to distinguish in many species. Legs come in many forms depending on their function, such as running, jumping, grasping or swimming. Insect wings also vary greatly in shape, size, color, thickness and vein pattern. The shape of the

insect wings and the pattern of veins are used widely in identification. Not all adult insects have wings.

Insect wings are almost always found only on mature insects. Most insects have two pairs of wings. In several groups of insects, such as beetles, the front wings are more hardened and serve as protection for the hind wings. Some insects (e.g., fleas and lice) have no wings.



Insect Legs Insect Antenna Insect Wings

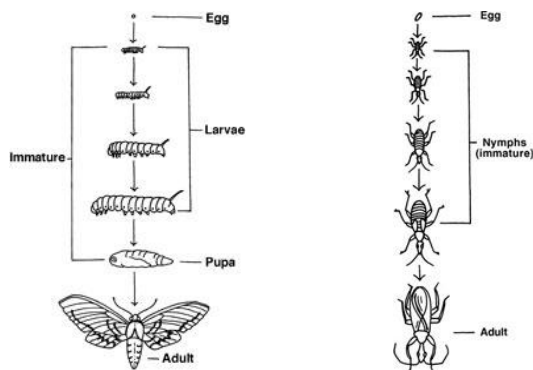
Abdomen

The abdomen is the third and final section of an insect's body. It may be visible or hidden under the wings. This section contains the internal organs of an insect, including the stomach and intestines, where food is digested and absorbed. The sexual organs are in the abdomen as well. The abdomen has glands that secrete various fluids to mark the insect's trail, for example, or to drive enemies away, attract mates or signal to others the location of food supplies. The abdomen may also have a needle-like projection for piercing or stinging.

Metamorphosis

Most insects undergo "complete" metamorphosis with four primary stages: egg, larva, pupa and adult. Caterpillars pass through several stages, shedding their skin between

them, as they feed and develop. Caterpillars of some insects, such as moths, spin silken cocoons to protect the pupa as it develops into an adult. Immature insects that undergo "incomplete metamorphosis" are called nymphs, which resemble the adults. Growth from one nymph stage to the next occurs by molting. A nymph's wings get larger with each successive shedding of skin, and by maturity as an adult, the wings are fully developed.



Complete metamorphosis Incomplete metamorphosis

Mary Kroening, Division of Plant Science,
University of Missouri Extension

<http://extension.missouri.edu/publications/DisplayPrinterFriendlyPub.aspx?P=mg12>

The Activity:

Procedure

1. Share insect flash cards with students, can they identify the various kinds of insects?
2. Discuss where these insects live and what adaptations they have that help them survive in their habitat.
3. Pass out a set of insect body part cards and Animals from the Different Orders of the Class Insecta sheet to each group of students.
4. Discuss the different body parts shown and how the insects use them in their habitats.



Journal Time!

Ask the students to create their own unique insect based on some of the characteristics on the insect body part cards. Each group should:

- create an art form that represents their insect.
- name the insect and
- describe and draw the habitat for their insect.

Ask each group to present their insect to the rest of the students. They should present the insects identifying characteristics and how the insect is adapted for survival.

Insect Song: Head, Thorax, Abdomen
from Sun Chorus CD by David Stokes
(tune of Head, Shoulders, Knees and Toes)
Adaptations by Fontenelle Forest staff

Head, Thorax, Abdomen, Abdomen

Head, Thorax, Abdomen, Abdomen

Two Eyes, Two Antenna, Four Wings, Six Legs

Head, Thorax, Abdomen, Abdomen

Or for insect with no wings...

Two Eyes, Two Antenna and Usually Some Wings

Or spiders...

