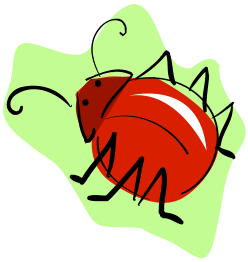
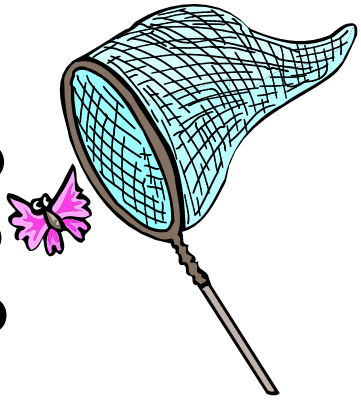
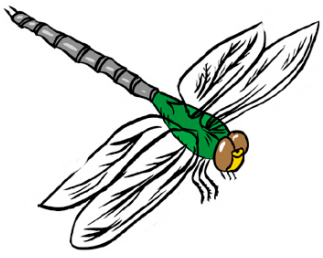


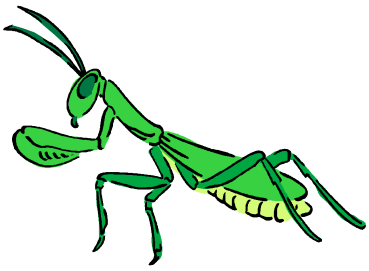
SMILE



Elementary Outdoor Science Adventure (EOSA)

Arthropod Resource Guide





Author: Kimberly M. Skyrm

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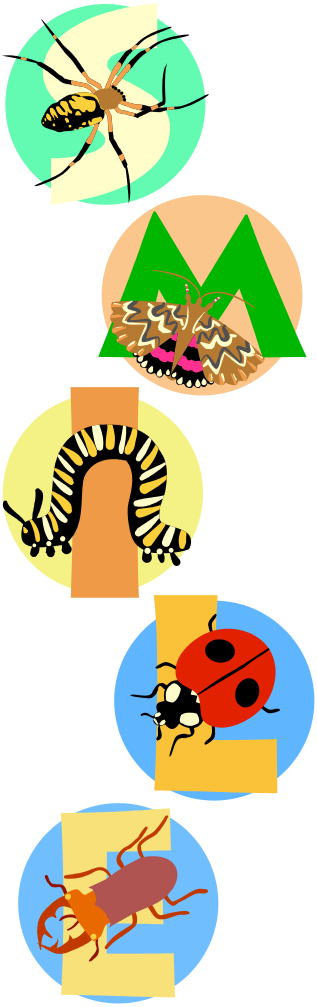
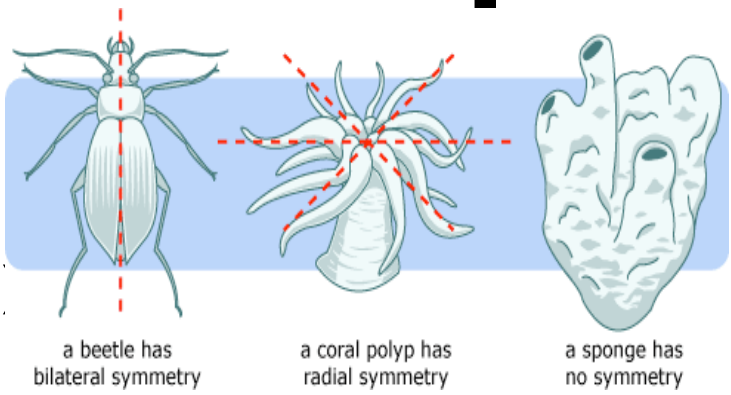


INTRODUCTION TO BASIC INFORMATION

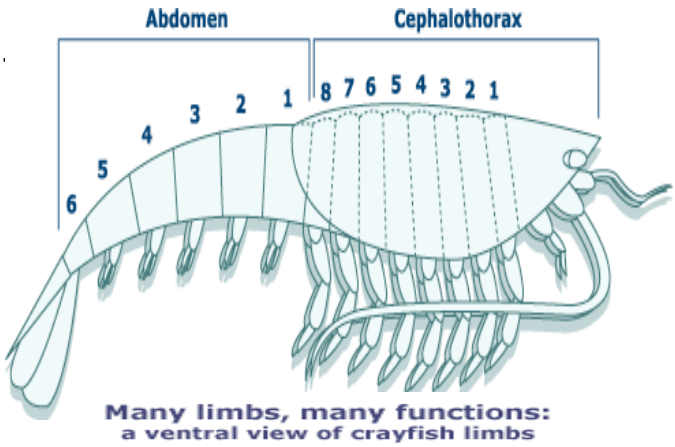
What is an Arthropod?

Characteristics:

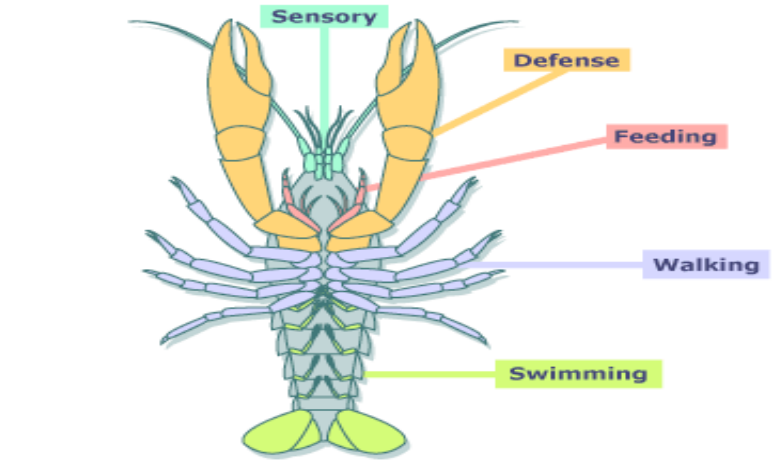
(1) bilateral symmetry (two matching sides)



(2) segmented body (a collection of different parts e.g. head, thorax, abdomen)



(3) paired appendages/limbs



(4) exoskeleton (hard outside shell covering their entire body)

(5) jointed legs

Arthropods are the largest group of organisms on the planet which include insects, spiders, scorpions, ticks, crabs, etc.

What is an Insect?

Characteristics:

(1) 6 legs or 3 pairs

(2) 3 body parts (head, thorax, abdomen)

