

IDENTIFICATION KEY FOR WOODY PLANTS OF THE PIKES PEAK REGION



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**Colorado
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INTRODUCTION

How to use this publication

This guide is divided into several sections:

- Coniferous Woody Plants
 - I.D. Hints and Anatomy
 - Key and Descriptions
- Broadleaf Woody Plants
 - I.D. Hints and Anatomy
 - Trees - Key and Descriptions
 - Shrubs – Key and Descriptions
- Additional Reading Material, Glossary and Index.

A "key" is basically a process of elimination, guiding you through a series of choices and narrowing down the selections until one selection remains.

Your first choice: Is the plant a conifer (most of the needles or scales stay on all year), or is it a deciduous broadleaf woody plant (all the leaves fall off every autumn)?

After this has been determined, you can work your way through the appropriate key. Once you've narrowed down your selection, the key refers you to a page number. Go to the page, check the description and diagram against the information you have. Does it match? If not, return to an earlier choice and work through the key again.

The identification guidelines in this book are for plants that are in an environment conducive to good plant health. If a plant is not healthy, the size of the leaf or needle may vary. Even the coloration and texture may be abnormal. These are factors that may lead you in the wrong direction when attempting to identify a plant.

Another factor that may lead you in the wrong direction is sucker growth. There are certain types of plants that have more sucker

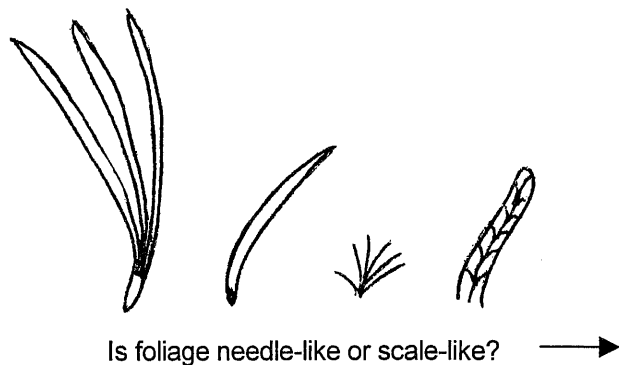
growth (extra stems growing from the base of the plant) than others. The foliage on these stems is not representative of the true foliage size and form. When identifying, disregard sucker growth.

If you are unfamiliar with plant anatomy, please take the time to study the "I.D. Hints and Anatomy" sections of this publication that describe the various shapes, sizes, etc. of needles, leaves, buds and stems.

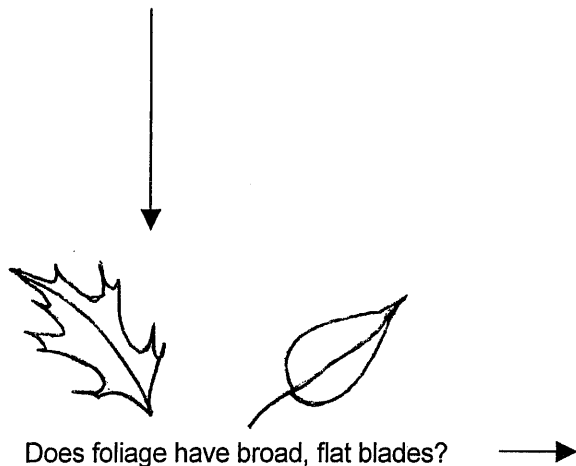
This book can be taken into the field with you. If you do not have the book with you, careful observation and notes can be taken regarding the anatomy of the plant(s) in question, and then refer to this book later. When in the field, you'll need a good hand lens (at least 3x), a small penknife, a notepad and pencil.

We've tried to include within this publication as many plants as possible that grow in Colorado (cultivated, native and naturalized). There will undoubtedly be some that are not included. Please contact your local extension office to ask the Colorado Master Gardeners for assistance with your plant identification, or refer to the many quality publications listed in "Additional Reading Material" at the end of this guide.

CONIFEROUS VS. BROADLEAF WOODY PLANTS?



OR



Needled or scaled foliage remains on the plant all year - **Coniferous Woody Plants**

Go To:

Conifers – ID Hints & Anatomy – page 3
and/or
Key to Coniferous Woody Plants - page 6

Needled foliage falls off every autumn - **European Larch** (a deciduous conifer)
Go to page 17

Tiny (1/4" long), scaled foliage falls off every autumn (Deciduous broadleaf) - **Salt Cedar** - Go to page 124

Foliage falls off every autumn (deciduous) - **Broadleaf Woody Plants**

Go to:

Broadleaf Woody Plants – I.D. Hints & Anatomy – page 20
and/or
Key to Broadleaf Trees (single trunks) - page 36
or
Key to Broadleaf Shrubs (multi-stemmed) - page 93

Foliage remains on branches throughout the winter - **Broadleaf Evergreen Shrubs**

Go to:

Broadleaf Woody Plants – I.D. Hints & Anatomy - page 20
and/or
Key to Broadleaf Shrubs (multi-stemmed) – page 93

CONIFERS

HELPFUL HINTS - WHAT TO LOOK FOR WHEN IDENTIFYING

FOLIAGE:

- Scale-like, overlapping, hugging the branch?
Are the branches rounded or flattened?
- Needle-like, long slender?
Are needles growing singly along the stem, or
Are there two or more needles attached together at the base by a paper sheath?
- Are needles straight, curved, twisted?
- Are they very thin or very thick?
- Sharp or blunt at tips?
- Flexible or stiff? Can you bend them between your fingers when holding them at each tip, or do they break?
- Color (may range from yellowish-green to bluish-green)
- Length (this is where it's handy to have a small ruler with you out in the field) – length is variable, depending on environment
- Shape in cross section (could be flat, round, angled or squared)
- Is there an odor when needle or scale is crushed or broken?
- Are needles grooved along the mid-section, notched at the tip, or tapered at the base or tip?
- Notice how the needles grow along the stem
 - Do they radiate completely around the stem?
 - Do they all grow forward toward the tip of the stem?
 - Do they grow along the upper half of the stem only, or just along the sides?
- Are there any white dots, resin or other gummy substance on the needles or scales?
- Are there white "stripes" on either side of the needle?
- Or a white "bloom" that can be easily rubbed off?

BUD:

- Size – depends on time of year – buds expand into new growth from mid to late spring/early summer. The rest of the year, buds should be visible.
- Shape (long, pointed, round, etc.)
- Color (uniform throughout the bud, or are the scale margins a different color than the rest of the bud scale?)
- Texture (smooth, hairy, rough, gummy)
- Solitary or multiple?
- Scales (do they peel back away from the bud, or do they lay close to the bud?)

STEM:

- When needle is pulled off of the stem, does it leave a leaf scar on the stem?
What shape is the scar? Is it flat, concave, or raised? Is it round or oval?
- When needle is pulled off, does it leave a stalk or projection on the stem?
- Color
- Texture
- Odor when bruised or broken
- Are there any galls or other abnormal growths?

CONE:

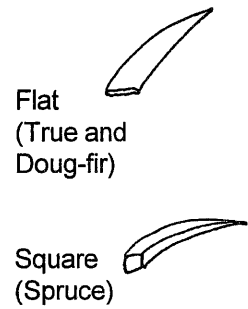
- Texture (woody, papery, thick, thin)
- Color (may be yellow, dark brown, green, reddish or purple)
- Size (length, width)
- Shape (round, long, narrow, oval)
- Are the cones "berry-like", as in the Junipers?
- Cone scales - are they prickly at the tips of each scale, with a short, thin or thick sharp point?
- Are there "appendages" (bracts) hanging over each scale, like a separate piece?
- What is the location of the cone? At end of stem or along the stem? Upright or hanging?
- If no cones are present on the ground, are there upright "stalks" still on the branches? (White fir cones disintegrate while still on the tree, leaving a central upright thin stalk.)

HABIT:

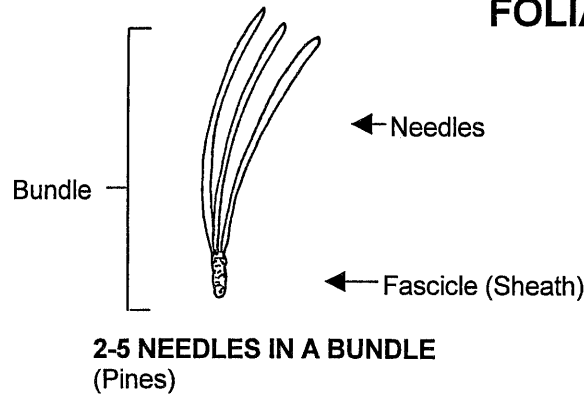
- Notice from a distance the general form of the tree.
- Is it roundish, oval, flat-topped, vase-shaped?
- Is it pyramidal, pointed, spire-like?
- Is it a single trunk, or multi-stemmed, thicket-forming?
- Is the branching very formal and symmetrical, or loose and irregular?
- Is there a definite central leader that continues all the way to the top, or does the plant branch off with several or many main branches?
- Where is the plant located? Was it planted on private property, or is it growing naturally? (cultivated, native or naturalized)

ANATOMY OF CONIFERS

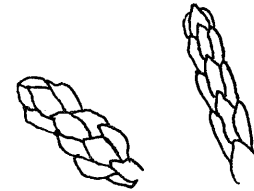
FOLIAGE



SINGLE NEEDLES



2-5 NEEDLES IN A BUNDLE
(Pines)

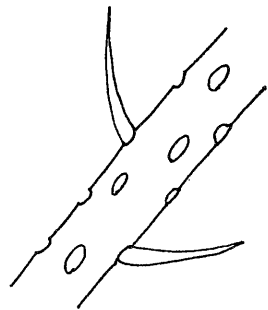


**SHORT
OVERLAPPING FOLIAGE**
Adult Growth -Juniper
or Arborvitae

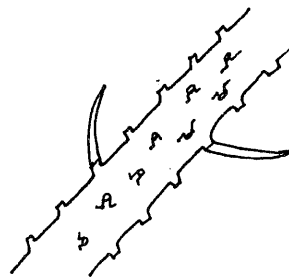


**SHORT
AWL-SHAPED NEEDLES**
Juvenile Growth - Juniper
or Common Juniper

STEMS



LEAF SCARS
(True Fir and Douglas-fir)
Flat, slightly raised or indented



STALKS
(Spruce)
Raised pegs

BUDS



POINTED
(Douglas-fir)

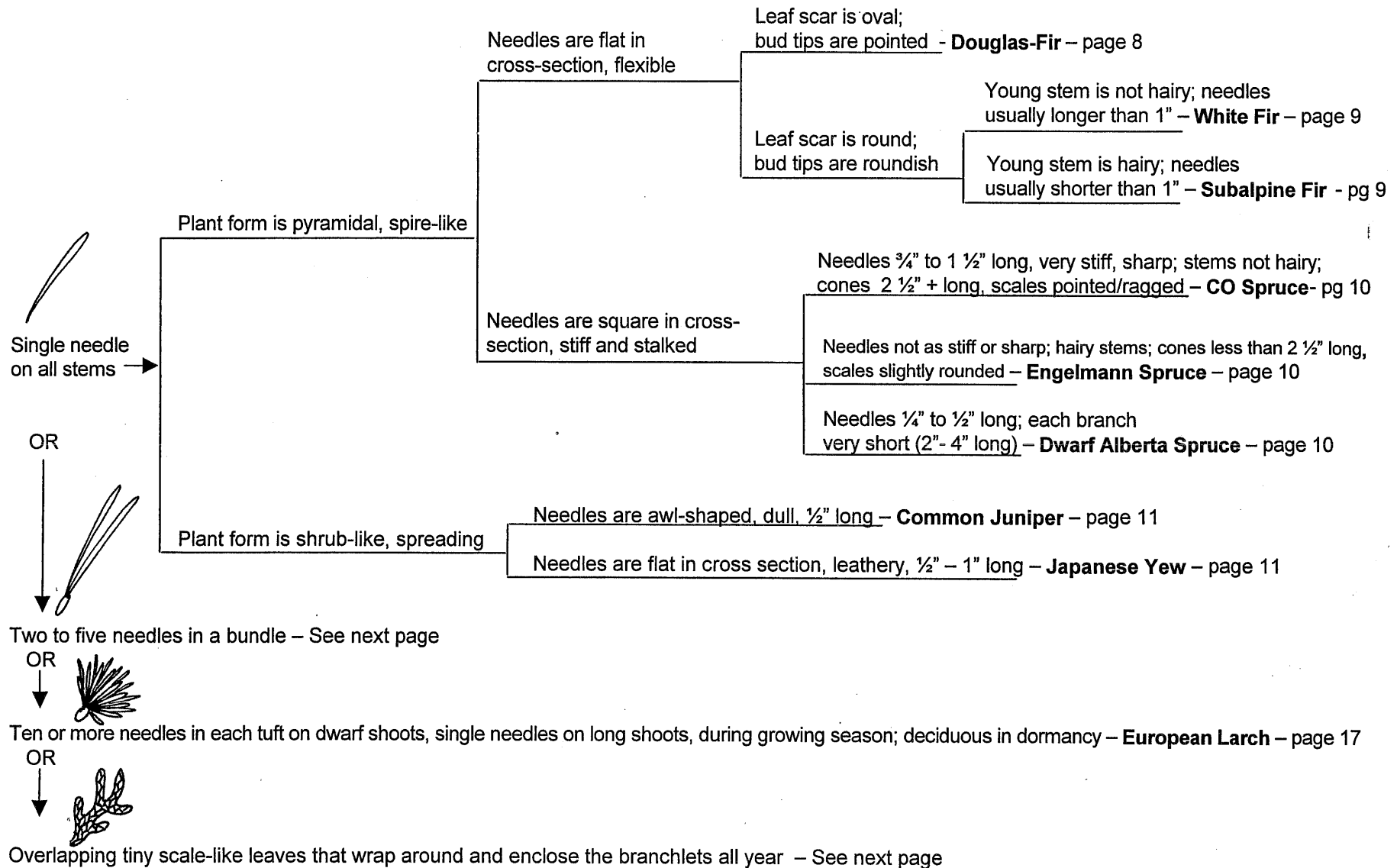


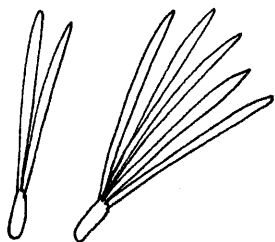
ROUNDED
(True Fir)



ROSETTE
(Spruce)

KEY TO CONIFEROUS WOODY PLANTS





Two to five needles
in a bundle

Two needles

Needles $\frac{1}{2}$ " - 1-3/4" long, curved, medium green with white lines;
no prickles at tip of cone scales - **Pinon Pine** - page 12

Needles 1" - 2" long, finely toothed, slightly twisted, curved, dark green;
branches out abruptly from trunk base, central leader not obvious - **Mugo Pine** - page 12

Needles 1" - 3" long, yellowish-green, slightly twisted; branches slender, slightly flexible; single trunk;
cones small (less than 2" long), asymmetrical; cone scales prickly-tipped- **Lodgepole Pine** - page 13

Needles $1\frac{1}{2}$ " - 3" long, twisted, no prickles on cone scale; old bark orange - **Scotch Pine** - pg 13

Needles 3" - 6" long, thick, stiff, dark green; cone scales have small prickles;
old bark dark; buds whitish - **Austrian Pine** - page 13

Two/three needles, medium green, 4" - 10" long - **Ponderosa Pine** - page 14

Five needles

White resin dots scattered on dark green needles - **Bristlecone Pine** - page 15

Needles 1" - 3" long, dark green, stiff, margins smooth; branches very flexible;
no prickles on thick cone scales, 4" - 8" cone has a short stalk - **Limber Pine** - page 16

No resin dots
on needles

Needles 2" - 5" long, blue-green, very soft, thin; margins toothed; branchlets green-brown;
cones 3"-8" long with 1" long stalk, thin scales don't bend back - **E. White Pine** - pg 16

Branchlets yellow-brown or red-brown; needles not as soft as E. white pine;
cone scales bend back, cones are short-stalked - **Southwestern White Pine** - page 16



Overlapping, scale-like
foliage that wraps around
the branchlets

Branches are flat,
compressed

Vertical foliage sprays - **Oriental Arborvitae** - page 19

Horizontal foliage sprays - **American (Eastern) Arborvitae** - page 19

CONIFEROUS WOODY PLANTS

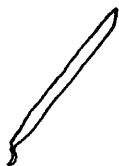
SINGLE NEEDLE ON ALL STEMS

PLANT FORM IS PYRAMIDAL, SPIRE-LIKE

NEEDLES ARE FLAT IN CROSS-SECTION AND FLEXIBLE

(Hint - Fir = Flat, Friendly and Flexible)

LEAF SCAR IS OVAL, BUD TIPS ARE POINTED



DOUGLAS-FIR - *Pseudotsuga menziesii* (soo-doe-soo'-ga men-zee'-zee-eye)

Family: Pine (*Pinaceae*)

- Needle - Single on the stem, spiraling all around the stem. Green above, may be noticeably grooved along the center on one side, 3/4" - 1-1/2" long. Needles are flat in cross section and not sharp. Retained for 5-8 years. Needle is pinched close to the stem. Blunt tip.
- Bud - Chestnut brown, 1/4" long, pointed and shiny.
- Stem - Leaf scar is small, oval; may be slightly raised. On mature trees, stems have a tendency to droop from each side of branch. Greenish-brown. Slightly hairy.
- Bark - Young bark is gray-brown, smooth with resin blisters. Older bark is dark red-brown with deep furrows.
- Cone - Scales have a 3-pronged, lobed "bract" that extends out beyond almost every cone scale. The bracts look like mice hiding under a pile of shingles. Cinammon-brown, papery cone is 2" - 4" long, hangs down. Scales are thin, stiff and rounded at tips.
- Habit - Pyramidal. 60' tall. Main branches are ascending. Colorado native, foothills and montane.
- Culture - Fast growing, needs lots of room, sun, and well-drained conditions. Does not do well under dry conditions. More wind tolerant and soil adaptable than true firs.

Note: Illustrations of conifer needles are actual size

SINGLE NEEDLE ON ALL STEMS
PLANT FORM IS PYRAMIDAL, SPIRE-LIKE
NEEDLE IS FLAT IN CROSS-SECTION AND FLEXIBLE
(Hint - Fir = Flat, Friendly and Flexible)
LEAF SCAR IS ROUND; BUD TIPS ARE ROUNDISH

Young stem is not hairy; needles usually longer than 1"

WHITE FIR - *Abies concolor* (ay'-beez kon'-kul-er)

Family: Pine (*Pinaceae*)

- Needle - Single on the stem. Needles are flat, flexible and "friendly" (not sharp!). Greenish-blue, 1" - 3" long, curving upward; tips rounded or blunt. Needles persist usually 7-10 years or longer.
- Bud - Golden-tan, slightly rounded, not at all pointed. Resinous.
- Stem - Circular leaf scar is flat (or even slightly recessed) along the stem - no pegs or stalks so stem is smooth to the touch. Hairless. Olive-green to gray.
- Bark - Young - smooth, gray-brown. Older - rough, light gray.
- Cone - Female cone grows upright on the branches, usually disintegrating before falling to the ground, leaving a central, thin "stalk" upright on the branch. 2" - 4" long.
- Habit - Pyramidal, spire-like. 60' tall, slow growing. Colorado native, foothills and montane region; cool, north slopes.
- Culture - Cool temperatures, moist, well-drained soils. Protect from wind.

Young stem is hairy; needles usually 1" or shorter

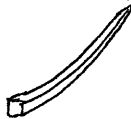
SUBALPINE FIR - *Abies lasiocarpa* (ay'-beez lass-ee-oh-kar'-pah)

Family: Pine (*Pinaceae*)

- Needle - Tips are blunt or notched at tip; curve up. Dull blue-green. $\frac{3}{4}$ " to 1-1/2" long.
- Bud - Rounded, light brown, resinous.
- Stem - Hairy, pale orange-brown; round leaf scar.
- Bark - Young - smooth, ash gray, raised resin blisters; Older bark - irregular gray-brown scales.
- Cone - 2" - 4" long; female cone grows upright on the branches, usually disintegrating before falling to the ground, leaving a central stalk pointing up on the branch. Very broad, purple cone scales.
- Habit - Pyramidal, tall and thin at top, spire-like. Colorado native, montane and sub-alpine region.
- Culture - Cool temperatures, moist, well-drained soils.

SINGLE NEEDLE ON ALL STEMS
PLANT FORM IS PYRAMIDAL, SPIRE-LIKE
NEEDLES ARE SQUARE IN CROSS-SECTION, STIFF AND STALKED
(Hint - Spruce = Single, Square, Sharp, Stiff, Spiral, Stalked)

Needles $\frac{3}{4}$ " - $1\frac{1}{2}$ " long, very stiff, sharp; stems not hairy; cones $2\frac{1}{2}$ " long, scales pointed, ragged



COLORADO SPRUCE - *Picea pungens* (pie'-see-a pun'-jenz)

Family: Pine (*Pinaceae*)

- Needle - Single on the stem, $\frac{3}{4}$ " to $1\frac{1}{4}$ " long, square in cross section (can be rolled between your fingers). Green, or greenish-blue with a white bloom that can be rubbed off. Needles are quite sharp and stiff (may snap in two when bent). Usual habit is to grow at right angles to the stem, spiraling all the way around the stem. Needles persist for 7-10 years.
- Bud - Rounded tip; bud scales peel back like a rosette toward winter; golden tan color; $\frac{1}{4}$ " - $\frac{1}{2}$ " long.
- Stem - Hairless, yellow-brown. When needles fall off, a raised "peg" or stalk remains on the stem.
- Bark - Flaky scales when young; thick, furrowed, purplish gray-brown when older.
- Cone - 2" - 4" long, scales are papery. Edges of cone scales are irregular, slightly notched; no prickles. Cones can usually be seen on the ground or at the top of the tree. Golden-brown.
- Habit - Pyramidal, spire-like. 60' tall. Shallow root system. Colorado native - foothills and montane.
- Culture - Prefers moist, cool environment. Needs lots of room.

Needles not as stiff or sharp; hairy stems; cones less than $2\frac{1}{2}$ " long, scales slightly rounded

ENGELMANN SPRUCE - *Picea engelmannii* (pie-see'ah en'-gull-man'-ee-i)

Family: Pine (*Pinaceae*)

- Needle - Single, square in cross section, but more flexible and softer than Colorado spruce.
- Bud - $\frac{1}{8}$ " - $\frac{1}{4}$ " long; scales are tight (not peeling back like the spruce bud scales).
- Stem - Slightly hairy (need a hand lens to see); Stalks remain on stem after needles fall.
- Bark - Thin and scaley, reddish, not as dark as Colorado spruce
- Cone - 1" - $2\frac{1}{2}$ " long - scales slightly notched at tip, not as ragged as Colorado spruce.
- Habit - Pyramidal, spire-like; shallow root system. Colorado native - montane and sub-alpine.

Needles $\frac{1}{4}$ " to $\frac{1}{2}$ " long; each branch very short (2" - 4" long)

DWARF ALBERTA SPRUCE - *Picea glauca* 'Conica'

Similar attributes to Colorado spruce, except growth is quite slow, 2" - 4" per year, which gives the short, conical-shaped tree a very dense form. Needs a protected location. To 10' tall.

**SINGLE NEEDLE ON ALL STEMS
PLANT FORM IS SHRUB-LIKE, SPREADING**

Needles are awl-shaped, dull, 1/2" long

COMMON JUNIPER – *Juniperus communis* (june-ipp'-er-us com-mune'-us)

Family: Cypress (*Cupressaceae*)

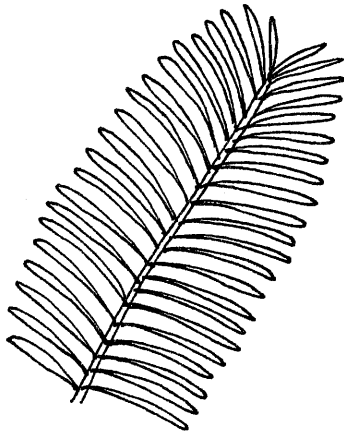


- Needle - Awl-shaped (broader at base and tapering to a sharp point), no overlapping scales like most other junipers. Usually in whorls of 3 needles.
- Bark - Reddish brown, peeling off on older branches.
- Cone - Berry-like; round, bluish-black with a powdery "bloom" that rubs off. Three seeds. Plants are usually dioecious (plants have either male flowers or female flowers, not both).
- Habit - The form of our CO native is spreading. In Eastern U.S., and under cultivation, some varieties can grow as an upright tree.
- Culture - Tolerant of a wide variety of soil types and climatic conditions.

Needles are flat in cross section, leathery, 1/2" – 1" long

JAPANESE YEW – *Taxus cuspidata* 'Nana' (tax'-us kus-pi-dae'-ta)

Family: Yew (*Taxaceae*)



- Needle - Dark green, leathery, 1/2" - 1" long, 1/8" wide. Needles are flat and long, coming to an abrupt point at the tip. Needles do NOT spiral around the stem – they are more or less opposite each other on the stem, forming a broad "V" shape along the branch. Persist for 8 years or more.
- Bud - Chestnut brown scales are concave and keeled. Scale tips are sharp pointed.
- Cone - Hard, red, berry-like.
- Habit - Spreading shrubs, wider than high. Branches are stiff. Cultivated.
- Culture - Does best in a protected location and part shade.

TWO TO FIVE NEEDLES PER BUNDLE TWO NEEDLES

(Hint - Pines = Plural)

Needles 1/2" to 1-3/4" long, curved, medium green with white lines; no prickle at tip of cone scales

PINON PINE - *Pinus edulis* (pie'-nus ed-u'-lis)

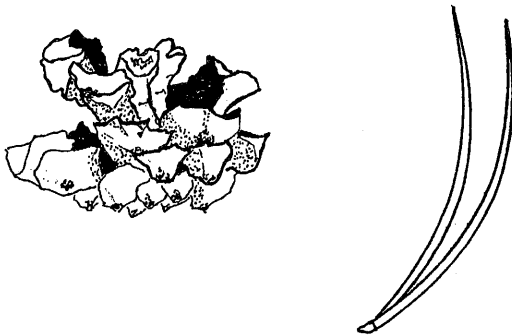
Family: Pine (*Pinaceae*)

Note - Not all pinons have two needles:

Single-leaf Pinon - *Pinus monophylla* - one needle - Nevada/California.

