



CALIFORNIA
NATIVE PLANT SOCIETY

California Word Puzzles!

A fun way to learn your native
plants and insects!

Created by CNPS Fellow Betsey Landis
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CALIFORNIA NATIVE PLANT SOCIETY

CHAPARRAL WORDSEARCH

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CAN YOU FIND THESE WILDFLOWERS?

BIGPOD CEANOTHUS
 BLACK SAGE
 BUCKWHEAT
 BUSH LUPINE
 CHAMISE
 CLARKIA
 CLEMATIS
 DEERWEED
 ELDERBERRY
 FIESTA FLOWER
 FUCHSIA
 HOLLYLEAF CHERRY
 INDIAN PINK
 MALLOW

MANZANITA
 MONKEYFLOWER
 OAK
 PEONY
 PHACELIA
 POPPY
 PURPLE SAGE
 REDBERRY
 SUGAR BUSH
 TOYON
 WALNUT
 YARROW
 YUCCA

CHAPARRAL

In southern California chaparral usually grows on slopes away from the coast up to elevations of 5000 feet. Chaparral occurs in nutrient-poor soils without year-round surface water.

Chaparral on cooler north-facing or east-facing slopes tend to have both tall and shorter shrubs and some trees. Chaparral on hotter, west-facing or south-facing slopes tend to have shorter shrubs and no trees.

Chaparral has many perennials, annuals, bulbs, ferns, vines and grasses.

The plant community called chaparral is not dependent on fire for renewal. Many chaparral plants will root-sprout or crown sprout if main stems or trunks are lost, as long as the roots are healthy. Even chaparral plants that only come up from seeds may have their seeds germinated when the seed hulls are cracked through soil erosion, slides, and other soil disturbances.

The historic average between wildfires for chaparral in southern California is 40 to 100 years. Too frequent wildfires do not give the chaparral plants time to mature and to produce fertile seeds. When chaparral dies as a plant community, weedy annual non-native grasses and annual flowers move in, fueling even more frequent fires.

Here are some native plants found in chaparral:

TREES

California walnut
Coast live oak
Mexican elderberry

PERENNIALS

Bush lupine
California peony
Collarless poppy
Deerweed
Golden yarrow
Indian pink
Our lord's candle yucca

ANNUALS

Clarkia
Phacelia

SHRUBS

Bigpod ceanothus
Black sage
Bush mallow
Bush monkeyflower
California buckwheat
California fuchsia
Chamise
Hollyleaf cherry
Manzanita
Purple sage
Redberry
Sugarbush
Toyon

BUTTERFLY LARVA FOOD PLANTS & ADULT NECTAR PLANTS

| <u>BUTTERFLY NAME</u> | <u>LARVA FOOD PLANTS</u> | <u>ADULT NECTAR PLANTS</u> |
|------------------------|---|--------------------------------|
| ACMON BLUE | CALIFORNIA BUCKWHEAT | DEERWEED |
| ARTFUL DUSKYWING | CEANOTHUS | |
| BLUE BUTTERFLIES | BUCKWHEATS | DEERWEED & OTHERS |
| CABBAGE BUTTERFLY | TOWER MUSTARD & OTHERS | |
| CALIFORNIA RINGLET | NATIVE GRASSES | |
| CHALCEDON CHECKERSPOT | MONKEYFLOWERS | GOLDEN YARROW, OTHERS |
| COMSTOCK'S FRITILLARY | VIOLA | |
| DOGFACE | FALSE INDIGO | |
| DUSKY METALMARK | BUSH SUNFLOWER | |
| LORQUIN'S ADMIRAL | WILLOWS | |
| MONARCH | INDIAN MILKWEED & NARROW LEAF MILKWEED | |
| MOURNING CLOAK | WILLOWS | |
| PALE SWALLOWTAIL | CEANOTHUS & OTHERS | |
| SARA ORANGETIP | TOWER MUSTARD & OTHERS | |
| SKIPPER BUTTERFLIES | NATIVE GRASSES | |
| WEST COAST LADY | BUSH MALLOW | |
| WHITE BUTTERFLIES | TOWER MUSTARD & OTHERS | |
| MANY BUTTERFLY ADULTS: | | SUNFLOWERS SAGES LUPINES |