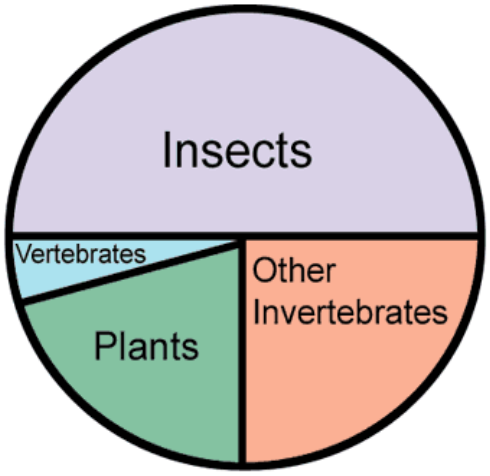
(3) 2 antennae on head

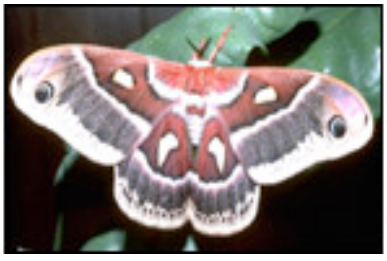
(4) exoskeleton

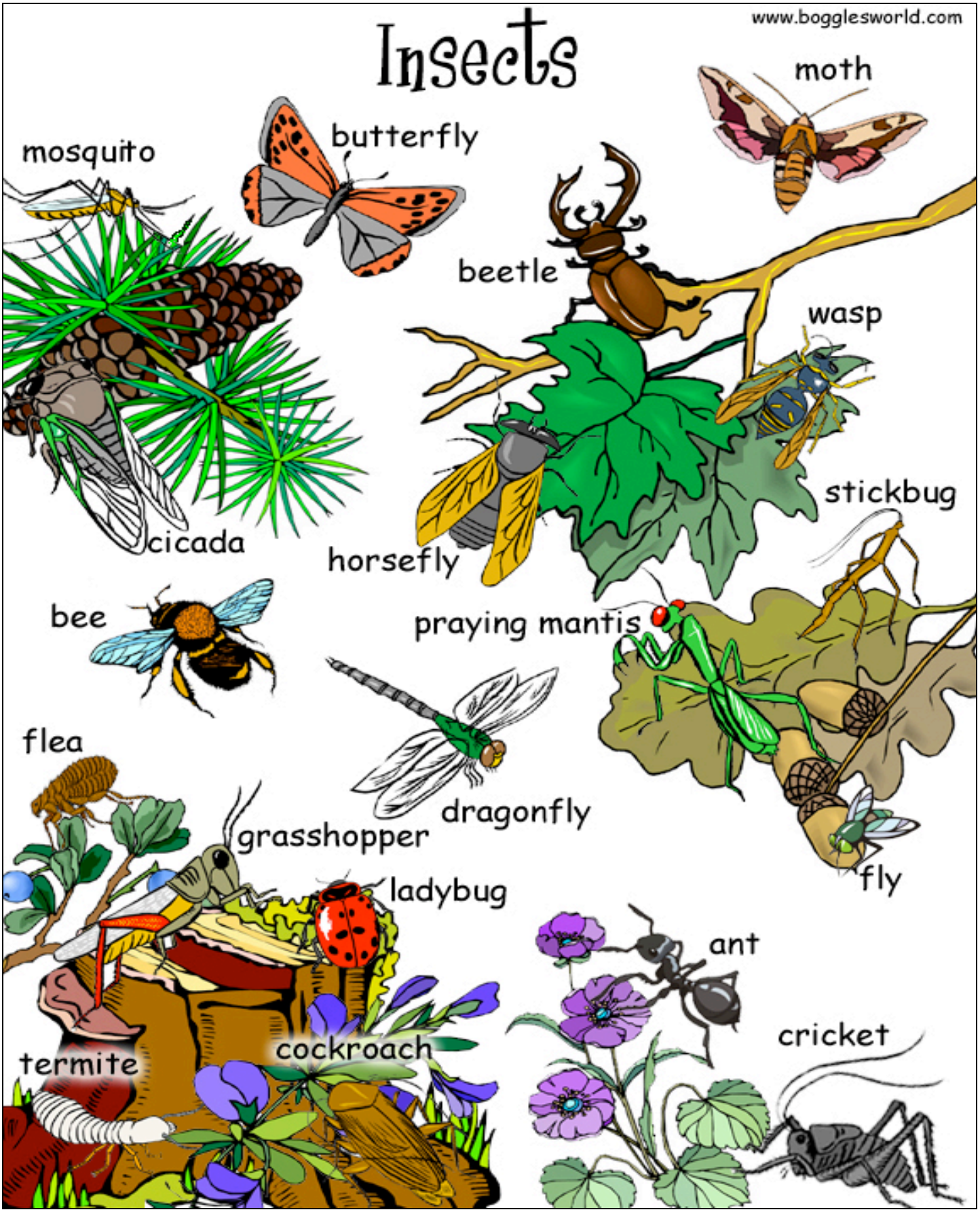
(5) metamorphosis (change body size/shape/color as they grow

(6) 2 compound eyes

- Insects are largest group of animals on the planet with over 1 million described species of insects worldwide!
- The Pacific Northwest is home to over 25,000 of these species-WOW!





www.bogglesworld.com
Insects
moth
butterfly
mosquito
beetle
wasp
stickbug
cicada
horsefly
praying mantis
bee
dragonfly
flea
grasshopper
ladybug
fly
ant
cricket
cockroach
termite

Insect Records

Fastest flyer: black cutworm moth (60-70 mph)

Most cold tolerant: African chironomid fly (-270 C°)

Shortest generation time: aphid (4.7 days)

Smallest egg: Tachnid fly (0.02mm)

Most spectacular mating: honey bee (males pursue females in comets and males die as they release their genitalia inside females during mating)

Fastest wing beat: Ceratopogonid fly (1046 Hz)

Longest migration: desert locust (4500 km)

Longest synchronized development time: 17-year periodical cicada (17 years)

Most instars: fire brat (60 molts)

Most parental care: burying beetles (males help care for young the entire time & can take over for females when they are gone)

Most resistant to insecticides: green peach aphid

Shortest life cycle: mosquito (1 week)

Longest life cycle: wood boring beetles (51 years)

Lowest number of offspring during a lifetime: louse fly (4.5 offspring)

Highest number of offspring during a lifetime: African driver ant (3-4 million every 25 days)

Adapted to greatest depths: non-biting midge (1360 m)

Most heat tolerant: desert ants (60 C°)

Most saline tolerant: brine fly larvae (5848 mOsm/l, sea water is only 1197 mOsm/l)

Most toxic venom: harvester ants (12 stings kills a 4.4lb rat)

Greatest bioluminescence: click beetles (45 millilamberts)

Loudest: African cicada (106.7 decibels)

Largest swarm: desert locust (10 billion locusts)

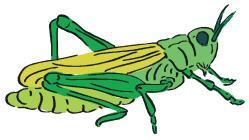
Largest butterfly/moth wingspan: white witch moth (280mm)

Longest insect: walking stick insect (22 inches)

Longest adult life: queen ant (28.75 years in captivity)

Shortest reproductive life: mayfly (less than 5 minutes after final molt)

Most mating during a single cycle: blue milkweed beetle (60)



Largest insect: scarab beetle (190g)

Smallest insect: parasitic wasp (170 micrometers)

Fastest runner: Australian tiger beetles (5.6 mph)

Largest eggs: carpenter bees (16.5 mm X 3 mm)

What is a Spider?

Characteristics:

(1) 8 legs or 4 pairs

(2) 2 body parts (cephalothorax & abdomen)