Mexican Pinon - *Pinus cembroides* - 2 or 3 needles, slender - Arizona/Mexico

Parry Pinon - *Pinus quadrifolia* - 4 needles - California



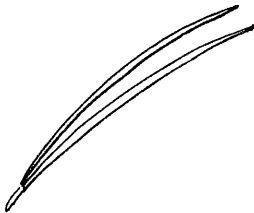
- Needle - In bundles of two, rarely 1 or 3, 1/2" - 1-3/4" long, thick, medium green with white stripes along needle, curved, distinctive odor when crushed. Needle margins are smooth. Persist 3-9 years.
- Bud - Short pointed. Resinous. Scales are small.
- Cone - Small (to 2"), very round, not many cone scales, no prickle. Seeds are large, wingless, dark brown and edible.
- Habit - Short to medium height (15'-20' high, 10'-15' wide), compact, dense, round shape. Native to CO juniper/pinon Belt. Very slow growing (up to 6" per year)
- Culture - Prefers dry, sandy, well-drained environment.

Needles 1" to 2" long, finely toothed, slightly twisted, curved, dark green; branches out abruptly from trunk base, central leader not obvious

MUGO PINE - *Pinus mugo* (pie'-nus mu'-go)

Family: Pine (*Pinaceae*)

- Needle - In bundles of two, 1" - 3" long, dark green, slightly twisted and curved. Needle margins very finely toothed. Bundle sheath persistent.
- Bud - Cylindrical, reddish-brown, resinous; scale tips pressed against bud.
- Cone - Small, round, 1" - 1-1/4" long, short stalk, or no stalk. Attached at right angles to the branch. Dark brown ring surrounds the prickle at the tip of the cone scales.
- Bark - Dark gray.
- Habit - Multiple branches from trunk base - branches grow upright forming a round, dense head. Can be dwarf or very large. Cultivated. Native to Europe.
- Culture - Prefers a good loamy soil but will adapt to lesser conditions. Candles can be pinched in spring to keep this pine small.



TWO TO FIVE NEEDLES PER BUNDLE
TWO NEEDLES
(Hint - Pines = Plural)

Needles 1" to 3" long, slightly twisted, yellowish-green; branches slender, slightly flexible; single trunk; cones small (less than 2" long), asymmetrical; cone scales prickle-tipped

LOGGEPOLE PINE - *Pinus contorta* spp. *latifolia* (pie'-nus con-tort'-uh)

Family: Pine (*Pinaceae*)

- Needle - Tiny teeth, in bundles of two, 1" – 3" long, yellowish-green, slightly twisted. Sharp and stiff. 1/8" papery sheath. Needle margins finely toothed. Needles persist 4-6 years.
- Bud - 1/4" long, round, resinous, dark chestnut-brown.
- Stem - Slender, flexible, light orange-brown, becoming black with age.
- Bark - Orange-brown to gray. Thin, loose scales like corn flakes.
- Cone - 2" long, tightly closed, persists on the tree for a long time. No stalk. Scales thick at tips with long slender prickles. Cones curve toward center of tree, lopsided looking, round to oval.
- Habit - Tall, slender, straight, pyramidal, 50' tall. CO native, montane, subalpine.

Needles 1 1/2" to 3" long, twisted, medium green; no prickles on cone scale; old bark orange

SCOTS/SCOTCH PINE - *Pinus sylvestris* (pie'-nus sil-ves'-tris)

Family: Pine (*Pinaceae*)

- Needle - In bundles of 2, rarely 3. 1 1/2" to 3" long, medium green, twisted. Margins very finely toothed.
- Cone - Stalked, 2 or 3 cones together. Scales are swollen at base. Yellow-brown, 1" – 2-1/2" long
- Bark - Orange colored older bark on upper main trunk and branches.
- Habit - Tall, open. 40' tall. Naturalized in NE U.S. Not native to CO.

Needles 3" - 6" long, thick, stiff, dk green; cone scales have small prickles; old bark dark; buds whitish

AUSTRIAN PINE - *Pinus nigra* (pie'-nus ni'-gra)

Family: Pine (*Pinaceae*)

- Needle - In bundles of two, 3" - 6" long, dark green, thick, straight, very sharp at ends, very finely toothed margin. Bundle sheath persistent.
- Bud - Usually pointed. Scales wide with white fringe. Lower scales are reflexed.
- Stem - Older bark light gray to dark grayish-brown. Thick, hairless.
- Cone - Very short prickles at the end of each cone scale, may not be obvious. Cones are not stalked. 2" – 3" long.
- Habit - Tall, oval, very dense, very dark green. 50'-60' tall, 20'-30' wide. Cultivated.

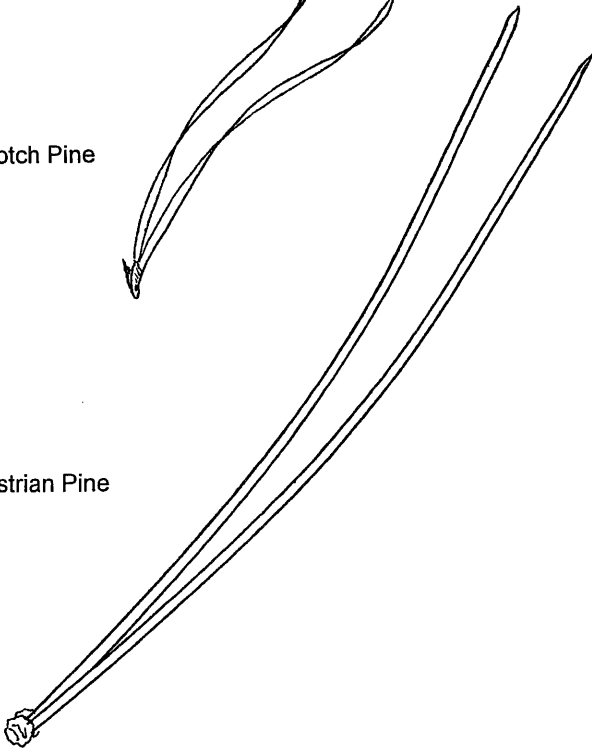
Lodgepole Pine



Scotch Pine



Austrian Pine



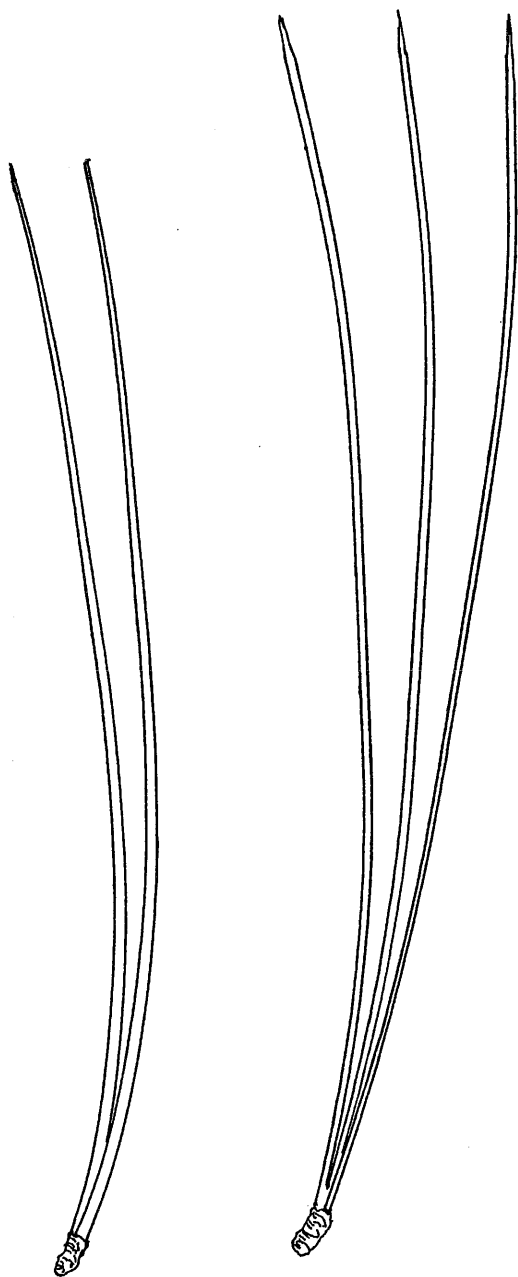
**TWO TO FIVE NEEDLES PER BUNDLE
TWO/THREE NEEDLES**

Needles are medium green, 4" to 10" long

PONDEROSA PINE - *Pinus ponderosa* (pie'-nus pon-der-o'-sa)

Family: Pine (*Pinaceae*)

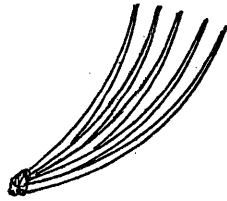
- Needle - In bundles of three, sometimes two - both types on same tree. Needles are 4" - 7", sometimes 10" long. Medium green. Not twisted. Persist on the tree usually for two years, but sometimes up to 7 years. Papery bundle sheath $\frac{1}{2}$ " - 1" long, persistent.
- Bud - Clustered and brownish. Scales narrow, hugging the bud. Oblong to round. Resinous.
- Stem - Brownish-black, thick, hairless.
- Bark - Older bark stout, orange and black. Flakes off in jig-saw, puzzle-like pieces. Smells like vanilla.
- Cone - 3" - 5" long, large, round to oval. Sharp, thick prickles that curve out at the end of each scale. Cone is attached directly to the branch (no cone stalk). Scales at base of cone remain on the stem after the cone falls off the tree.
- Habit - Tall, oval, more open than Austrian pine. To 50' - 70' tall. Colorado native (foothills to montane) and cultivated.
- Culture - Prefers well-drained soils. Sun. Drought resistant.



TWO TO FIVE NEEDLES PER BUNDLE

FIVE NEEDLES

WHITE RESIN DOTS SCATTERED ON DARK GREEN NEEDLES



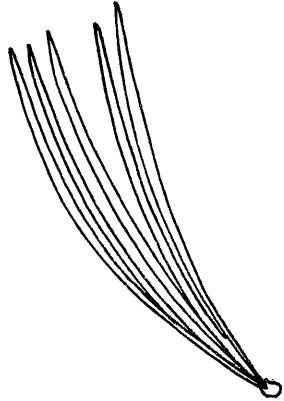
BRISTLECONE PINE - *Pinus aristata* (pie'-nus a-ris-ta'-ta)

Family: Pine (*Pinaceae*)

- Needle - In bundles of five, 1" - 1-1/2" long, dark green, margins smooth. White resin drops scattered all along the needles. Needles persist for 17-20 years.
- Bud - Resinous. Small scales. 1/3" long, brown.
- Stem - Thick, orange to black, tufts of needles toward the end of branch.
- Bark - Young bark thin, smooth, gray-white. Older bark is red-brown and furrowed.
- Cone - 2" - 4" long, with a sharp, slender "bristle" at the end of each scale. Young cones are purple.
- Habit - Very dense, bushy (bottlebrush appearance). Small to medium height. Irregular branching. 10' to 30' tall, depending on environment.. Colorado native, montane, sub-alpine. Slow growing.
- Culture - Prefers well-drained soils, low to moderate moisture. Intolerant of shade.

Foxtail Pine (*Pinus balfouriana*), native to California and Utah, does not have the white resin dots.

**TWO TO FIVE NEEDLES PER BUNDLE
FIVE NEEDLES
NO RESIN DOTS ON NEEDLES**



Needles 1" to 3" long, dark green, stiff, margins smooth; branches very flexible;
no prickles on thick cone scales; 4"- 8" long cone has a short stalk

LIMBER PINE - *Pinus flexilis* (pie'-nus flek'-sil-is)

Family: Pine (*Pinaceae*)

- Needle - In bundles of five, or 4; 1 ½" - 3" long, dark green, firm. Margins are smooth. Persist for 5+ yrs.
- Bud - Red-brown, fat and pointed.
- Stem - Very flexible, smooth, covered with white hairs when young. Gray when older.
- Bark - Young bark is thin, smooth white-gray. Older bark is dark brown and furrowed.
- Cone - 3" - 10" long, light tan, no stalk, no prickles. Very thick, round-tipped cone scales may be bent back at the tip. Very resinous.
- Habit - 25' - 50' at maturity. Broad, open crown. Colorado native, montane to timberline.
- Culture - Low to moderate moisture requirements.

Needles 2" - 5" long, blue-green, very soft, thin; margins toothed; branchlets green-brown;
cones 3" - 8" long with 1" long stalk; thin scales don't bend back

EASTERN WHITE PINE - *Pinus strobus* (pie'-nus stro'-bus)

Family: Pine (*Pinaceae*)

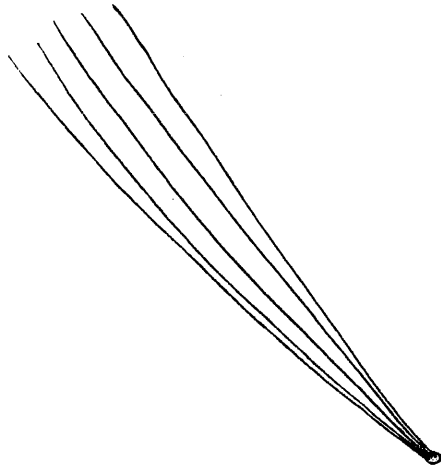
- Needle - In bundles of five, 3" long, very soft, thin. Blue-green. Margins are very finely toothed.
- Bud - Reddish-brown with narrow white margin on bud scales.
- Cone - 4" - 8" long, narrow, golden-brown. Cone scales are relatively thin.
- Habit - Tall (50'+), wide, soft and layered looking. Native to Eastern U.S., cultivated in CO.
- Culture - Prefers moist, well-drained soils. Best in protected locations.

Branchlets yellow-brown or red-brown; needles not as soft as eastern white pine;
cone scales bend back, cones are short-stalked

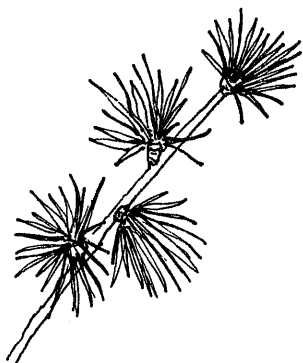
SOUTHWESTERN WHITE PINE - *Pinus strobiformis* (pie'-nus stro-bu-form'-us)

Family: Pine (*Pinaceae*)

- A little more open than eastern white pine. Native to SW U.S. and Mexico. Foothills to montane. 40' tall. Drought resistant.



**TEN OR MORE NEEDLES IN EACH TUFT ON DWARF SHOOTS
SINGLE NEEDLES ON LONG SHOOTS
DECIDUOUS IN DORMANCY**



EUROPEAN (COMMON) LARCH – *Larix deciduas* (lar'-riks dee-sid'-you-ah)

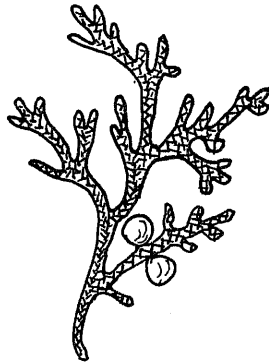
Family: Pine (*Pinaceae*)

- Needle - Single needles on new growth, ten or more needles in tufts on older growth, 1" long, light green, flat above, keeled below.
- Bud - Round, brown, slightly resinous.
- Stem - Straw-colored, hairless. Spur shoots on older growth.
- Bark - Scaly and gray on young trees; furrowed with reddish-brown inner bark on older trees.
- Cone - 1 to 1 ½" long, oval-shaped, grows upright on the stem. Tiny bracts under broad cone scales.
- Habit - Straight trunk, pyramidal crown and drooping lateral branches.
- Culture - Prefers moist, well-drained and sunny conditions.

Note: *The European larch is one of the few coniferous (cone-bearing) trees whose needles are deciduous*

**OVERLAPPING, SCALE-LIKE FOLIAGE THAT WRAPS AROUND THE
BRANCHLETS ALL YEAR**

**BRANCHES ARE 4-ANGLED OR ROUND, SPREADING HAPHAZARDLY;
MAY HAVE NEEDLE-LIKE FOLIAGE (JUVENILE) IN LOWER BRANCHES**



JUNIPER - *Juniperus* spp. (june-ipp'-er-us)

Family: Cypress (*Cupressaceae*)

- Needle - Very small and scale-like, hugging the stem, and/or needle-like and prickly. Foliage sprays are not flattened, and are both horizontally and vertically arranged on the branches. Some species may have both scale-like (adult) foliage, and needle-like (juvenile) foliage on the same plant.
- Cone - Berry-like, 3 to 6 closed scales are hardly visible, fused together. Junipers usually have separate male and female plants.
- Habit - Upright, tree-like, formal and dense or informal with irregular branching or low, spreading shrubs.
- Culture - Does well in a variety of situations and will tolerate dry locations well.

Chinese Juniper - *Juniperus chinensis*

Either shrubs or upright trees. Two to five seeds.

One-Seed Juniper - *Juniperus monosperma*

Shrub or small tree; Scales gray-green, long and pointed. Faintly toothed leaf margins; short, stout branchlets, usually one seed. CO native, foothills, pinon/juniper belt.

Savin Juniper - *Juniperus Sabina*

Spreading shrubs. Lacy foliage. One to three seeds.

Rocky Mountain Juniper - *Juniperus scopulorum*

Usually upright small trees but some small shrubs. Green to silver-blue leaves, smooth margins; gray to black cones, 2 seeds. CO native, foothills, montane, dry slopes.

Eastern Red Cedar - *Juniperus virginiana*

Upright tree form. Scales gray-green, smooth margins; long, slender branches; usually 2-3 seeds

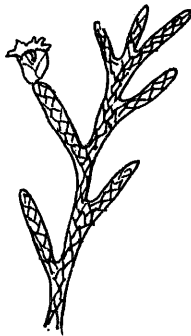
**OVERLAPPING SCALE-LIKE FOLIAGE THAT WRAPS AROUND THE
BRANCHLETS ALL YEAR
BRANCHES ARE FLAT, COMPRESSED**

Vertical foliage sprays

**ORIENTAL ARBORVITAE - *Thuja orientalis* (*Platycladus orientalis*)
(thew'-ya ok-si-den-tae'-lis)**

Family: Cypress (*Cupressaceae*)

- Needle - Very small, scale-like, hugging the stem. Foliage sprays are vertical and flattened, as if they had been pressed. Medium green to bright yellow-green.
- Cone - Berry-like; thick scales are more pronounced than on juniper, tending to peel away a little into pointed tips.
- Habit - Tear-drop-shaped, upright, very dense, formal. Can grow to 15' or 20' tall. Usually has multiple trunks.
- Culture - Place in protected location. Very prone to winterkill. Does not tolerate dry, windy conditions.



Horizontal foliage sprays

AMERICAN (EASTERN) ARBORVITAE – *Thuja occidentalis* (thew'-ya or-ee-en-tae'-lis)

Family: Cypress (*Cupressaceae*)

- Needle - Same as above, only the foliage sprays are horizontal. Medium green.
- Cone - 5 or 6 pairs of leathery scales, usually rounded or slightly pointed at tips.
- Habit - Loosely pyramidal. Usually has one trunk. Not as dense as oriental arborvitae.
- Culture - Place in protected location. Very prone to winterkill. Does not tolerate dry, windy conditions.

BROADLEAF WOODY PLANTS

HELPFUL HINTS - WHAT TO LOOK FOR WHEN IDENTIFYING

LEAF FEATURES:

LEAF ARRANGEMENT:

- Are there two leaves that are directly opposite each other on the stem? (opposite)
- Are the leaves arranged on the stem one at a time, alternating sides? (alternate)
- Are the leaves almost opposite each other? (sub-opposite)
- Are there three or more leaves attached to the stem at exactly the same point? (whorled)

LEAF TYPE:

- Is there just one leaf blade (and leafstalk) for each bud? (simple leaf)
- Or is there more than one leaf blade (and leafstalk) for each bud? (compound)
 - Palmately compound (leaflets arranged so the leaflets radiate from one central point).
 - Pinnately compound (three or more leaflets arranged along a central stalk - one set of leaflets per bud).
 - Evenly pinnate (an even number of leaflets on the stalk - 6, 10, 12, etc.).
 - Oddly pinnate (an odd number of leaflets - 7, 15, 21, etc.).
 - Bipinnately compound (more than one set of leaflets per bud - all leaflets arranged up and down a central stalk).

LEAF MARGIN (EDGE OF LEAF):

- Are margin edges smooth or toothed (serrated)? If toothed, to what degree? (very fine and tiny to very large and coarse)
- Are teeth pointed or rounded? Do they point toward the tip of the leaf or straight out?
- Are there teeth within teeth (doubly serrated)?
- Are margin edges wavy or lobed (indented)? Are tips of lobes pointed or rounded? If pointed, are there thin 'bristles' or hairs at the tip of each lobe? How many lobes?

OVERALL LEAF SHAPE:

- Egg-shaped (ovate), oval, heart, round, diamond, triangular, narrow, oblong, lance-like?

SHAPE OF LEAF TIP (APEX):

- A long, pointed tip, or a blunt, short tip? Rounded, straight across, heart shaped?

SHAPE OF LEAF BASE:

- Rounded, heart-shaped, wedge-shaped, straight across? Or are the two sides of the base uneven, unequal, lopsided?

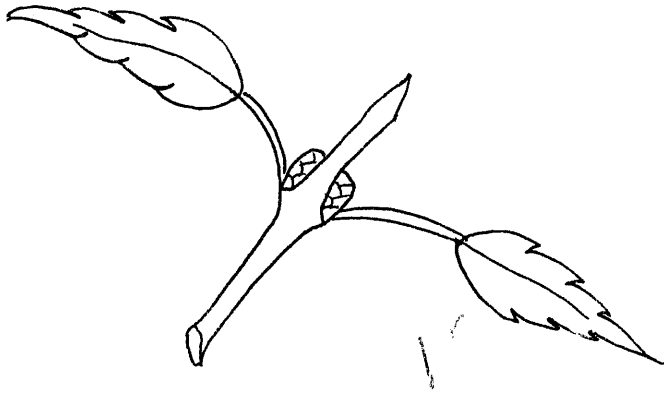
VENATION:

- Which way do the veins run?
- Are there several main veins originating from the same point at the base of the leaf? (palmate venation)
- Or is there one central vein, with the side veins parallel to each other and straight, or irregular and curved? (pinnate venation)
- Is there a very fine network of veins? (reticulate)
- Do the secondary veins curve and run parallel to the margin and the main central vein, starting at the base and ending near the tip? (arcuate venation, sometimes called "parallel")

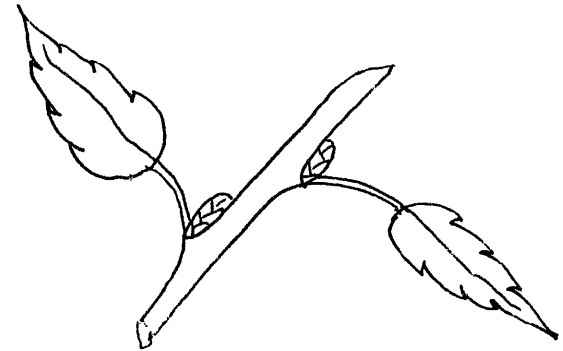
MISCELLANEOUS LEAF FEATURES:

- Stipules: Tiny leaf-like appendages at the base of the petiole.
- Glands: Very tiny bumps on top of the petiole, at the base of the leaf or on the leaf veins. May be the same color as the leaf or a different color.
- Petiole: (Leafstalk) - Is the stalk smooth or hairy? Notice the length. What is its general shape? Flat? Roundish? Is there milky sap that exudes from the stalk when pulled from the stem?
- Leaf Color: Could range from yellow/green to red/purple to blue/gray. Is the leaf the same color beneath as above?
- Leaf Texture: Is the leaf glossy, shiny or dull? Is it thin or thick? Is it rough, sandpapery or smooth? Is it wrinkled looking? Is the texture the same beneath as above? Are there tiny hairs anywhere? Over entire surface, only at veins, or beneath?
- Odor: When the leaf is crushed or torn, is there a distinctive odor?