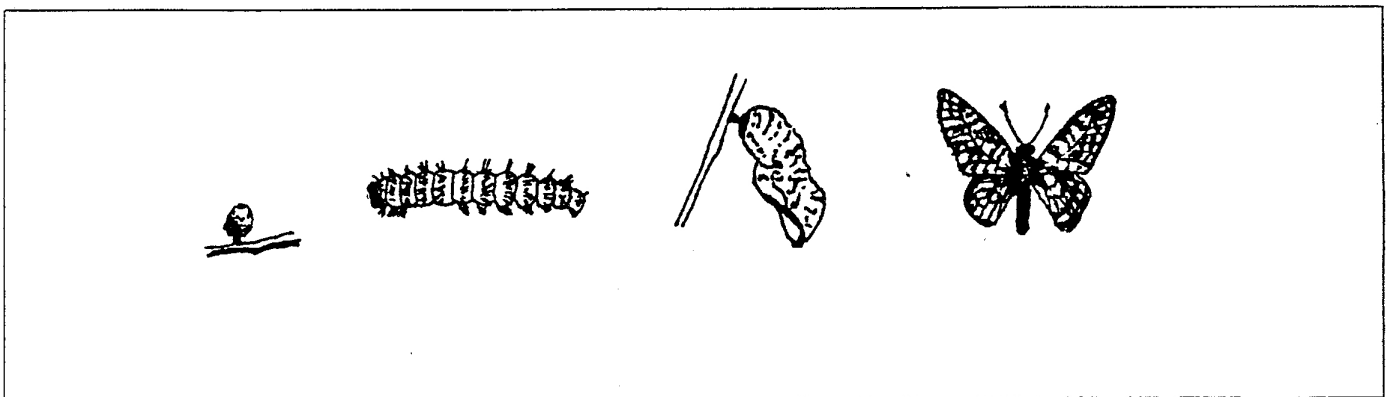
BUTTERFLY LIFE STAGES

EGG

LARVA

PUPA (CHRYSA LIS)

ADULT



Sketches from Southern California Native Plants for School and Urban Gardens by Betsey Landis

CALIFORNIA NATIVE PLANT SOCIETY BUTTERFLIES, LARVA & ADULT FOOD PLANTS

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FIND THESE BUTTERFLY NAMES, TERMS & FOOD PLANTS!

ACMON BLUE

ADMIRAL

ARTFUL DUSKYWING

BLUE

BUCKWHEAT

BUTTERFLY

CABBAGE

CEANOOTHUS

CHALCEDON CHECKERSPOT

CHRYSLIS

DEERWEED

DOGFACE

EGG

FALSE INDIGO

FRITILLARY

INDIAN MILKWEED

LARVA FOOD

LUPINE

MALLOW

METALMARK

MONARCH

MONKEYFLOWER

MOURNING CLOAK

NATIVE GRASSES

NECTAR PLANT

PALE SWALLOWTAIL

PUPA

RINGLET

SAGE

SARA

SKIPPER

SUNFLOWER

TOWER MUSTARD

VIOLA

WEST COAST LADY

WHITE

WILLOW

CALIFORNIA NATIVE PLANT SOCIETY

COASTAL SAGE SCRUB WORDSEARCH

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CAN YOU FIND THESE WILDFLOWERS?