(3) No antennae! instead have pedipalps

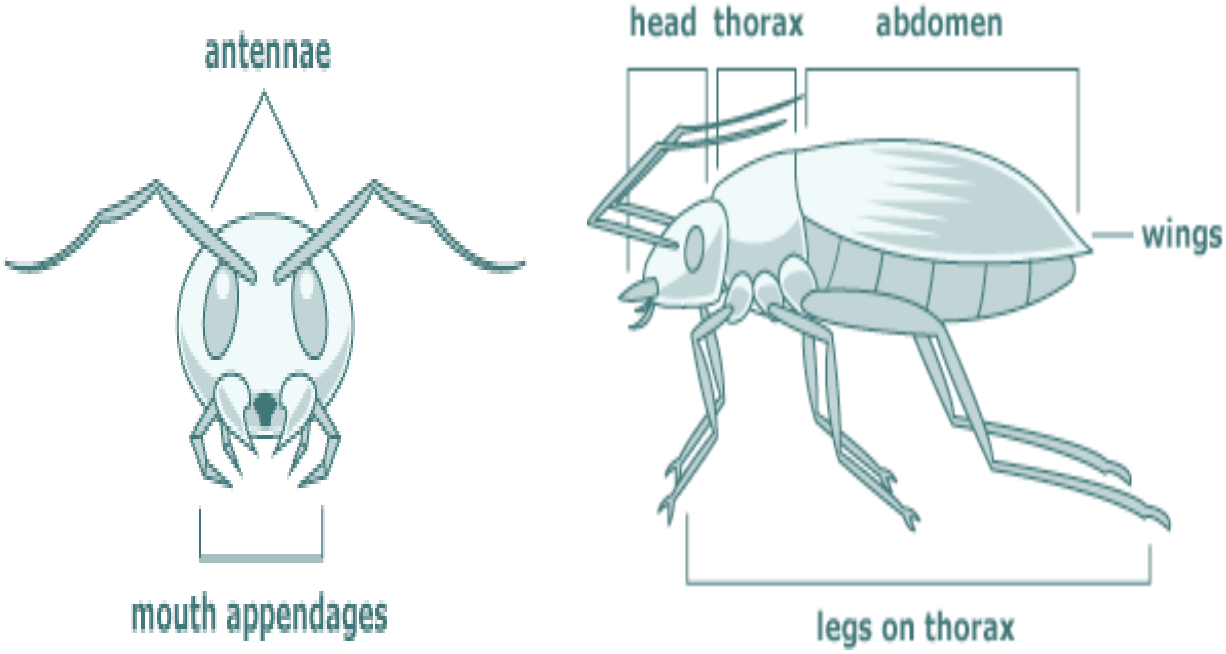
(4) exoskeleton

(5) 6-8 eyes

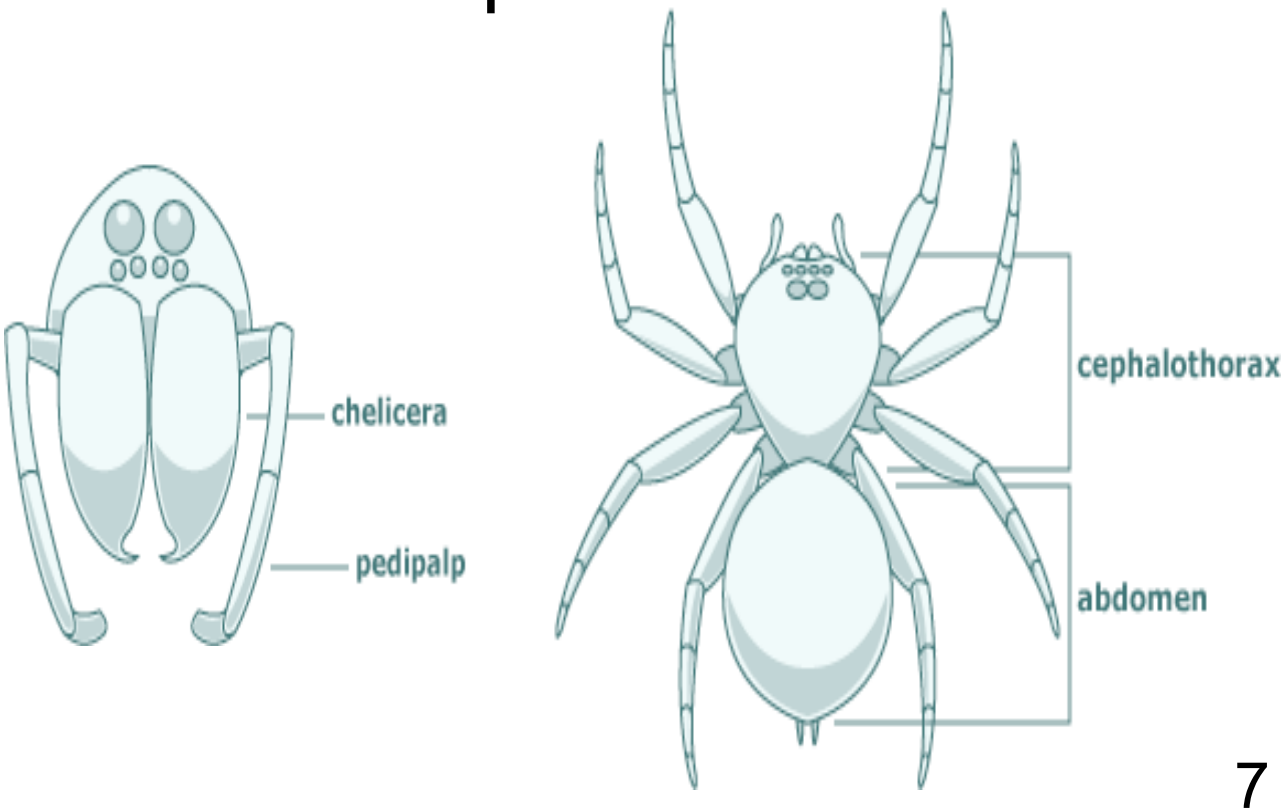
- Spiders are a large group of animals with over 40,000 described species worldwide!
- The Pacific Northwest is home to about 1,000 different species!

ANATOMY

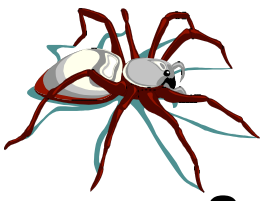
Insect



Spider



FACT SHEET



Spiders

- 40,000 species worldwide
- 8 legs
- 2 body segments: head & cephalothorax
- 6 or 8 eyes
- No wings!
- No true antennae, modified into pedipalps or “feelers”
- Chelicerae/fangs with venom
- Exoskeleton/carapace
- Life cycle:

egg→spiderling or “mini-adult”→adult

Insects

- 1 million species worldwide
- 6 legs
- 3 body segments: head, thorax & abdomen
- 2 compound eyes
- None, 2 or 4 wings
- Antennae
- No fangs, instead chewing/lapping, piercing/sucking, siphoning, sponging mouthparts, some have venom
- Exoskeleton
- Life cycle:

egg→larva→pupa→adult

egg→nymph→adult

INSECT MOUTHPARTS

Chewing/Lapping
(bee)

Chewing/Raptorial
(dragonfly nymph)

Siphoning
(butterfly)

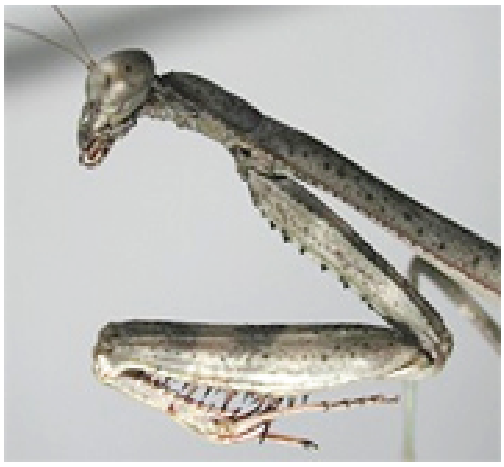
Chewing (wasp)

Piercing/Sucking
(leaf-footed bug)

Sponging (fly)

Saltatorial or jumping (grasshopper)

Raptorial or grasping (praying mantis)



INSECT

LEGS

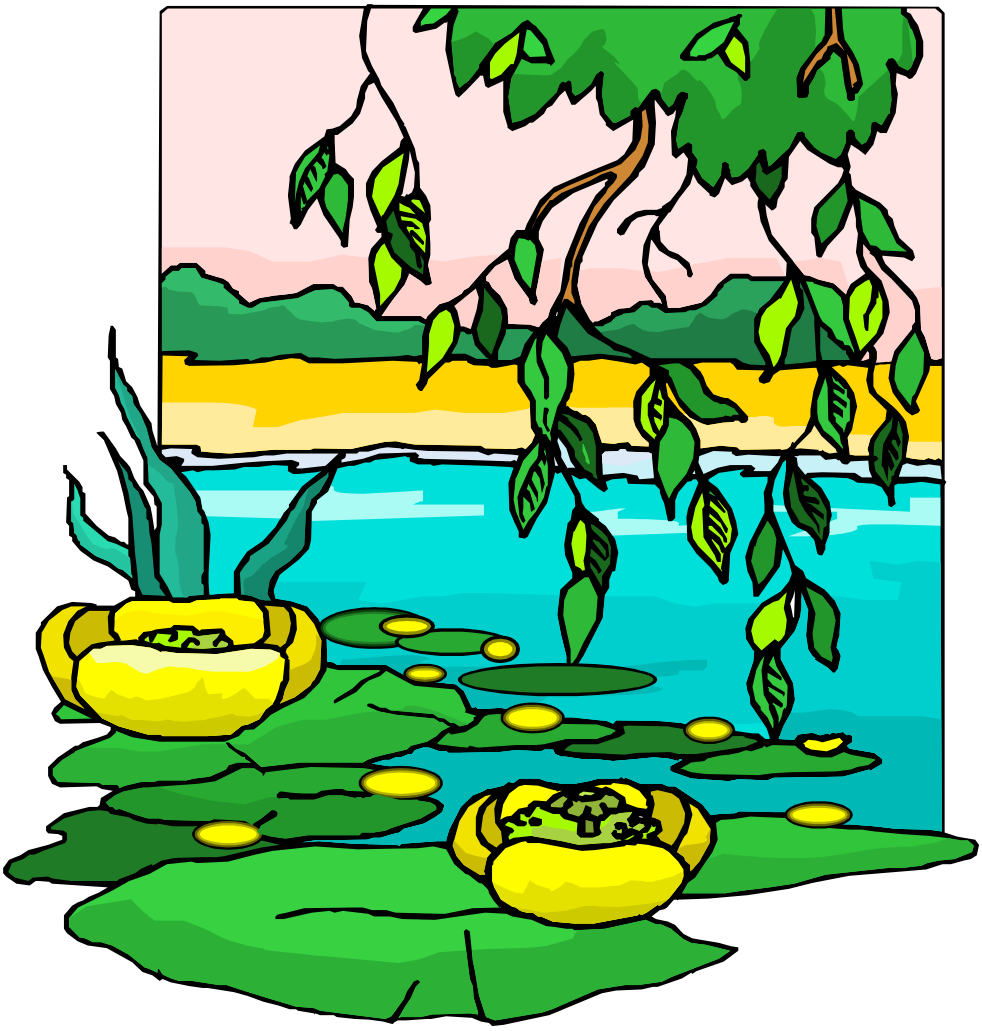
Scansorial or clinging (hog louse)

