Plant Anatomy & Plant Parts

What you need to know to identify plants

http://www.pnwherbaria.org/
Searching for plants.
http://www.pnwherbaria.org/data/search.php
Monocot vs Dicot

Dicot

Monocot

Livingstone © Biodidac

9/8/97
Monocot vs. Dicot Examples

Monocot

Dicot
Grass, Grass-like, Forb or Shrub?

Grass:
- Hollow, jointed stems
- Parallel veination
- Leaves on two sides of the stem
- A grass flower “floret”

Grass-Likes:
- "Looks like a grass, but isn’t"

Forbs:
- "Wildflowers and Weeds"
- Showy flowers

Sedges
- Solid stems
- Leaves on three sides

Rushes
- Leaves on two sides

Shrubs:
- Solid woody stems
- Leaf veins are net-like
- Often producing berries

Created by [Signature]
Root Systems

- Fibrous vs. tap root
  - Lateral roots
  - Root Hairs
Fibrous vs. Taproot

Fibrous Roots
Idaho Fescue
Festuca idahoensis

Taproot
Dandelion
Taraxacum officinale
Root Systems

- Rhizomes & Stolons

**RHIZOMATUS PLANT**

**STOLONIFEROUS PLANT**
Rhizomes and Stolons

Rhizomes
Sideoats Grama
*Bouteloua curtipendula*

Stolons
Curly Mesquite
*Hilaria belangeri*
Root Systems

- Rhizomes & Stolons
Stem Type

caulescent (stem)

acaulescent (without stem)
Stem Types

Caulescent
Prairie Coneflower
*Ratibida columnifera*

Acaulescent
Dandelion
*Taraxacum officinale*
Parts of a Leaf

- Blade
- Margin
- Petiole
- Veins
Parts of a Leaf

- Blade
- Margin
- Petiole
- Veins

- Blade
- Margin
- Petiole
- Veins
Morphology of Forbs and Woody Plants

- Inflorescence (Flower)
- Leaf Blade
- Petiole
- Axillary Bud (or Node)
- Stem (or Internode)
Flowers

- Inflorescence types
  - Spike
  - Raceme
  - Panicle
  - Umbel
  - Head
Spike
*Elymus trachycaulus*

Raceme
*Delphinium bicolor*

Panicle
*Panicum virgatum*

Head
*Grindelia squarrosa*

Umbel
*Conium maculatum*
Types of Inflorescences (Flower Heads)

- Spike
- Panicle
- Raceme
- Umbel
- Corymb
Inflorescence

(Fig 14 in Brown Book)
Composite Seed heads

- Ray & Disk flowers
- Ray flowers only
- Disk flowers only

Tetradymia canescens
Composite Seed head

(Fig 16 in Brown Book)
Flowers

- Composite Heads

Ray Flowers  Disk Flowers  Ray and Disk Flowers
Leaf & Sten Arrangement

- Basal
- Opposite
- Alternate
- Whorled
- Fascicled
Leaf & Stem Arrangement

- Basal
- Opposite
- Alternate
- Whorled
- Fascicled

Basal Arrangement: *Agoseris glauca*

Fascicled: *Pinus edulis*
Leaf Arrangements

Alternate  Opposite  Whorled
Leaf Arrangement

Alternate

Opposite

Whorled
Leaf Attachment

- Sessile
- Petiolate
- Clasping
- Sheathing
Petiolate

Sheathing

Clasping

Sessile
Next Lectures

- Continuation of plants and plant parts.
Leaf Type: Simple or Compound

Simple Leaf:
- Blade
- Petiole
- Axillary bud

Compound Leaf:
- Axillary bud
- Leaflet
Leaf Types

- Simple

- Compound
  - Compound - Palmate
  - Compound - Pinnate
Compound Leaves

Palmate

Pinnate
Simple Leaves
Leaf Shapes

- Linear
- Elliptic
- Lanceolate
- Oblanceolate
- Ovate
- Obovate
- Palmate
- Wedge-shaped
- Arrow-shaped
Leaf Shapes

Linear
Salix exigua

Elliptic
Arctostaphylos pungens

Lanceolate
Senecio serra

Oblanceolate
Hymenoxys hoopesii

Ovate
Populus tremuloides

Obovate
Arctostaphylos Uva-ursi

Palmate
Acer glabrum

Wedge-shaped
Artemisia tridentata

Arrow-shaped
Balsamorhiza sagittata
Leaf Shapes

Fig. 11
Leaf Veinations

Parallel  Pinnate  Palmate  Netted
Leaf Margins

- Lobed-pinnate
- Lobed-palmate
- Entire
- Serrated
- Scalloped
- Toothed
Leaf Margins

Lobed-pinnate
*Quercus gambelii*

Lobed-palmate
*Rubus parviflorus*

Entire
*Symphoricarpos albus*

Serrated
*Prunus virginiana*

Scalloped
*Symphoricarpos occidentalis*

Toothed
*Amelanchier alnifolia*
More Leaf Margins

www.infovisual.info/01/011_en.html

If a leaf margin is very ragged and like it has been cut and sliced… then the margin would be called insized or divided. It could be palmately divided, pinnately diviced or highly divided:
More Leaf Margins

If a leaf margin is very ragged and like it has been cut and sliced… then the margin would be called **incised** or **divided**.

It could be **palmately** divided, **pinnately** divided or simply “highly divided”.
Leaf Margins

Fig. 13

in Brown Book
Plant Anatomy & Plant Parts

What you need to know to identify plants

http://www.pnwherbaria.org/
Searching for plants.
http://www.pnwherbaria.org/data/search.php