

Insects

Insects are animals without backbones and appeared on Earth many millions of years before backboned animals like reptiles and mammals.

- Insects, like arachnids, belong to a group of animals called arthropods, which have a hard external skeleton (exoskeleton) made largely of chitin.
- The bodies of insects are divided into three parts: head, thorax, and abdomen. By comparison, the bodies of arachnids have two parts: the cephalothorax (head and thorax) and the abdomen.
- Insects have three pairs of jointed legs. Arachnids have four pairs of legs.
- Insects are usually small, with a body length of several inches or less.
- Insects have a wide range of lifestyles, including flying insects, like butterflies, water-dwelling insects, for example water boatmen, and terrestrial insects like grasshoppers, and most beetles.
- Insect mouthparts are modified in many ways depending on their food supply. Different insects eat anything from pollen to dung! The mouthparts of arachnids, like spiders, are modified for biting or piercing, and arachnids usually only eat other animals.
- Many insects have wings and are accomplished fliers. Wings are absent in some species of insect such as lice, fleas, and ants. Arachnids do not fly.

There are about 4 million species of insect on Earth and some experts think there may be as many as 10 million. Insects are divided into approximately 30 orders including:

- Blattodea - cockroaches
- Isoptera - termites
- Siphonaptera - fleas
- Odonata - dragonflies and damselflies
- Dermaptera - earwigs
- Diptera - flies
- Lepidoptera - butterflies and moths
- Orthoptera - grasshoppers, katydids, crickets
- Coleoptera - beetles
- Hymenoptera - wasps, bees, ants, sawflies

Examples of all these insects and more can be found in Blue Sky!

Arachnids

Arachnids, such as spiders, scorpions, mites, and ticks, are characterized by having eight legs, two body parts - the cephalothorax and the abdomen, a hard external skeleton, fang-like pincers (chelicerae), and simple eyes.

The tarantula, the largest of our native spiders, is extremely shy and docile – a gentle giant. Its bite is no worse than that of a bee sting. As with all spiders, they are out merely looking for something to eat. Tarantulas are mostly out during night hours.

Spiders are a very valuable asset and take care of thousands of insects, many of whom we would consider as pests.

Even the Black Widow spider, in its 1-2 years of life, will consume over 2,000 insects in that time. That's a lot of bugs! Black Widows are a very common spider in our area and its venom is very potent. Drop for drop it is more toxic than rattlesnake venom. It is also a very shy spider and will only bite if it feels threatened.

Trapdoor spiders and the tarantula are related to each other. The trapdoor is a reasonably large spider and will bite if provoked. As it spends most of its life inside its burrow, the chances of a bite are extremely rare.

Most spiders can bite, but mouthparts are usually so small they can't penetrate the skin.

AVOID BEING BITTEN

- Do not pick up spiders.
- Do not stick your hands in any area that you haven't inspected first.
- Learn to recognize them:
 - Black Widows have large bulbous body, long legs, and a very shiny abdomen. Females are generally twice size of males. Both females and males bite, but females are more deadly because they inject a lot more venom. Females generally hang upside down in their web so the red hourglass marking is very visible.
 - Tarantula are very easy to identify. They are a very large, black or dark brown, hairy spider.

- Desert Recluses – the Western estern is less venomous than Eastern brown recluse, but still delivers a very venomous bite. Brown recluses are small brown spiders, also called violin or fiddleback spiders because of the violin-shaped marking on their heads. They are not easy to see, particularly as they move quickly.

TREATMENT

If bitten, and you know it's a black widow or brown recluse, seek medical attention immediately - seriously venomous. There is anti-venin available, but not over-the-counter.

INVERTEBRATE COMPENDIUM
FOR THE BLUE SKY ECOLOGICAL RESERVE

Invertebrates species were identified by sight, sound, frass, or other signs, and are cited according to the nomenclature of: Insects of the Los Angeles Basin, Hogue (1974 [1993]), California Insects, Powell & Hogue (1979), American Insects, Arnett (2000), Field Guide to North American Insects & Spiders, Lorus & Margery Milne (1996), Simon & Scuster's Guide to Insects, Arnett & Jacques (1981), Dragonflies and Damselflies of California, Manolis (2003), The Flies of Western North America, Frank R. Cole (1969), A Field Guide to the Insects of America North of Mexico, Borror & White (1970), Butterflies of Southern California, Emmel & Emmel (1973), California Butterflies, Garth & Tilden (1986), Butterflies of Greater Los Angeles, Mattoni (1990), Butterflies of Baja California, Brown, Real & Faulkner (1992), and Butterflies through Binoculars, Glassberg (2000).