Natatorial or swimming (backswimmer)

Cursorial or walking/running (roach)

Fossorial or digging (mole cricket)

THE POND COMMUNITY



POND ARTHROPODS FOOD GUIDE

Carnivores (ANIMAL FEEDERS):

I. Engulfing predators (eat prey whole)

- dragonfly (nymph)
- damselfly (nymph)
- stonefly (larvae)
- midge (larvae)
- crane fly (larvae)

II. Piercing/sucking predators (eat prey inside out)

- water bug
- backswimmer
- diving beetle
- water scorpion
- water spiders
- water mite
- midge (larvae)
- horse fly (larvae)

III. Collecter/gatherer (eat by stirring up prey matter)

- water boatmen
- midge (larvae)
- black fly (larvae)
- crane fly (larvae)
- mosquito (larvae)
- flower fly (larvae)
- soldier fly (larvae)

Herbivores (PLANT FEEDERS):

I. Gatherer/scraper (eat by scraping surface plants)

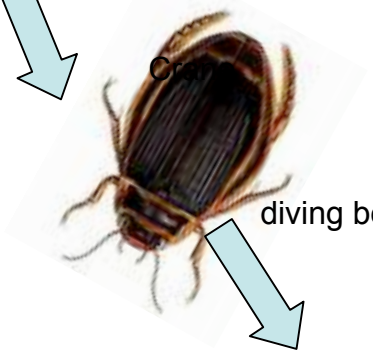
- caddisfly (larvae)

II. Shredder (eat by shredding plants)

- flea beetles (adult)
- mosquito (larvae)
- fly (larvae)
- mayfly (larvae)
- water penny
- stonefly (larvae)
- caddisfly (larvae)
- crane fly (larvae)

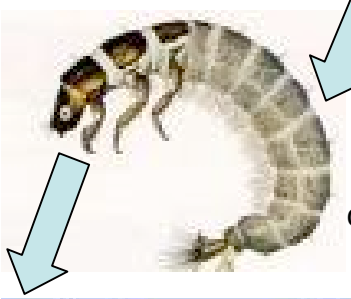
SAMPLE FOOD CHAIN:

Crane

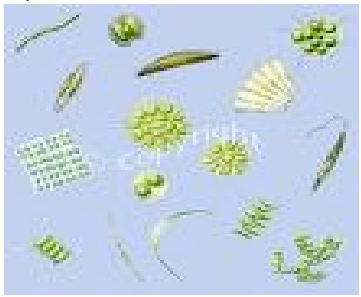


diving beetle

stonefly larvae



caddisfly larvae



algae

DRAGONFLIES

How to Identify:

•un-folded spread wings

•eyes touch (no space between the eyes)

•bulky, large body

•no bristles or tails sticking out of their abdomen

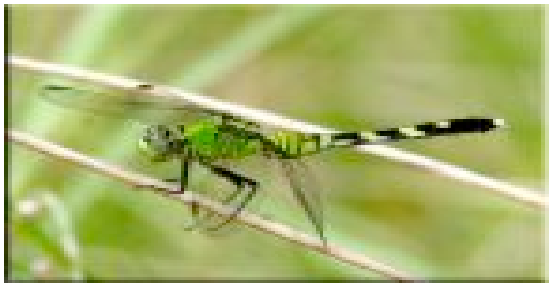
Adult

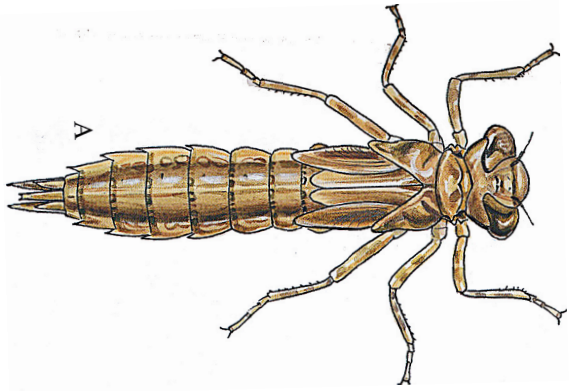
Nymph (immature)

Types of Dragonflies:

(1) Darners-The biggest of all dragonflies!

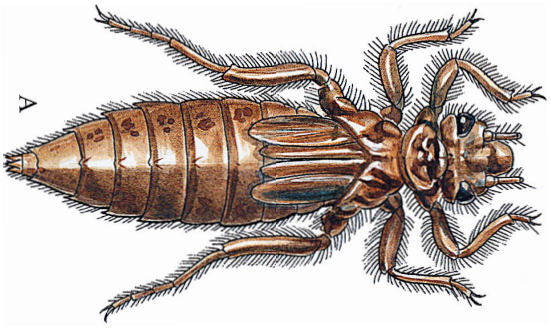
*Common species: green darner





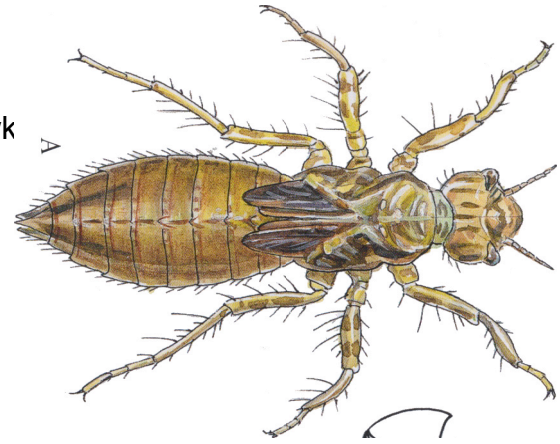
(2) Clubtail-The rarest of all dragonflies!

*Common species: pacific clubtail



(3) Skimmer-The most common of all dragonflies!

*Common species: western pondhawk



DAMSELFLIES

How to identify:

•folded wings
•small, long, slender body
•separated eyes
•bristles-like tails sticking out of their abdomen

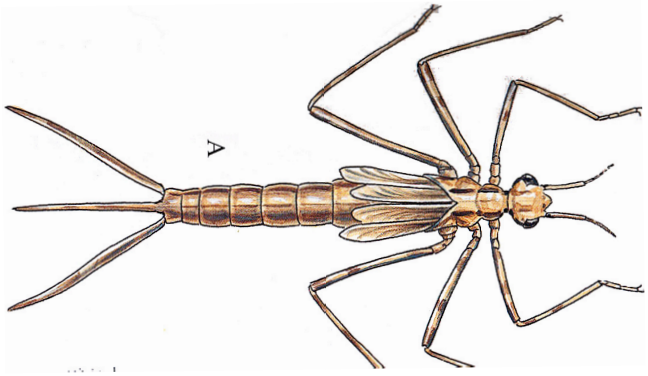
Adult

Nymph (immature)

Types of Damselflies:

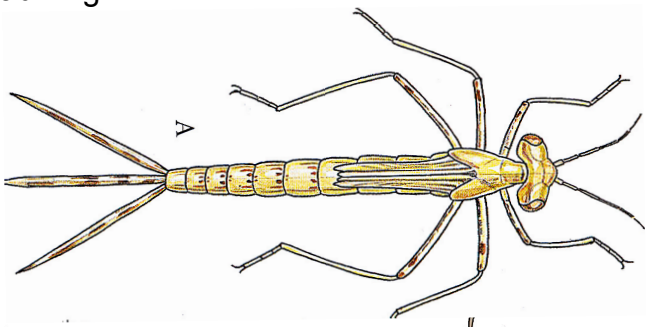
(1) Broad-winged damselflies

*Common species: jewelwing



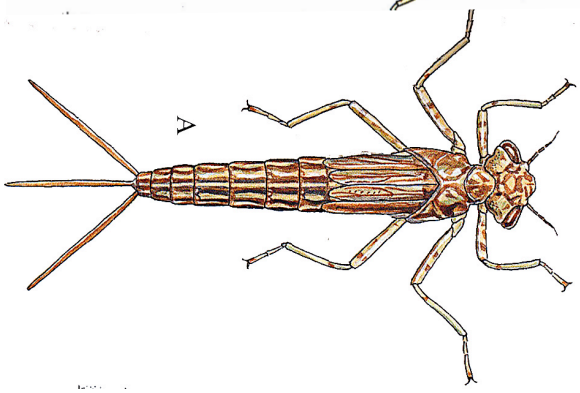
(2) Spread-winged damselflies

*Common species: common spreadwing

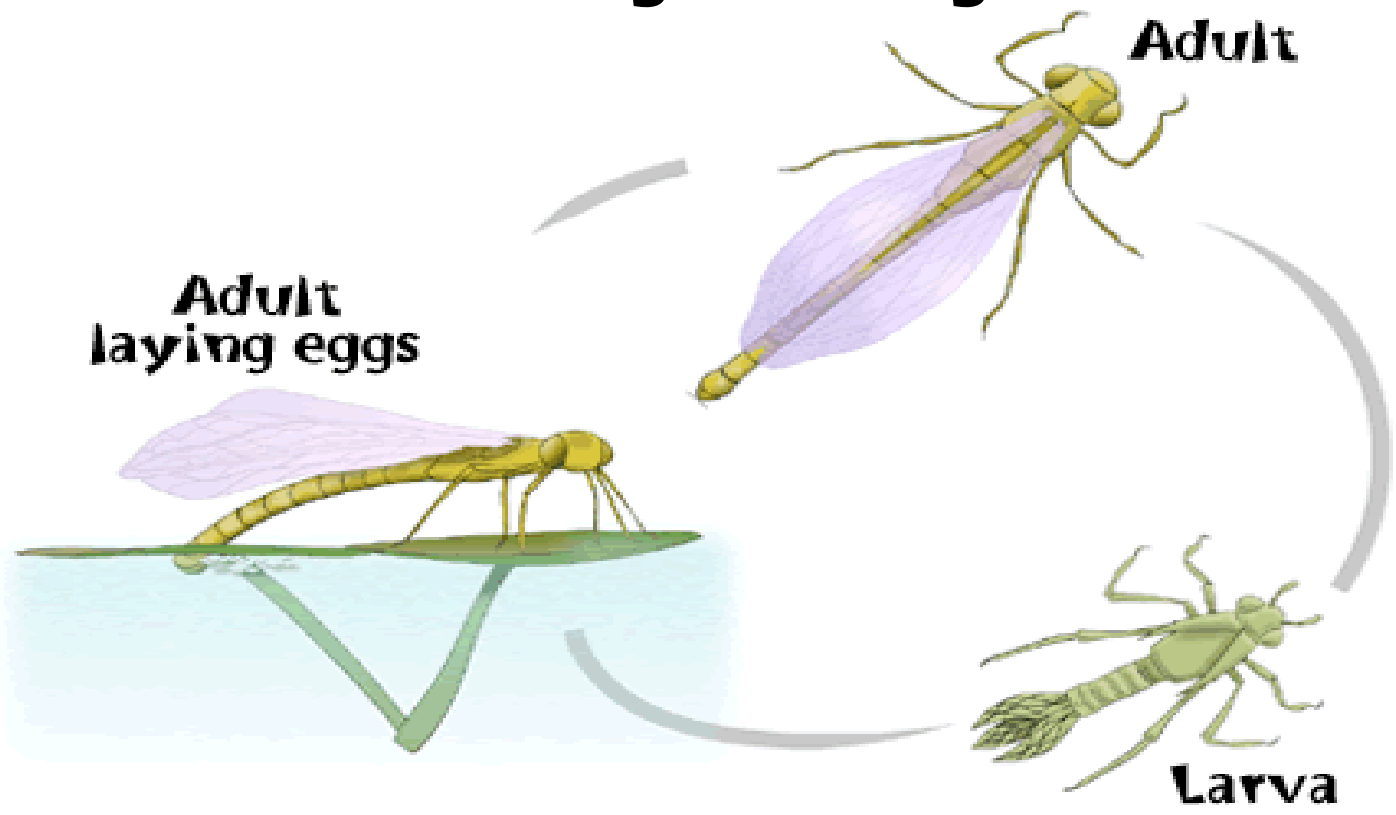


(3) Narrow-winged damselflies

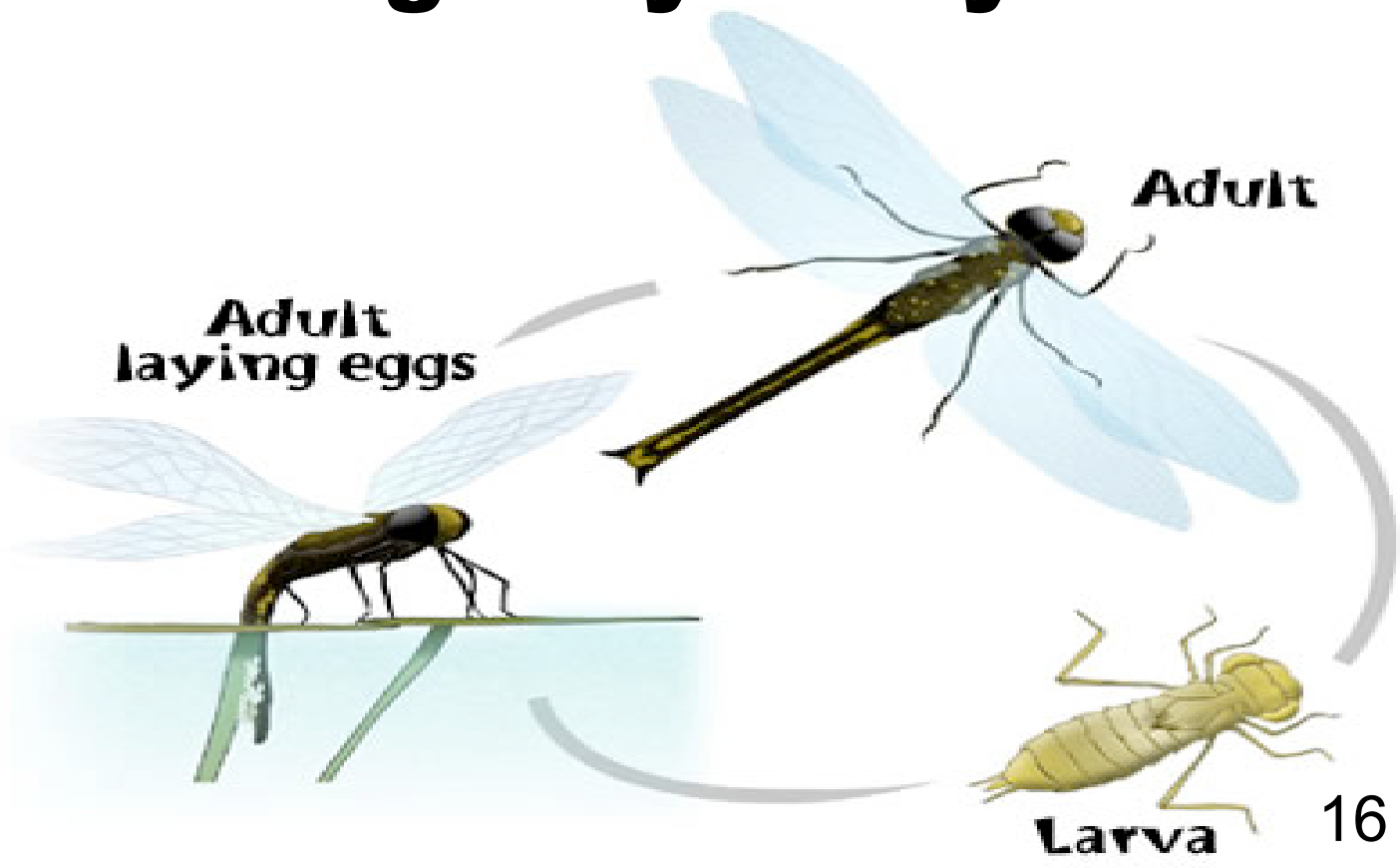
*Common species: boreal bluet



Damselfly lifecycle



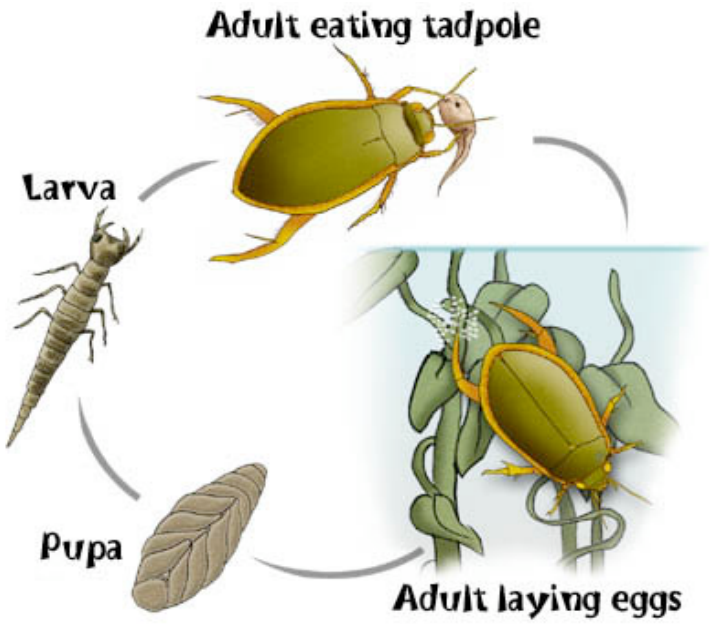
Dragonfly lifecycle



DIVING BEETLE

How to Identify:
•streamlined body shape
•one pair of thin antennae
•back legs with thick fringe of swimming hairs
•dark brown or black in color

Adult



Life Cycle

Fun Facts:
•Beetles make up nearly one in three animal species.

•Diving beetles live in ponds, lakes, billabongs and slow-running streams.

•Diving beetles are predators which eat other invertebrates that live or fall into the water.

•Occasionally they also eat small tadpoles and fish. Adults tear larger prey into smaller pieces. Larvae pierce and pump digestive juices into their prey. They then suck out the liquified remains.

•Fish, frogs and water spiders like to eat diving beetles.

•Adult diving beetles breathe by storing oxygen in a bubble underneath their wing cases.

•Larvae have a siphon (like a snorkel) coming out the end of their body. They stick this siphon out of the water to get oxygen to breathe.

•When diving beetles breed, the male fertilizes the female's eggs internally. Female beetles often deposit their eggs into aquatic plants by making cuts in the stem.

•Adult diving beetles often fly from one pond to another. They use light reflected from the water to find ponds. Sometimes they get confused, as light reflected off glass can look the same.

BACKSWIMMER

How to Identify:
•very big eyes
•curved back
•long back legs with special hairs (these help them swim)
•dark brown or black in color

Adult eating prey

Adult

Fun Facts:
•Backswimmers get their name because they are great at backstroke. Using their legs they swim upside down at the surface of the water.

•Backswimmers live in ponds, lakes, billabongs and slow-running streams.

•Adult and larval backswimmers eat smaller animals in the water including bloodworms and aquatic larvae.

•They also grab invertebrates from the water's surface, drag them under and eat them.

•Fish, turtles, water birds and lots of insects that live in the water like to eat backswimmers.

•Adult backswimmers breathe by storing oxygen in a bubble on the underside of their abdomen. To get more air they come to the water's surface.

•When backswimmers breed, males make sounds to attract females to mate with. The eggs are fertilized inside the female. After the eggs are fertilized the female lays the eggs in holes she drills in the stems of water plants.

GIANT WATER BUG

How to Identify:
•flattened body
•strong front legs used to grab prey
•long back legs with thick fringe of hairs (these help them swim)
•dark brown or black in color

Adult with eggs on back

Adult

Fun Facts:
•Giant water bugs live in wetlands, ponds and lakes that have lots of water plants.

•Giant water bugs are predators that eat invertebrates that live or fall into the water.

•Because they are so large adults can eat fish, frogs and tadpoles.

•Large fish, turtles and water birds all like to eat giant water bugs.

•Giant water bugs breathe by pushing the tip of their abdomen through the surface of the water and drawing air into their special breathing tubes.