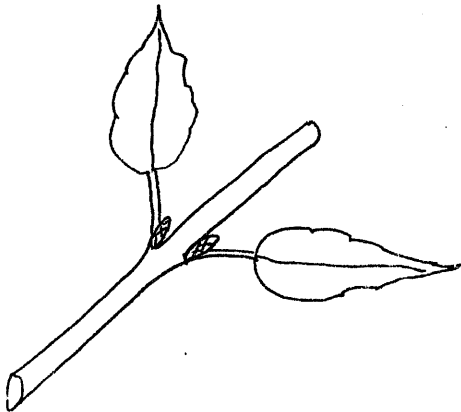
LEAF ARRANGEMENT



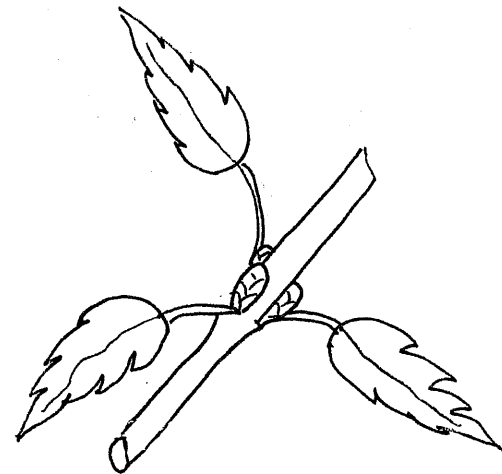
OPPOSITE



ALTERNATE

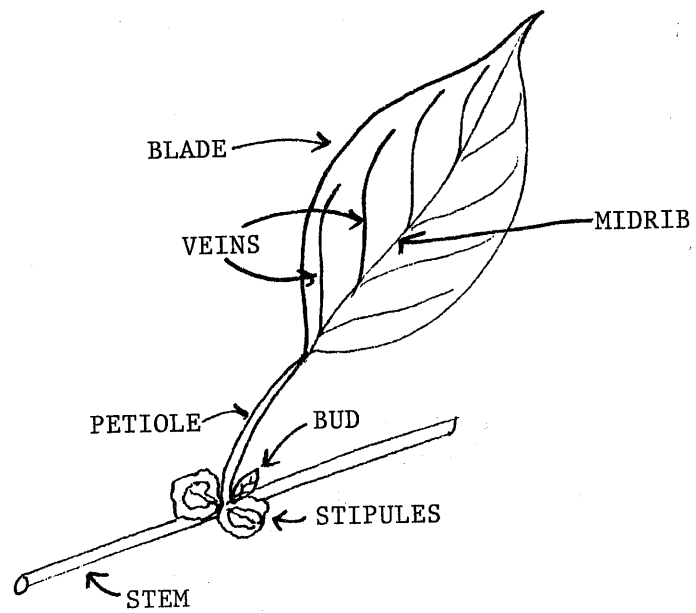


SUB-OPPOSITE

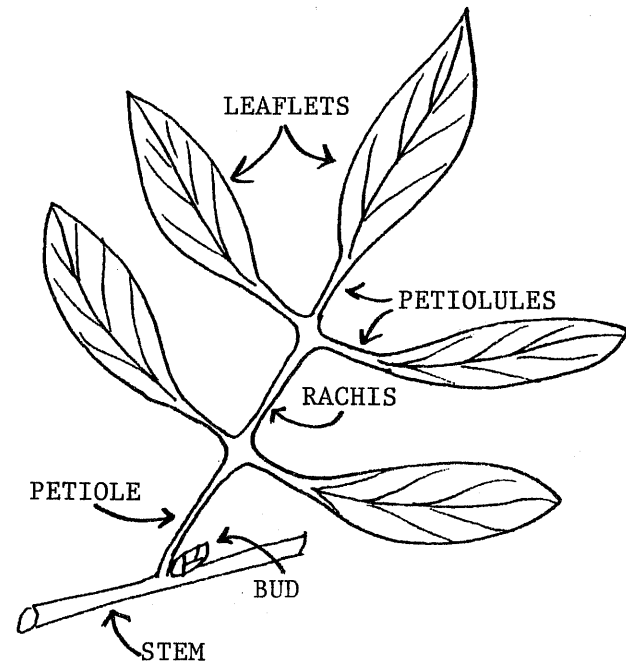


WHORLED

LEAF TYPE

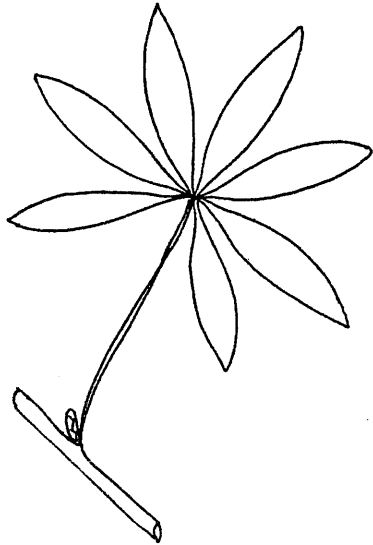


SIMPLE LEAF

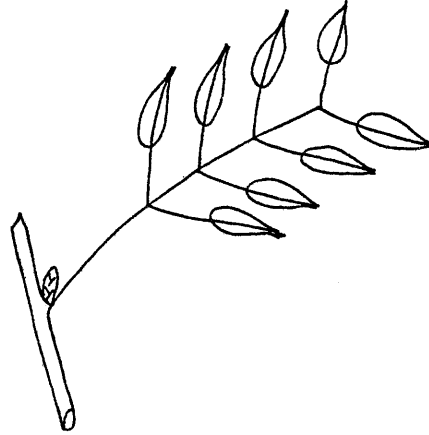


COMPOUND LEAF

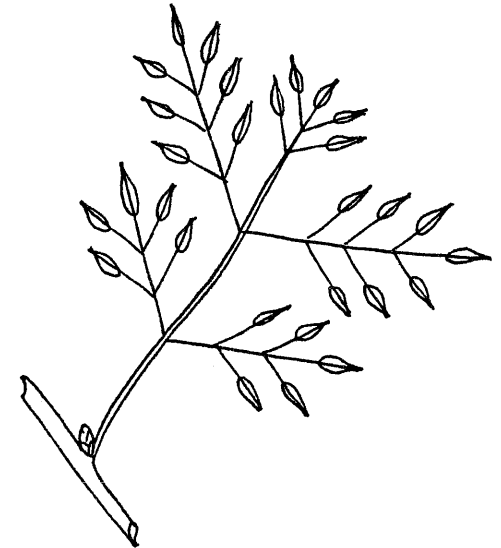
TYPES OF COMPOUND LEAVES



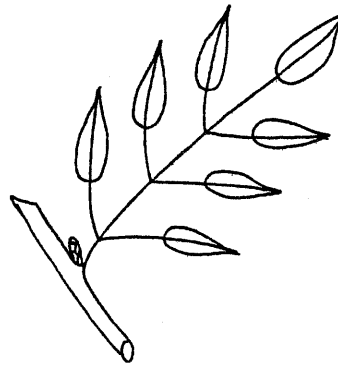
PALMATELY COMPOUND



EVENLY PINNATE



BIPINNATELY COMPOUND



ODDLY PINNATE

LEAF MARGINS



ENTIRE

Smooth edges,
no teeth.



SERRATE

Saw-toothed. Teeth
directed toward
the tip.



SERRULATE

Very small teeth
directed toward
the tip.



DOUBLY SERRATE

Saw-toothed within
teeth (smaller teeth
within larger teeth)



DENTATE

Teeth directed
outward, not
toward the tip.



DENTICULATE

Very small teeth
directed outward,
not toward the tip.



CRENATE

Rounded teeth.



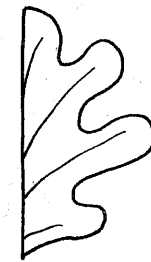
CRENULATE

Very small
rounded teeth.



SINUATE

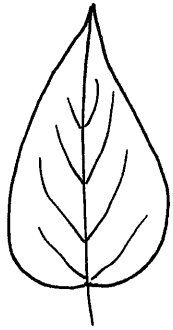
Wavy



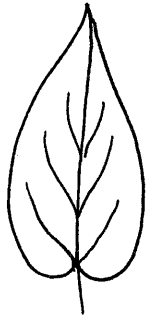
LOBED WITH SINUSES

Deep or shallow
indentations toward
the central vein (midrib)

LEAF SHAPES



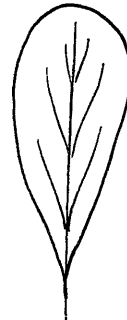
OVATE
Egg-shaped,
broadest part is
closest to stem



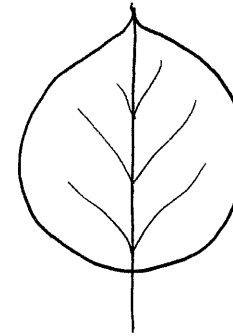
CORDATE
Heart-shaped
(ovate with
heart-shaped
base).



ELLIPTIC
Oval, broadest
through the
middle. Ends
equal. Length is
twice the width.



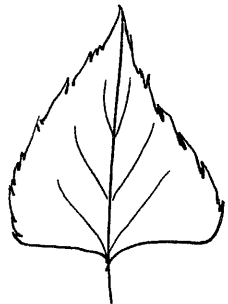
OBOVATE
Inverted egg-
shaped, broadest
part is at the tip
(apex)



ORBICULAR
Round



RHOMBIC
Diamond-shaped,
wedge-shaped



DELTOID
Triangular



LINEAR
Length is over
4 times the width.
Parallel sides.



OBLONG
Longer than broad
and almost uniform
width.



LANCEOLATE
Narrow, broadest
below the middle.



OBLANCEOLATE
Narrow, broadest
above the middle.

LEAF TIPS



ACUMINATE

Pointed margins are pinched



ACUTE

Pointed margins are straight until they meet



TRUNCATE

Straight across



OBTUSE

Rounded at the very end.
Semi-circular



MUCRONATE

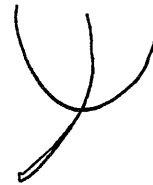
A short, sharp tip



CORDATE

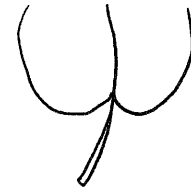
Heart-shaped, notched

LEAF BASES



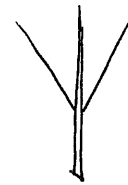
ROUNDED

Sides rounded into the petiole



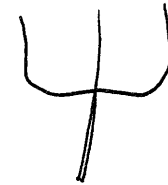
CORDATE

Heart-shaped



ACUTE

Straight edges tapering down to a point,
wedge-shaped



TRUNCATE

Straight across



OBLIQUE

Lopsided, asymmetrical,
uneven



ATTENUATE

A long, gradual,
slender taper

LEAF VENATION

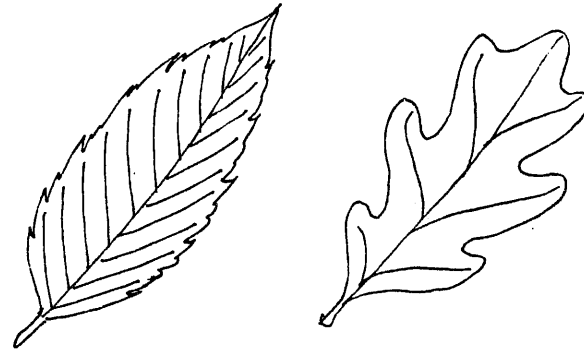
PALMATE VENATION

Major veins extend from base of blade where petiole attaches to blade.



PINNATE VENATION

Major veins extend from central vein (midrib)



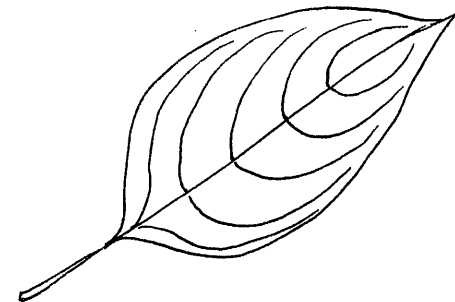
RETICULATE VENATION

A network of veins.



ARCUATE (PARALLEL) VENATION

Major veins are parallel to midrib and/or the leaf margins



STEM FEATURES:

THE STEM ITSELF:

- Are there thorns, spines or prickles? Large, thin, short, fat - what color are they, how thick are they? Are they very sharp, or not sharp at all?
- Are there noticeable lenticels (dots on the stem - breathing pores). Raised or sunken; what color? Elongated horizontally or vertically?
- Is the stem straight, or is it crooked or zig-zaggy? (Usually the stems that are zig-zaggy also have a false terminal bud - the false terminal is not situated at the extreme tip of the stem. It is just a little bit to the side.)
- What is the texture of the stem? Smooth, hairy, sticky, flaky, peeling?
- Is there a white or blue "bloom" that you can rub off?
- Size - is the stem thin, thick, ribbed, grooved? Are there ridges? Is it round or square?
- Color - of the outer bark and also the inner bark.
- Is there an odor to the stem when it is scraped, bruised or broken?
- Notice if there are bits of bud scales still remaining at the terminal bud scale scars (the point on the stem that differentiates between last year's growth and this year's growth - several rows of scars encircling the stem - new growth will be tender and greenish, last year's growth will probably be a little woody).
- Are there spur shoots? (tiny short stems that are very knobby with lots of horizontal ridges - they hold the flowers and fruit and are extra sturdy to hold that weight.) They are a good indication that the plant has fleshy, heavy fruit instead of a dry fruit.
- Is there a milky sap that exudes from a cut stem?
- Bark on trunk - note the color and texture. Is it smooth, knobby, corky, peeling? Do the ridges run in a diamond shape, or vertically?

BUD:

- Buds are available for observation almost the entire year except from bud break in late spring to mid-summer. They develop in the axil of the petiole and the stem. In the winter, the bud is usually visible just above the leaf scar that is left on the stem after the petiole has fallen. A few plants produce a bud under the bark, within the base of the petiole; therefore the bud will be invisible in the summer, and it will be in the center of the leaf scar in the winter.
- Are buds whorled (more than two at one point around the stem)?
- Are buds opposite each other on the stem, sub-opposite (almost opposite), or do they alternate along the stem (staggered)?
- Do the side (lateral) buds stick out, away from the stem, or are they pressed closely to the stem?
- Are they slightly stalked, or not stalked at all?
- Are the lateral buds positioned in a vertical position, or are they slightly lopsided, tilting to one side or another?
- Are they curved or twisted?
- Is there only one bud at each node, or are there two or more (collateral or accessory) next to each other at each node?
- Is there one bud directly above another at a node?
- Is the terminal bud all alone, or are there several lateral buds positioned closely to the terminal bud, making a cluster of buds at the terminal?

- Is the terminal bud a "true" terminal bud, or is it a "false" terminal bud? (A true terminal bud will be straight - a false terminal bud will be a little tilted to one side, and there may be a terminal branch scar near it, where the true terminal bud fell off, leaving a scar; sometimes this is very hard to determine.)
- Also notice: Color - shape (pointed, round, etc.) - texture (sticky, smooth, hairy, leathery, shiny) - size.

BUD SCALES:

- Do the scales overlap each other? (imbricate) There would be at least three scales in order to be imbricate.
- Are there just 2 scales (rarely 3) that just barely meet and do not overlap? (valvate)
- Some plants have only one bud scale (a single cap that fits over the bud and splits open when the bud expands in the spring).
- Is the bud 'naked,' meaning that there are no hard scales, just a pair of developing leaves covering the bud?
- Notice the arrangement of the scales around the bud. Are they:
 - Arranged on the bud in vertical rows of uniform ranks - one exactly above the other?
 - Arranged with the lowest scale centered directly over the leaf scar?
 - Arranged with the lowest scales paired at each side of the leaf scar?
- Does the color of the individual scale change near the scale margin (at the top of each scale)?
- Is there hair just on the scale margins, on the whole scale, or not at all?
- What is the general shape of each scale? Is it long, short, fat, narrow? Is there a vertical ridge in the center of the scale?
- Are there remnants of old bud scales still attached at the base of the bud, from last year's growth?

LEAF SCAR:

- The leaf scar is the scar left on the stem when a leaf falls off at the end of the season. It's the point at which the end of the petiole was attached to the stem. The scar assumes the same shape that the end of the petiole had - sometimes it's hardly visible at all, and other times it's quite large and distinctive. Each type of plant has its own special leaf scar and is a great help in identifying the different plants. During the growing season, there won't be any leaf scars on the newest shoot growth - look at the leaf scars on last year's shoot growth.
- If the leaf scars are opposite each other on the stem, do they completely encircle the stem, with the ends of the scars meeting?
- Is there a horizontal line connecting the two scars, or is there an open, clear area between the two scars?
- What is the general shape of the scar? Narrow and thin, wide and fat, round, triangular, horseshoe-shaped? Curved or straight across?
- Is the scar raised, sunken, or flush with the stem?
- Does the bud sit on top of the scar, is it partially encircled by the scar, or is it totally enclosed inside the leaf scar?
- Are there stipule scars (tiny, thin lines on each side of leaf scar that indicate where the stipules were attached before they fell off)?

VASCULAR BUNDLE SCARS/TRACES:

- These are the scars (tiny dots) within the leaf scar that are formed when the leaf falls off and the vascular system (the xylem and phloem) between the stem and leaf is cut off.
- Are the bundle scars visible at all?
- Are they very distinct? How many are there?
- Are there so many that they look like a blotch or a line? Are they raised, flush or sunken? (This is when a hand lens will come in very handy.)

PITH:

- The pith is the innermost portion of the stem. A penknife can be used to carefully scrape back a portion of the stem so the pith can be seen. (Don't do this on a large branch or a branch you don't want to lose because it more than likely will cause that particular branch to die.) The pith may be different in the current year's growth versus last year's growth. Check both.
- Is the pith solid throughout, hollow throughout or just at the leaves or buds; spongy (large cavities); or is it chambered (hollow except for tiny partitions uniformly placed within the pith)?
- What color is the pith - white, cream, brown, yellow, green, salmon?
- Is it a relatively small pith, or does it consume a large portion of the stem in cross section?
- What shape is it in cross-section - round, star-shaped, oval?

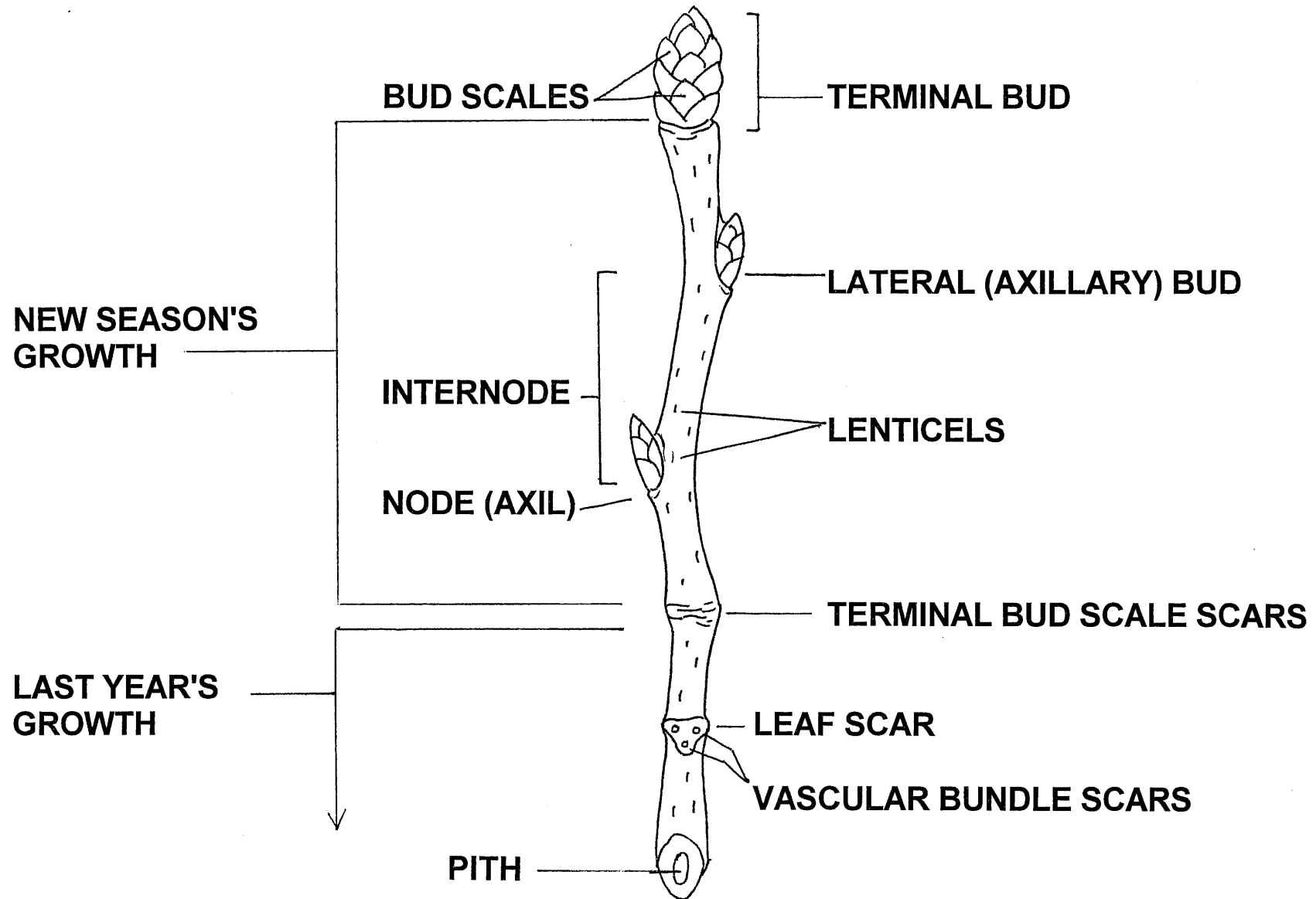
HABIT:

- Look at the plant overall - are there lots of small branches, or just a few main branches? During the growing season, is the plant so dense you can't see through the leaves, or is it sparse, open?
- What is the general branching pattern - upright, horizontal, pendulous?
- Shape and form - round, oval, columnar, weeping, vase-shaped, cone-shaped, spire-like? Is it very formal and straight, or informal and irregular?
- Is the plant multi-stemmed, thicket forming, or is it a single trunk?
- Are there suckers at ground level?

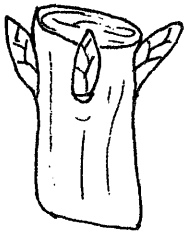
MISCELLANEOUS:

- Fruits and flowers may be on the plant for a very short time, but sometimes the stalk remains with remnants of dried fruit which can provide a clue.
- Is it a single stalk or a longer stalk with several side stalks coming off it?
- Is the fruit fleshy or papery, dry or cone-like? Is it a furry, hairy, droopy catkin? If fleshy, how many seeds are inside?
- Flower - note the color, form, number of petals, time of bloom, fragrance. Does it bloom before, during or after the leaves?
- Check the ground near the plant for fallen fruit pods, or, in the winter, for dried leaves. This is not a foolproof method of identification, however, because the leaves or pods may have blown in from a neighboring plant.

STEM CHARACTERISTICS



BUDS



Buds are three at a point along the stem (whorled)



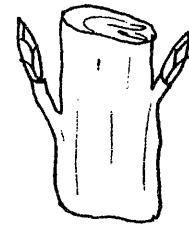
Buds are opposite each other along the stem



Buds alternate along the stem



Bud pressing close to stem (appressed) or away from stem (divergent)



Bud attached to stem by a tiny stalk



Bud centered directly over leaf scar



Buds are tilted to one side or the other



Several buds together above the leaf scar (collateral)



One bud directly over another (superposed)

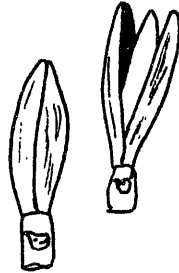


Several buds clustered near the terminal bud

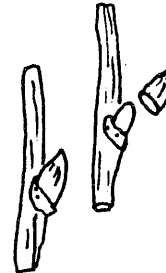
BUD SCALES



More than two bud scales overlap each other (imbricate)



Two bud scales meet but do not overlap (valvate)



One bud scale like a "cap"



Bud scales are "naked." Developing leaves cover the bud.



Bud scales are arranged in "ranks" or vertical rows



Lowermost bud scale is centered directly over the leaf scar



Lowermost bud scales are not centered over the leaf scar

LEAF SCARS



Opposite leaf scars meet across the stem



Line connects opposite leaf Scars



Bundle scars are visible within the leaf scar



So many bundle scars they seem to form a line.