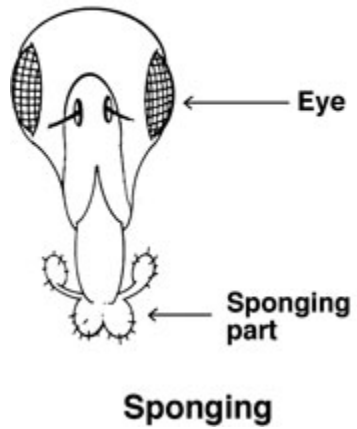
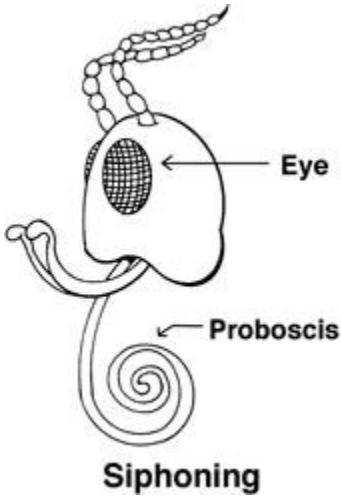
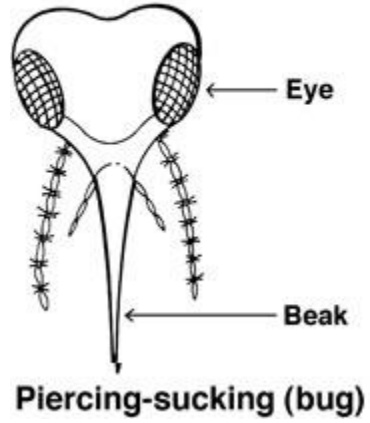
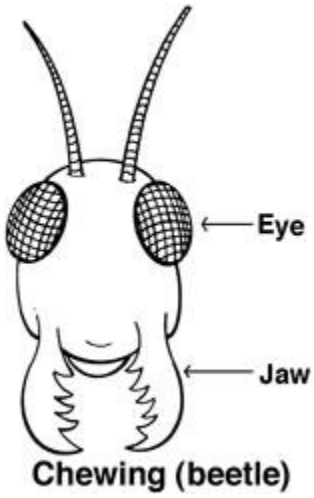
Cephalothorax, Abdomen, Abdomen

Cephalothorax, Abdomen, Abdomen

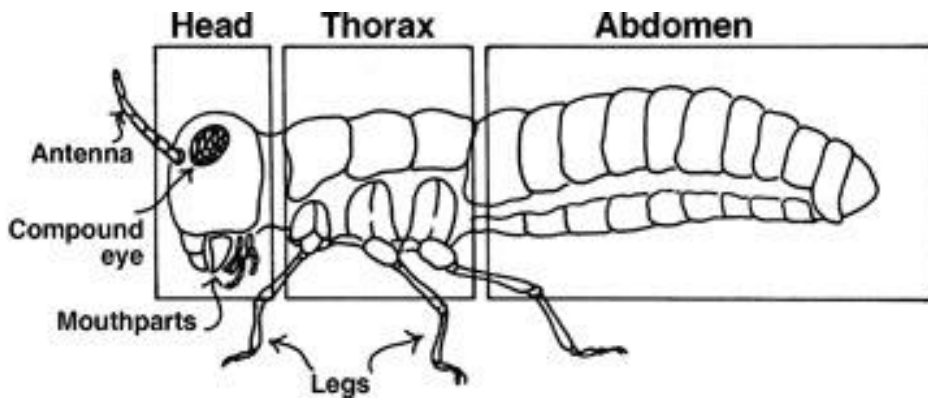
Eight eyes, Eight legs and Two spinnerettes

