How to Identify Plants

Who needs to Identify Plants?

- Students
- Gardeners, landscapers, growers
- Farmers – agricultural weeds, forage
- Herbal Healers, Plants for Medicine
- Park visitors, hikers
- University Researchers
- Resource Managers
- Foresters, Ecologists
- Plant Explorers – describing new species
- Ethnobotanists – medicinal plants
- Medical Doctors – poisonous plants, allergies
- Forensic Scientists – scene of the crime

Vegetation Studies

An Integrated Approach to Plant Identification
Many tools available

- Visual inspection of plant characteristics
- Learn common plant families and use scientific names
- Notebook – write down characteristics
- Photographic references – take pictures
- Field Guides, Lists, Online resources
- Plant classification - dichotomous keys, interactive keys
- Collect specimens – plant press, notes, drier
- Herbarium (museum) collections
- Expert advice

Collecting and Pressing the Plant for Voucher Specimen

Livingstone Nganga, UMSL Undergraduate
2012 REU, now at UC-Davis

Pressing a Plant for a Voucher Specimen in Herbarium Collection

Tighten straps, place on heater

Mounting Plant Specimens at MBG

Chelsea Pretz
Joseph Bradley
REU 2014


ORYZA SATIVA L.
1850 m
cultivated field - solid stand
An interesting crop, and a local cultivar, showing intravarietal diversity. Perhaps a survey over years has produced cultivars brought in train in the past century BC, (from India) growing only on a very small scale - pleasant grain.
DATE
COLLECTOR
NUMBER
SPENCER
copyright reserved


PLANTS OF MISSOURI
no. 79153
Echinacea purpurea f. lignottii
Steyermark
rays white
ravine slopes
copyright reserved

Sorting and Filing at MBG

Herbarium Method

- Plant specimens pressed, dried, and mounted on paper sheets.
- Specimens labeled and identified.
- Specimens sorted, examined by experts, loaned to other herbaria
- Specimens filed in collection by Family and Genus

Collect information about what you see:

Herbaceous, conifer, broadleaved evergreen, deciduous?

Collect information about what you see:

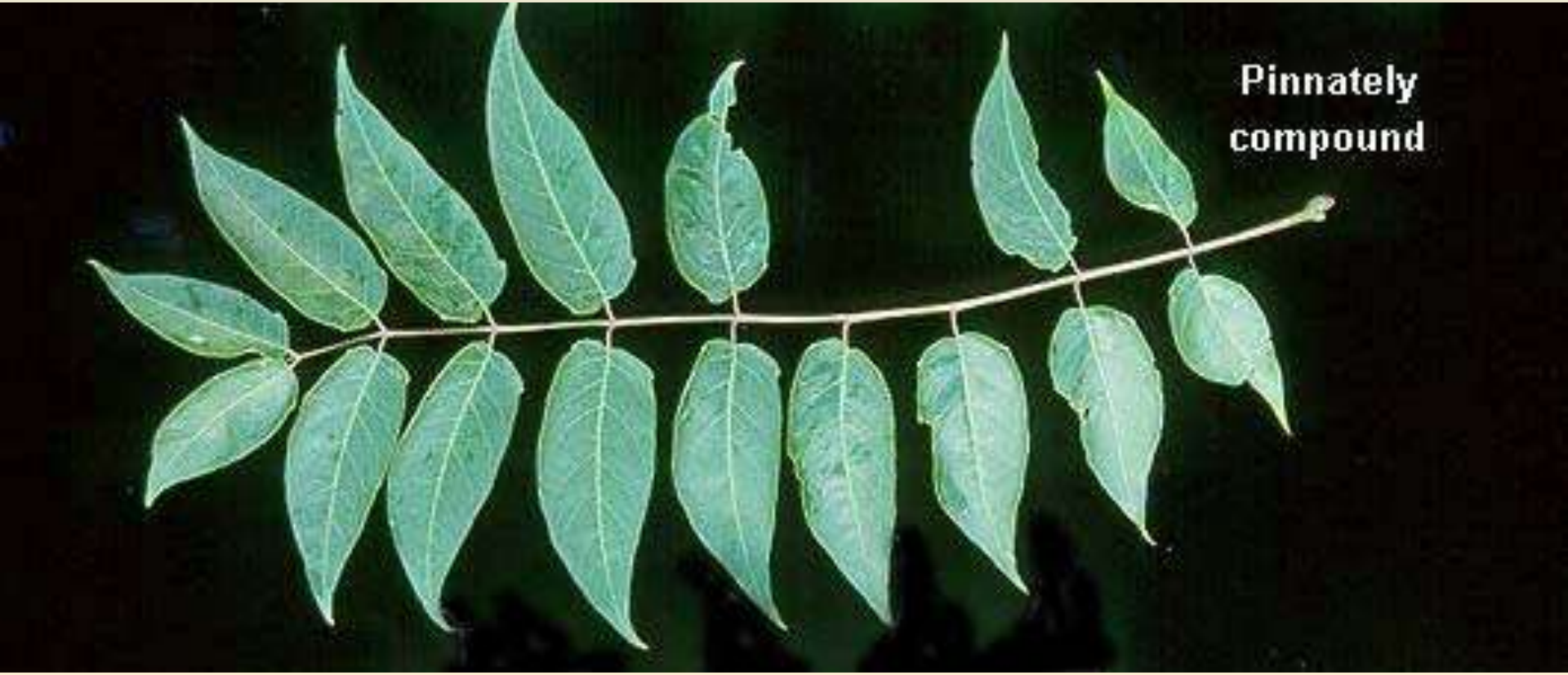
What is the overall form of the plant?