PITH



Solid or continuous



Hollow



Chambered, with tiny partitions

STEM



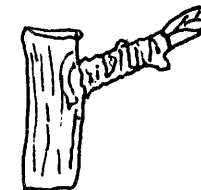
Stipule scars at each side of leaf scar



Vertical ridges coming off of the bud

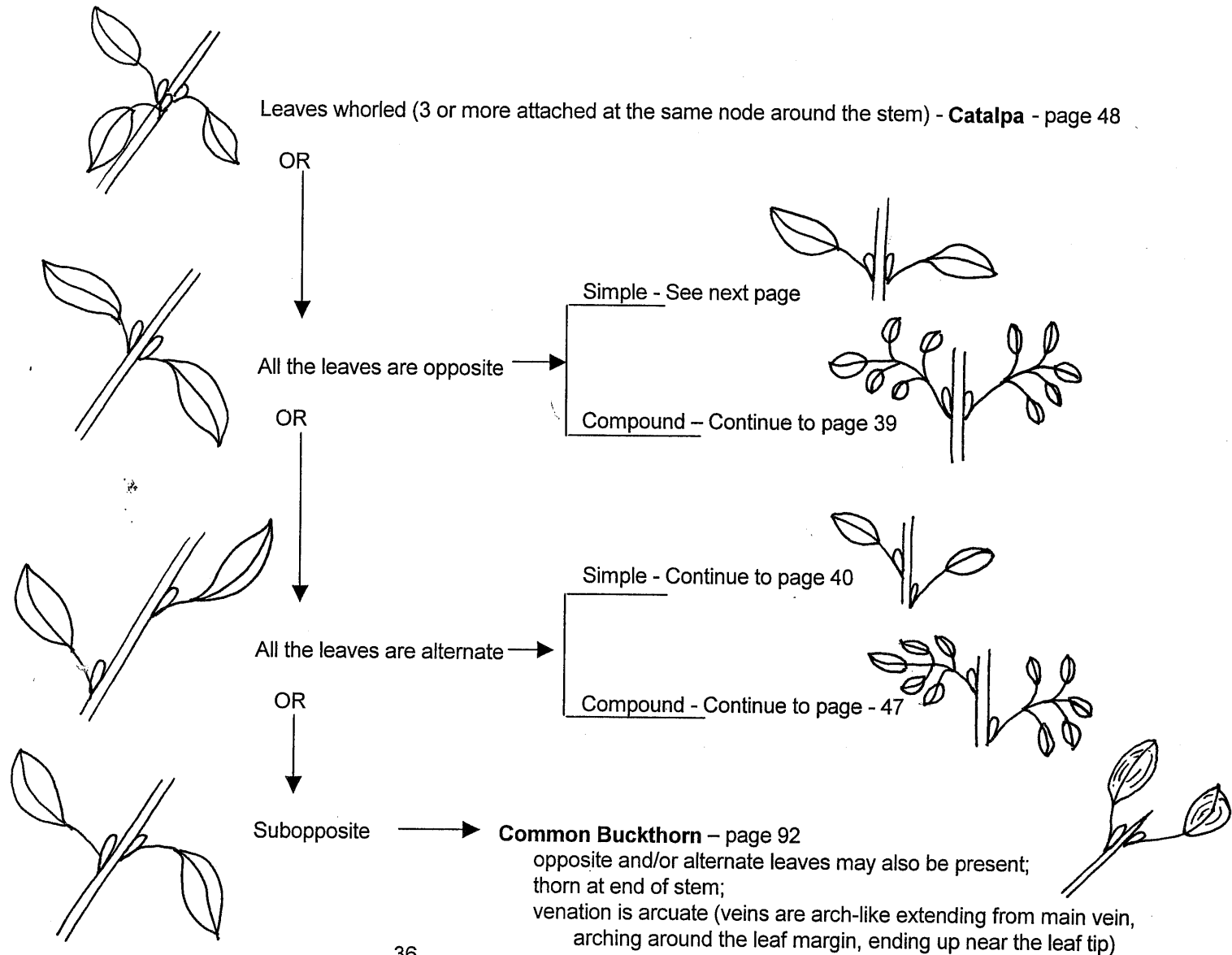


Stems are corky or "winged"

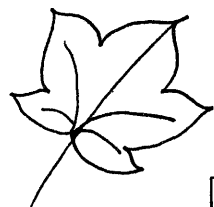


Spur shoots (dense growth on a short stubby stem)

SUMMER KEY TO BROADLEAF TREES (Single Trunks)



OPPOSITE – SIMPLE LEAVES



Milky sap is visible when leafstalk is broken, at base of leafstalk, scratched bud scales or stem

Leaf dark green all growing season – **Norway Maple** – page 49

Leaf starts out purplish and a few weeks later turns very dark green – **Schwedleri Norway Maple** – page 49

Leaves are lobed →

OR



Margins of lobes are smooth

Lobes have blunt tips; leaf is up to 3" wide, shiny above and hairy beneath; irregular canopy – **Big Tooth Maple** – page 50

Lobes more sharply pointed than Big Tooth Maple; leaf is 3" - 6" wide, not very shiny, a few hairs on veins beneath; round canopy – **Sugar Maple** – page 50

No milky sap visible



Margins of lobes are toothed

Three to five lobes; middle lobe twice as long as other lobes

Older leaves usually unlobed; middle lobe is fairly wide – **Tatarian Maple** – pg 51

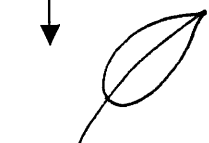
All leaves lobed; middle lobe is quite narrow – **Amur Maple** – page 51

Cultivated tree; single trunk; leaves 3" wide or wider – **Red Maple** – pg 52

Three to five lobes, fairly similar in size; base of middle lobe is wide; sinuses are "V" shaped and toothed

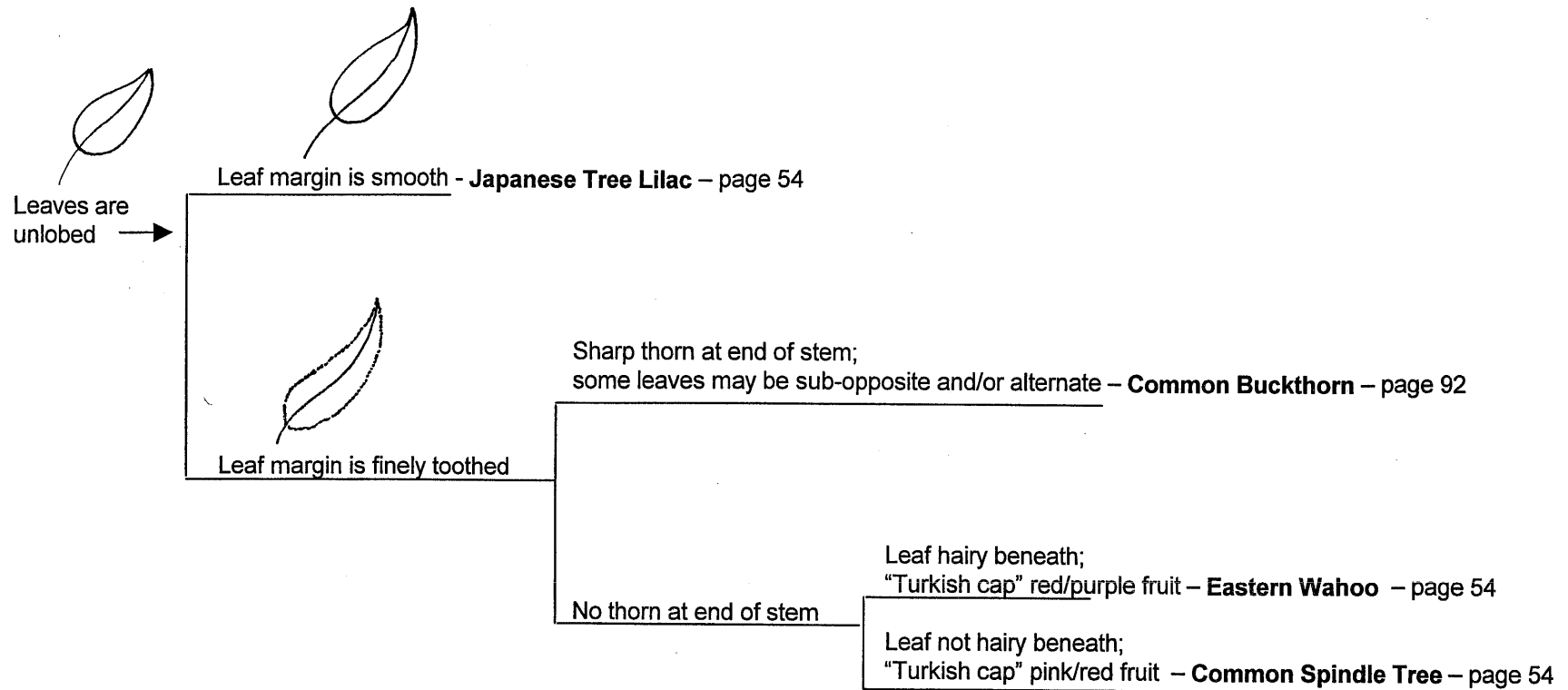
Usually native, can be multi-stemmed; leaves less than 3" wide - **Rocky Mountain Maple** – page 52

Five to seven lobes; base of middle lobe is narrow; sinuses are "U" shaped and untoothed – **Silver Maple** – page 53



Leaves are unlobed – Continue to next page

OPPOSITE – SIMPLE – UNLOBED



OPPOSITE - COMPOUND LEAVES



Leaves are
pinnately compound →

OR



Leaves are
palmately compound →

Leaflets are not uniform in shape;
margins are lobed and/or coarsely toothed;
leaf scars meet across the stem – **Boxelder** – page 55



Bud sits on top of leaf scar;
leaflet margins toothed,
especially above the middle – **Green Ash** – page 56



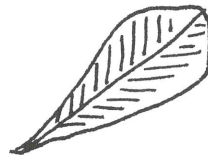
Leaflets are uniform in shape;
margins are smooth or slightly serrated;
leaf scars do not meet across the stem



Bud sits inside the leaf scar;
leaflet margins smooth,
except for a few faint rounded teeth – **White Ash** – page 56



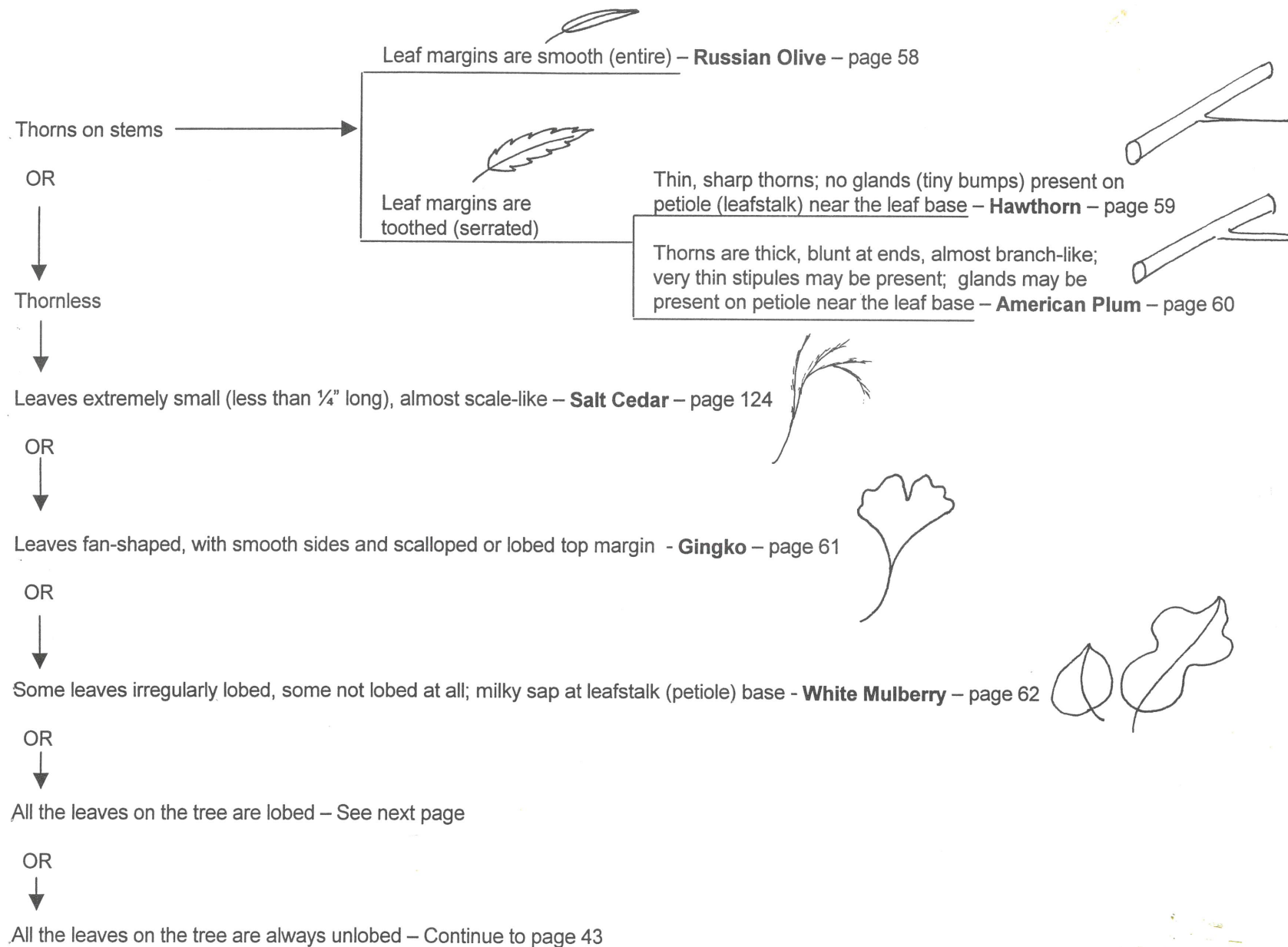
Usually 7 large leaflets, broadest above the mid-point; sticky bud – **Horsechestnut** – page 57



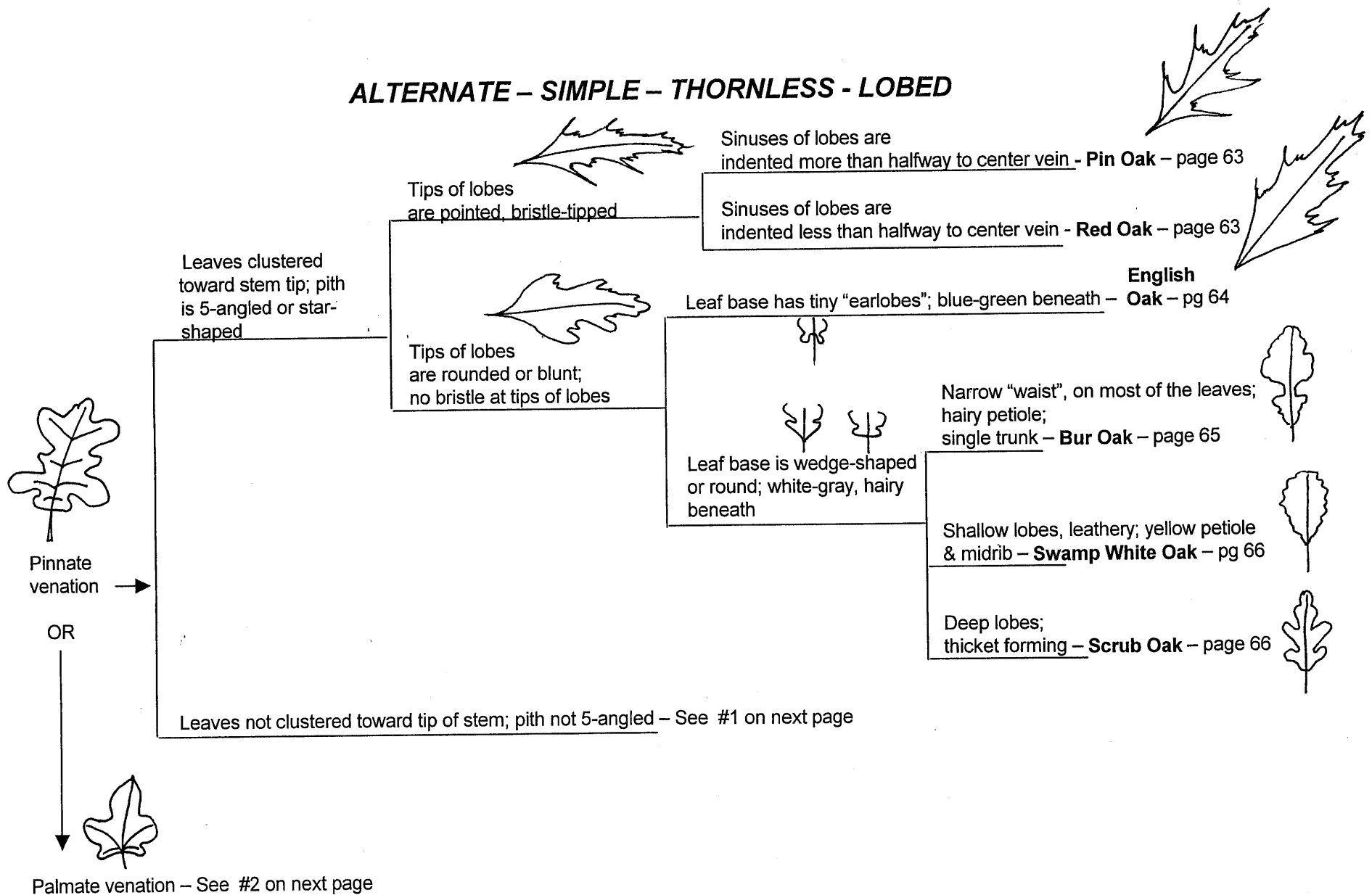
Usually 5 - 7 smaller leaflets, broadest at or below mid-point; bud not sticky – **Ohio Buckeye** – page 57



ALTERNATE - SIMPLE LEAVES



ALTERNATE – SIMPLE – THORNLESS - LOBED



ALTERNATE – SIMPLE – THORNLESS – LOBED



#1

Pinnate venation;
leaves not clustered toward the tip of stem;
pith not 5-angled

Long, very sharply pointed lobes; small round white pith; smooth white bark;
branches weeping and slender – **Cutleaf Weeping Birch** – page 69

Lobes are short and rounded; margins of lobes are serrated; pith is pale;
tiny red/brown, shiny, hairless buds; hairless stem – **Thornless Hawthorns** – page 59

Short, rounded lobes with serrated margins; hair on tip of young stem,
and on tips of bud scales;
Spur shoots (short, compact branches) are present – **Crabapple varieties** – page 79

Lobes are coarsely serrated ; brown bark; triangular pith;
woody “cone” and papery “catkin” are present – **Alder** – page 68



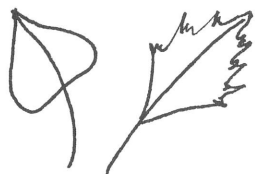
#2

Palmate venation

Leaves whitish beneath; petiole flat – **White Poplar** – page 67

Leaves pale green beneath; petiole round with a hollow base at the stem end – **American Sycamore** – page 67

ALTERNATE - SIMPLE - THORNLESS - UNLOBED LEAVES



Leaf is triangular or diamond/wedge-shaped →

Petiole is round

Small woody "cone" visible year-round, along with papery catkin part of the year – **Alder** – page 68

No woody "cone" but papery strobile may be present – **Birch** – page 69

Petiole is flat

Form of plant is columnar – **Lombardy Poplar** – page 70

Form of plant is tall, wide, open – **Plains Cottonwood** – page 70

OR



Leaf is round or heart-shaped →

Petiole is round

Leaf margin is smooth all around; leaf is 3" long – **Eastern Redbud** – page 71

Leaf margin is very finely toothed all around; leaf is 3" long – **Apricot** – page 71

Leaf margin is medium-toothed; leaf base usually uneven; leaf is 3"-6" long – **Linden** – page 72

Petiole is flat – **Aspen** – page 73

OR



Leaf is long and narrow (3-4 times longer than wide) →

One bud scale



Branches very droopy; leaf very narrow (1/2" – 3/4" wide) – **Weeping Willow** – page 74

Branches not as droopy, leaf not as narrow (3/4" – 1 1/4" wide) – **Peachleaf Willow** – pg 74

More than one bud scale



Stems yellowish-green to gray; catkins drooping – **Narrowleaf Cottonwood** – page 75

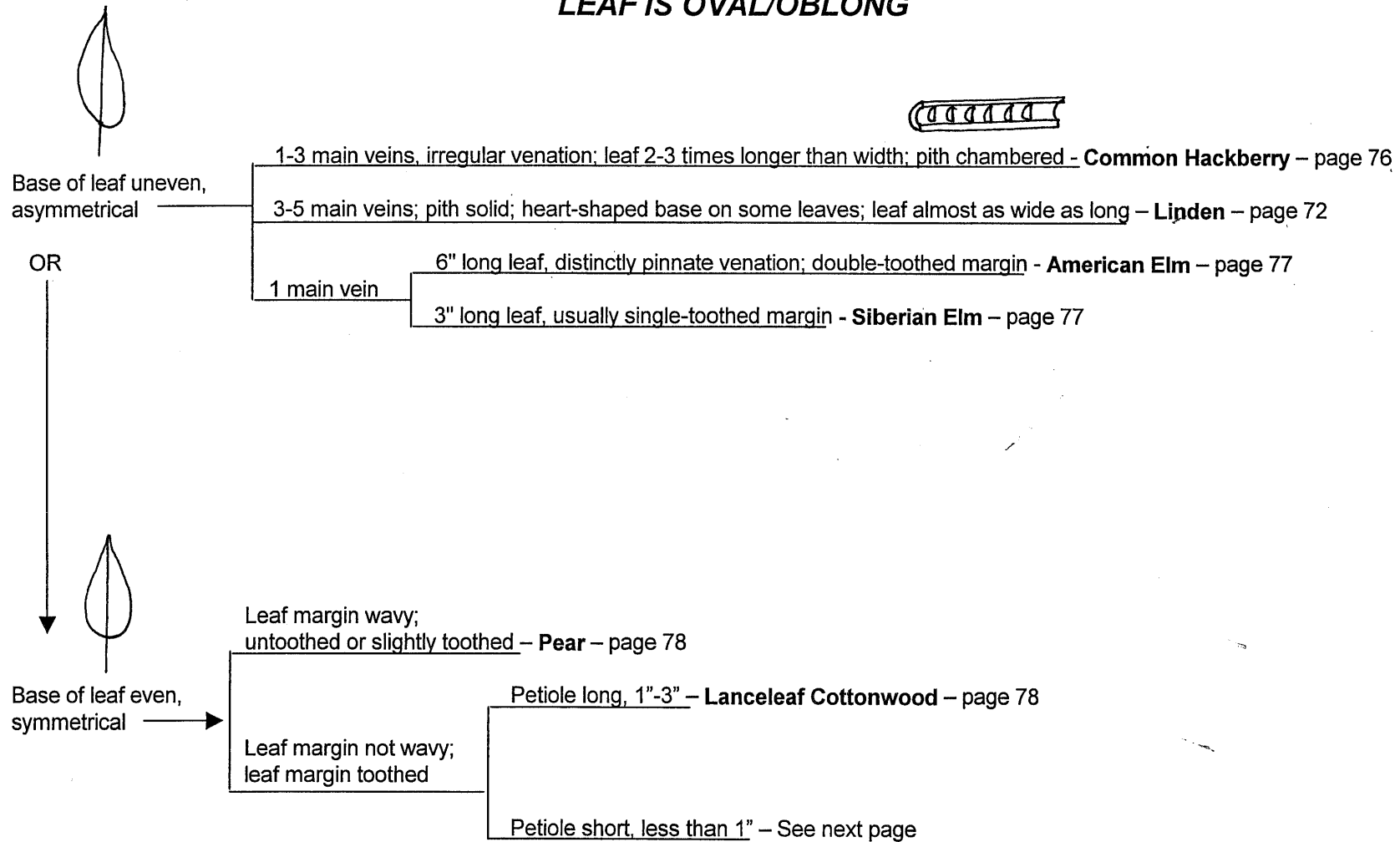
Stems reddish above, greenish beneath; no catkins – **Peach** – page 75

OR



Leaf is oval or oblong (twice as long as wide) - See next page

ALTERNATE - SIMPLE - THORNLESS - UNLOBED LEAVES **LEAF IS OVAL/OBLONG**



ALTERNATE – SIMPLE – THORNLESS – UNLOBED LEAVES
LEAF IS OVAL/OBLONG
BASE OF LEAF EVEN, SYMMETRICAL
LEAF MARGIN NOT WAVY; LEAF MARGIN TOOTHED
PETIOLE SHORT, 1" OR LESS



Very strong pinnate venation;
 mostly straight veins extending
 almost to the margin, usually
 unforked →

Margins are mostly singly toothed; buds tiny and black – **Siberian Elm** – page 77

Margins coarsely toothed, doubly toothed
 or almost lobed; buds long and pointed

Pith round; ⑥
 papery catkins, no woody "cones" – **Birch** – page 69

Pith triangular; ④
 papery catkins and woody "cones" – **Alder** – page 68

OR



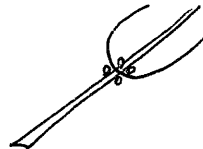
Irregular pinnate venation;
 veins may curve slightly,
 usually splitting and forking
 near the leaf margin →

No glands (tiny bumps) on petiole or base of leaf;
 newest stem growth and buds are hairy

Stems, leaves and buds very hairy – **Apple** – page 79

Stems, leaves and buds slightly hairy – **Crabapple** – page 79

Usually glands on petiole or
 base of leaf; stems and buds
 not hairy



True terminal
 bud absent – **Plums** – See #1 next page



True terminal
 bud present – **Cherries** – See #2 next page

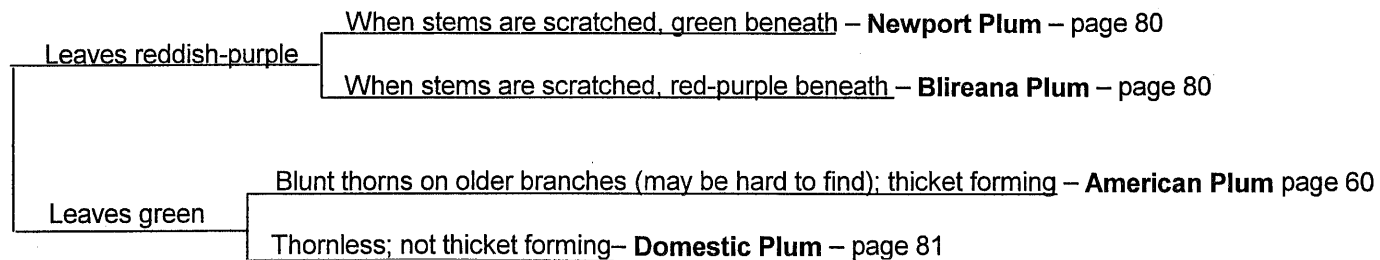


ALTERNATE – SIMPLE – THORNLESS – UNLOBED LEAVES
LEAF IS OVAL/OBLONG
BASE OF LEAF EVEN, SYMMETRICAL
LEAF MARGIN NOT WAVY; LEAF MARGIN TOOTHED
PETIOLE SHORT, 1" OR LESS
IRREGULAR PINNATE VENATION; VEINS MAY CURVE SLIGHTLY,
USUALLY SPLITTING OR FORKING NEAR THE LEAF MARGIN
USUALLY GLANDS ON PETIOLE OR BASE OF LEAF; STEMS AND BUDS NOT HAIRY



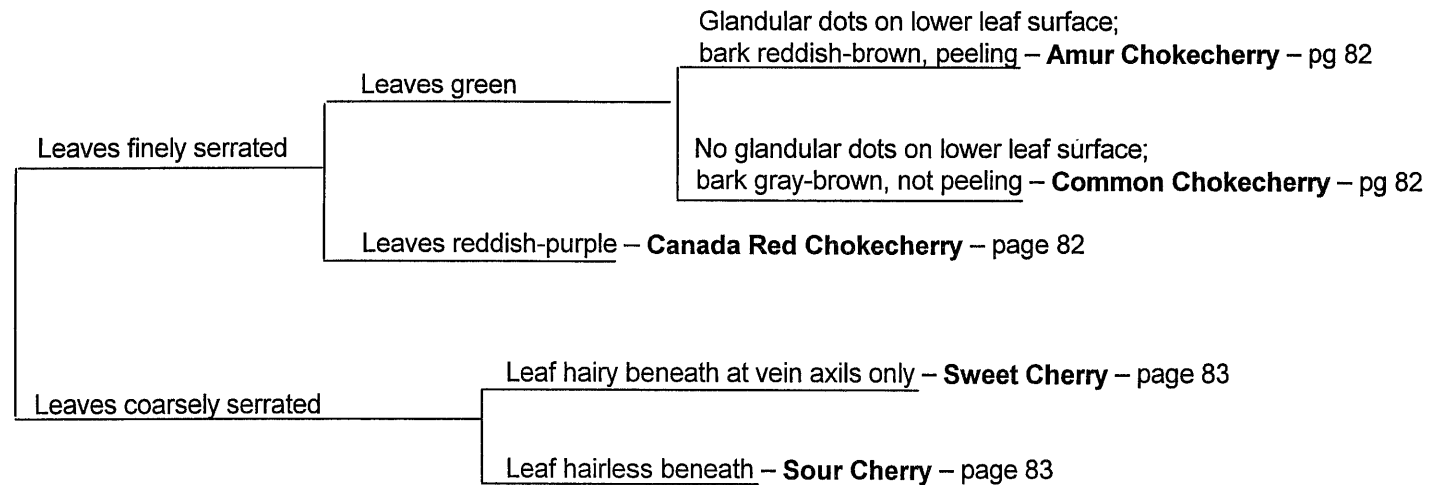
#1 – Plums

(true terminal
bud absent)