•When some water bugs breed, the female lays her eggs on the back of the male. She does this so the eggs are safe from predators. The male then strokes the eggs with his hind legs to maintain a fresh flow of water to them.

•Other water bugs lay their eggs on plants.

WATER SPIDER

How to Identify:
•long, thin legs
•body covered in tiny hairs
•dark colored gray, brown or black with stripes and patterns

Water spider eating a fish

Adult with egg case & “air bubble”

Adult

Fun Facts:
•Water spiders live near ponds, lakes and slow-running streams.

•They can be seen hunting on the water's surface and sometimes even under the water.

•Water spiders are predators which eat insects, small fish and tadpoles.

•Frogs, herons, lizards and large fish are some of the animals that like to eat water spiders.

•Water spiders breathe out of the water by drawing air into special breathing tubes (called spiracles) in their bodies. In the water, air is trapped in the hairs surrounding their spiracles.

•Water spiders can stay under the water for about one hour.

•When water spiders breed, the females build nursery webs in plants on the banks of ponds and streams. These webs are made of sheets of silk and have a tent-like structure.

THE FOREST COMMUNITY

FOREST ARTHROPODS FOOD GUIDE

Carnivores (ANIMAL FEEDERS):

I. Shredder predators (eat prey in pieces):

- ground beetle
- wasp
- praying mantis

II. Piercing/sucking predators (eat prey inside out):

- spider
- mosquito
- centipede
- tick

Herbivores (PLANT FEEDERS):

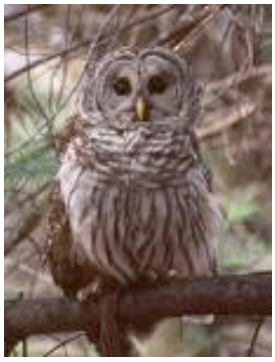
I. Shredder (eat plants in pieces)

- termites
- millipede
- wood lice
- cockroach
- caterpillar
- earwig
- cricket

II. Siphon/Chewing/Lapping (eat plant nectar and pollen)

- butterfly
- flower fly
- moth
- bee

SAMPLE FOOD CHAIN:



owl

centipede

ground beetle

caterpillar

tree

MILLIPEDES

Millipede head with eyes & antennae

How to Identify:

•tube or round shaped bodies, some can be flat-shaped as well
•dull colored brown, black or shades of grey
•2 pairs of legs per segment
•move very slow

Common Species: yellow-spotted millipede, black millipede

Yellow-spotted millipede

Black millipede

Black millipede rolled into a ball for defense

Fun Facts:

•There are over 7,500 species of millipede in the world.

•Millipedes get their name from “milli”+“pede” which means *1,000 feet* (actually they tend to have less than 500 legs).

•Millipedes are herbivores which consume only plant matter and usually prefer decaying stuff (like old logs, fallen leaves, etc.). They are very effective at chewing plant material using specialized jaw-like structures.

•Millipedes tend to remain exclusively docile living in burrows or underneath plant matter.

•Millipedes defend themselves by curling up in a ball and secreting repellent fluids such as hydrogen cyanide gas which can stain your skin.

CENTIPEDES

How to Identify:

•flattened shaped bodies
•bright colored red, orange or shades of blue
•1 pair of legs per segment
•move very fast

Garden centipede

Soil centipede

Fun Facts:

•There are several thousand species of centipede in the world.

•Centipedes get their name from “centi”+“pede” which means *100 feet* (actually they tend to have less than 50 legs).

•These animals live underneath plant matter or rocks in the soil.

•Centipedes are predators which hunt and eat other animals. Centipedes are very active hunters that chase down their prey and insert their fangs into the victim and eat.

•Centipedes are venomous since they have these fang-like structures (almost like a snake venom). (BE VERY CAREFUL-DO NOT TOUCH!!)