BLACK SAGE
 BLADDERPOD
 BLUE-EYED GRASS
 BUCKWHEAT
 BUSH MONKEYFLOWER
 BUSH SUNFLOWER
 CALIFORNIA FUCHSIA
 CHOLLA
 COYOTE BRUSH
 DEERWEED
 INDIAN PINK
 LAUREL SUMAC

LEMONADE BERRY
 LUPINE
 MARIPOSA LILY
 PHACELIA
 PRICKLY PEAR
 SAGEBRUSH
 STAR LILY
 SUGARBUSH
 WALLFLOWER
 WHITE SAGE
 YARROW

COASTAL SAGE SCRUB

Coastal sage scrub is found on ocean-facing slopes or inland slopes or ridgetops where the soil is thin and nutrient-poor, there is strong sunlight and little or no water.

Generally there are low spreading shrubs and many perennial and annual plants, but no trees. The perennials may be drought-deciduous (lose their leaves when the weather is very dry for a long time).

Sagebrush is a dominant plant in most coastal sage scrub habitat, though prickly pear cactus, black sage, white sage and purple sage are also common.

The names of some of the native plants are:

SHRUBS

Black sage
Bladderpod
Buckwheat
Bush monkeyflower
Bush sunflower
California fuchsia
Coyote brush
Deerweed
Laurel sumac
Lemonade berry
Sagebrush
Sugarbush
White sage

CACTI

Cholla
Prickly Pear

PERENNIALS

Indian pink
Yarrow (golden)

IRIS & LILIES

Blue-eyed grass (iris)
Mariposa lily
Star lily

ANNUALS

Lupine
Phacelia
Wallflower

CALIFORNIA NATIVE PLANT SOCIETY GRASS WORD SEARCH

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FIND THE FOLLOWING GRASS WORDS IN THE PUZZLE:

AURICLE
AWN
BRACT
BRISTLE
CHAFF
CULM
FLORET
GLUME
GRAIN
GRASS FAMILY

LEMMA
LIGULE
NERVE
NODE
PALEA
RHIZOME
SCALE
SHEATH
SPIKELET
STEM
STOLON

BOTANICAL TERMS FOR GRASSES

auricle: ear-like structures extending from the lower end of the leaf blade.

awn: a bristle on the bracts or scales, usually an extension of a nerve.

bract: modified, reduced leaves located above the foliage leaves.

bristle: a stiff hair-like structure.

chaff: a thin dry scale or bract.

culm: specialized stem of grass.

floret: unit usually of two bracts (lemma and palea) enclosing a flower.

glume: a chaff-like bract.

grain: a swollen, seed-like structure.

grass family: the most economically important family of plants. Annual herbs to woody, hollow-stemmed plants like bamboo or cane.

lemma: lower of two bracts enclosing a flower above the glumes.

ligule: collar-like structure at junction of leaf blade and leaf sheath.

nerve: vascular strand of glume, lemma or leaf.

node: where the leaves arise from the stem.

palea: inner of the two bracts, directly below the grass flower.

rhizome: a prostrate elongated culm growing mostly underground, usually rooting at nodes and upturned at apex.