#2 – Cherries

(true terminal
bud present)





Leaf divided into three leaflets

→ **Hop Tree** – page 84

OR

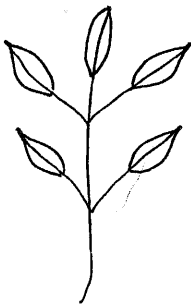
ALTERNATE - COMPOUND LEAVES

Smooth or very finely toothed leaflet margins



Leaflet margins smooth except at leaf base (lobes on each side, like earlobes) - **Tree of Heaven** – pg 88

More than three leaflets



Leaflet margins are medium-toothed



Leaflet margins coarsely and irregularly toothed or lobed – **Goldenraintree** – page 91

Thorns

Pair of ¼" – ½" prickles at nodes – **Black Locust** – page 85

Trunk or main branches with many thick, sharp thorns – **Honeylocust** – pg 86

Thornless

Leaflets blunt at tips; pinnate or bipinnate - **Thornless Honeylocust** – page 86

Leaflets pointed at tips

Pinnately compound - **Japanese Pagoda Tree** – page 87

Bipinnately compound - **Kentucky Coffeetree** – page 87

Chambered pith in older stem growth - **Black Walnut** – page 89

Short leaflets (to 2-1/2" Long), all the same size; no milky sap from cut stem - **European Mountain Ash** – page 89

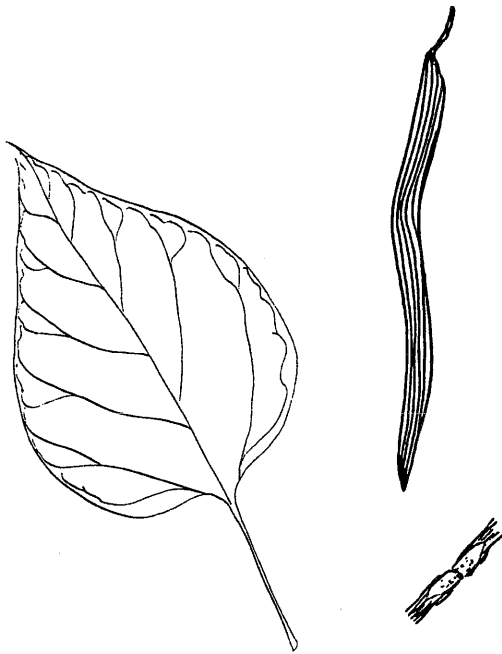
Solid pith

Long leaflets (2" to 5"), ranging from short to long; milky sap exuding from cut stem - **Staghorn Sumac** – page 90

BROADLEAF TREES (Single Trunk)

LEAVES WHORLED

(3 or More Attached at Same Node Around the Stem)



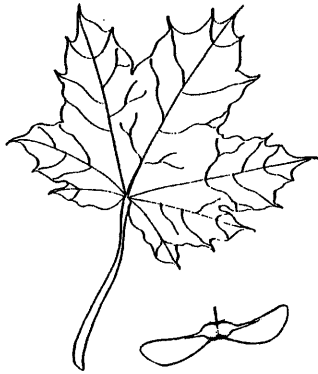
NORTHERN (WESTERN) CATALPA - *Catalpa speciosa* (ka-tall'-pa spee-see-o'-sa)

Family: Trumpet Creeper (*Bignoniaceae*)

- Leaf - Very large, heart-shaped, 6" - 12" long; smooth (entire) margin; long, tapering tip. Three (sometimes two) leaves attached at the same point on the stem. Medium green, dull texture; petiole 4" - 6" long.
- Bud - Small, embedded in bark most of the year. True terminal (end) bud absent. Six+ loose, pointed, brown scales.
- Leaf scar - Large, raised, round. 12+ raised bundle scars form a closed circle within the scar. Two or three leaf scars encircle the stem at the same node.
- Stem - Stout. Large lenticels. Gray-brown.
- Bark - Dark brown; irregular, shallow ridges.
- Pith - Solid, white.
- Flower - Large, showy white panicles of orchid-like blossoms in May or June, usually marked with purple.
- Fruit - Long (8" - 20"), straight, brown capsule shaped like a cigar, persists thru winter. Seeds within the capsule are 1" long, 1/4" wide, flat, tannish-white, fringed at both ends.
- Habit - Usually straight trunk, oval form; irregular, sparse branching. 50' ht. x 25' spread. Slow grower.
- Culture - Hardier at lower elevations (under 6,000'); moderate moisture requirements.

OPPOSITE - SIMPLE - LOBED LEAVES

MILKY SAP IS VISIBLE WHEN LEAFSTALK IS BROKEN, AT BASE OF LEAFSTALK, SCRATCHED BUD SCALES OR STEM



NORWAY MAPLE - *Acer platanoides* (ay'sir plat-a-noy'-deez)

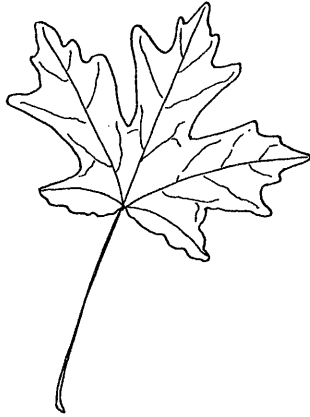
Family: Maple (*Aceraceae*)

- Leaf - Usually 5-lobed, blade as wide as it is long (4" - 7"), dark green. Lobes are sharply pointed, coarsely toothed. Milky sap visible when petiole is removed from stem. Hair in corners of veins beneath.
- Bud - Large rounded terminal bud, purplish-brown, 4+ overlapping bud scales. Lateral (side) buds have 2-3 scales.
- Leaf scar - Edges of leaf scars meet around the stem, forming a right angle.
- Stem - Stout, smooth, brownish.
- Bark - Close, tight ridges.
- Pith - Solid, white.
- Flower - Inconspicuous, greenish-yellow; blooming profusely in April before leaves appear.
- Fruit - Samara. Wings spread out completely to make a straight line, like a mustache.
- Habit - Large, dense, shade tree. Spreading branches. Broad, round canopy. 40' x 30'
- Culture - Moderate soil moisture. Full sun. Wrap young trunk to prevent sunscald.

Note - The cultivars 'Schwedleri' and 'Deborah' are even darker green in summer, but start out purplish-red for 2-4 weeks in early spring. 'Royal Red' has maroon foliage all season. 'Columnare' is 50' x 20' or less, very columnar.

OPPOSITE - SIMPLE - LOBED LEAVES
NO MILKY SAP VISIBLE
MARGINS OF LOBES ARE SMOOTH

Lobes have blunt tips; leaf is up to 3" wide, shiny above and hairy beneath; irregular canopy



BIG TOOTH (Wahsatch) MAPLE – *Acer grandidentatum* (ay'-sir grand-eye'den-tae'-tum)

Family: Maple (*Aceraceae*)

- Leaf - 3-5 lobes, tips are blunt; dark green, shiny above, hairy beneath. Good fall color. Thick petiole.
- Bud - Pointed, 1/16" long, red/brown. Outer scales hairy
- Leaf scar - Narrow, almost meeting across the stem. Bands of long hair near the leaf scar.
- Stem - Slender, bright red.
- Bark - Dark brown, plate-like scales
- Fruit - Samara is rosy red in summer, green at maturity.
- Habit - Irregular canopy. 20' x 15'; native to moist streambed areas and canyon slopes. Slow growing. May occur as multi-stemmed shrubs in thickets.
- Culture - Low moisture requirements once established.

Lobes more sharply pointed than Big Tooth Maple;
 leaf is 3"- 6" wide, not very shiny, a few hairs on veins beneath; round canopy



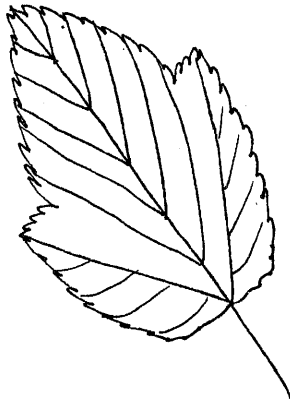
SUGAR MAPLE - *Acer saccharum* (ay'-sir sak-kar'-um)

Family: Maple (*Aceraceae*)

- Leaf - Bright green above, paler beneath. Lobes are almost smooth, few teeth, and the petiole does not yield a milky sap.
- Bud - Slender, sharp pointed and brown. Six to eight pairs of scales.
- Leaf scar - Narrow, crescent-shaped. Hair along upper edge of scar.
- Stem - Glossy brown. Small lenticels.
- Bark - Dark gray to grayish-brown.
- Pith - Round, pale, solid.
- Flower - Yellowish-green, 1" - 3" long panicles, blooming before leaves appear.
- Fruit - Horseshoe-shaped samara.
- Habit - Large, dense shade tree. Spreading branches. 50' x 30'. Oval to round. Slow growing.
- Culture - Prefers slightly acidic, well-drained soil and moderate moisture requirements. Leaves are susceptible to wind and hail damage.

OPPOSITE - SIMPLE - LOBED LEAVES
NO MILKY SAP VISIBLE; MARGINS OF LOBES ARE TOOTHED
THREE TO FIVE LOBES; MIDDLE LOBE TWICE AS LONG AS
OTHER LOBES

Older leaves usually unlobed; middle lobe is fairly wide

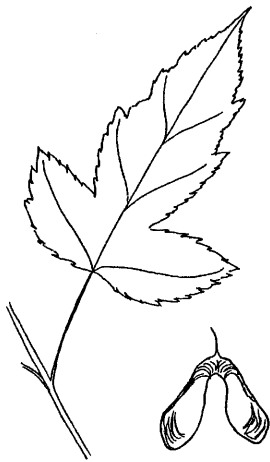


TATARIAN MAPLE – *Acer tataricum* (ay'-sir ta-ta-reek'-um)

Family: Maple (*Aceraceae*)

- Leaf - 2" - 4" long; irregular, double-serrated margin. Some leaves lobed, some not. If lobed, middle lobe is longer than two side lobes and wide at base. Medium green. May have hairs on veins beneath. Petiole 1" - 2" long.
- Bud - ¼" long; red-brown-black overlapping scales, may be slightly hairy.
- Leaf scar - 3 bundle scars.
- Stem - Slender, smooth, red-brown, lenticels visible.
- Flower - Greenish-white, blooming in mid-spring.
- Fruit - Red samara, parallel wings.
- Habit - Small tree or large, bushy shrub.
- Culture - Tolerant of dry, alkaline soils.

All leaves lobed; middle lobe is quite narrow



AMUR MAPLE - *Acer ginnala* (ay'-sir ji-nae'-la)

Family: Maple (*Aceraceae*)

- Leaf - Margins doubly toothed. 3-7 main veins. Red-orange autumn foliage early, for a short time.
- Bud - Small, reddish-brown, several scales. Usually solitary. Shiny.
- Leaf scar - Horizontal line across stem, connecting narrow crescent-shaped leaf scars.
- Stem - Thin, gray, hairless.
- Bark - Grayish-brown.
- Pith - Round, solid, pale.
- Flower - Yellow-white, fragrant, small panicles. Blooms as the leaves appear.
- Fruit - Samara. Wings nearly parallel, in clusters. Fruit stalk may persist through winter.
- Habit - Small ornamental tree or shrub. Either multi-stemmed and dense, or may have a single trunk. Rounded canopy. 20' tall or less.
- Culture - Does better with slightly acidic soil conditions, and moderate to high moisture. Prefers full sun but tolerates part shade.

**OPPOSITE - SIMPLE - LOBED LEAVES
NO MILKY SAP VISIBLE; MARGINS OF LOBES ARE TOOTHED
THREE TO FIVE LOBES, FAIRLY SIMILAR IN SIZE
BASE OF MIDDLE LOBE IS WIDE
SINUSES ARE "V" SHAPED AND TOOTHED**

Cultivated tree; single trunk; leaves 3" wide or wider

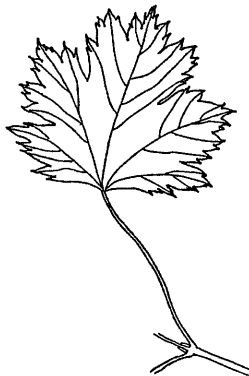


RED MAPLE - *Acer rubrum* (ay'-sir ru'-brum)

Family: Maple (*Aceraceae*)

- Leaf - Usually 3 lobes, rarely 5. Base of the middle lobe is wide. Sinuses are slightly toothed, and not deep. Bright green above, light silvery gray and hairy veins beneath. Petioles often red.
- Bud - Rounded and slightly hairy bud scale margins. Round flower buds are clustered, bright red.
- Leaf scar - Narrow.
- Stem - Slender, bright red in winter, greenish-red in summer. Older stems grayish. Stems do not smell.
- Pith - Solid, white.
- Bark - Young - smooth, light gray. Older - dark gray and rough, does not flake off as much as silver maple.
- Flower - Red, blooming before leaves appear. Short dense clusters. Petals.
- Fruit - 2" - 3" long samara, wings spreading at a 60° angle.
- Habit - Large shade tree, spreading branches. To 40'+ tall.
- Culture - Avoid very alkaline soils. High moisture preferred.

Usually native, can be multi-stemmed; leaves less than 3" wide;

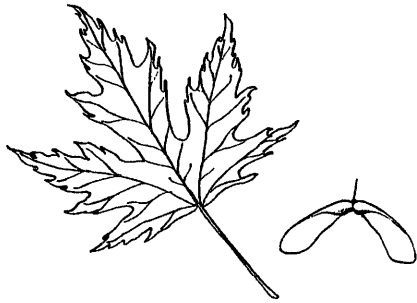


ROCKY MOUNTAIN MAPLE - *Acer glabrum* (ay'-sir glae'-brum)

Family: Maple (*Aceraceae*)

- Leaf - Three larger main lobes, sometimes 2 smaller lower lobes. Middle lobe sometimes wide at base, sometimes so narrow at base it divides and becomes a compound leaf. Margins of lobes coarsely serrated. Petiole smooth, thick, red, 1" - 6" long.
- Bud - Red, pointed, 1/8" - 1/4" long.
- Leaf scar - Crescent-shaped
- Stem - Slender, smooth. Reddish or pale green when young. Gray when older.
- Bark - Tight, thin, smooth, dark red-brown to gray.
- Flower - Yellow-green in small clusters in early spring.
- Fruit - Samara, two wings, each wing one-inch long, reddish, hanging in clusters.
- Habit - Can be multi-stemmed, small, clump-forming. CO native, foothills, montane, streambanks.
- Culture - Shade tolerant. Moderate moisture requirements.

OPPOSITE - SIMPLE - LOBED LEAVES
NO MILKY SAP VISIBLE; MARGINS OF LOBES ARE TOOTHED
FIVE TO SEVEN LOBES; BASE OF MIDDLE LOBE IS NARROW;
SINUSES ARE "U" SHAPED AND UNTOOTHED



SILVER MAPLE - *Acer saccharinum* (ay'-sir sak-ka-rie'-num)

Family: Maple (*Aceraceae*)

- Leaf - Five pointed lobes; deep, U-shaped, toothless sinuses. Base of middle lobe is narrowed. Middle lobe may have 3 of its own, smaller lobes. Medium green above, whitish beneath. Heart-shaped leaf base.
- Bud - Reddish, blunt or slightly pointed, small. Scales overlap. Extra buds may be present above some leaf scars (there may be flower buds along with a leaf bud that is stalked). Flower buds are fatter and may have hairy margins. Bud scales are sharper pointed at the tip on silver maple than they are on red maple. Terminal bud has 3-4 pairs of scales.
- Leaf scar - Narrow, 3 bundle scars. Leaf scars are connected across the stem by a horizontal line.
- Stem - Young stems are slender; reddish new growth, gray older growth of stems is smooth. Unpleasant odor when crushed.
- Bark - Trunk bark on older trees is gray, shaggy and may peel off in vertical strips.
- Pith - Solid, white.
- Flower - Greenish-yellow to red, blooming before leaves appear (one of the first trees in our area to bloom). Short dense clusters. No petals.
- Fruit - Samara. Wings curving slightly at 90 degree angle.
- Habit - Large shade tree. Spreading branches, narrow crotches, shallow root system. To 60'+ tall. Fast growing, weak-wooded, susceptible to storm damage. Because of shallow roots, will damage sidewalks and driveways.
- Culture - Avoid highly alkaline soils. Prefers high moisture conditions.

OPPOSITE - SIMPLE - UNLOBED LEAVES

Leaf margin is smooth



JAPANESE TREE LILAC - *Syringa reticulata* (suh-ring'-a ruh-tik-u-lae'-ta)

Family: Olive (*Oleaceae*)

- Leaf - Egg shaped, 2" to 5-1/2" long, narrow tip, rounded or heart-shaped base. Smooth margin. Net-like venation. Dark green above, grayish-green beneath. Petiole to 1" long.
- Bud - 4 pairs of scales, brownish. True terminal bud may be absent.
- Leaf scar - Small, narrow, crescent-shaped.
- Stem - Stout, shiny brown, lots of horizontal lenticels, like a cherry tree (only cherry leaves are alternate, not opposite).
- Bark - Reddish-brown.
- Flower - White, fragrant, very showy, up to 12" long terminal panicle; blooming early to mid-June.
- Fruit - 4/5" long, warty capsule.
- Habit - Small to medium ornamental. Spreading, round canopy. To 30' tall.
- Culture - Moderate moisture requirements; ph adaptable; full sun for good flowering.

Leaf margin is finely toothed

EASTERN WAHOO - *Euonymus atropurpureus* (u-on'-uh-mus at-ro-pur-pu'-re-us)

Family: Bittersweet (*Celastraceae*)

- Leaf - Oval, long pointed tip, broadest from base to middle. Hairy beneath. Up to 5" long. Finely toothed margin.
- Bud - Small, green tinged with red. Hugs the stem. Broad at base, pointed tip. 5-6 bud scales.
- Leaf scar - Half round, 1 large bundle scar.
- Stem - May be slightly 4-angled (suarish). Green, turning brown.
- Pith - White, solid.
- Flower - Dark purple, 4 petals. 6-18-flowered clusters in leaf axils. Blooms in May.
- Fruit - 4-lobed capsule, similar to a Turkish cap, reddish-purple, drooping. Brown seed, red aril.
- Habit - Small ornamental. Wide, flat-topped canopy. To 10'-15' tall.
- Note:** *Leaves, fruit and bark are extremely poisonous.*



COMMON SPINDLE TREE - *Euonymus europaeus* (u'on'-uh-mus ewe-rope'-ee-us)

- Leaf - Not hairy beneath
- Flower - Yellowish-green
- Fruit - Pink-red; orange seeds, orange aril

OPPOSITE - COMPOUND LEAVES - PINNATELY COMPOUND

Leaflets are not uniform in shape; margins are lobed and/or coarsely toothed;
leaf scars meet across the stem

BOXELDER (Ash-Leaved Maple) - *Acer negundo* (ae'-sir ne-gun'-doe)

Family: Maple (*Aceraceae*)

- Leaf - Usually 3-5 leaflets, rarely 7-9. Coarsely toothed and/or lobed. Odor when crushed.
- Bud - White, hairy. Terminal bud present. 4+ exposed scales.
- Leaf scar - Scars meet across the stem at sharp angles. May have tiny red glands above.
- Stem - Greenish-purple, smooth, hairless but sometimes white "powder" on new growth. Powder rubs off. Stem smells bad when bruised. Raised lenticels.
- Bark - Smooth, light gray-brown; narrow vertical furrows.
- Pith - Large, white, solid.
- Flower - Yellowish-green, before leaves appear. Trees dioecious (either male, seedless; or female, seeds).
- Fruit - Samara (double-winged), like maple - not like ash. Wings almost touch each other. Profuse. Samaras hang in clusters all year on female trees.
- Habit - Messy form and seeds. Can be multi-stemmed. Irregular branching. Short-lived. Very fast growing, therefore weak branching structure, prone to storm damage.
- Culture - Adaptable. Moderate moisture requirements.



**OPPOSITE - COMPOUND LEAVES - PINNATELY COMPOUND
LEAFLETS ARE UNIFORM IN SHAPE
MARGINS ARE SMOOTH OR SLIGHTLY SERRATED
LEAF SCARS DO NOT MEET ACROSS THE STEM**

Bud sits on top of leaf scar; leaflet margins toothed, especially above the middle

GREEN ASH – *Fraxinus pennsylvanica* (frak'-si-nus pen-sil-va'-ni-ka)

Family: Olive (*Oleaceae*)

- Leaf - Oddly pinnate - 5-9 leaflets, egg-shaped, long pointed tip, wedge base. Smooth margin below the middle, slightly toothed above. Shiny green. Petiole slightly "winged".
- Bud - 1/2" long or less, 2-3 pairs of brown, fuzzy scales. Terminal bud and the two nearest lateral buds form a shape like a king's crown made of suede.
- Leaf scar - Half circle or shield-shaped, straight across top. Many bundle scars form a continuous half circle within leaf scar. Bud sits at top of leaf scar. Leaf scars don't meet across stem.
- Stem - Gray-brown, pale lenticels, stout, stiff, compressed at nodes. Long ridges. May be hairy.
- Bark - Vertical ridges form a diamond-shape; ridges are flat on top like they've been planed.
- Pith - Six-sided, white.
- Flower - Green to reddish-purple, tiny.
- Fruit - Samara, single wing shaped like a canoe paddle, pointed at top, round at other end. 1" - 1-3/4" long.
- Habit - Large shade tree, to 60'+ tall x 30' wide. Several main branches, irregular, spreading.
- Culture - Adaptable to many soil types. Moderate moisture requirements.

Cultivars:

- Marshall's Seedless** - No fruit.
- Summit** - Narrow, upright. Has fruit.
- Emerald** - Seedless. Dark green foliage.

Bud sits inside the leaf scar; leaflet margins smooth except for a few faint rounded teeth

AUTUMN PURPLE ASH – *Fraxinus americana* 'Autumn Purple'

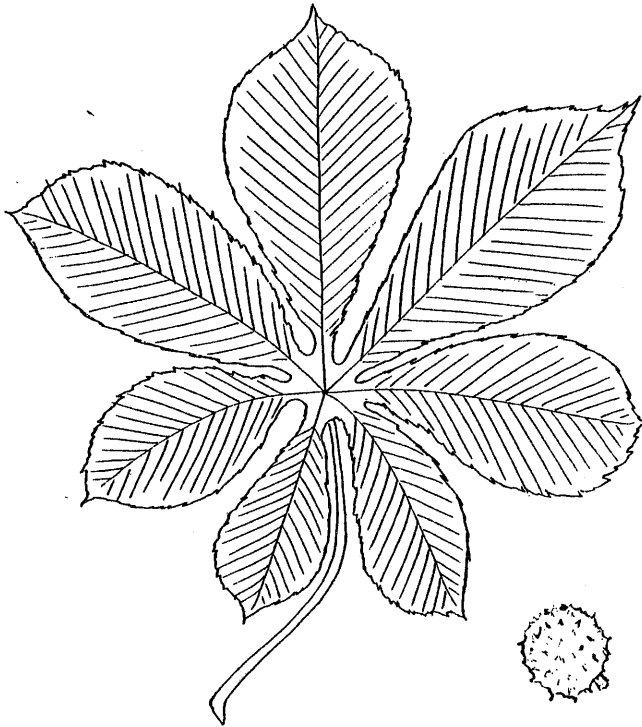
Family: Olive (*Oleaceae*)

- Leaf- Margins barely toothed or smooth. Very nice fall color, maroon/purple.
- Bud - Sits within the leaf scar, not on top like green ash.
- Note - All other features of Autumn Purple Ash are similar to Green Ash. See "Green Ash" above for details.