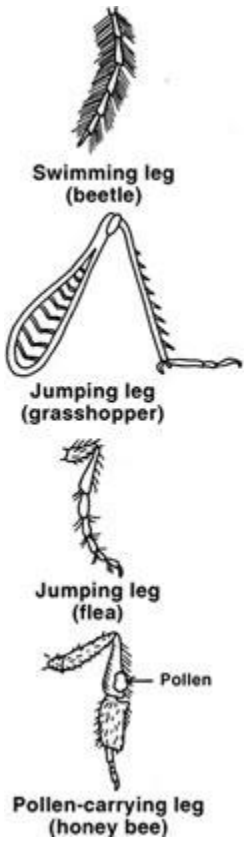
Cephalothorax, Abdomen, Abdomen

Insect Mouth Parts

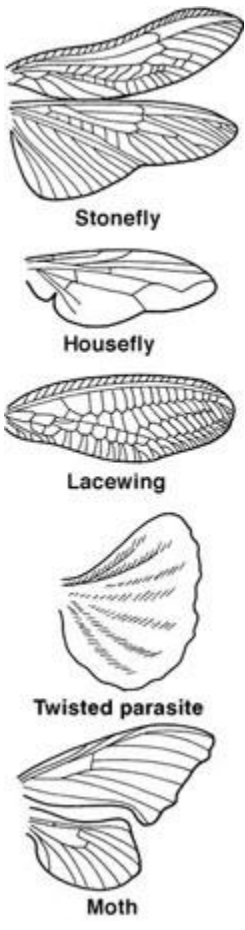


Major Insect Body Parts





Insect Legs



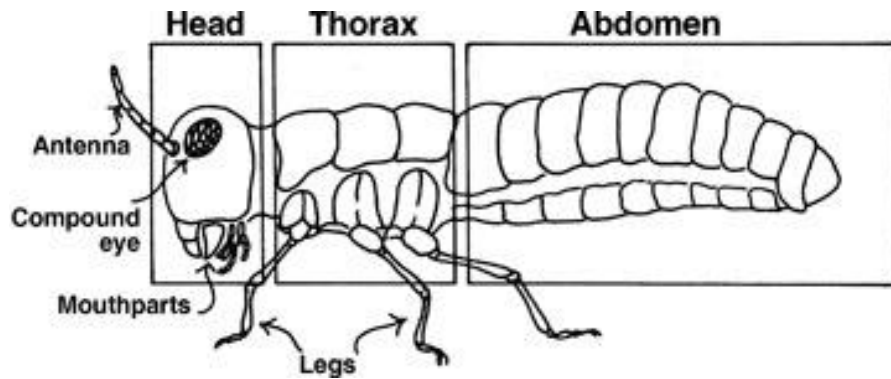
Insect Wings



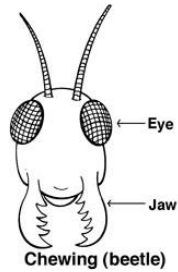
Insect Antenna

Identify Insect Body Parts at Home

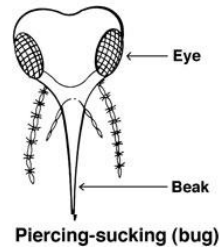
Insect Basics



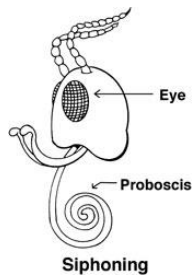
Head



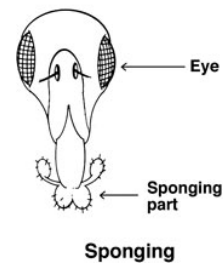
Example _____



Example _____



Example _____



Example _____

Asian Lady Beetle	Seven-spot Lady Beetle	Tiger Beetle
Black Swallowtail Butterfly	Black Swallowtail Caterpillar	House Fly
Yellow Jacket	Ants	Bumble Bee
Freshly emerged Cicada	Annual Cicada	Annual Cicada Nymph
Narrow-winged Damselfly	Field cricket	Grasshopper
Katydid	Praying Mantis	Stink Bug
Boxelder Bug	Green Darner	Dragonfly Naiad
Damselfly Naiad	Asian Lady Beetle Larva	