Collect information about what you see:

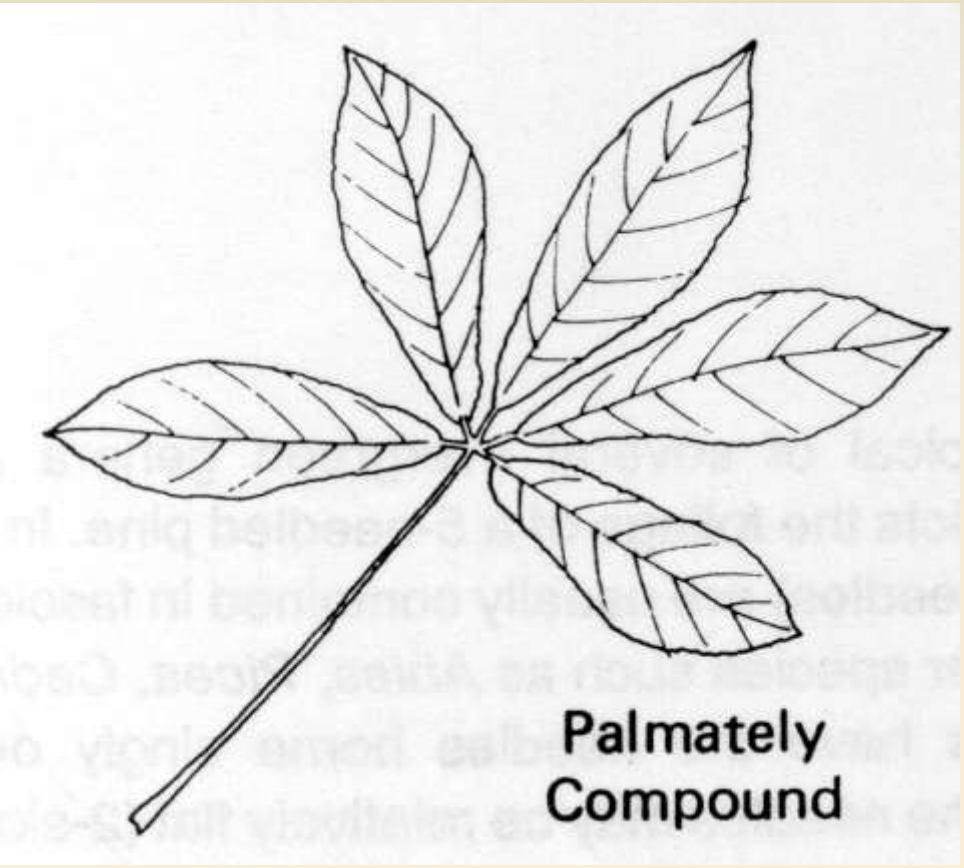
What are the characteristics of individual plant parts?