OPPOSITE - COMPOUND LEAVES - PALMATELY COMPOUND

Usually 7 large leaflets, broadest above mid-point; sticky bud

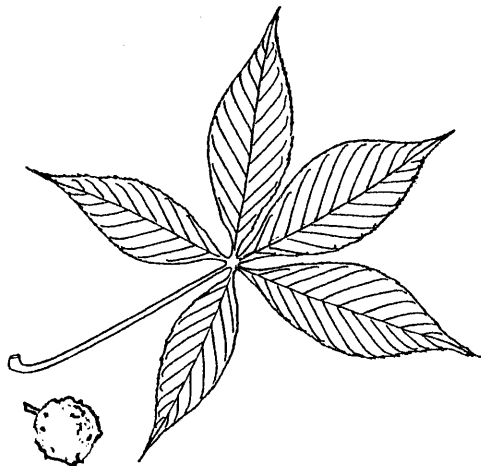


HORSECHESTNUT - *Aesculus hippocastanum* (es'-ku-lus hip-o-kas-ta'-num)

Family: Horsechestnut (*Hippocastanaceae*)

- Leaf - Usually 7 (rarely 5 or 9) leaflets, each 4" - 10" long, wedge-shaped, long pointed base, short pointed tip, doubly toothed margin. No petiolules (leaflet stalk).
- Bud - Terminal bud is sticky, dark brown, large (1/2" or longer) and oval. Lateral buds are smaller and have 4 or more pairs of scales.
- Leaf scar - Large, shield shaped or triangular. 5-7 bundle scars that are in pairs of 2 or 3.
- Stem - Stout (1/4" thick or more). Large lenticels. No odor when crushed.
- Bark - Dark gray-brown. Exfoliating with age.
- Pith - Large, continuous, pale. May be six-sided.
- Flower - Large, showy, upright, white terminal panicle.
- Fruit - Prickly, large ball containing 1-3 large shiny brown nuts. Ball cracks into 3 segments. Nuts are inedible and narcotic.
- Habit - Medium size, dense, shade tree. Round canopy. 20' - 40' tall.
- Culture - Moderate moisture requirements. Needs lots of room to spread. Avoid highly alkaline situations.
- NOTE:** *Seeds, young stems and leaves of horsechestnut may be toxic to livestock.*

Usually 5 - 7 smaller leaflets, broadest at or below mid-point; bud not sticky



OHIO BUCKEYE - *Aesculus glabra* (es'-kew-lus glae'-bra)

Family: Horsechestnut (*Hippocastanaceae*)

- Leaf - Usually 5 (rarely 7) leaflets, finely toothed; Broadest at the middle, tapering to points at both ends. Petiolules (leaflet stalks) are pinched, short. Leaflets 3" - 6" long. Leaf smells bad when crushed.
- Bud - Terminal bud is light brown, not sticky, large (1/2" or longer) and oval. Lateral buds are smaller. Bud scales have a central ridge and may have a hairy margin.
- Leaf scar - Large, shield shaped or triangular. 5-7 bundle scars in 3 groups.
- Stem - Stout (1/4" thick or more). Stems smell bad when crushed.
- Bark - Gray. Vertical ridges and plates.
- Pith - May be six-sided, large, continuous, pale.
- Flower - Large 4" - 7" long, yellow panicle in May. Bell-shaped blossoms. Smells bad.
- Fruit - Slightly prickly ball, solitary. Similar to but not as prickly as horsechestnut.
- Habit - Medium size, dense, shade tree. Round canopy. 40' tall.
- Culture - Moderate moisture requirements. Needs lots of room to spread. Well-drained.
- NOTE:** *Seeds, young stems and leaves of buckeye may be toxic to livestock.*

**ALTERNATE - SIMPLE LEAVES
THORNS ON STEMS**

Leaf margins are smooth (entire)



RUSSIAN OLIVE - *Elaeagnus angustifolia* (ee-lee-ag'-nus an-gus-ti-fo'-lee-ah)

Family: Oleaster (*Elaeagnaceae*)

- Leaf - Long, narrow. Smooth margin. Pale gray-green color. Scaly, silvery above and on petiole.
- Bud - Small, round, 4 exposed scales, covered with silvery, scaly, short hairs.
- Leaf scar - Half round, tiny. One bundle scar.
- Stem - Long, sharp thorns. Slender stem, shiny brown or covered with silvery-green, short hairs.
- Bark - Shiny brown, shreddy with age.
- Pith - Small, round, continuous, brown.
- Flower - 1-3 blossoms in leaf axils along new stem growth, May and June. Fragrant. Outer silver scales, inner yellow.
- Fruit - May persist. Usually a creamy-yellow color. If salmon-colored, plant could be **autumn olive**, *E. umbellata*, (see index). Fruit is on very short stalk.
- Habit - Suckers profusely at base. Can form a thicket if allowed to spread. 25' x 20', round, irregular.
- Culture - **Not recommended for planting. A Colorado noxious weed.**

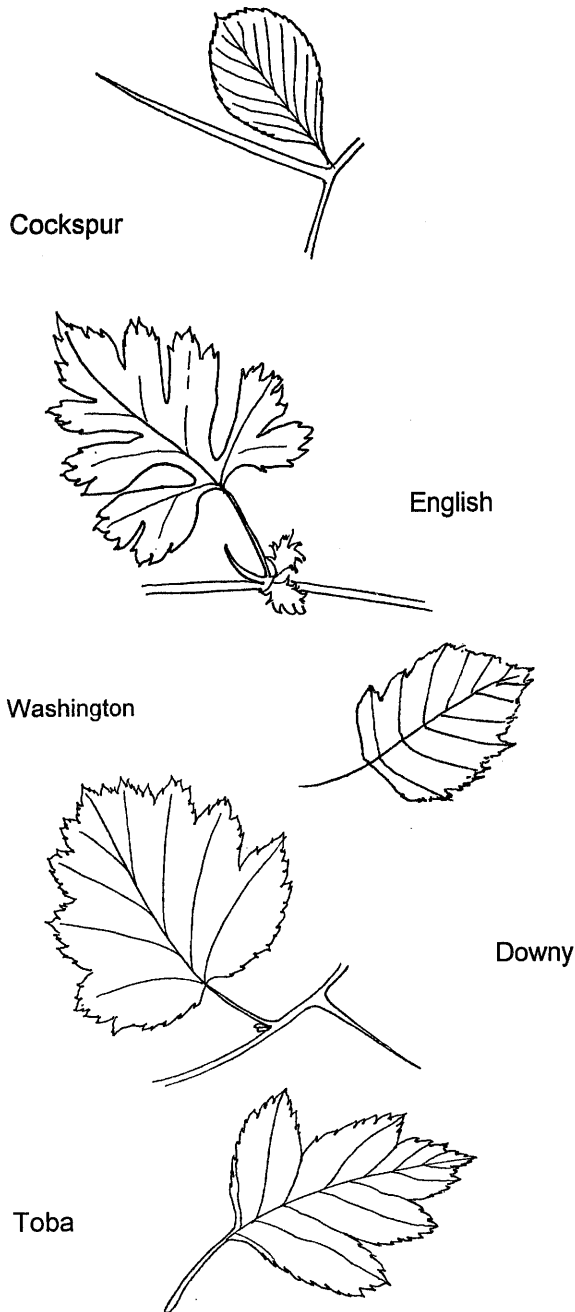
ALTERNATE - SIMPLE LEAVES
THORNS ON STEMS
LEAF MARGINS ARE TOOTHED (SERRATED)

Thin, sharp thorns; no glands (tiny bumps) present on petiole (leafstalk) near the leaf base

HAWTHORN - *Crataegus* spp. (kra-tee'-gus)

Family: Rose (*Rosaceae*)

- Leaf - Various shapes from oval to slightly or moderately lobed. Usually toothed margin.
- Bud - Very tiny, roundish, shiny, usually red to brown, may be on either side of base of thorn. Not hairy. Approximately six bud scales. True terminal buds.
- Leaf scar - Small, crescent, raised. Three bundle scars.
- Stem - Stems are grayish-brown, slender and zig-zaggy. Most hawthorns have sharp thorns, however, there are a few cultivars of thornless Hawthorns.
- Pith - Small, round, continuous, pale.
- Flower - Varies with species - white, pink, red.
- Fruit - Pome, yellow or red, apple-like, small. Some may persist through winter.
- Habit - Varies with species - all are small ornamental trees.
- Culture - Usually low to moderate moisture requirements. Full sun.



Cockspur (*C. crus-galli*) - 3" - 8" long thorns, glossy, dark green, unlobed leaf, broadest above the middle; 20' x 15'.

English (*C. laevigata*) - Leaf has 3-7 lobes, dark green, smooth; 1" thorns. 20' x 20'; open and spreading. Tolerates part shade. Moist, well drained conditions.

Washington (*C. phaenopyrum*) - 1-4 pairs of shallow lobes, irregularly toothed; glossy, smooth; 2" thorns; persistent fruit.

Downy (*C. mollis*) - Dull leaf has 4-5 pairs of lobes, hair on veins and beneath; 2" thorns.

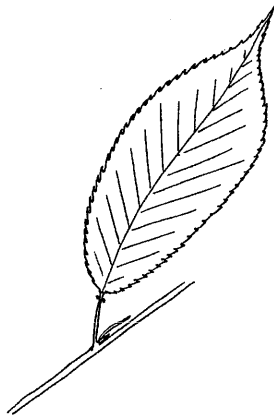
Toba (*C.x mordenensis* 'Toba') - Thornless. Shiny, lobed leaf. Pink to white flowers.

**ALTERNATE - SIMPLE LEAVES
THORNS ON STEMS
LEAF MARGINS ARE TOOTHED (SERRATED)**

Thorns are thick, blunt at ends, almost branch-like; very thin stipules may be present;
glands may be present on petiole near the leaf base

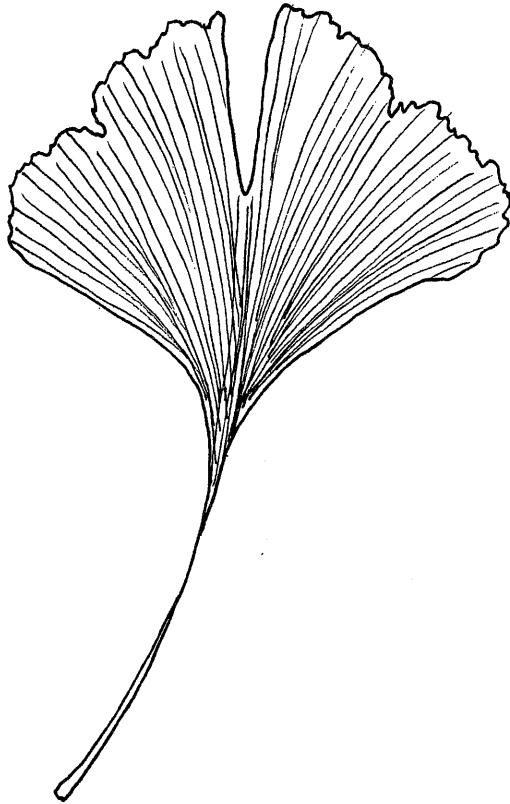
AMERICAN (WILD) PLUM - *Prunus americana* (proo'-nus ah-mere-uh-kah'-nah)

Family: Rose (*Rosaceae*)



- Leaf - 1" - 5" long, hairless or nearly so. Petiole hairy on upper side. Leaf somewhat sharply pointed, narrowing abruptly to a long tip. Broadest at or above the middle. Sharply and often doubly toothed. May or may not have glands (tiny bumps or knobs) at top of petiole. Net-like veins. Long, narrow stipules usually present.
- Bud - True terminal bud absent. Lateral buds are reddish-brown, 1/8" - 1/2" long. Sharp pointed. Lighter colored and downy at scale margins.
- Leaf scar - Raised, oblong, more than 1 bundle scar (hard to see). Base of scar is darker than rest of scar or stem.
- Stem - Stout and stiff. May be angled at nodes. Light colored lenticels. Typically hairless, grayish film. Usually has long, blunt thorns on older branches. Spinelike lateral spurs 2nd year. Shaggy older bark. New growth is orange-brown.
- Pith - Solid, small, round. May be brown in some areas of stem, white in other areas.
- Flower - White, fragrant, 1" across, 5 petals, blooms just as leaves appear. Clusters of 3-5 flowers together, at end of spur or from lateral buds.
- Fruit - Red, yellow or purple plum with slight bloom (powdery); 1" diameter, large seed, somewhat flattened.
- Habit - Small tree. Low, broad crown. Suckers - can be multi-stemmed and form a thicket. Usually 20' tall or smaller. CO native - plains and foothills, canyons and slope bottoms.
- Culture - Low moisture requirements; cold and drought tolerant.

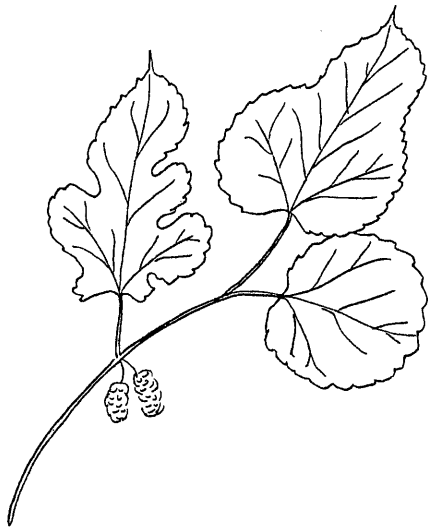
**ALTERNATE – SIMPLE LEAVES – THORNLESS
LEAVES FAN-SHAPED, WITH SMOOTH SIDES AND SCALLOPED OR
LOBED TOP MARGIN**



GINKGO (MAIDENHAIR TREE) – *Ginkgo biloba* (geenk'-go by-low'-bah)

Family: Ginkgo (*Ginkgoaceae*)

- Leaf - Fan- or triangular-shaped; veins are parallel to side margins; side margins are smooth; top margin may have 2 or 3 lobes, or a scalloped-appearing margin. Bright green.
- Bud - Brown, overlapping scales.
- Stem - Thick, pale brown to gray. Stringy and peeling on older branches. Older branches have short, black spur shoots.
- Bark - Ridges are gray-brown with dark, vertical furrows.
- Flower - Male catkins are 1" long in early spring, green, on short shoots. Female flowers are on a long (up to 2") stalk, greenish/white.
- Fruit - Ginkgo is a gymnosperm (naked seed). Plum-shaped, ill-smelling.
- Habit - Slow grower. Starts out pyramidal then becomes open and broad. Large branching structure. 50' x 30'
- Culture - Full sun. Moderate moisture requirements. Adapts to sandy soil and pH levels. Protect from wind.



ALTERNATE - SIMPLE - THORNLESS
SOME LEAVES IRREGULARLY LOBED, SOME NOT LOBED AT ALL
MILKY SAP AT LEAFSTALK (PETIOLE) BASE

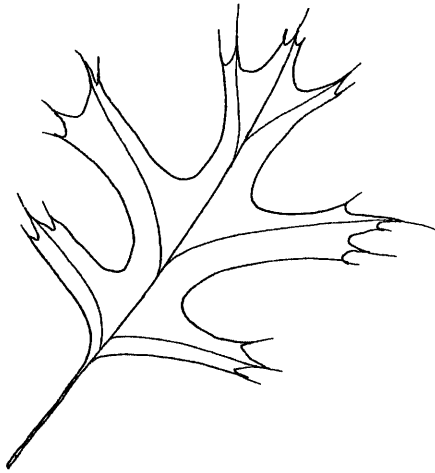
WHITE MULBERRY - *Morus alba* (mor'us al'-bah)

Family: Mulberry (*Moraceae*)

- Leaf - Some leaves are lobed, others are simply "oval" shaped. Both types have toothed margins. Leaf is glossy green above. Leaf base may be uneven. Palmate venation, 3 main veins. Hairless except at veins beneath. Milky sap at petiole base.
- Bud - 3-6 bud scales, slightly hairy. Dark margin at top of each scale. Side buds tilted above leaf scar. True terminal bud absent.
- Leaf scar - Half round. Many tiny bundle scars.
- Stem - Lenticels are prominent.
- Bark - Young – ashy-orange. Older – brown.
- Pith - White, solid.
- Flower - Drooping catkins. Tiny, greenish, clustered in cylinder shape.
- Fruit - Juicy berry, cylinder shape. White to pinkish, or even black. Edible only when ripe.
- Habit - Large, dense, round canopy. Usually "messy" looking. To 40' tall.
- Culture - Prefers well drained, moist locations. Salt tolerant.

ALTERNATE - SIMPLE - THORNLESS - LOBED LEAVES
PINNATE VENATION
LEAVES TOWARD STEM TIP; PITH IS 5 ANGLED OR STAR-SHAPED
TIPS OF LOBES ARE POINTED, BRISTLE-TIPPED

Sinuses of lobes are indented more than halfway to center vein (midrib)



PIN OAK - *Quercus palustris* (kware'-kus pa-lus-'tris)

Family: Oak or Beech (*Fagaceae*)

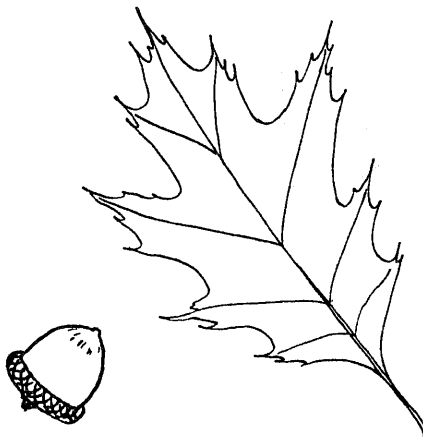
- Leaf - Lobes pointed, a very thin bristle on the tip of each. 5-7 pairs of lobes, sinuses reaching more than halfway to the central vein; deep, untoothed sinuses. Leaf dark green, shiny above. Hair at vein axils beneath. Leaves clustered toward branch tip.
- Bud - Terminal bud under 3/16" long; narrow, sharp, hairless. Lateral buds stick out. Lots of buds clustered toward branch tip.
- Leaf scar - Half round. More than 3 bundle scars.
- Stem - Slender. Many pinlike, stubby stems at end of each branch.
- Pith - Solid, 5-angled or star-shaped. Pale brown.
- Flower - Male catkins to 3" long, yellow-green, at base of new growth. Female at axils of new growth.
- Fruit - 1/2" diameter acorn; cup brownish and hairless, shallow, saucerlike, 1/4" high.
- Habit - Pyramidal when young. Large broad shade tree when older. Lower branches droop, middle branches horizontal, upper branches rising. 40'-50' tall.
- Culture - Prefers moist, rich, acid, well-drained soils. Prone to iron chlorosis.

Sinuses of lobes are indented less than halfway to center vein

RED OAK - *Quercus rubra* (kware'-kus ru'-bra)

Family: Oak or Beech (*Fagaceae*)

- Leaf - Lobes pointed, a very thin bristle on the tip. 7-9 pairs of lobes, sinuses not as deeply indented as with pin oak (indented about halfway to central vein). Lobes taper toward leaf tip. May have matted hair on underside of leaf at axils of the main veins. Petiole is slender, 1" - 2" long.
- Bud - Red-brown. Scales overlap, 10+ scales, narrow, sharp, hairless. Terminal bud longer than 3/16".
- Leaf scar - Raised, half round. Twelve or more bundle scars. (If you can't find bundle scars in one leaf scar, look at some of the other leaf scars, or other branches.)
- Stem - Hairless. Reddish to greenish-brown. Stoutier than pin oak.
- Pith - Solid, 5-angled or star-shaped.
- Flower - Male is 3" - 5" long catkin.
- Fruit - Acorn. Cup is almost flat.
- Habit - Pyramidal when young, Large broad shade tree when older. 40'+ tall.
- Culture - Avoid very alkaline soils.



ALTERNATE - SIMPLE - THORNLESS - LOBED LEAVES

PINNATE VENATION

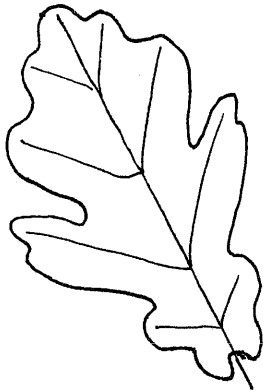
LEAVES CLUSTERED TOWARD STEM TIP

PITH IS 5 ANGLED OR STAR-SHAPED

TIPS OF LOBES ARE ROUNDED OR BLUNT

NO BRISTLE AT TIPS OF LOBES

Leaf base on some of the leaves has tiny "earlobes"; blue-green beneath



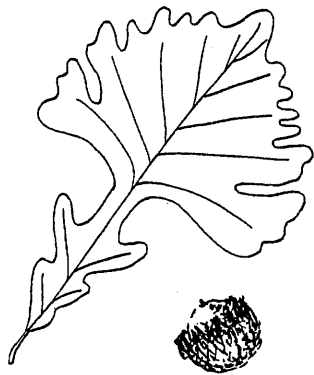
ENGLISH OAK – *Quercus robur*

Family: Oak or Beech (*Fagaceae*)

- Leaf - Lobes rounded, some leaves having tiny lobes on each side of the base of the leaf, resembling earlobes. Glossy, dark green above, blue-green beneath.
- Bud - Bud scales are fringed with hairs. Plump, reddish-brown, angled.
- Leaf scar - Raised, half-round.
- Stem - Shiny, reddish-brown, zig-zaggy.
- Bark - Gray-black, deep vertical furrows.
- Fruit - Acorn, 1" long, narrow. Cup covers 1/3 of the acorn.
- Habit - Broad, thick, spreading branches. 50' x 50', dense canopy.
- Culture - Full sun, moderate soil moisture, prefers well-drained soils. pH adaptable, but under 8.0 is preferred. Prone to iron chlorosis.

ALTERNATE - SIMPLE - THORNLESS - LOBED LEAVES
PINNATE VENATION
LEAVES CLUSTERED TOWARD STEM TIP
PITH IS 5 ANGLED OR STAR-SHAPED
TIPS OF LOBES ARE ROUNDED OR BLUNT
NO BRISTLE AT TIPS OF LOBES
LEAF BASE IS WEDGE-SHAPED OR ROUND
WHITE-GRAY, HAIRY BENEATH

Narrow "waist" on most of the leaves; hairy petiole, single trunk



BUR OAK - *Quercus macrocarpa* (Mossy Cup) (kware'-kus mak-ro-kar'-pa)

Family: Oak or Beech (*Fagaceae*)

- Leaf - Lobes rounded, no bristle tip. Leaf usually narrow from base to the middle, then has a deeply indented sinus, and the rest of leaf widens out with rest of sinuses not being as deep as the one in the center of the leaf. Leaf hairy, whitish beneath. Dull, medium-green above.
- Bud - Scales overlap, 10+ scales. Gray to yellowish-brown. Terminal bud under 3/16" long, rounded, hairy.
- Leaf scar - Raised, half round. Twelve or more bundle scars. (If you can't find bundle scars in one leaf scar, look at some of the other leaf scars, or other branches.)
- Stem - Yellow-brown. May be hairy and have corky wings.
- Bark - Dark gray. Older branches may be corky.
- Pith - Solid, 5-angled or star-shaped. Pale brown.
- Flower - Male catkins at base of new growth, yellow-green.
- Fruit - Acorn. Cap covers at least 1/2 the acorn and has mossy fringe. Inside cap is hairless.
- Habit - Oval to broad when mature. 40'+ tall.
- Culture - Full sun. Adapts to alkaline soils and drought.

ALTERNATE - SIMPLE - THORNLESS - LOBED LEAVES
PINNATE VENATION
LEAVES CLUSTERED TOWARD STEM TIP
PITH IS 5 ANGLED OR STAR-SHAPED
TIPS OF LOBES ARE ROUNDED OR BLUNT
NO BRISTLE AT TIPS OF LOBES
LEAF BASE IS WEDGE-SHAPED OR ROUND
WHITE-GRAY, HAIRY BENEATH

Shallow lobes, leathery; yellow midrib and petiole

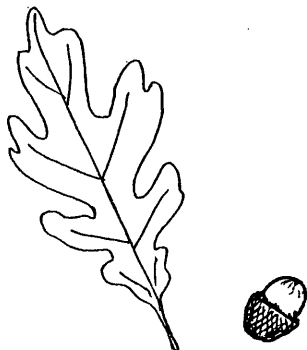


SWAMP WHITE OAK – *Quercus bicolor* (kware'kus by'-kul-er)

Family: Oak or Beech (*Fagaceae*)

- Leaf - 3" – 7" long; shallow, rounded lobes, no bristle on tips of lobes, dark green above, white beneath; Yellow midrib and petiole.
- Bud - Light brown, hairy above the middle. There may be thin appendages among the scales.
- Leaf scar - Half round.
- Stem - Yellowish-brown or reddish-brown, smooth.
- Bark - Grayish-brown, flaky. Deep furrows.
- Fruit - Acorn is 1" long, usually two together, cup covers 1/3 of light brown acorn.
- Habit - 50' to 60' tall, spreading, open, broad. Short trunk.
- Culture - Grows naturally in moist areas, but can adapt to drought conditions. Prefers acid soil.

Deep lobes; thicket forming



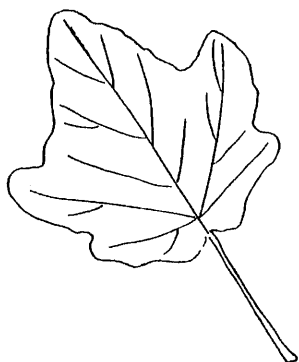
SCRUB OAK - *Quercus gambelii* (kware'-kus gam-bell'-ee-eye)

Family: Oak or Beech - *Fagaceae*

- Leaf - Rounded, deep lobes (variable), no bristle tip. Lobes may begin about halfway up from the base of leaf. Sinuses are small and shallow. Leaf is glossy above, slightly hairy beneath.
- Bud - Bud scales overlap each other, and there are 10+ scales.
- Leaf scar - Raised, half round. Twelve or more bundle scars.
- Stem - Fairly slender, light brown-gray.
- Pith - Solid, 5-angled or star-shaped.
- Flower - Catkin. Male 1" long; female tiny, in clusters in leaf axil.
- Fruit - Acorn. Cap encloses about half the acorn. No fringe on acorn cap.
- Habit - Dense thicket. Multi-stemmed. 15'-30' tall.
- Culture - Full sun, low moisture requirements. Well drained, low alkalinity preferred.

ALTERNATE - SIMPLE - THORNLESS - LOBED LEAVES PALMATE VENATION

Leaf whitish beneath; petiole flat



WHITE POPLAR - *Populus alba* (pop'-u-lus al'-ba)

Family: Willow (*Salicaceae*)

- Leaf - Slightly lobed. Deep dark green above, white and woolly beneath. Petiole is long and hairy. Random venation off of the central vein.
- Bud - Scales round, brown with white 'wool' (woolliness may rub off), and fringed with long hairs.
- Leaf scar - Somewhat raised, crescent-shaped, 3 lobed. Three bundle scars.
- Stem - New growth white, woolly;
- Bark - White, smooth; oldest is black.
- Pith - 5-pointed, star-shaped. White, solid.
- Flower - Male and female catkins on separate trees before leaves.
- Fruit - Female catkin cotton producing. Seeds are attached to 'threads' of cotton.
- Habit - Large, open, has several main branches. White "cast" to everything. Weak wooded. May sucker. To 40'+. *P. alba* 'Pyramidalis' (Bolleana poplar) is columnar.
- Culture - Full sun, moist conditions are preferred.

Leaf pale green beneath; petiole round with a hollow base at the stem end



AMERICAN SYCAMORE - *Platanus occidentalis* (plat'-a-nus ok-si-den-ta'-lis)

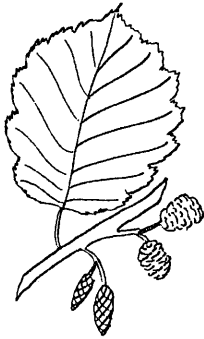
Family: Sycamore (*Platanaceae*)

- Leaf - Maple-like, large, up to 10" wide, glossy, hairless except veins beneath. 3 - 7 shallow lobes, large teeth. Lobes wider than long. Petiole is 2"- 4" long, stout, with hollow base. Stipules saucerlike, toothed, encircling stem.
- Bud - Inside the base of the petiole. Red/brown, cone-shaped, smooth, shiny. Single visible bud scale. True terminal bud absent.
- Leaf scar - Surrounds bud. Many bundle scars.
- Stem - Stout, round, zig-zag. Stipule scars encircle stem. Small branches are white.
- Bark - Mottled, brown/white/yellow on older bark.
- Pith - Pale brown, solid.
- Flower - Round heads, reddish yellow on previous year's wood.
- Fruit - Brown, 1" diameter ball. Usually 1 smooth ball per stalk. Long (3"-6") fruit stalk.
- Habit - Large shade tree. Irregular branching. 40'+ tall.