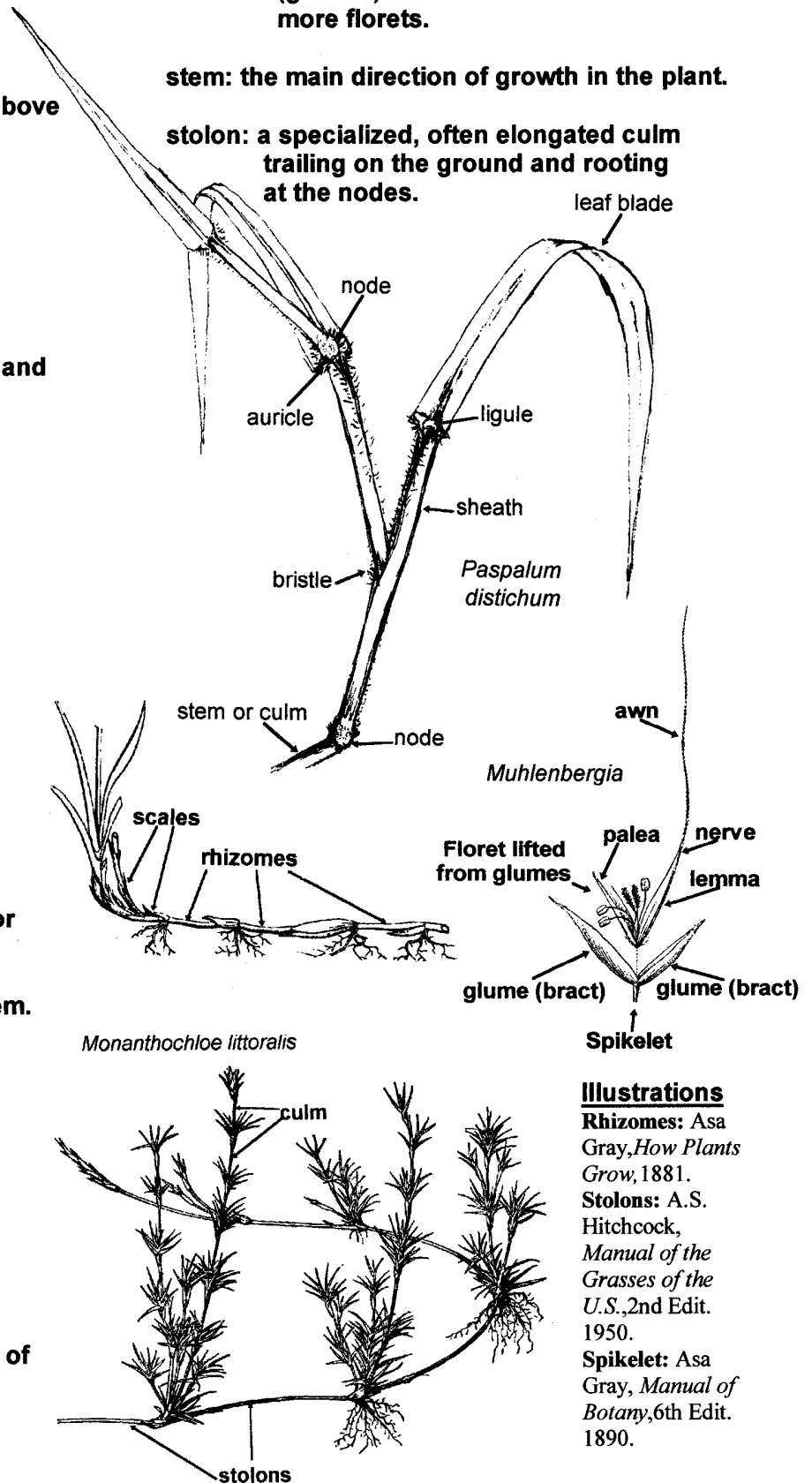
scale: a small dry bract.

sheath: part of leaf that covers all or part of a culm.

spikelet: in a panicle or flower spike, a unit usually of two empty bracts (glumes) at the base of one or more florets.

stem: the main direction of growth in the plant.

stolon: a specialized, often elongated culm trailing on the ground and rooting at the nodes.



Illustrations

Rhizomes: Asa Gray, *How Plants Grow*, 1881.

