

Plant Identification

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Objectives

- Learn terms to describe plant leaf features (parts, types, venation, surfaces, shapes, margins, arrangement).
- Use a dichotomous key to identify plants.

Instructions (See later materials.)

Biodiversity

Objectives

- Compare biodiversity of animals found on two different parts of campus.

Instructions

1. Make a table to record brief descriptions and the number of all animals you see today. Include a way to track whether you see the animal on the developed part of campus, in the Wildlife Sanctuary, or both. Tally marks may be useful to track numbers.
2. Summarize your data for the number of species you find within these four groups: Invertebrates, Mammals, Birds, and Reptiles/Amphibians/Fish.

Lab 7 Assignment

Regarding Lab 7:

1. What are the names of all the plants you identified in this lab?
2. Draw a graph comparing the species diversity you found in the Sanctuary, versus on the developed part of campus.
3. What are advantages of using scientific names, rather than common names?
4. What are advantages of using common names, rather than scientific names?
5. What types of human activities decrease species diversity?
6. What types of human activities increase species diversity?
7. An acre of clear-cut forest that has been replanted may contain a hundred Ponderosa pines, which are all twenty years old. An acre of old-growth forest may only have sixty trees, but of fifteen different species, and all different ages. Which forest would support a greater diversity of animal species? Why?

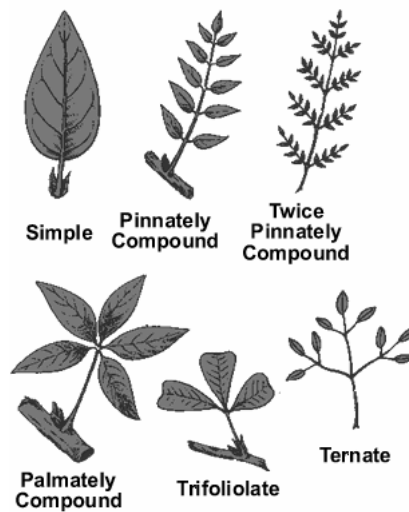
Preparing for Lab 8:

8. Draw your own diagram showing the parts of protein synthesis, including transcription, translation, the nucleus, DNA, mRNA, tRNA, codons, anticodons, ribosomes, amino acids, and the new protein.

Key to Common Trees and Shrubs of the Wildlife Sanctuary

Adapted from Schmidt *et al.* 2007. Life All Around Us. Image from www.studydrive.in.

- 1a. Tree Go to #2
- 1b. Shrub Go to Shrub Key #21
 - 2a. Leaves small, and needle-like or scalelike 3
 - 2b. Leaves broad, more than 2mm wide 4
- 3a. Leaves scalelike or narrowly triangular ***Calocedrus decurrens*** (Incense Cedar)
- 3b. Leaves needle-like or narrow and flattened ***Pinus sp.*** (Pine)
 - 4a. Leaves simple (or at least not obviously compound) 5
 - 4b. Leaves obviously compound 10
- 5a. Leaves palmately veined ***Platanus racemosa*** (Western Sycamore)
- 5b. Leaves pinnately veined 6
 - 6a. Petioles strongly flattened ***Populus fremontii*** (Fremont Cottonwood)
 - 6b. Petioles not flattened 7
- 7a. Leaf margin entire ***Salix sp.*** (Willow)
- 7b. Leaf margin not entire 8
 - 8a. Leaf margin serrate ***Alnus rhombifolia*** (White Alder)
 - 8b. Leaf margin dentate 9
- 9a. Hairs in axils of leaf veins of older leaves ***Quercus agrifolia*** (Coast Live Oak)
- 9b. Lower leaf surface lacks pubescence ***Prunus ilicifolia ssp. lyonii*** (Catalina Cherry)
 - 10a. Leaf margin entire 11
 - 10b. Leaf margin not entire 12
- 11a. Leaflets 5 - 8mm at widest point ***Schinus molle*** (Peruvian Pepper)
- 11b. Leaflets >8mm at widest point ***Eucalyptus sp.*** (Eucalyptus)
 - 12a. Leaves opposite ***Lyonothamnus sp.*** (Catalina Ironwood)
 - 12b. Leaves alternate ***Juglans californica*** (California Black Walnut)