NOTE: LONDON PLANETREE (*Platanus x acerifolia*) - Very similar to Sycamore except terminal lobe is as wide as it is long, or longer. Fruit usually in pairs.

ALTERNATE - SIMPLE - THORNLESS - UNLOBED LEAVES
LEAF IS TRIANGULAR OR DIAMOND/WEDGE-SHAPED
PETIOLE IS ROUND

Small woody "cone" visible year-round, along with papery catkin part of the year



THINLEAF (MOUNTAIN) ALDER - *Alnus tenuifolia* (al'-nus ten-ewe-i-fo'-lee-a)

Family: Birch - *Betulaceae*

- Leaf - Coarsely, double-toothed. Broad, round tip, wedged base, 6-8 pairs of veins. Tufts of hair in vein axils beneath. Hairy stipules, 1/2" long. Orange-colored central vein beneath. Stout, grooved petiole, 1" long.
- Bud - Stalked, 1/3" long, bright red, a little hairy. Two or more scales, barely meeting. True terminal bud absent.
- Leaf scar - Half round, raised.
- Stem - Slender, not peeling. Tight bark. Young - rusty, hairy. No wintergreen or spicy taste or odor.
- Bark - Smooth, becoming scaly with age. Light brown to gray.
- Pith - Triangular in cross section
- Flower - Female egg-shaped strobile before leaves. Male 2" - 4" long catkin, 3-5 clustered together.
- Fruit - Persistent woody strobile, looks like a miniature cone, less than 1" long.
- Habit - Birch-like, slender. May be multi-stemmed. To 15' tall, upright, clump forming.
- Culture - High water needs – use in a moist site. Alders fix nitrogen in the soil, similar to legumes.

**ALTERNATE - SIMPLE - THORNLESS - UNLOBED LEAVES
LEAF IS TRIANGULAR OR DIAMOND/WEDGE-SHAPED
PETIOLE IS ROUND**

No woody "cone", but papery strobile may be present

BIRCH - *Betula* (bet'-ewe-la)

Family: Birch - *Betulaceae*

- Leaf - Doubly toothed. Triangular, diamond-shaped, or egg-shaped, depending on the species. Blunt base. No glands on petiole.
- Bud - Long, pointed, may be twisted. Some may be divergent (sticking out away from the stem). On second year's growth, the lateral buds may be on very short branches, giving the bud the appearance of being stalked. Two to four exposed, overlapping bud scales, the lower scales are very short. True terminal bud absent.
- Leaf scar - Semi-oval, crescent shaped, small. Three bundle scars but they are very hard to see.
- Stem - New stems are reddish-brown, slender, may be heavily lenticelled and hairy. On second year stems, leaves arranged in pairs on short spur-like branches.
- Bark - Older bark separates into thin, papery sheets; may be creamy white or brown.
- Pith - Small, round, solid.
- Flower - Two types of "catkins" may be present on the same tree - the male, long, slender and drooping, near end of stem; the female, shorter, fat and erect, like a miniature, papery cone, April to June.
- Fruit - Cone-shaped strobiles, shattering when ripe. Scales are 3-lobed or unlobed, thin and papery.
- Habit - Medium sized ornamental. Shape varies with the species. 15'-30' tall.
- Culture - Medium to high moisture requirements.

River Birch (*B. nigra*) - Broad wedged base. Smooth margin at base, rest is doubly toothed or may even be slightly lobed. 7-9 pairs of veins. 1/2" long petiole. Buds hug the stem and may be hairy. Reddish, peeling bark.

Paper or Canoe Birch (*B. papyrifera*) - Base is round or heart-shaped and smooth. Rest of margin is coarsely and doubly toothed. Leaf has pointed tip. Small, warty black glands (bumps) along main veins. Smooth above, usually hairy beneath at angles of the veins. 6-10 pairs of veins, 1" long petiole. Buds stick out away from the stem. Hairy bud scale margin. Bark white, papery. Young stem reddish-brown.

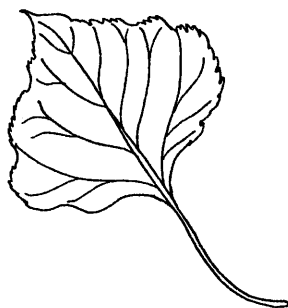
Cutleaf Weeping Birch (*B. pendula* 'Gracilis') - Leaf shape is lobed, deeply cut. Bark is white, peeling, papery. Pendulous branching pattern. Prone to borer damage, attacks top center of tree first. Avoid south and west exposures - prefers cool and moist conditions.

Rocky Mountain Birch (*B. occidentalis*) - 20' x 15', upright, clump. Moist conditions.



ALTERNATE - SIMPLE - THORNLESS - UNLOBED LEAVES
LEAF IS TRIANGULAR OR DIAMOND/WEDGE-SHAPED
PETIOLE IS FLAT

Form of plant is columnar

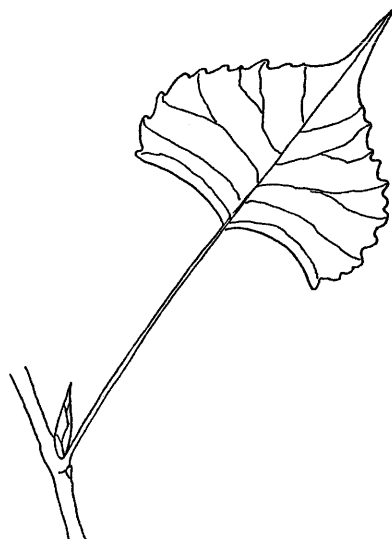


LOMBARDY POPLAR - *Populus nigra* 'Italica' (pop'-u-lus ni'-gra i-tal'-i-ka)

Family: Willow (*Salicaceae*)

- Leaf - Triangular, often wider than long. Fine toothed. Flat petioles lack glands. Leaf margins are translucent.
- Bud - Terminal bud not gummy. Lateral buds stick out. Reddish, elongated, curving outward. Lowermost bud scale is centered directly over the leaf scar of the lateral buds.
- Stem - Round, smooth. Orange, changing to ash-gray the second year.
- Bark - Thick, ridged and furrowed.
- Flower - Usually only male catkins.
- Fruit - None - usually no female plants.
- Habit - Columnar. 10' wide, up to 30'-40' tall. Short trunk. Very fast growing and short-lived.
- Culture - Prefers high moisture conditions.

Form of plant is tall, wide, open



PLAINS COTTONWOOD - *Populus sargentii* (or Eastern Cottonwood - *P. deltoides*)

Family: Willow (*Salicaceae*)

- Leaf - Triangular, glossy. Flat base, pointed tip. May have 2 or 3 glands near base of leaf at top of flat petiole which is 2-1/2" - 4" long. Margins have large rounded to pointed teeth. 3-5 veins meet at leaf base.
- Bud - Lowermost bud scale is centered directly over the leaf scar (typical of all species of Poplar) of the lateral buds. Buds are large (over 1/2"), pointed, shiny and can be green, yellow or gray. Stick out away from the stem. May be gummy. Terminal bud present.
- Leaf scar - Crescent-shaped. 3-6 bundle scars. Very noticeable stipule scars (horizontal lines) on either side of the leaf scar.
- Stem - Knobby (due to the enlarged nodes) and grayish-green.
- Bark - Gray, thick ridges and deep furrows.
- Pith - Brown, solid, 5-sided.
- Flower - Male & female flowers on separate trees. Flowers appear before leaves. Drooping catkins.
- Fruit - Capsules split open to release small seeds that are on a mat of long silky hairs (cotton).
 Note: *P. deltoides* 'Siouxland' is cottonless.
- Habit - Large, open form. Several main branches. Colorado native to the plains and foothills.
- Culture - Very high water needs.

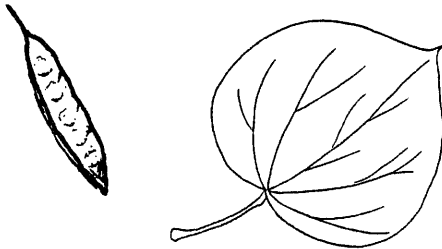
ALTERNATE - SIMPLE - THORNLESS - UNLOBED LEAVES
LEAF IS ROUND OR HEART-SHAPED
PETIOLE IS ROUND

Leaf margin is smooth all around; leaf is 3" long

EASTERN REDBUD - *Cercis canadensis* (ser'-sis kan-a-den'-sis)

Family: Cassia (*Caesalpiniaceae*) (Formerly Legume Family)

- Leaf - Heart-shaped base, pointed tip. 2" - 6" long, smooth margin. Leaf is thin, papery. May have tufts of hair in vein axils beneath. 5-7 prominent veins branching from leaf base. Long (up to 4"), slender petiole swollen at each end. Dark green.
- Bud - Small, round, purplish-red. Usually more than one bud per leaf scar. True terminal bud absent. Flower buds are larger and in clusters, stalked, even on the trunks. 5-6 scales, may have accessory buds; partially covered by leaf scar.
- Leaf scar - Raised, inverted triangle. Fringed w/hair at top, 2-3 lines from the scars. 3 raised bundle scars.
- Stem - Hairless. Slender, smooth, zig-zag. Young - dark brown, lustrous, Older - dull, darker.
- Bark - Smooth, gray with red streaks. Scaly with age.
- Pith - White, often streaked with red. Solid.
- Flower - Pinkish-purple, appearing before leaves in April or May, along preceding year's branches and trunk. Very showy pea-like clusters of blossoms.
- Fruit - 2" - 4" long, flat, dry pink-red to purplish pods, beanlike. Born on older branches. May remain all winter. Usually six seeds.
- Habit - Dividing close to ground, low, wide-topped, flat head. Horizontal branching. Can be multi-stemmed. 15' - 25' tall.
- Culture - Moderate water requirements. Likes a protected location. Sun or part shade.



Leaf margin is very finely toothed all around; leaf is 3" long

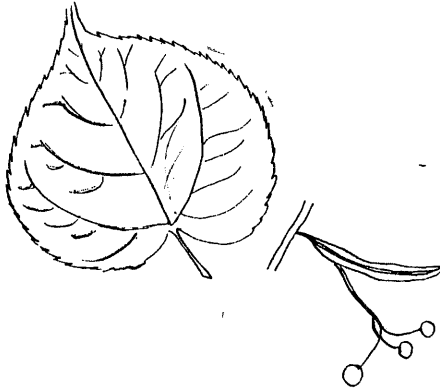
APRICOT - *Prunus armeniaca* (proo'-nus ar-men-e-a'-ka)

Family: Rose (*Rosaceae*)

- Leaf - Broad, round, 2" - 4" long, closely toothed, short, pointed tip. 1" long petiole. Medium green. numerous glands may be on top of petiole. Petiole may be reddish.
- Bud - Dark, hairy on scale margins. True terminal bud absent.
- Stem - Thornless. Reddish bark.
- Flower - Pink to white, single, before leaves.
- Fruit - Round, hairy. Smooth seed, 1" - 1-1/2" diameter.
- Habit - Small to medium sized tree. Broad canopy. To 15' - 25' tall. Branches low to ground. Dense.
- Culture - Full sun. well-drained, moist conditions. Rarely fruits because early flowers are hit by frost.



**ALTERNATE - SIMPLE - THORNLESS - UNLOBED LEAVES
LEAF IS ROUND OR HEART-SHAPED
PETIOLE IS ROUND**



Leaf margin is medium toothed; leaf base usually uneven; leaf is 3" – 6" long

AMERICAN LINDEN (BASSWOOD) - *Tilia americana* (till'-ee-a a-mere-i-kah'-nah)

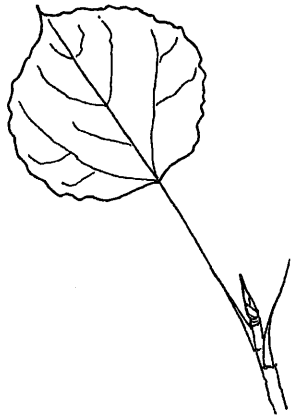
Family: Linden (*Tiliaceae*)

- Leaf - Large (4" - 10") heart-shaped leaf. Base is usually uneven. Tip is pointed. Three veins start at base. Axillary tufts of hair beneath. Coarsely toothed. May have stipules. Medium-dark green.
- Bud - Hairless, small, pointed, shiny (2-3 visible scales, one scale is larger and bulging, giving the bud a tilted or lopsided look.). Bud shaped like a teardrop. May be red, green or brown. Not stalked. Branch scar next to false terminal bud.
- Leaf scar - More than 3 bundle scars. May have stipule scars.
- Stem - Slender and green at the newest growth, becoming stouter, slightly zig-zag, smooth.
- Bark - Light brown, deeply furrowed on older trees.
- Pith - Continuous, white.
- Flower - Fragrant, yellow, 5 petaled, June to July. Attracts bees.
- Fruit - Whitish "berry" attached by long stalk to leaf-like, light green appendage (bract), which turns tan when mature. May persist through winter.
- Habit - Formal, dense, shade tree. Usually has a strong central leader. 50' x 40'.
- Culture - Full sun, well drained, moderate moisture. pH adaptable.

Littleleaf Linden (*T. cordata*) - Very similar but smaller in leaf, bud, habit. 45' x 30', conical, dense. May sucker. 'Greenspire' is 45' x 25', glossy, dark green leaves.

Redmond Linden (*T. x euchlora* 'Redmond') – Medium to fast growth rate. Reddish bark and stems. Narrow branch crotches.

ALTERNATE - SIMPLE - THORNLESS - UNLOBED LEAVES
LEAF IS ROUND OR HEART-SHAPED
PETIOLE IS FLAT



QUAKING ASPEN - *Populus tremuloides* (pop'-u-lus trem-u-loy'-dez)

Family: Willow (*Salicaceae*)

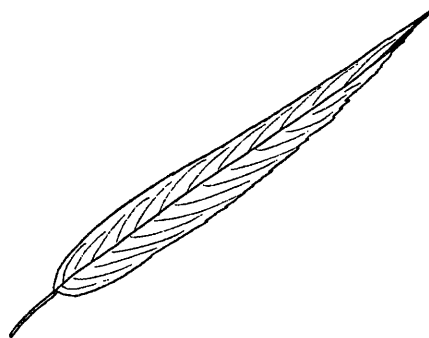
- Leaf - Round, with an abrupt point at tip - roundish teeth (20-40 pairs of fine teeth). Shiny green above, pale dull green beneath. Flat petiole, set at right angle to the blade.
- Bud - Lowermost bud scale is centered directly over the leaf scar of the lateral buds. 6-7 bud scales. Buds are chestnut brown, shiny, gummy, pressed close to the stem. Not as large as cottonwood buds. Buds are clustered near the end of the branch.
- Leaf scar - Wide. U-shaped. Three bundle scars. Stipule scars not as noticeable as the ones of cottonwood.
- Stem - Grayish-green when young. White may rub off on your hand like chalk. Smooth.
- Bark - Greenish-white, smooth. Large black knots where branches fell off.
- Pith - Brown, solid.
- Flower - On separate trees. Male tassels have red stamens.
- Fruit - Catkins - seeds are tufted like cotton.
- Habit - Small ornamental. Suckers profusely. 15'-30' tall. CO native to foothills, montane.
- Culture - Prefers moist conditions and a higher elevation than 6,000'.

ALTERNATE - SIMPLE - THORNLESS - UNLOBED
LEAF IS LONG AND NARROW (3-4 TIMES LONGER THAN WIDE)
ONE BUD SCALE

Branches very droopy, leaf very narrow (1/2" – 3/4" wide)

WEeping WILLOW- *Salix babylonica* (sa'-liks bab-i-lon'-i-ka)

Family: Willow (*Salicaceae*)



- Leaf - Very narrow. To 7" long, 1/2" wide. Finely toothed. Medium to dark green above, white or silky beneath. One main vein, other veins are parallel to each other, evenly spaced. Stipules may be present.
- Bud - One bud scale, like a cap. True terminal bud absent.
- Leaf scar - Small.
- Stem - Very long, slender, droopy, golden, round, smooth, shiny; young growth slightly silky.
- Bark - Corky, ridged and furrowed. Light brown.
- Flower - Upright catkin.
- Fruit - Cottony capsule.
- Habit - Very weeping. Large, open, to 40' tall. Very fast growth and weak wooded.
- Culture - Extremely moist conditions.

Branches not as droopy; leaves not as narrow (3/4" – 1-1/4")

PEACHLEAF WILLOW - *Salix amygdaloides* (sa'-liks a-mig-da-loy'-dez)

Family: Willow (*Salicaceae*)



- Leaf - 2" - 6" long, 1" wide. Broadest below the middle. Dark yellowish-green, whitened beneath. Very long pointed, fine toothed, leathery. May have small, kidney-shaped stipules. Petiole very slender, may be twisted, no glands. Leaf may have large, yellow central vein.
- Bud - One bud scale. Egg shaped, shiny. Brown on top, light orange below. 1/8" long. Hugs stem. True terminal bud absent.
- Leaf scar - Narrow, nearly straight across. 3 bundle scars. Very small stipule scars.
- Stem - Branches a little drooping. Shiny, yellow-orange or brown. Slender and smooth.
- Bark - Blackish.
- Pith - White, solid. Small.
- Flower - Yellow-green, hairy. Catkin, 1" long.
- Fruit - Cottony capsule.
- Habit - Not as weeping as Weeping Willow. Found along streambanks. 40' – 60' tall. CO native.
- Culture - Very moist conditions.

**ALTERNATE - SIMPLE - THORNLESS - UNLOBED
LEAF IS LONG AND NARROW (3 - 4 TIMES LONGER THAN WIDE)
MORE THAN ONE BUD SCALE**

Stems yellowish-green to gray; catkins drooping

NARROWLEAF COTTONWOOD - *Populus angustifolia* (pop'-u-lus an-gus-ti-fol'-e-a)

Family: Willow (*Salicaceae*)

- Leaf - Narrow, 2" - 6" long, 3/4" - 1-1/2" wide, broadest near the middle. Round base, very pointed tip. Finely toothed. Sticky underneath. Short petiole. Stout yellow midrib (central vein).
- Bud - Brown, sticky, 3-5 thin scales. 1/2" long. Slender, pointed. Lateral buds may be curved outward.
- Leaf scar - Oval. Three bundle scars.
- Stem - Slender, round, smooth, yellow-green when young. Pale lenticels.
- Bark - Gray, furrowed.
- Pith - Greenish to light brown, 5-pointed, angular, solid.
- Flower - On separate trees.
- Fruit - Egg-shaped capsules on drooping catkins which release hairy brown seeds.
- Habit - Tall, oval. Usually found along streambanks, wet areas. To 40' tall. Suckers. CO native.
- Culture - High moisture requirements.



Stems are reddish above, greenish beneath; no catkins

PEACH - *Prunus persica* (proo'-nus pur'-si-ka)

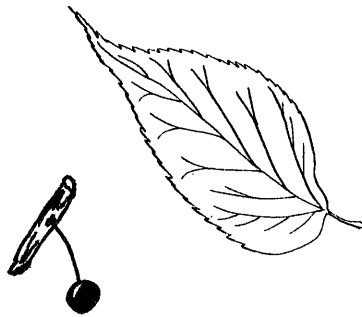
Family: Rose (*Rosaceae*)

- Leaf - Long, narrow, very finely toothed. 3" - 6" long. Broadest at or slightly above the middle. Pointed tip. Shiny above. Paler and smooth below. May have glands on petiole. May have stipules.
- Bud - Hairy, not sticky. Several bud scales. True terminal bud absent.
- Stem - Smooth. Reddish above, greenish and grainy beneath. Stipule scars.
- Bark - Dark reddish-brown, scaly.
- Flower - Pink, 1" to 1 1/2" across, before leaves appear. Solitary on wood of previous year.
- Fruit - Fleshy, hairy, 3" diameter, yellowish-red. Hard or bony stone. Each stone encloses a seed grooved on one side.
- Habit - Spreading, low, broad crown.
- Culture - Moderate moisture requirements. Full sun.



ALTERNATE - SIMPLE - THORNLESS - UNLOBED LEAVES
LEAF IS OVAL/OBLONG
BASE OF LEAF IS UNEVEN, ASYMMETRICAL

1-3 main veins, irregular venation; leaf 2-3 times longer than width, pith chambered



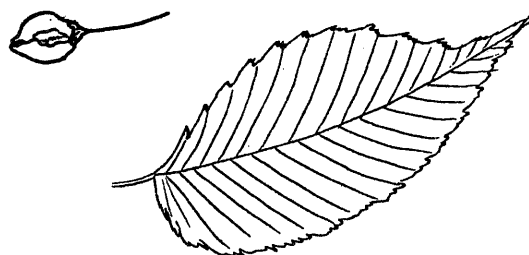
HACKBERRY - *Celtis occidentalis* (sel'-tis ok-si-den-tae'-lis)

Family: Elm (*Ulmaceae*)

- Leaf - Medium to light green, uneven base, widest at base, 3" - 7" long. Coarsely toothed except smooth at base. Net-like venation, 3 conspicuous veins branching from base. Long narrow tapering tip. Hackberry Nipple Galls (small round balls) usually found on underside of leaf.
- Bud - Usually arranged in two rows along the stem. Buds are very small, narrow, pointed, pressed close to stem. Hard to see. Scales are hairy.
- Leaf scar - Crescent-shaped, raised. Three bundle scars. Stipule scars.
- Stem - Slender, grayish, zig-zaggy. Lots of gray lenticels on young growth.
- Bark - Gray-brown to dark brown. Older bark is "warty," or knobby.
- Pith - Usually chambered throughout or near leaf scars; white, small.
- Flower - Female is greenish, solitary, in leaf axil. Male in clusters of 1, 2 or 3 at base of new growth.
- Fruit - Solitary, edible, round berries hang down from branches. Start out orangy-red and turn to dark purple.
- Habit - Irregular branching, large shade tree, vase-shaped, dense, broad, spreading. Very "twiggy." 45' x 40'.
- Culture - Tolerates low moisture conditions once established. Adaptable to wind and alkalinity.

ALTERNATE - SIMPLE - THORNLESS - UNLOBED LEAVES
LEAF IS OVAL/OBLONG
BASE OF LEAF UNEVEN, ASYMMETRICAL
ONE MAIN VEIN

6" long leaf, distinctly pinnate venation; double-toothed margin



AMERICAN ELM - *Ulmus americana* (ul'-mus a-mer-i-ka-na)

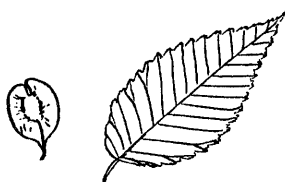
Family: Elm (*Ulmaceae*)

- Leaf - To 6" long. Double-toothed margin, long, narrow tip, widest at middle or above. Uneven base. Pinnate venation - parallel veins extend from central vein to margin. May be very rough above, like sandpaper, in texture. Medium to dark green. Short petiole.
- Bud - Round flower buds. Leaf buds very tiny, narrow. Buds are reddish-brown or blackish. May be tipped to one side or the other of leaf scar. Bud scales (4 or more) may be in 2 ranks (two vertical rows). Scales edged in black. True terminal bud absent.
- Leaf scar - Half round. Bundle scars when visible are in groups of 3, sunken.
- Stem - Slender, slightly zig-zag, may be in a "fishbone" or herringbone pattern.
- Bark - Gray-brown deep, intersecting furrows. Older, upper bark sometimes black from sooty mold.
- Pith - White, solid.
- Flower - On slender drooping stalk, before leaves. In clusters on old stem at buds.
- Fruit - Small, flat, oval to circular, papery, notched at tip, 1/3" diameter. Long-stemmed. Hairless except for margin. One seed.
- Habit - Vase shaped. Large shade tree, 40'+ tall.
- Culture - Moderate moisture. Develops Dutch Elm Disease.

3" long leaf, usually single-toothed margin

SIBERIAN ELM - *Ulmus pumila* (ul'-mus pu'mi-la)

Family: Elm (*Ulmaceae*)



- Leaf - To 3" long. Usually single-toothed margin, pointed tip, may have a slightly uneven base. Pinnate venation. Leaf smaller and not as rough in texture as American Elm.
- Bud - Roundish in shape. Flower buds are larger than the leaf buds, which are very tiny and hard to see. Buds are reddish-brown or blackish and may be tipped to one side or the other of the leaf scar. Bud scales (4 or more) may be in 2 ranks (two vertical rows). Scales may be hairy on margins. True terminal bud absent.
- Leaf scar - Half round. Sunken bundle scars when visible are in groups of 3.
- Stem - Slender. New growth gray, in a "fishbone" or herringbone pattern;
- Bark - Older bark brown, furrowed.
- Pith - White, solid.
- Fruit - Oval, circular, flat papery, 1/2" diameter. In clusters of 8-15.
- Habit - Scraggly, not vase shaped. Weak wooded, very fast growing. Broken branches. 40'+ tall.
- Culture - Thrives just about anywhere under any conditions.
- Note: Confused with Chinese elm. Chinese elm fruits in September, not in spring like Siberian elm.

ALTERNATE – SIMPLE – THORNLESS – UNLOBED LEAVES
LEAF IS OVAL/OBLONG; BASE OF LEAF EVEN, SYMMETRICAL

Leaf margin wavy; untoothed or slightly toothed



PEAR - *Pyrus communis* (pi'-rus kom-mu'-nis)

Family: Rose (*Rosaceae*)

- Leaf - Finely toothed or smooth margin, to 3" long. Broadly oval. Dark green. Nearly hairless underneath. May have wavy margin. Glossy. Short pointed. Long petiole.
- Bud - Usually brownish. Terminal large, hairy, cone-shaped, pointed, with two smaller side buds. Bud scales short pointed.
- Leaf scar - 3 bundle scars.
- Stem - Nearly hairless. Yellowish-green. Stout. Inconspicuous lenticels.
- Bark - Dark brown to gray, thick, scaly with shallow ridges.
- Flower - Clustered on spurs. Hairy flower stalk.
- Fruit - Large 2" - 4" long, 3" wide. Green to yellow.
- Habit - Oval, medium sized. To 30' tall.
- Culture - Moderate moisture requirements.