INSECTA - INSECTS

ODONATA - DRAGONFLIES & DAMSELFLIES

Archilestes californica

California archilestes

Argia vivida

vivid dancer

Argia agrioides

California dancer

Enallagma civile

familiar bluet

Enallagma carunculatum

tule bluet

Ischnura cervula

Pacific forktail

Ischnura denticollis

black-fronted forktail

Telebasis salva

desert firetail

Sympetrum illotum

cardinal meadowhawk

Sympetrum corruptum

variegated meadowhawk

Libellula saturate

flame skimmer

Libellula croceipennis

neon skimmer

Tramea onusta

red saddlebags

ORTHOPTERA - GRASSHOPPERS, CRICKETS
& KATYDIDS

Trimerotropis pallidipennis

pallid-winged grasshopper

Idiostatus aequalis

Chaparral Shield-backed Katydid

Stenopelmatus sp.

Jerusalem cricket

Gryllus sp.

field cricket

BLATTODEA – COCKROACHES

Blattella vaga

field cockroach

ISOPTERA – TERMITES

Zootermopsis augusticollis

Pacific dampwood termite

HEMIPTERA - TRUE BUGS

Chlorochroa sayi

Say's stink bug

Chlorochroa sp.

stink bug

Leptoglossus clypealus

Western leaf-footed bug

Boisea rubrolineata

Western box-elder bug

Lygaeus kalmia

Common milkweed bug

Family *Miridae*

plant bug sp.

Lopidea sp.

red body plant bug

Apiomerus crassipes

bee assassin

Family *Reduviidae*

assassin bug

Gerris remigis

common water strider

HOMOPTERA - CICADAS, LEAFHOPPERS &
ALLIES

Family *Cicadellidae*

leafhopper sp.

Family *Cicadidae*

cicada

Antianthe expansa
keelbacked treehopper

Family *Cercopidae*
spittle bug

Pterochlorus viminalis
giant willow aphid

Hemiberlesia lataniae
latania scale

Aleurothrixus floccosus
woolly whitefly

NEUROPTERA - NERVE-WINGED INSECTS

Neohernes californicus
California Dobsonfly

Family *Hemerobiidae*
brown lacewing

Chrysoperla sp.
green lacewing

Brachyneumuris sp.
antlion

LEPIDOPTERA - BUTTERFLIES & MOTHS

Caloptilia sp.
leafminer moth

Bucculatrix sp.
micro-lep

Argyrotaenia citrana
Orange Tortrix Tortricid moth

Cydia latiferreanus
filbertworm

Acrolophus popeanella
Popeanella Tube moth

Petrophila schaefferalis
Schaeffer Crambid moth

Mecyna mustelinalis
Mustelin Crambid moth

Jocara trabalis
snout moth

Acrolophous pyramellus
Pyramid Tube moth

Papilio rutulus
western tiger swallowtail

Papilio eurymedon
pale swallowtail

Pontia protodice
checkered white

Pieris rapae
cabbage white

Anthocharis sara
Pacific sara orange-tip

Nathalis iole
dainty sulphur

Coilia eurytheme
orange sulphur

Zerene eurydice
California dogface

Leptotes marina
marine blue

Hermiargas ceraunus gyas
Edward's blue

Euphilotes bernadino
bernardino blue

Plebejus acmon
acmon blue

Glaucopsyche lygadamus australis
southern blue

Apodemia virgulti
Behr's metalmark

Chlosyne gabbii
Gabb's checkerspot

Vanessa cardui
painted lady

Vanessa virginiensis
Virginia lady

Vanessa annabella
west coast lady

Nymphalis antiopa
mourning cloak

Junonia coenia
common buckeye

Liminitis lorquini
Lorquin's admiral

Adelpha californica
California sister

Coenonympha California
California ringlet

Erynnis funeralis
funereal duskywing

Hylephila phyleus
fiery skipper

Ochlodes agricola
rural skipper

Paratrytone melane
umber skipper

Family *Geometridae*
geometrid moth

Pero occidentalis canastra
occidental geometrid moth

Aethaloida packardaria
Packard's geometrid moth

Chlorochlamys triangularis
triangular emerald moth

Perizoma custodiata
custodial geometrid moth

Manduca sexta
tobacco hornworm
Cisthene dorsimacula
dorsimacula tiger moth
Bruceia hubbardi
little lichen tiger moth
Orgyia magna
magna tussock moth
Autographa californica
alfalfa looper
Trichoplusia ni
cabbage looper
Cryphia viridata
viridata owlet moth
Oligia marina
marina owlet moth
Micrathetis triplex
triplex noctuid moth
Cosmia calami
calami owlet moth
Xestia perquiritata
noctuid moth
Abagrotis reedi
noctuid moth
Helicoverpa zea
noctuid moth
Annaphila sp.
orange day-flying noctuid