- 21a. Leaves revolute (edges rolled under), and leaves clustered in fascicles (bundles).
..... ***Eriogonum fasciculatum*** (California Buckwheat)
- 21b. Leaves not revolute, and leaves not in fascicles 22
 - 22a. Leaves simple 23
 - 22b. Leaves compound ***Peritoma arborea*** (Bladder Pod)
- 23a. Leaves alternate 24
- 23b. Leaves opposite ***Simmondsia chinensis*** (Jojoba)
 - 24a. Leaf margins entire 25
 - 24b. Leaf margins not entire 28
- 25a. Leaves folded with red margins ***Malosma laurina*** (Laurel Sumac)
- 25b. Leaves flat. Leaf margin not red 26
 - 26a. Leaves longer than 3cm ***Salix sp.*** (Willow)
 - 26b. Leaves shorter than 3cm 27
- 27a. Older portion of stem red ***Arctostaphylos sp.*** (Manzanita)
- 27b. Older portion of stem greenish ***Ceanothus spinosus*** (Green Bark Ceanothus)
 - 28a. Leaf not lobed ***Heteromeles arbutifolia*** (Toyon)
 - 28b. Leaf lobed 29
- 29a. Leaf pubescent below ***Fremontodendron californicum*** (Flannel Bush)
- 29b. Leaf glaucous below ***Romneya coulteri*** (Matilija poppy)

SHAPE & ARRANGEMENT



Acicular
needle shaped



Falcate
hooked or sickle shaped



Orbicular
circular



Rhomboid
diamond-shaped



Acuminate
tapering to a long point



Flabellate
fan shaped



Ovate
egg-shaped, wide at base



Rosette
leaflets in tight circular rings



Alternate
leaflets arranged alternately



Hastate
triangular with basal lobes



Palmate
resembles a hand



Spatulate
spoon-shaped



Aristate
with a spine-like tip



Lanceolate
pointed at both ends



Pedate
palmate, divided lateral lobes



Spear-shaped
pointed, barbed base



Bipinnate
leaflets also pinnate



Linear
parallel margins, elongate



Peltate
stem attached centrally



Subulate
tapering point, awl-shaped



Cordate
heart-shaped, stem in cleft



Lobed
deeply indented margins



Perfoliate
stem seeming to pierce leaf



Trifoliate/Ternate
leaflets in threes



Cuneate
wedge shaped, acute base



Obcordate
heart-shaped, stem at point



Odd Pinnate
leaflets in rows, one at tip



Tripinnate
leaflets also bipinnate



Deltoid
triangular



Obovate
egg-shaped, narrow at base



Even Pinnate
leaflets in rows, two at tip



Truncate
squared-off apex



Digitate
with finger-like lobes



Obtuse
bluntly tipped



Pinnatisect
deep, opposite lobing



Unifoliate
having a single leaf



Elliptic
oval-shaped, small or no point



Opposite
leaflets in adjacent pairs

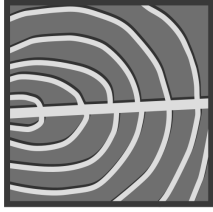


Reniform
kidney-shaped



Whorled
rings of three or more leaflets

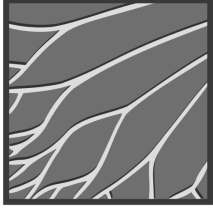
VENATION



Arcuate
secondary veins
bending toward apex



Cross-Venulate
small veins connecting
secondary veins



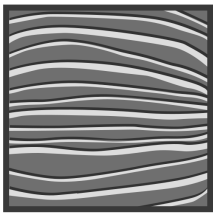
Dichotomous
veins branching
symmetrically in pairs



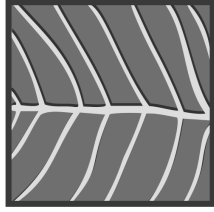
Longitudinal
veins aligned mostly
along long axis of leaf



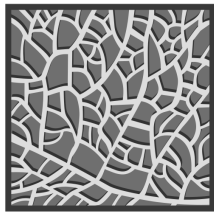
Palmate
several primary veins
diverging from a point



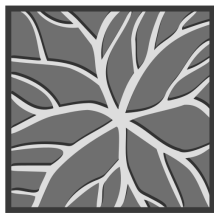
Parallel
veins arranged axially,
not intersecting



Pinnate
secondary veins
paired oppositely

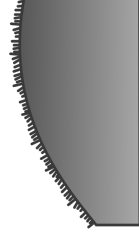


Reticulate
smaller veins
forming a network



Rotate
in peltate leaves,
veins radiating

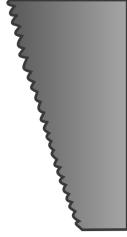
MARGIN



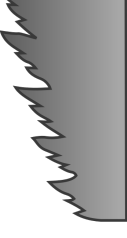
Ciliate
with fine hairs



Crenate
with rounded teeth



Denticulate
with fine dentition



Doubly Serrate
serrate with sub-teeth



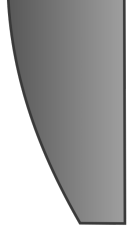
Lobate
indented, but not to midline



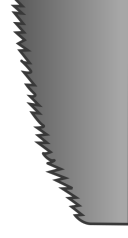
Serrate
teeth forward-pointing



Dentate
with symmetrical teeth



Entire
even, smooth throughout



Serrulate
with fine serration



Undulate
widely wavy



Spiny
with sharp stiff points



Sinuate
with wave-like indentations