Leaf type-simple leaf

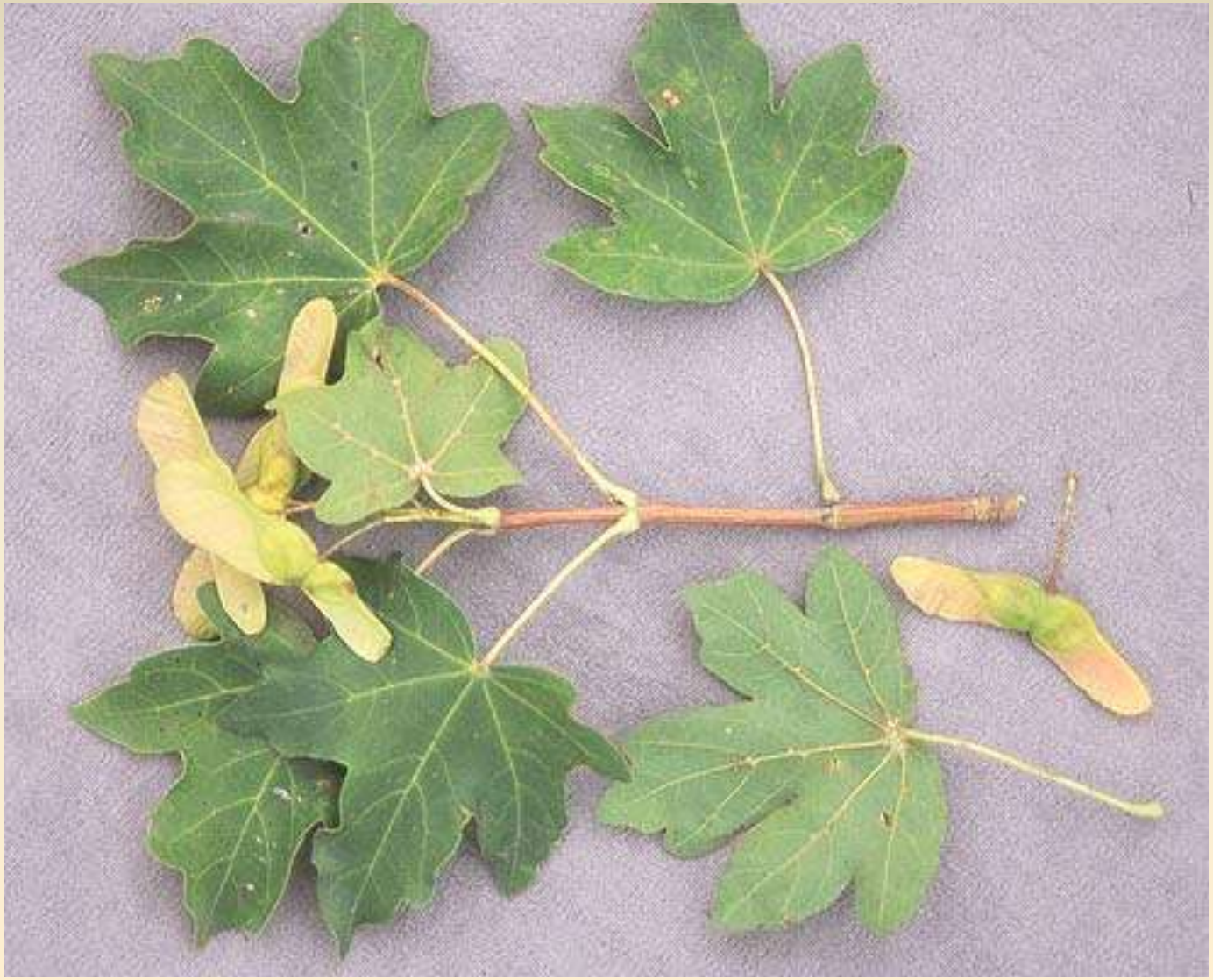
Leaf type-pinnately compound



Leaf type



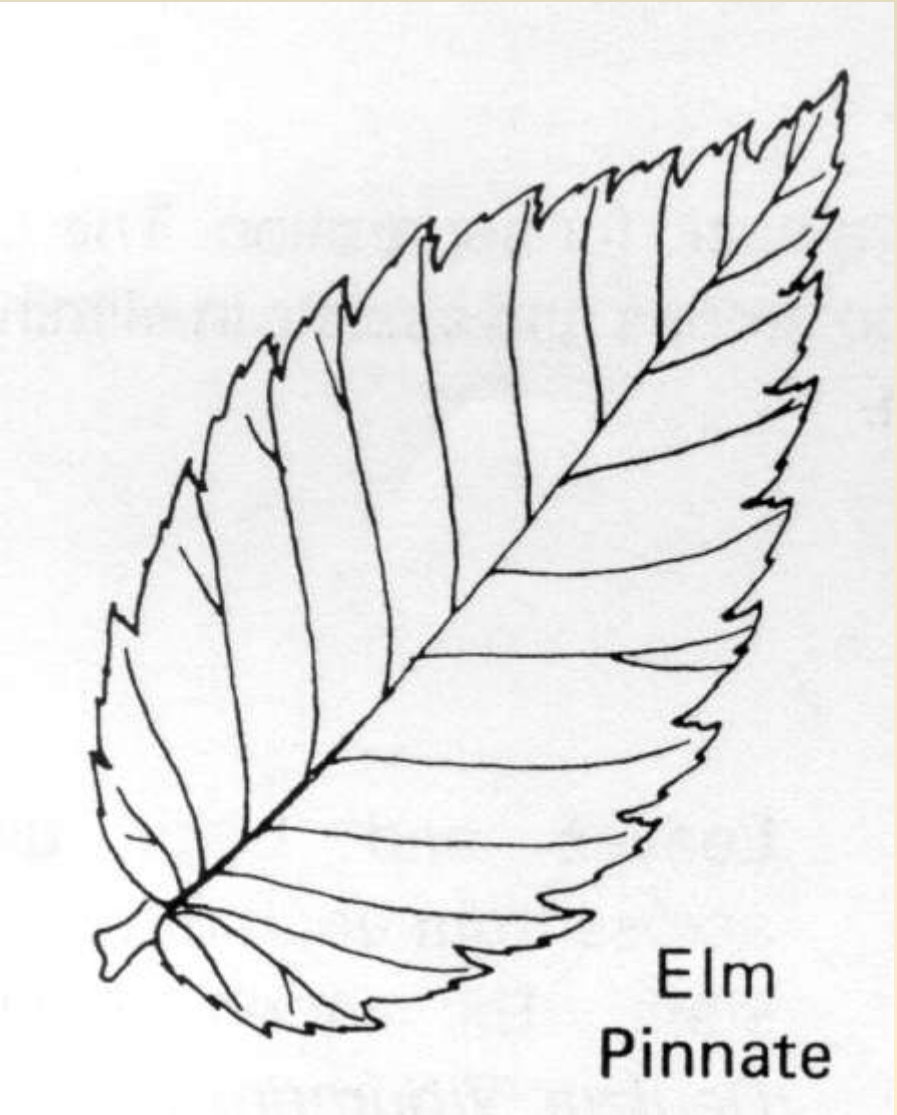
Leaf Arrangement