<http://www.uky.edu/Ag/CritterFiles/casefile/insects/insectfile.htm>



Green Darner & Dragonfly Naiad



Narrow-winged Damselfly and Damselfly Naiad



Field cricket



Grasshopper



Katydid



Praying Mantis



Stink Bug



Boxelder Bug



Annual Cicada



Annual Cicada Nymph



Freshly emerged Cicada



Asian Lady Beetle



Asian Lady Beetle Larva



Seven-spot Lady Beetle



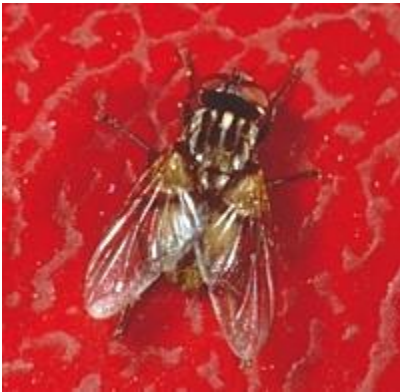
Tiger Beetle



Black Swallowtail Butterfly



Black Swallowtail Caterpillar



House Fly



Yellow Jacket



Ants



Bumble Bee

Session: Insects

Title of Activity: Insectigator

Objectives: Participants will

- 1). Search for and collect an insect outdoors.
- 2). Sketch, label and identify the insect found.

Method: Students will go outside in search of insects. They will collect their insect in a small bug box for closer viewing. In their journals students will sketch their insect, label its body parts and identify it.

Materials Contained in

Activity Tub:

Bugs & Slugs, Invertebrates field guides, crayons, magnifying bug boxes, green insect viewers

Materials Needed to Conduct

Activity:

Journals, pencils

Duration: 30 Minutes

Group Size: up to 12 students in groups of 2-3

Setting: Indoors and Outdoors

Key Terms: Head, thorax, abdomen, antenna, larva, compound eye, nymph.

Set Abilities: observe, using tools

Background:

Insects are found in almost all environments in the world with the exception of oceans. Insects typically move about by walking, flying or occasionally swimming. Because it allows for rapid yet stable movement, many insects adopt a tripod gait in which they walk with their legs touching the ground in alternating triangles. Insects are the only invertebrates to have evolved flight. Many insects spend at least part of their life underwater, with larval adaptations that include gills and some adult insects are aquatic and have adaptations for swimming.

Some species, like [water striders](#), are capable of walking on the surface of water. Insects are mostly solitary, but some insects, such as certain bees, ants, and termites are social and live in large, well-organized colonies. Some insects, like earwigs, show maternal care, guarding their eggs and young. Insects can communicate with each other in a variety of ways. Male moths can sense the pheromones of female moths over distances of many kilometers. Other species communicate with sounds: crickets stridulate, or rub their wings together, to attract a mate and repel other males. Lampyridae in the beetle order Coleoptera communicate with light.

Humans regard certain insects as pests and attempt to control them using insecticides and a host of other techniques. Some insects damage crops by feeding on sap, leaves or fruits, a few bite humans and livestock, alive and dead, to feed on blood and some are capable of transmitting diseases to humans, pets and livestock. Many other insects are considered ecologically beneficial and a few provide direct economic benefit. Silkworms and bees have been domesticated by humans for the

production of silk and honey, respectively.

<http://en.wikipedia.org/wiki/Insect>

March 14, 2011

The Activity:

Procedure

1. Ask the students “where outside can we expect to find insects?”
Look under logs, rocks, on flowers, in sunny places, window sills, on trees and under leaves.
2. Take the students outside to search for insects using the magnifying bug boxes and insect viewers to collect and observe any found insects.



Journal Time!

- Have students sketch one of the found insects in their journal.
- Label the body parts and describe where the insect was found using the insectigator investigation journal page.

Wrap up – Explain that insects are found in their ideal environment. Temperature, light and season are big factors to where insects are located.

Insectigator



(Draw your insect in the box)



Insect Observations

Specie of Insect:

_____ (Examples: Ant, Spider, Caterpillar)



Give your Insect a name:

_____ (Example Andy the Ant)





Date: Month _____ Day _____

Season: Winter Spring Summer Fall

Time: ____ : ____ a.m. or p.m.

Temperature: ____ C / ____ F

Cloud Cover: (circle one)

			
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Wind:

- No Wind
- Calm Breeze
- Gusty
- Constant Wind
- Blowing my hat off

Match the insect with their ideal environment