•Their defense mechanism involves using their fangs to scare predators by displaying them in a circular motion toward the predator.

Centipedes are also brightly colored as a “warning” display since they are potentially dangerous animals. Unfortunately, these colors can prove to be a downfall for these organisms since they are easily spotted if they come out of their terrestrial retreat.

WOOD LICE

How to Identify:

•flat, dome shaped body

•dull colored brown, black or shades of grey

•7 pairs of legs

•move very slow

Common rough wood louse

Common shiny woodlouse

Fun Facts:

•There are over 3,000 described species of wood lice in the world.

•The word “lice” refers to a group but the word “louse” refers only to one animal. These animals are also referred to as “roly-poly”, “pill bug”, “doodle bug” and “sow bug”.

•Wood lice breath by using gills or pseudo trachea located on the underside of their bodies on the last pair of legs.

•Wood lice are herbivores which consume only plant matter and usually prefer decaying stuff (like old logs, fallen leaves, etc.) since they have to keep moist in order to breath.

•Wood lice are primarily nocturnal and come out at night to feed, hiding during the day.

•Wood lice defend themselves by curling up in a ball and exposing their armor like exoskeleton which is very tough to penetrate if you are a predator.

•Wood lice females carry eggs underneath their body in a pouch and look after the young briefly after hatching.

GROUND BEETLES

How to Identify:

•have a flattened body shape with ridged elytra (hard outside wings)
•black, shiny black or metallic in color with possible color pattern
•small head with large jaws (mandibles) and threadlike antennae
•have long legs and can move very fast
•body covered in fine hairs

Tiger beetle head

Common Ground beetle

Fiery Hunter beetle

Fun Facts:

•Ground beetles are the most common type of beetle and in the largest family of beetles with over 20,000 species worldwide.

•These adult beetles and their larvae are mostly predators (a few do eat plants) of other insects or invertebrates such as snails and slugs.

•Ground beetles are very fast and can chase down their prey and grab with their huge jaws, including the larvae which prey on soil arthropods as it lives in the soil.

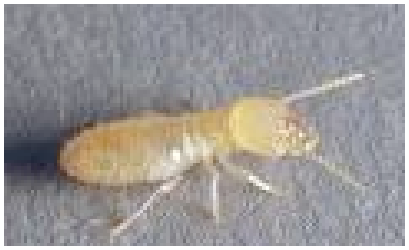
•Adults are often active at night, hunting for food and tend to hide under rocks, leaves or logs during the day.

•Some beetles like the fiery hunter like to hunt during the day. This beetle is unique since it will actually climb trees using its long legs in search of its favorite meal--caterpillars.

•One interesting group of ground beetles, called bombardier beetles, have a unique defensive mechanism. When threatened, they raise the end of their body and fire a chemical gas explosion complete with a popping noise and small smoke puff. The explosion is very sudden and scary to predators.

•Tiger beetles are another type of ground beetle that gets it name from their brightly colored body, and fast hunting ability just like tigers.

TERMITES



worker

How to Identify:

•very small antennae
•crème, light brown or dark brown in color
•no wings except for the reproductives
•soft body

Pacific Dampwood termite king & queen

Pacific Dampwood termite soldier

Fun Facts:

•There are 2,300 species of termites worldwide.

•Termites look very similar to ants except that they are generally lighter in color with a uniform body shape and do not have a stinger (unlike ants who have a thin waist and a stinger).

•The Pacific Dampwood termites are the largest termites in the United States reaching sizes up to 3/4”.

•All termites eat wood and have special organisms (protozoans & bacteria) within their body that help with digestion. As a result termites like to live where they eat as they prefer to live in wood such as old logs, trees or even human houses.

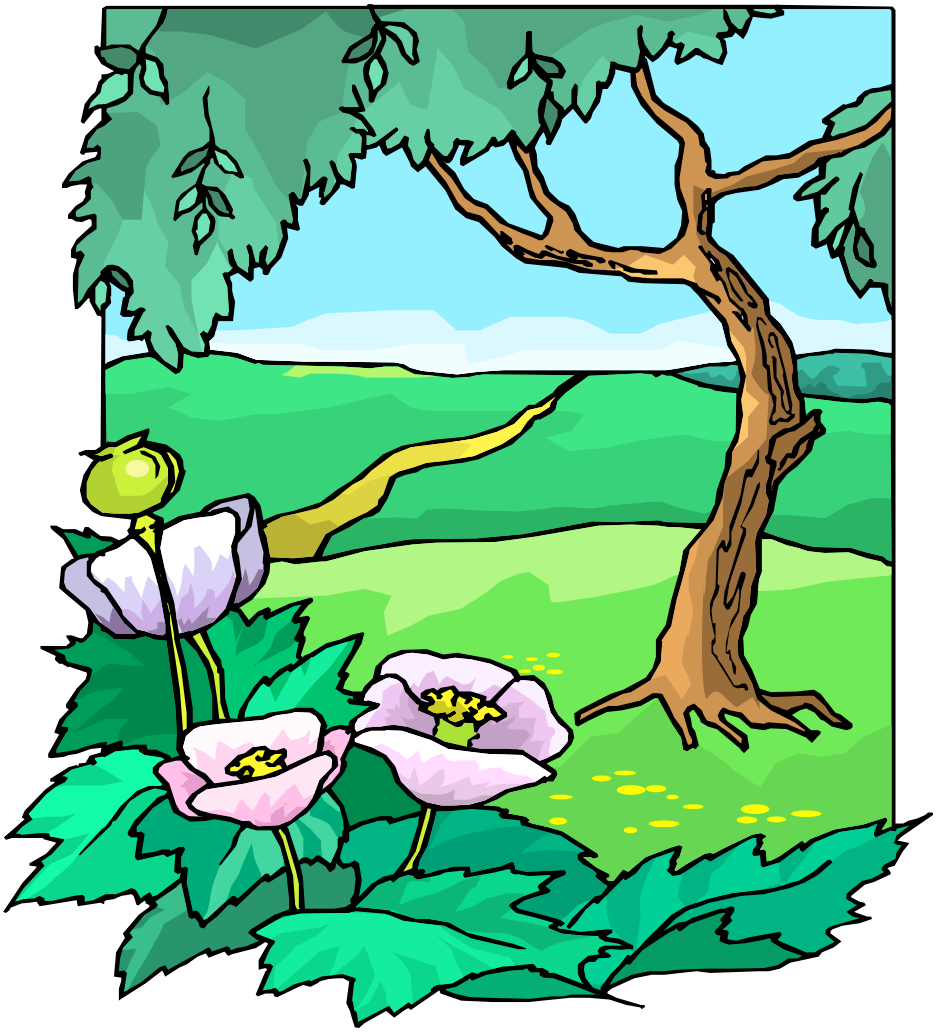
•Termites live as a family unit (almost like a human city full of siblings) called a colony. A single termite colony can contain up to 15,000 individuals, although most have around 1,000--Now that is a BIG family!

•Colonies are divided into 3 castes or groups called: (1) reproductives (queen & king), (2) workers and (3) soldiers.

•For defense, termites have soldiers which are armed with large heads complete with a set of large jaws to aid in colony protection from other insects or large animals. Some termite soldiers can actually spray acid chemicals from their head with excellent accuracy into a predators face to protect themselves.

•A termite colony biggest enemy is actually their closest relative-Ants!

THE MEADOW COMMUNITY



MEADOW ARTHROPODS FOOD GUIDE

Carnivores (ANIMAL FEEDERS):

I. Shredder predators (eat prey in pieces)

- ground beetle
- dragonfly
- praying mantis
- ant
- lady bug
- wasp

II. Piercing/sucking predators (eat prey inside out)

- spider
- mosquito
- centipede
- tick
- assassin bug
- ambush bug

Herbivores (PLANT FEEDERS):

I. Shredder (eat plants in pieces)

- caterpillar
- grasshopper
- cricket
- katydid

II. Siphon/chewing/lapping (eat plant nectar and pollen)

- butterfly
- flower fly
- moth
- bee

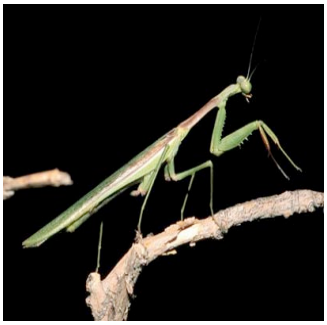
III. Piercing/sucking (eat plant inside out)

- aphids
- true bugs

SAMPLE FOOD CHAIN:

robin

wolf spider



preying mantis

grasshopper

grass

FLIES

blue bottle fly

How to Identify:
•2 wings or 1 pair of wings
•small antennae
•dark or brightly colored body with patterns
•2 large eyes

Flower fly

Mosquito

Crane fly

Fun Facts:
•There are 240,000 species of flies worldwide.