Leaf Arrangement

Leaf Arrangement

Types of Venation



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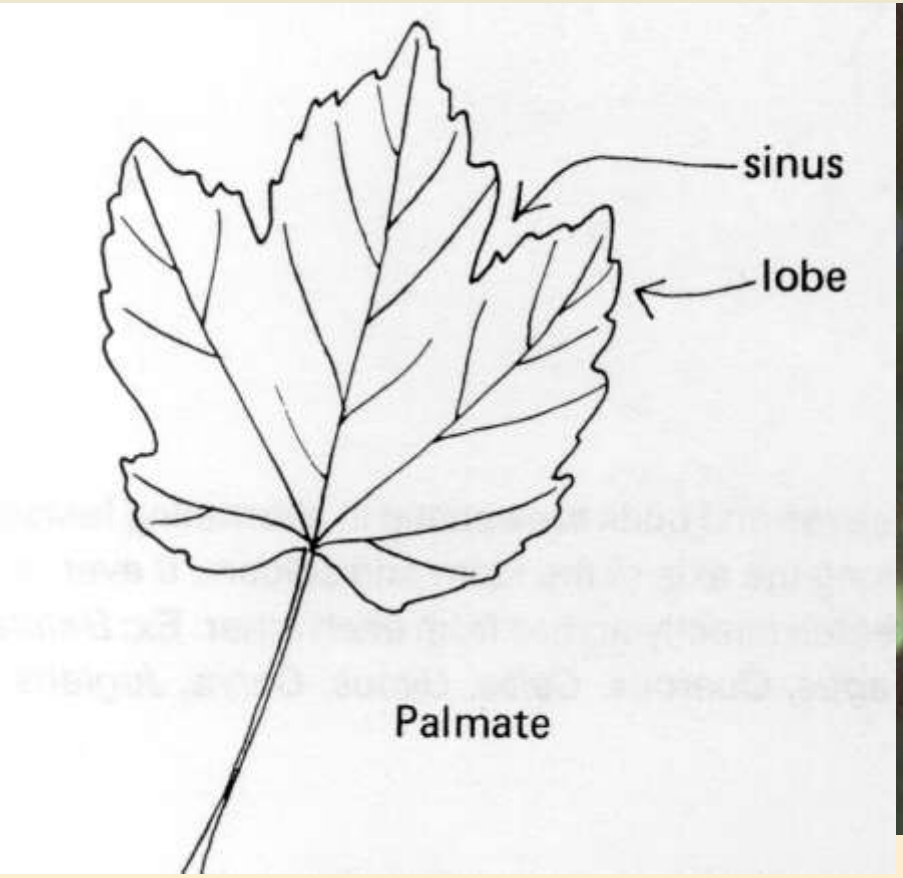