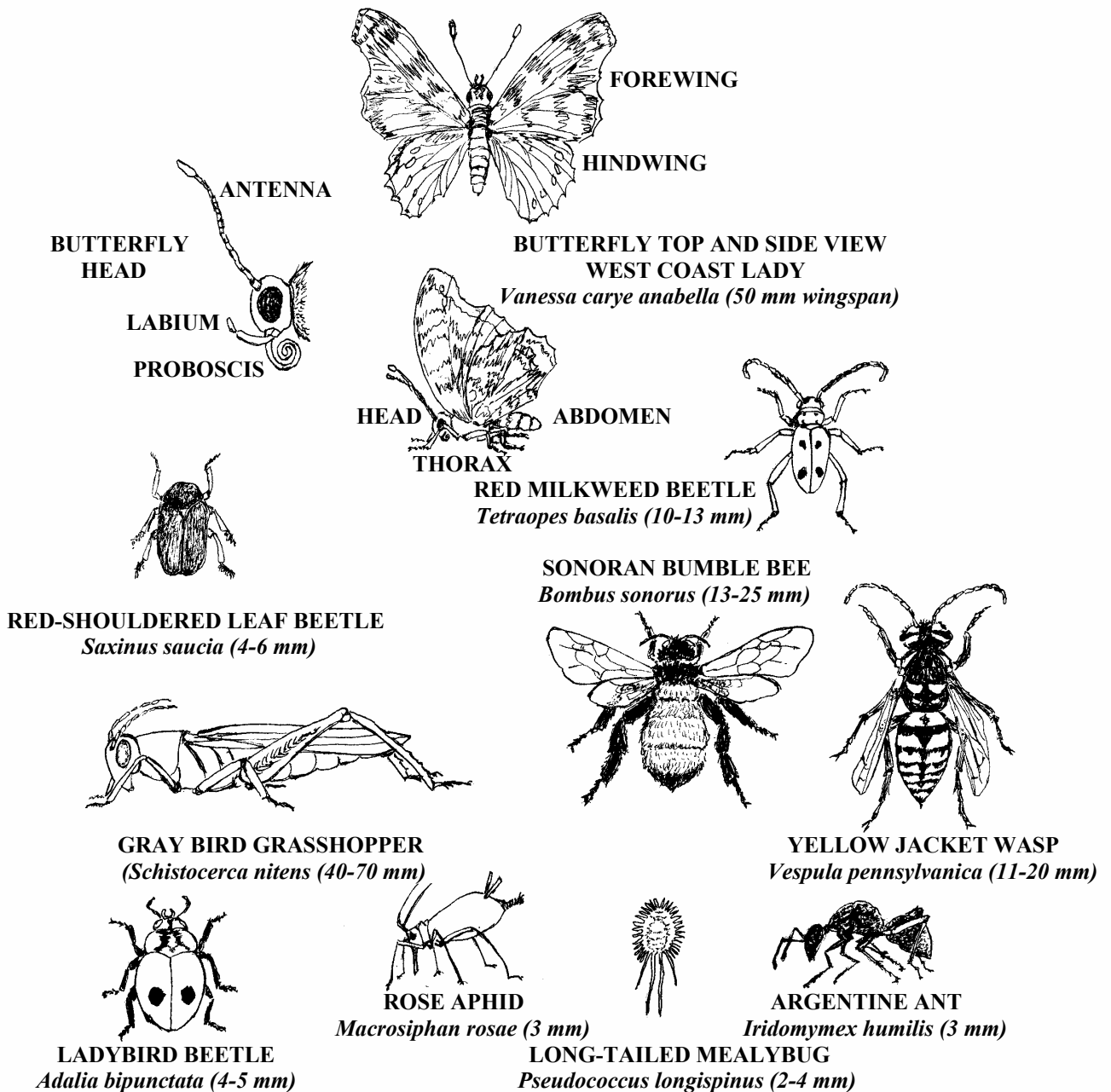
Stolons: A.S. Hitchcock, *Manual of the Grasses of the U.S.*, 2nd Edit. 1950.

Spikelet: Asa Gray, *Manual of Botany*, 6th Edit. 1890.

COMMON TYPES OF INSECTS FOUND ON PLANTS

Not drawn to scale. Body length (or butterfly wingspan) given in millimeters.

Slugs, snails (mollusks) and spiders (arachnids) are not insects.



Information from *California Insects* by Jerry A. Powell & Charles L. Hogue, 1979, U.C. Press, and *Insects of the Los Angeles Basin* by Charles L. Hogue, 1993, Natural History Museum of Los Angeles County. Sketches of insects from *Southern California Native Plants for School and Urban Gardens* by Betsey Landis.