•Flies have sticky pads on their feet which allow them to walk upside down and vertically.

•Flies cannot chew food, instead they use sponge-like mouthparts to soak up their food.

•The larvae of flies are called maggots and they feed on a variety of food sources from live animals to decaying matter or even feces.

•Unfortunately, flies cause a wide variety of human diseases and problems. However some flies are beneficial insects since they help to pollinate flowers such as the flower fly.

•Flies taste, smell, and feel with the hairs that cover their bodies. Flies can also taste with their feet when they land on a surface.

•The compound eyes of flies are made up of separate light-detecting units and among the most complex in the insect world.

•Flies do not have eyelids, so they have to rub their eyes with their feet to keep them clean.

BEES

How to Identify:
•4 wings or 2 pair of wings
•large antennae
•bright or dark colored body with patterns
•body covered in dense hair

Leaf cutting bee

Bumble bee

Sweat bee

Fun Facts:
•There are 25,000 species of bees worldwide.

•All bees feed on nectar and pollen from plants and as a result are responsible for most of the pollination of plant life on the planet (including a majority of crops that we eat).

•Bees carry an electrostatic charge since they are so hairy, allowing pollen to stick easily to their bodies.

•There are two types of bees: (1) solitary and (2) social

•Solitary bees are those which live alone (similar to a nest of wasps). Examples of these include leaf cutting bees and sweat bees. Most of these bees do not typically sting and are considered harmless.

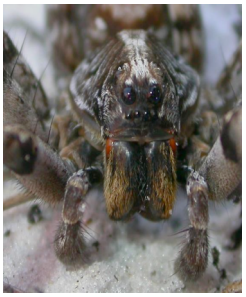
•Social bees are those which live as a group in a hive or colony. Examples of these include bumble bees and honey bees. Honey bees will frequently sting since they are trying to protect their family from danger.

•Many species of bees have special hind leg “sacs” adapted to carry pollen called corbicula.

•Bumble bees are some of the largest bees and create the loudest buzzing sound.

•There are some bees called cuckoo bees which take over and lay their eggs in other bee nests, forcing the workers of the nest to take care of their young. This is called cleptoparasitism since they develop and live on provisions stolen from other bees.

WOLF SPIDERS



How to Identify:

•large hairy body with grey, black, and cream color patterns
•2 large front eyes followed by 4 smaller eyes
•have long legs and can move very fast
•body covered in fine hairs

Adult with egg sac

Adult with spiderlings

Adult

Fun Facts:

•Wolf spiders are active ground hunters that are constantly patrolling the ground in search of insects, small spiders, and similar prey.

•Wolf spiders do not use webs to capture prey, rather they stalk and chase their prey, like a wolf (hence the name).

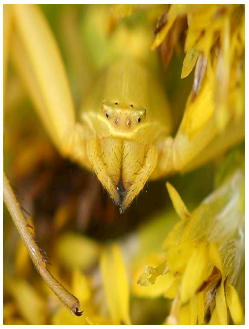
•These spiders typically hunt at night and can be seen by shining a bright light and looking for a small reflectance, these are their eyes since they reflect light.

•Wolf spiders typically live in burrows of holes in the ground or underneath plants.

•Female wolf spiders are great mothers since they actually construct an circular shaped egg sac with white papery silk, and attach it to their spinnerets, carrying it around until the young hatch.

•When the spiderlings hatch, they are typically transferred and carried around on the mother's back until they are large enough to hunt on their own. Then they disperse through the act of ballooning or simply crawl off the mother’s back onto the ground.

CRAB SPIDERS



How to Identify:

•short, broad, flat body

•bright or dull color patterned to match surroundings

•long, curved front legs

•generally walk sideways and move fast

Adult with egg sac

Adult

Fun Facts:

•Crab spiders get their name from their sideways movement and large claw-like front legs-just like crabs!

•Crab spiders are not active hunters since they rely on camouflage to ambush unsuspecting prey such as insects, small spiders, and similar prey.

•Crab spiders can remain on the same plant for days or even weeks blending in to their surroundings until prey comes along.

•Crab spiders are typically found above ground crawling on plants.

•When these spiders spot a predator they quickly move to the under side of a plant or lay motionless so that they cannot be spotted.

•Crab spiders have excellent eyesight and are usually very accurate at quickly grabbing prey items.

•Female spiders guard their egg sacs which are typically fastened to surrounding vegetation, until the young hatch. After emerging the young are on their own and typically balloon in the air to disperse to new locations.

JUMPING SPIDERS

How to Identify:

•body covered in dense hair

•2 large front eyes

•bright or dull color patterned to match surroundings

•long front legs

Adult

Adult

Adult

Fun Facts:

•Jumping spiders make up the largest family of spiders of the planet with over 5,000 species.

•They are active predators that are constantly patrolling plants in search of insects, small spiders, and similar prey.

•Jumping spiders typically hunt during the day and can be seen on plants or human structures.

•These spiders do not use webs to capture prey, rather they stalk and typically pounce on and grab their prey (hence the name).

•Female spiders guard their egg sacs which are typically fastened to surrounding vegetation, until the young hatch. After emerging the young are on their own and typically balloon in the air to disperse to new locations.

•Jumping spiders have some of the best eyesight in the animal kingdom as they can spot prey from 4-8” away!

•Jumping spiders have elaborate courtship dances which are used to entice females during mating.

GRASSHOPPERS, CRICKET& KATYDIDS

How to Identify:
•very short antennae
•dark or brightly colored to blend in with surroundings
•folded wings
•long, round body shape
•move by mostly jumping

Adult grasshopper

Adult cricket

Adult katydid

Fun Facts:
•These insects are typically found on plants or in trees.

•Crickets and grasshoppers feed on a variety of plant and animal matter including live and dead matter. These insects will even practice cannabalism if they are very hungry.

•Most people consider these insects to be pests since they like to consume crop plants that we eat as food. Although in most cases these insects end up as food for other animals.

•These insects hatch in the spring and grow very rapidly resembling “mini-adults” or nymphs as they develop.

•Overall these insects like to live close to one another in groups with some groups such as the desert locust totaling over 40 million insects.

•Crickets, grasshoppers & katydids are very good at camouflage and are typically heard before seen as they produce sound to communicate with each other by rubbing their body parts together in a process called stridulation.

•These use special structures on their legs called tymbals from which they sound is produced.

•Crickets can actually be used as a real life thermometer as the level of their sound corresponds to outside temperatures (loud=hot weather, low=cool weather).

BUTTERFLIES & MOTHS

How to Identify:
•large wings which make up most of their body
•bright or drab colored body and wings
•long antennae

Adult butterfly

caterpillar

Adult moth

Fun Facts:
•Moth and butterfly bodies are completely covered in scales, which rub off if you touch them.

•Butterflies are less common than moths and are typically active during the day and moths are active at night.

•Both moths and butterflies are plant feeders and their young or larvae are called caterpillars.

•For defense some butterflies eat toxic plants which then makes them toxic. As a result other butterflies actually mimic the color patterns of these toxic animals in order to avoid predation. A great example of this is the monarch butterfly which eats milkweed plants which are toxic and the Viceroy butterfly in turn looks like the monarch even though it is not toxic.

•These insects use special chemical messages in order to communicate with each other called pheromones. Some moths actually have ears which they use to detect the presence of predators such as bats.

•All adult butterflies have a proboscis or tube-like structure which is used to get nectar from flowers. Some butterflies will land and feed on feces, urine, your sweat or on wet ground in order to obtain moisture. Most moths do not have a functional proboscis instead they live off of stored fat reserves accumulated during the larval or caterpillar life stage.

•Some butterflies like to migrate or relocate when the weather changes. An example of this is the annual migration in which 1,000's of monarch butterflies migrate Mexico.

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INSECTS