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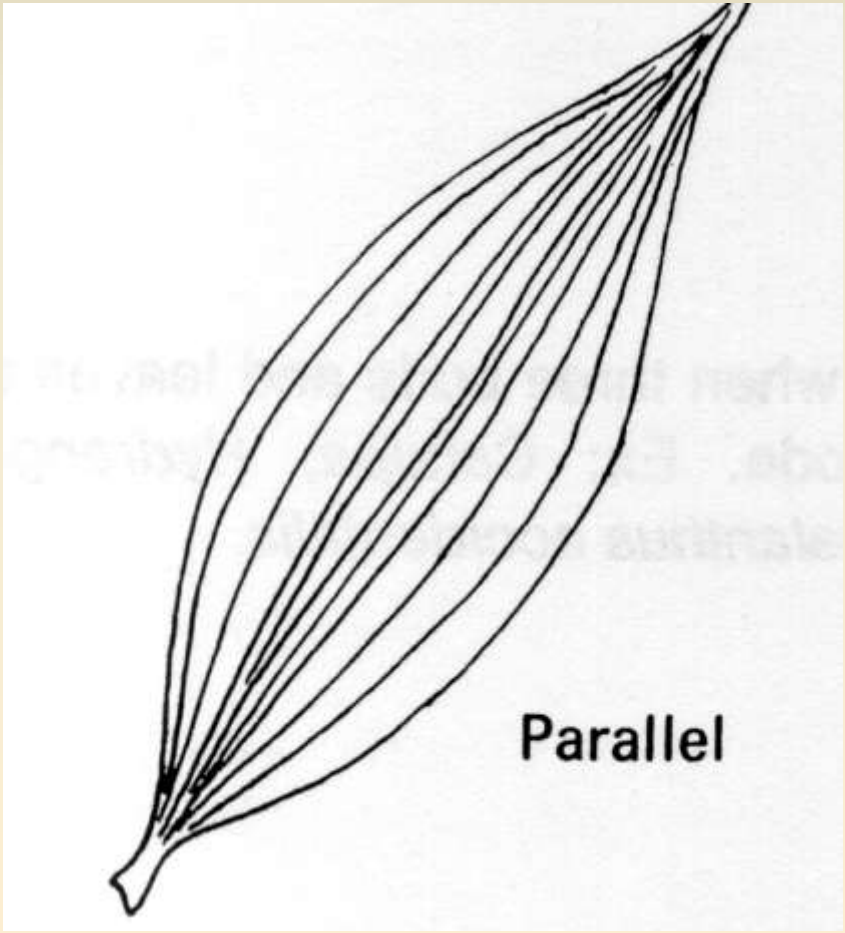
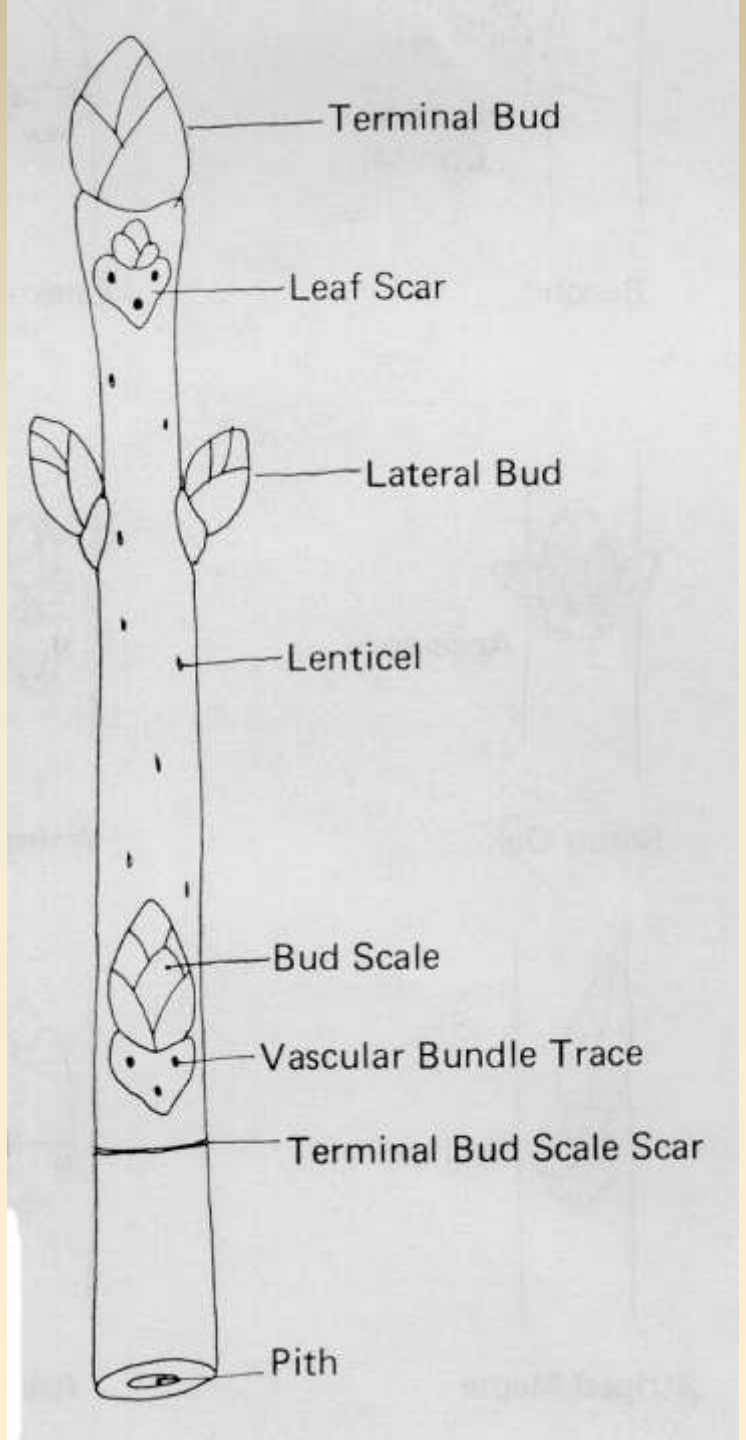


Leaf margins

Other i.d. features - buds

Stem and Bud


Terminal Bud
Leaf Scar
Lateral Bud
Lenticel
Bud Scale
Vascular Bundle Trace
Terminal Bud Scale Scar
Pith