For more ideas and information, visit the California Native Plant Society online at cnps.org/education



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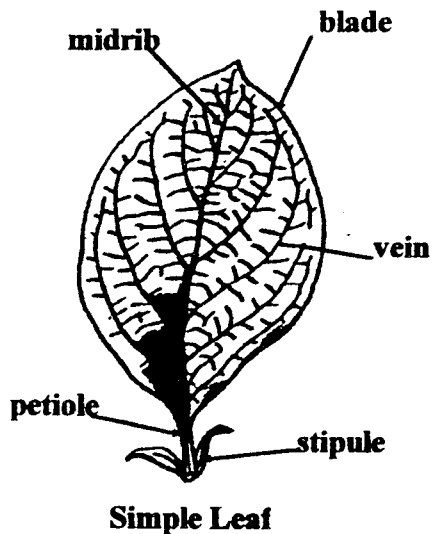
BUTTERFLIES & OTHER PLANT-LOVING INSECTS

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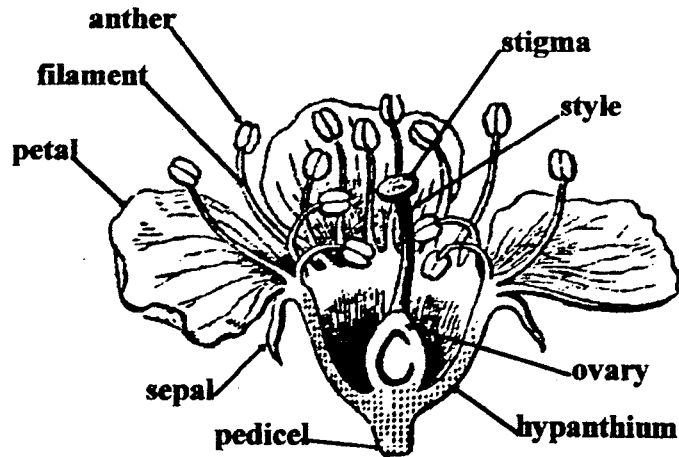
CAN YOU FIND THESE BUTTERFLY & INSECT NAMES & TERMS?

ABDOMEN
 ADMIRAL
 ANTENNA
 ARGENTINE ANT
 BLUE
 BUMBLEBEE
 BUTTERFLY
 CATERPILLAR
 CHECKERSPOT
 CHRYSALIS
 DOGFACE
 DUSKYWING
 FOREWING
 FRITILLARY
 GRAY BIRD GRASSHOPPER
 HEAD
 HIND WING

LABIUM
 LADYBIRD
 LARVA
 LEAF BEETLE
 MEALYBUG
 METALMARK
 MILKWEED BEETLE
 MONARCH
 MOURNING CLOAK
 PROBOSCIS
 RINGLET
 ROSE APHID
 SKIPPER
 SWALLOWTAIL
 THORAX
 WEST COAST LADY
 YELLOWJACKET WASP



Simple Leaf



Half of a Cherry Blossom

BOTANICAL TERMS

(Illustrations of leaf and flower from *How Plants Grow* by Asa Gray 1858)

anther: pollen-forming portion of a stamen

blade: expanded portion of a leaf

calyx (calyces): collective term for sepals; outermost or lowermost whorl of flower parts, generally green. Sometimes the same as the corolla.

corolla: collective term for petals; whorl of flower parts immediately inside or above calyx, often large and brightly colored. Sometimes the same as the calyx.

filament: anther-stalk.

hypanthium: structure derived from the fused lower portions of sepals, petals and stamens.

midrib: central, thick, laminar structure that runs the length of a leaf.

ovary: ovule-bearing portion of pistil. Normally develops into fruit with ovules becoming seeds. Ovule is a structure containing an egg.

pedicel: stalk of an individual flower or fruit.

petal: individual member of the corolla, whether fused or not. Often brightly colored.