DIPTERA - GNATS, MIDGES & FLIES

Tipula planicornis
giant crane fly
Holorusia hespera
common crane fly
Culiseta incidens
cold weather mosquito
Family *Culicidae*
mosquito sp.
Bradysia impatiens
black gnat
Family *Chironomidae*
midge sp.
Hemipenthes sinuosa jaennickiana
black-winged bee fly
Bombylius sp.
bee fly
Conophorus sp.
bee fly
Family *Muscidae*
muscid fly
Family *Syrphidae*
syrphid flower fly

Sphecomyia vittatum
syrphid fly
Eupeodes sp.
hover fly
Sarcophaga sp.
flesh fly
Calliphora / Paralucilia sp.
blue bottle fly
Phaenicia sericata
green bottle fly

COLEOPTERA – BEETLES

Calathis ruficollis
rufous ground beetle
Amara sp.
small ground beetle
Agorini calathus
ground beetle sp.
Family *Staphylinidae*
rove beetle
Staphylinus olens
Devel's Coach Horse Rove beetle
Family *Elateridae*
click beetle
Phengodes sp.
glowworm beetle
Coccinella californica
California ladybird beetle
Hippodamia convergens
convergent lady beetle
Coccinella novemnotata
nine-spotted ladybird
Coccinella septempunctat
seven-spotted ladybird
Family *Phalacridae*
shining flower beetle
Subfamily *Aphodiinae*
dung beetle
Serica sp.
scarab june beetle
Phobetus comatus
hairy June beetle
Polyphylla decemilineata
ten-lined june beetle
Cyclocephala hirta
hairy cyclocephala
Dichelonyx sp.
chafer beetle
Bothynus gibbosus
carrot beetle
Phloeodes pustulosus
ironclad beetle

Lytta sp.
blister beetle sp.
Nemognatha sp.
blister beetle
Eleodes sp.
stink beetle
Cratidus osculans
wooly darkling beetle
Prionus californicus
California prionus
Family *Chrysomelidae*
leaf beetle
Scyphophorus yuccae
yucca weevil

HYMENOPTERA - ANTS, WASPS & BEES

Iridomyrmex humilis
Argentine ant
Pogonomyrmex californicus
California harvester ant
Liometopum occidentale
velvety tree ant
Camponotus sp.
Carpenter ant
Family *Brachonidae*
brachonid wasp
Vespula pensylvanica
yellow jacket
Polistes sp.
paper wasp
Andricus sp.
Chalcid oak gall parasitoid
Family *Spheciidae*
thread-waist wasp
Chalybion californicum
blue mud wasp
Sirex aureolatus
wood wasp
Family *Ichneumonidae*
ichneumonid wasp
Family *Torymidae*
oak gall wasp
Pepsis sp.
tarantula wasp
Family *Tiphiidae*
tiphid wasp
Family *Megachilidae*
leaf-cutter bee
Subfamily *Andreninae*
mining bee
Subfamily *Anthphorinae*

digger bee
Subfamily *Hylaeinae*
yellow-faced bee
Xylocopa varipuncta
valley carpenter bee
Xylocopa californica
California carpenter bee
Bombus vosnesenkii
Vosnesenski's bumblebee
Bombus sonorus
Sonoran bumblebee
Apis mellifera
honeybee

ARACHNIDA - SPIDERS & ALLIES

SCORPIONIDA - SCORPIONS

Anuroctonus phaiodactylus
burrowing scorpion

ARANEAE - SPIDERS

Bothriocyrtum californicum
California trapdoor spider
Aphonopelmus sp.
tarantula
Lycosa sp.
wolf spider sp.
Agelenopsis operta.
funnel-web spider
Latrodectus hesperus
western black widow spider
Family *Araneidae*
orb weaver
Cyclosa turbinata
trash-web spider
Phidippus formisus
red jumping spider

Peucetia viridans
green lynx spider
Family *Thomisidae*
crab spider
Castianera sp.
ant-mimic spider

ACARI - MITES AND TICKS

Family *Tetranychidae*
spider mites
Dermacentor occidentalis
Pacific coast tick

DIPLOPODA - MILLIPEDES

Hittonius sp.

common millipede

CRUSTACEA - CRUSTACEANS
ISOPODA – SOWBUGS, ETC.

Armadillium vulgare

common pillbug