Other i.d. features - bark

Other i.d. features - spines

Other i.d. features -fruit

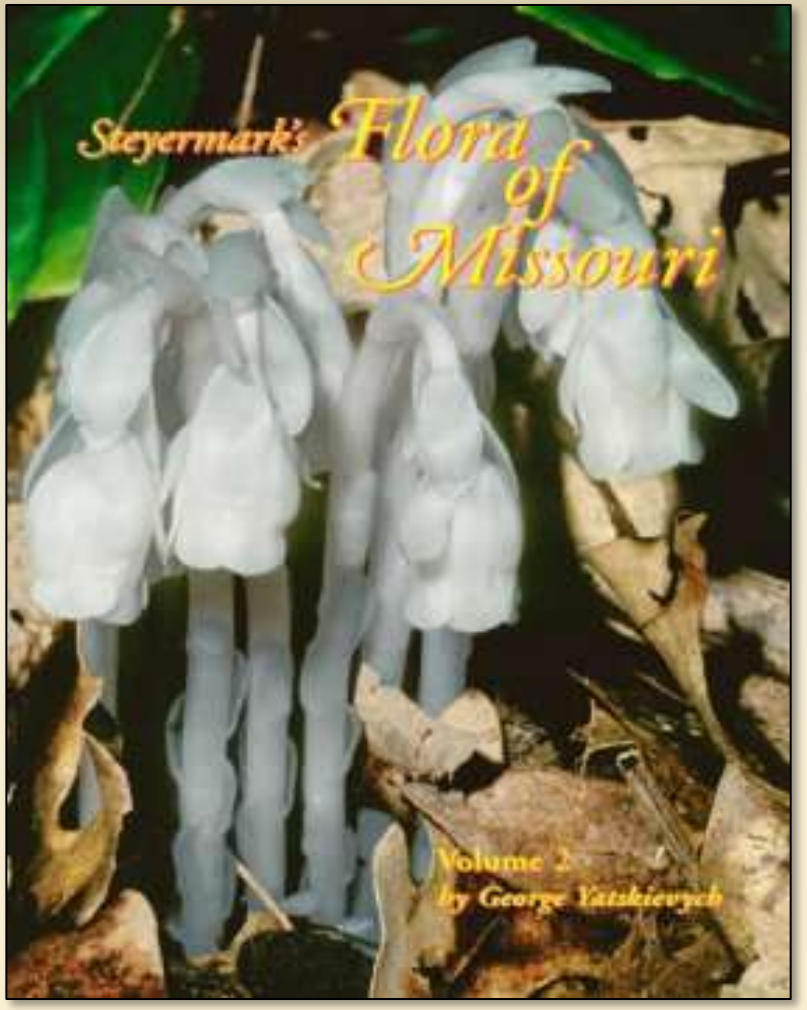
Other i.d. features - fruit

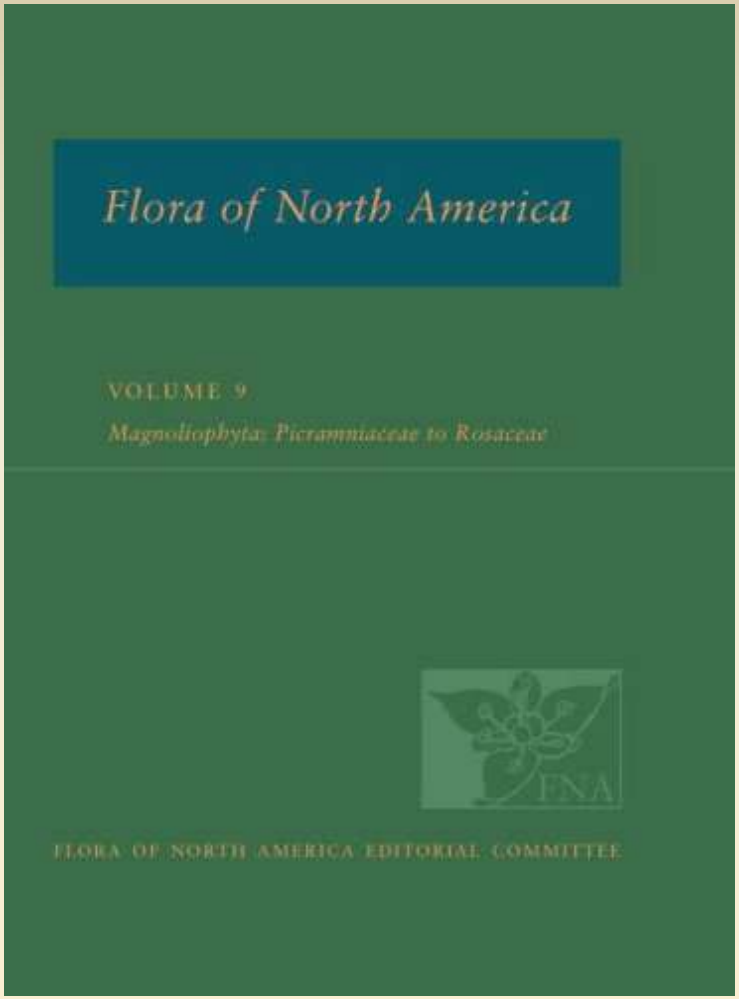
Other i.d. features – flower & fruit

Other i.d. features - flowers

Petals separate or united, actinomorphic or zygomorphic, color

Floras - Books for Plant Identification





A "flora" is a book (or a database, or both) that describes all the plant species that occur in a particular region. It doesn't usually cover only native plants; a flora is meant to be broadly inclusive, describing all the plants that are well-established in the region it covers.

KEY II. PLANTS WITH OPPOSITE OR WHORLED SIMPLE LEAVES

1. Leaves subopposite
   2. Leaves toothed ..... ***Rhamnus***
   2. Leaves entire; southern
      3. Leaves greater than 5 cm long ..... ***Lagerstroemia***
      3. Leaves less than 5 cm long ..... ***Fontanesia***
1. Leaves distinctly opposite or whorled
   4. Leaves lobed
      5. Leaves mostly pinnately lobed
         6. Margin of lobes entire; sap clear; shrubs; fruit a capsule ..... ***Syringa***
         6. Margin of lobes serrate; sap milky or clear; trees or tall shrubs; fruit a capsule or head of achenes
            7. Trees; sap milky; fruit a head of achenes ..... ***Broussonetia***
            7. Shrubs; sap clear or milky; fruit a capsule ..... ***Hydrangea***
      5. Leaves palmately lobed
         8. Leaf blades less than 20 cm long
            9. Petioles with stipules and glands, or if lacking glands, the lower surface of leaf densely pubescent; fruit a drupe ..... ***Viburnum***
            9. Petioles lacking stipules and glands, or if stipules present, the lower surface of leaf glabrous to pubescent, not densely so; fruit a samara ..... ***Acer***
         8. Leaf blades greater than 20 cm long