petiole: leaf stalk, connecting leaf blade to stem.

pistil: female reproductive structure of a flower, composed of an ovule-containing ovary at the base, one or more pollen-receiving stigmas at the tip and generally one or more styles between ovary and stigma.

sepal: individual member of the calyx, whether fused or not, generally green.

stamen: male reproductive structure of a flower, usually composed of a stalk-like filament and a terminal, pollen-producing anther.

stigma: the part of the pistil on which pollen is normally deposited.

stipule: appendage at base of petiole.

style: stalk-like structure connecting stigma to ovary.

vein: tissue specialized for transport of substances within a plant.

CALIFORNIA NATIVE PLANT SOCIETY

LEAF & FLOWER WORD SEARCH

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CAN YOU FIND THESE LEAF & FLOWER TERMS?

ANTHER

BLADE

BLOSSOM

CALYX

COROLLA

FILAMENT

FLOWER

HYPANTHIUM

LEAF

MIDRIB

OVARY

OVULE

PEDICEL

PETAL

PETIOLE

PISTIL

PLANT

SEED

SEPAL

STAMEN

STIGMA

STIPULE

STYLE

VEIN

CALIFORNIA NATIVE PLANT SOCIETY

NATIVE GRASSES WORDSEARCH 1

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| A | A | M | K | N | F | S | N | K | S | R | S | R | K | J | K | I |
| T | R | E | Q | S | T | S | A | M | R | G | H | S | S | U | A | G |
| X | G | A | A | S | B | A | V | A | F | T | P | S | P | N | L | G |
| O | D | D | W | A | W | R | I | N | D | N | K | A | R | E | I | A |
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CAN YOU FIND THESE GRASSES?

ALKALI SACATON
 BENT GRASS
 BIG GALLETA
 BLUE GRAMA
 CALIFORNIA BROME
 CORDGRASS
 FLUFF
 GRAY'S FESCUE
 JUNEGRASS
 MEADOW BARLEY
 MOUNTAIN TIMOTHY

NEEDLE GRASS
 NEEDLE-AND-THREAD
 NUTKA REED GRASS
 OATGRASS
 RICE
 SCRIBNER GRASS
 SHORT-AWN FOXTAIL
 SPRANGLETOP
 VANILLA
 WEAK MANNAGRASS

ABOUT GRASSES IN GENERAL

There are 600 to 700 genera and 6000 to 10,000 species in the Gramineae, the grass family, depending on who is counting. This makes grasses the third largest family in term of genera (behind orchids and composites) and the fifth largest in terms of species (behind orchids, composites, legumes and Rubiaceae).

Note: Examples of composites are sunflowers. Examples of legumes are plants producing peas or beans. Examples of Rubiaceae are plants producing coffee beans or medicines like quinine.

Grasses occur on all continents and most islands, from sea shore to mountaintop. About one quarter of the earth's plant cover is composed of grasses.

While "woodland", "chaparral" and "marsh" are words used to describe the environments and the architecture of the plant communities, "grassland" refers simply to an area covered by grasses. So do the terms prairie, meadow, steppe, pampas, savanna, paramos and veldt.

Grasses are with us in the cities, either as ornamentals or as weeds. You are never far from a grass.

Here are names of some California native grasses:

Blue grama
Big galleta
Bent grass
Nutka reed grass
Bearded sprangletop
Rice cutgrass
Short-awn foxtail
Needle-and-thread
Gray's fescue
California cordgrass
Weak mannagrass

California brome
Vanilla grass
Fluff grass
Scribner grass
Meadow barley
Mountain timothy
Junegrass
California oatgrass
Purple needlegrass
Alkali sacaton

CALIFORNIA NATIVE PLANT SOCIETY

NATIVE GRASSES WORDSEARCH 2

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CAN YOU FIND THESE GRASSES?

AMERICAN SLOUGH
 BLUESTEM
 CALIFORNIA FESCUE
 COMMON REED
 DEER
 DESERT NEEDLEGRASS
 DROOPING WOODREED
 FOWL MANNA
 GIANT RYE
 KNOT
 KNOT-ROOT

MELIC
 OLDFIELD THREE-AWN
 ONE-SIDED BLUEGRASS
 SALTGRASS
 SEMAPHORE
 SLIM TRIDENS
 SQUIRRELTAIL
 TALL TRISETUM
 TUFTED HAIRGRASS

WHY GRASSES ARE IMPORTANT

We civilized human beings are the People of the Grasses. Our three major crops (rice, wheat, maize) are all grasses. If any one of the three were wiped out, most humans in the world would starve before we could grow replacements.

Whole groups of animals depend on grasses: cattle, sheep, antelope, bison, etc.

As an experiment, try for a day to eat a diet free of grasses and products derived from grasses: no bread, grains, pasta, cereal, dairy products, red meat, cane sugar or corn syrup.

Fish and potatoes would work. In fact, the only traditional societies that do not depend on grasses (but do practice some form of agriculture) are on some islands in Micronesia. Every continental society and most island societies use some grass, if only sugar cane or bamboo.

In California native Americans have used native grasses for basketry, food, and seasonings, hats, sandals, and in many other ways.

Here are some California native grasses:

American slough grass
Cane bluestem
California fescue
Common reed
Deergrass
Desert needlegrass
Drooping woodreed
Fowl manna
Giant ryegrass
Knot grass
Knot-root bristlegrass

California melic
Oldfield three-awn
One-sided bluegrass
Saltgrass
Semaphore grass
Slim tridens
Squirreltail
Tall trisetum
Tufted hairgrass

CALIFORNIA NATIVE PLANT SOCIETY

RIPARIAN (STREAMSIDE) WORDSEARCH

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CAN YOU FIND THESE WILDFLOWERS?

ALDER
 ARROYO WILLOW
 BIG LEAF MAPLE
 BIRDS FOOT FERN
 BLACKBERRY
 CATTAIL
 COTTONWOOD
 CURRANT
 FERN
 HUMBOLDT LILY
 HUMMINGBIRD SAGE
 LIVE FOREVER
 MEADOW RUE

MUGWORT
 MULEFAT
 RED WILLOW
 REED
 RUSH
 SILKTASSEL
 SWEET PEA
 SYCAMORE
 VIRGINS BOWER
 WILD GRAPE
 WOOD ROSE
 YERBA MANSA

RIPARIAN (STREAMSIDE)

Riparian means streamside. Riparian and pond plant communities are found anywhere there are streams flowing year-round, streams that only flow when the rains are heavy, springs, seeps or ponds.

Trees are tall and often are winter deciduous (shed their leaves in winter) like sycamores and cottonwoods. Coast live oaks will grow in damp shady canyons on slopes above the flowing canyon streams.

Shrubs such as roses, blackberries, currants, mulefat, and the six-foot humboldt lilies enjoy the extra water.

There are native cattails, rushes, reeds and many ferns.

Watch out if you go hiking in these plant communities! Poison oak grows very well here and in the cooler, moister, shaded chaparral environments. Poison oak often climbs into the canopies of neighboring shrubs and trees so be careful when you walk under leafy boughs. Leaves three, let it be!

Here are some native plants found in riparian plant communities:

TREES

Alder
Big leaf maple
Cottonwood
Red willow
Sycamore

SHRUBS

Arroyo willow
Golden currant
Mulefat
Blackberry
Silktassel
Wood rose
Cattail

SUCCULENTS

Chalk live forever
Lance-leaved live forever

PERENNIALS

Hummingbird sage
Meadow rue
Mugwort
Reed
Rush
Yerba mansa

VINES

Virgin's bower
Wild grape
Wild sweet pea

FERNS

Bird's foot fern
Bracken fern
California polypody
Chain fern
Goldback fern