            10. Leaves with long tapering tip, glabrous or softly pubescent, usually in whorls of 3; pith continuous; fruit a long cylindrical capsule, 20–50 cm long ..... ***Catalpa***

Using dichotomous keys to identify plants

A.

B.

BB.

C.

D.

DD.

CC.

AA.

E.

EE.

F.

FF.

G.

H.

A dichotomous key offers users a choice between two characters.

By making a series of choices between two characters, a correct I.D. is made.

An example for shoes

A. leather

B. velcro closures *EZ*

BB. shoe laces

C. colored leather

D. red *Zippy*

DD. blue *Snazzy*

CC. white leather

AA. canvas

E. velcro closures

EE. shoe laces

F. low top *Keds*

FF. high top *Converse*

Ribes - The Gooseberries of Missouri

1. Twigs unarmed, lacking bristles or spines; inflorescences racemes with 3–15 flowers; flower stalks jointed toward the tip
    2. Leaves dotted with resinous glands on the undersurface; perianth greenish white; hypanthium narrowly bell-shaped, the portion above the ovary as long as or slightly shorter than the sepals . . . . . ……. . 1. R. AMERICANUM
    2. Leaves not gland-dotted; perianth yellow, sometimes reddish-tinged; hypanthium narrowly cylindrical, the portion above the ovary much longer than the sepals . . . . . 4. R. ODORATUM
1. Twigs armed with stiff bristles and large nodal spines; inflorescences clusters of 2–4 flowers (flowers occasionally solitary); flower stalks not jointed
    3. Petioles with many capitate-glandular hairs; hypanthium (above the ovary) as long as or slightly longer than the sepals; stamens not or only slightly exserted at flowering; ovary with gland-tipped hairs that become slender stiff prickles on the mature fruit . . . . . ……. 2. R. CYNOSBATI
    3. Petioles rarely with capitate-glandular hairs; hypanthium (above the ovary) much shorter than the sepals; stamens long exserted at flowering; ovary smooth, the fruit without prickles . . . . . ……. . . . . 3. R. MISSOURIENSE

End