Bradford Pear (*Pyrus calleryana* 'Bradford') - Has a very hairy, large gray terminal bud.

Leaf margin not wavy; leaf margin toothed; petiole long, 1" – 3"



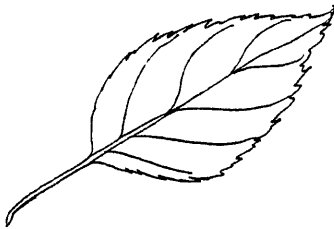
LANCELEAF COTTONWOOD - *Populus acuminata* (pop'-u-lus a-ku-mi-na'-ta)

Family: Willow (*Salicaceae*)

- Leaf - 2" - 4" long, 1" - 2" wide. Oval or egg-shaped, pointed tip, round or wedge-shaped base. Base and tip smooth, rest toothed. Deep glossy green above, dull green below. Veins are light yellow. Two glands at top of round, long petiole.
- Bud - Terminal bud 1/2" long, shiny, brown, may be gummy. Lateral buds smaller, flattened against stem.
- Leaf scar - Raised.
- Stem - Pale yellow brown, smooth, slender, round.
- Bark - Older stems are light gray-brown.
- Pith - 5-sided.
- Fruit - Catkins, 4" - 5" long.
- Habit - Dense, round crown. 40' tall. CO native
- Culture - High water requirements.

ALTERNATE - SIMPLE - THORNLESS - UNLOBED LEAVES
LEAF IS OVAL/OBLONG; BASE OF LEAF EVEN, SYMMETRICAL
LEAF MARGIN NOT WAVY; LEAF MARGIN TOOTHED
PETIOLE SHORT, 1" OR LESS; IRREGULAR PINNATE
VENATION; VEINS MAY CURVE SLIGHTLY, USUALLY
SPLITTING AND FORKING NEAR THE LEAF MARGIN
NO GLANDS (TINY BUMPS) ON PETIOLE OR BASE OF
LEAF; NEWEST STEM GROWTH AND BUDS ARE HAIRY

Stems, leaves and buds VERY hairy



APPLE - *Malus pumila* (may'-lus pu'mill-ah)

Family: Rose (*Rosaceae*)

- Leaf - Egg-shaped. Toothed margin. Hairy, stout petiole. Leaf may have heart-shaped base. Usually soft and hairy, especially beneath.
- Bud - Whitish, hairy. Blunt. Bud scales rounded.
- Leaf scar - Somewhat raised, narrow, slightly curved. Three bundle scars.
- Stem - Hairy. Fruit spurs present (short, stubby branches). Sweet taste.
- Bark - Gray; round, wide ridges that may spiral.
- Flower - Pinkish-white blossom. Flower stalk hairy.
- Fruit - Apple, 3" diameter.
- Habit - Medium size, broad canopy. To 30' tall. Short trunk
- Culture - Moderate moisture requirements. Well drained, full sun.
- NOTE: Seeds and foliage are poisonous.

Stems, leaves and buds slightly hairy



CRABAPPLE - *Malus species* (may'-lus)

Family: Rose (*Rosaceae*)

- Leaf - 2" - 4" long, 1" - 2" wide, toothed margin. Pinnate venation. Some species may have lobed leaves.
- Bud - Bud scales open up to expose grayish-white hairs. Buds are about 1/4" long, and a little rounded at the end. The hair on the tip of the bud is more obvious closer to spring.
- Leaf scar - Small, crescent, 3 bundle scars.
- Stem - Branch may be hairy right at tip of newest growth. Fruit spur branches are present (very short branches).
- Bark - Varies. Some species have very mottled, attractive appearance.
- Flower - Clusters, fragrant, 5 petals, lots of stamens, 1" - 2" across. Terminal flower on cluster opens first then progresses backwards.
- Fruit - Small, apple-like, ranging in size and color (from yellows to reds).
- Habit - Small to medium-sized ornamental. Various shapes. From 12' to 25' tall.
- Culture - Moderate moisture requirements. Well drained, full sun.

ALTERNATE - SIMPLE - THORNLESS - UNLOBED LEAVES
LEAF IS OVAL/OBLONG; BASE OF LEAF EVEN, SYMMETRICAL
LEAF MARGIN NOT WAVY; LEAF MARGIN TOOTHED
PETIOLE SHORT, 1" OR LESS; IRREGULAR PINNATE
VENATION; VEINS MAY CURVE SLIGHTLY, USUALLY
SPLITTING AND FORKING NEAR THE LEAF MARGIN
USUALLY GLANDS ON PETIOLE OR BASE OF LEAF; STEMS AND
BUDS USUALLY NOT HAIRY; TRUE TERMINAL BUD ABSENT
LEAVES REDDISH-PURPLE

When stems are scratched, green beneath



NEWPORT PLUM - *Prunus cerasifera* 'Newport'

(also may be known as *Prunus ceracifera* 'Atropurpurea' x Omaha Plum)

Family: Rose (Rosaceae)

- Leaf - Purplish-red, small (2" - 3-1/2" long), blunt tip, puckery near the lower part of the central vein. Leaf turns red in fall. Stipules fall off early. Glands very hard to see - at base of leaf – not on every leaf.
- Bud - Short, blunt, a little hairy.
- Stem - Hairless, lenticels. Grayish-brown. Green beneath bark when scratched,
- Flower - Pinkish, white. Small.
- Fruit - Sparse, 1" diameter, dull deep red, flesh is light red.
- Habit - Round, broad head. Small ornamental. To 15'-25' tall.
- Culture - Moderate moisture requirements. Full sun.

When stems are scratched, red-purple beneath

BLIREANA PLUM - *Prunus x blireana*

Family: Rose (Rosaceae)

A hybrid between *Prunus ceracifera* 'Atropurpurea' and *Prunus mume*. Blooms in April or early May, pale pink to white.

ALTERNATE - SIMPLE - THORNLESS - UNLOBED LEAVES
LEAF IS OVAL/OBLONG; BASE OF LEAF EVEN, SYMMETRICAL
LEAF MARGIN NOT WAVY; LEAF MARGIN TOOTHED
PETIOLE SHORT, 1" OR LESS; IRREGULAR PINNATE
VENATION; VEINS MAY CURVE SLIGHTLY, USUALLY
SPLITTING AND FORKING NEAR THE LEAF MARGIN
USUALLY GLANDS ON PETIOLE OR BASE OF LEAF; STEMS AND
BUDS USUALLY NOT HAIRY; TRUE TERMINAL BUD ABSENT

Leaves green; thornless, not thicket forming

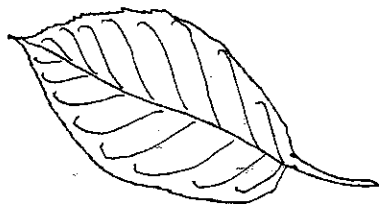


PLUM - *Prunus domestica* (proo'-nus doe-mes'-tik-a)

Family: Rose (*Rosaceae*)

- Leaf - 2" - 4" long, irregularly toothed margin. Usually has glands on petiole or leaf base. Dark green above, paler and hairy beneath. Stipules may persist.
- Bud - True terminal bud absent.
- Leaf scar - Stipule scars may be evident near the leaf scar.
- Stem - Grayish to black bark. Sour tasting.
- Flower - Three or less in clusters.
- Fruit - Has whitish powder. Stones are flattened. Line vertically along fruit axis.
- Habit - Various shapes. Usually medium-sized, round canopy.

ALTERNATE - SIMPLE - THORNLESS - UNLOBED LEAVES
LEAF IS OVAL/OBLONG; BASE OF LEAF EVEN, SYMMETRICAL
LEAF MARGIN NOT WAVY; LEAF MARGIN TOOTHED
PETIOLE SHORT, 1" OR LESS; IRREGULAR PINNATE
VENATION; VEINS MAY CURVE SLIGHTLY, USUALLY
SPLITTING AND FORKING NEAR THE LEAF MARGIN
USUALLY GLANDS ON PETIOLE OR BASE OF LEAF; STEMS AND
BUDS USUALLY NOT HAIRY; TRUE TERMINAL BUD PRESENT



Leaves finely serrated, green; glandular dots on lower leaf surface; bark reddish-brown, peeling

AMUR CHOKECHERRY - *Prunus maacki* (proo'-nus makk'-ee-eye)

Family: Rose (Rosaceae)

- Leaf - Egg-shaped or oval, 2" - 5" long; finely, sharply toothed. Usually has two round knobby glands at top of petiole near the leaf base.
- Bud - Dull, light brown. Cone-shaped.
- Leaf scar - Oval, 3 bundle scars.
- Bark - Cinnamon-coppery colored or reddish-brown and peels off.
- Flower - White, numerous, on a 2" - 3" long central stalk.
- Fruit - 1/5" diameter black fruits on long central stalk.
- Habit - Medium sized, rounded shade tree. 15' - 30' tall.

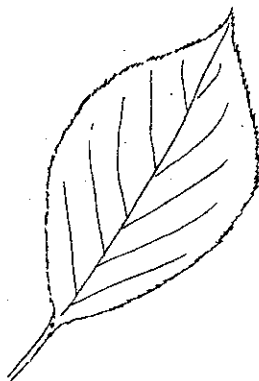


Leaves finely serrated, green; no glandular dots on lower leaf surface; bark gray-brown, not peeling

COMMON CHOKECHERRY - *Prunus virginiana* (proo'-nus vir-jin-e-a'-na)

Family: Rose (Rosaceae)

- Leaf - Egg shaped or oval, 2" - 5" long, tiny, sharp, pointed teeth, hairless central vein. Poisonous when wilted. Two round knobby glands at top of petiole near the base of the leaf.
- Bud - 3/16" long, dull brown. Bud scales rounded at tips with gray margins. Terminal bud present.
- Leaf scar - Oval, 3 bundle scars.
- Stem - Rank odor. No spurs, no thorns. Gray film. Stout, smooth, dull. Light colored.
- Flower - White, creamy, 5-petaled, round tipped blossoms, on a long, central stalk. Fragrant.
- Fruit - Reddish-purple to black, elongated clusters. Long central fruit stalk may remain through winter. Flesh of fruit edible. Seed poisonous.
- Habit - Single trunked or multi-stemmed shrub or small tree. Suckers. To 15' - 25' tall.



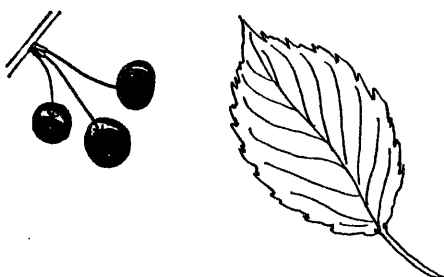
Leaves finely serrated, reddish-purple

CANADA RED CHERRY - *Prunus virginiana* 'Schubert'

Same as common chokecherry except foliage starts out green in spring and turns reddish purple rest of season.

ALTERNATE - SIMPLE - THORNLESS - UNLOBED LEAVES
LEAF IS OVAL/OBLONG; BASE OF LEAF EVEN, SYMMETRICAL
LEAF MARGIN NOT WAVY; LEAF MARGIN TOOTHED
PETIOLE SHORT, 1" OR LESS; IRREGULAR PINNATE
VENATION; VEINS MAY CURVE SLIGHTLY, USUALLY
SPLITTING AND FORKING NEAR THE LEAF MARGIN
USUALLY GLANDS ON PETIOLE OR BASE OF LEAF; STEMS AND
BUDS USUALLY NOT HAIRY; TRUE TERMINAL BUD PRESENT

Leaves coarsely serrated; leaf hairy beneath at vein axils only



SWEET CHERRY - *Prunus avium* (proo'-nus a'-ve-um)

Family: Rose (*Rosaceae*)

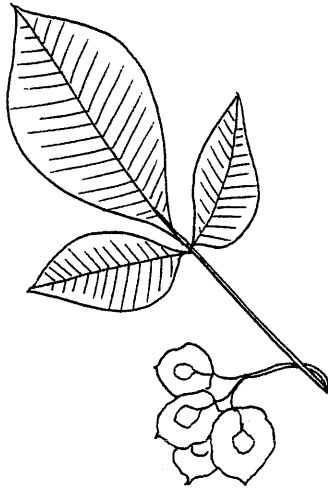
- Leaf - Glands on leaf stem or base of leaf. Leaf is 2" - 6" long, pointed tip, irregularly or doubly toothed. Stipules usually present. 6-8 pairs of side veins. May be hairy beneath at veins. Dull green above. Spur branches have leaves.
- Bud - Clustered at terminal. Glossy, spindle-shaped. True terminal bud present.
- Stem - Stem smells sour when broken. Horizontal lenticels. No thorns. Stipules scars. Short spur branches. Stem is dark reddish-brown.
- Flower - White, 1" - 1-1/2" diameter.
- Fruit - Has no powder or encircling lines. Seeds are round. Fruits are solitary, reddish.
- Habit - Small to medium sized ornamental. May be dwarf.

Leaves coarsely serrated; leaf hairless beneath

SOUR CHERRY (*P. cerasus*)

10-14 pairs of side veins. Flowers and fruit clustered on leafless spur branches. Usually not hairy at veins beneath. Glossy green above.

ALTERNATE - COMPOUND LEAVES
LEAF DIVIDED INTO THREE LEAFLETS



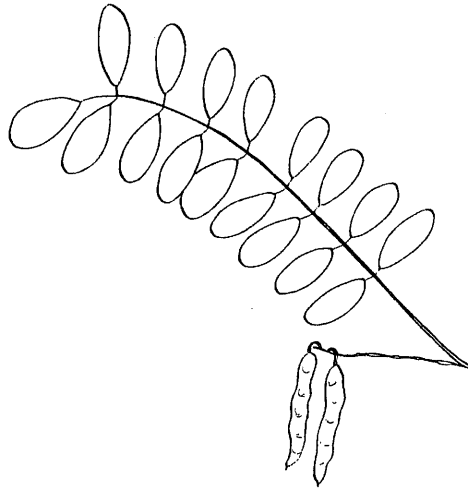
HOP TREE (WAFER ASH) - *Ptelea trifoliata* (tee'-lee-a tri-fo-lee-ah'-tah)

Family: Rue (*Rutaceae*)

- Leaf - Three leaflets (trifoliate), middle leaflet usually larger. Pointed at base and tip. Margin smooth or finely toothed. Glossy above, glandular dotted beneath. Aromatic, like orange peels.
2" - 4" long petiole.
- Bud - Small, woolly, round, yellowish. Almost surrounded by leaf scar. True terminal bud absent.
- Leaf scar - Raised. Horseshoe shaped. Three bundle scars.
- Stem - Slender, smooth, dark reddish-brown.
- Pith - Large, round, continuous, white.
- Flower - Greenish-white, flat topped, fragrant.
- Fruit - Drooping samara, roundish, flat, buff colored, 1" diameter, persistent. Similar to elm fruit.
2-3 seeds in middle.
- Habit - Bushy, rounded. Small ornamental tree or shrub. Suckers. CO native, foothills.
- Culture - Well drained, full sun or part shade. Moderate to high moisture requirements.

**ALTERNATE - COMPOUND LEAVES
MORE THAN THREE LEAFLETS
SMOOTH OR VERY FINELY TOOTHED LEAFLET MARGINS**

Thorns: pair of 1/4" - 1/2" prickles at nodes



BLACK LOCUST - *Robinia pseudoacacia* (ro-bin'-e-a soo-do-a-ka'-se-a)

Family: Pea or Legume (*Fabaceae* or *Leguminosae*)

- Leaf - Oddly pinnate - 7-19 leaflets, egg-shaped, each leaflet 1" - 2" long. Smooth margins. Each leaf 6" - 14" long. Center vein is flat on upper surface, grooved and rounded beneath. Older foliage dark blue-green, new foliage bright yellow-green.
- Bud - Tiny, may be completely submerged into stem. Rusty-colored hairs. 3-4 buds clustered, covered with overlapping scales. True terminal bud absent. Scales are brown outside, woolly inside.
- Leaf scar - Nearly circular. Three bundle scars.
- Stem - Hairless, reddish-brown, brittle, zig-zaggy. Ridges along stem from leaf scars. Pair of thorns at leaf axils.
- Bark - Heavy, disorganized ridges.
- Pith - Brown, solid.
- Flower - Creamy white, fragrant clusters, 4" - 8" long. Pea-like blossoms, usually in clusters.
- Fruit - 2" - 6" flat pods, thin, papery. Reddish-brown, smooth. Persist through winter.
- Habit - Irregular branching. Suckers. Can form a thicket.
- Culture - Very adaptable.
- Note:** Young leaves, seeds, roots and inner bark are poisonous.

ROSE LOCUST (*R. neomexicana*) - Similar to Black Locust except flowers are lavender-rose and the fruit pods are smaller and have glandular hairs. Hairy flower stalks and hairy buds. Glandular, rusty hairs on stems. Naturalized.

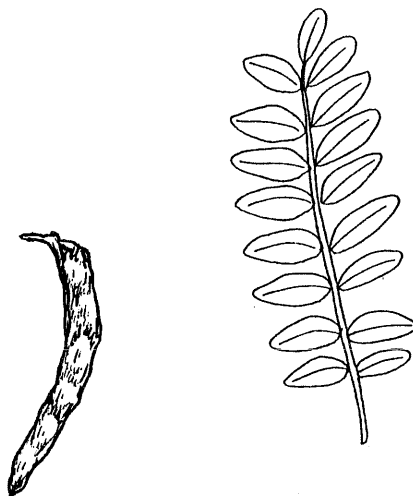
IDAHO LOCUST (*R. 'Idaho'*) - Lavender-rose flowers - more of a single-trunked tree form. Cultivated.

**ALTERNATE - COMPOUND LEAVES
MORE THAN THREE LEAFLETS
SMOOTH OR VERY FINELY TOOTHED LEAFLET MARGINS
THORNLESS**

Leaflets blunt at tips; pinnate or bipinnate

**THORNLESS COMMON HONEYLOCUST - *Gleditsia triacanthos* var. *inermis*
(gle-dit'-se-a try-a-kan'-thus ee-ner'-mis)**

Family: Cassia (*Caesalpinaceae*) Formerly Bean (*Fabaceae*) Family

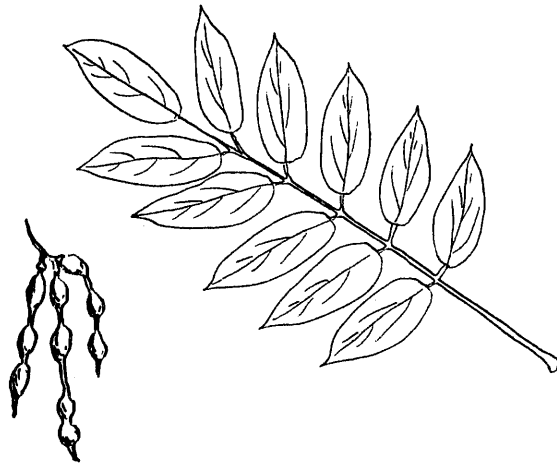


- Leaf - Oddly pinnate or bipinnately compound - 20-30 oblong leaflets, each 1" - 2" long, broadest at base, rounded or blunt at base and tip. Hairy on central vein beneath, hairy petiole. Very finely toothed margin. The whole leaf is 6" - 15" long. Base of petiole swollen, enclosing bud. Leaflets usually have no leafstalk. Leaves may be clustered toward branch tip.
- Bud - Hairless, usually embedded into the stem, making the bud very hard or impossible to see. Smaller buds may be above larger ones. True terminal bud absent.
- Leaf scar - Hard to see. Roundish with 3 bundle scars. Surrounds bud.
- Stem - Stout. Native honeylocusts may be armed with long thorns that are actually modified branches. (Most honeylocusts in the landscape are thornless - "inermis"). Zig-zaggy branching. Shiny, smooth, reddish-brown, brittle. Mottled or streaked. Very knobby. Enlarged leaf nodes.
- Bark - Mostly smooth, but rough in spots, as if smoothed by a trowel.
- Pith - Round, continuous, pale or pinkish.
- Flower - Small, greenish-yellow. Fragrant. Blooms in May or June.
- Fruit - Brownish-red, flat, slightly curved 6" - 18" long pod, leathery. Seeds rattle inside.
- Habit - Large, open canopy. Horizontal, zig-zagging branching. 50' x 40'
- Culture - Moderate moisture requirements. Full sun.

NOTE:

- Imperial** - 30' to 35' tall; thornless, round crown, some fruit.
- Moraine** - 40' to 50' tall. Fruitless. Darker green leaves. 40' x 45'
- Shademaster** - Ascending branches, dark green leaves, may have some pods; 70' x 50'
- Skyline** - 45' x 35', compact, ascending branches. Pyramidal. Dark green leaves.
- Sunburst** - 30' to 35' tall. New growth golden, changing to bright green. Needs regular irrigation.
- Fairview** - Fruitless; 40' x 40'

**ALTERNATE - COMPOUND LEAVES
MORE THAN THREE LEAFLETS
SMOOTH OR VERY FINELY TOOTHED LEAFLET MARGINS
THORNLESS; LEAFLETS POINTED AT TIPS**



Pinnately compound

JAPANESE PAGODA TREE - *Sophora japonica* (so-for'-a ja-pon'-i-ka)

Family: Pea or Bean (*Fabaceae* or *Leguminosae*)

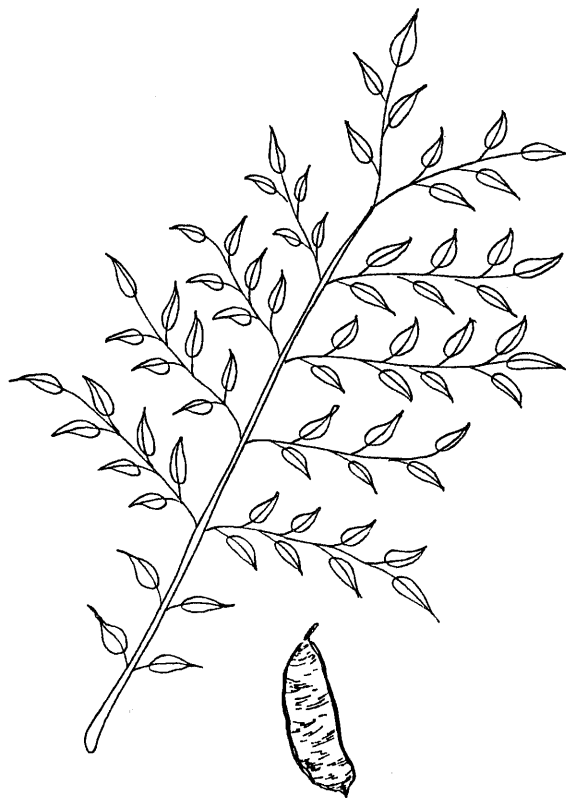
- Leaf - Oddly pinnate, 7-17 leaflets, each 1" - 2" long, pointed tip, smooth margin. Shiny green above, slightly hairy beneath. Swollen base of petiole encloses bud. Leaf is 6" - 10" long.
- Bud - Blackish, woolly, small. Concealed by leaf scar. Unstalked. True terminal bud absent.
- Leaf scar - Raised, "V"-shaped, 3 bundle scars.
- Stem - Slender, smooth. Green on young trees. Gray lenticels. Protruding nodes.
- Pith - Solid, green.
- Flower - Creamy white, 6" - 12" long terminal panicles. Blooms in summer. Fragrant.
- Fruit - Pod, bright greenish-yellow, turning brown. 2" - 4" long. 1-6 seeds. Pod persists. Fresh seeds and pulp are poisonous.
- Habit - Large shade tree. Broad round crown. To 40' tall.
- Culture - Adapts to alkaline and saline soils; moderate soil moisture requirements.

Bipinnately compound

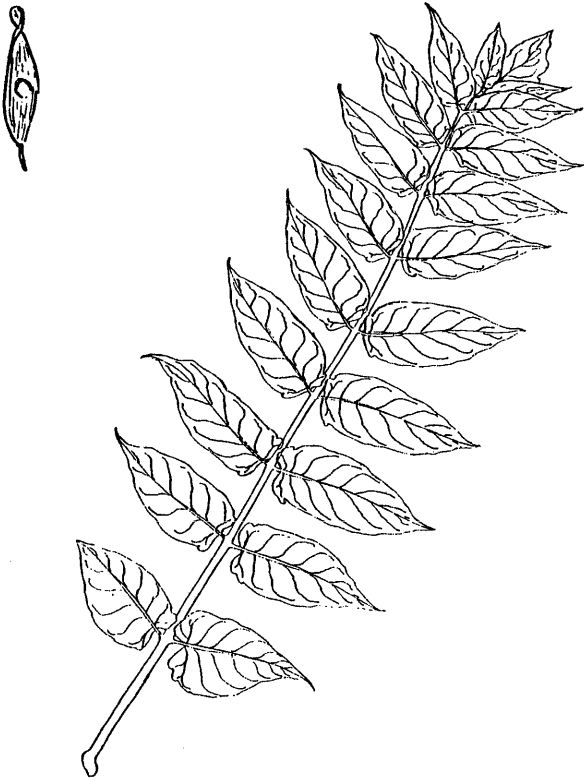
KENTUCKY COFFEETREE - *Gymnocladus dioica* (jim-nok'-la-dus dy-o-ee'-kus)

Family: Cassia (*Caesalpinaceae*) formerly bean (*Fabaceae*) family.

- Leaf - Each leaflet 2" - 2-1/2" long, broadest at base, pointed tip, smooth margin. 5-14 leaflet stalks, each with 3-7 pairs of leaflets. Entire leaf is 36" long x 24" wide. Dark green.
- Bud - Silky, sunken into stem. May be above one another. 2 dark brown scales visible. Terminal bud false.
- Leaf scar - Large, sunken into stem, heart-shaped. 3-5 bundle scars.
- Stem - Very stout, contorted. Dense, short hairs when young. Reddish-brown. Orange lenticels.
- Pith - Salmon-pinkish or reddish. Wide.
- Flower - Loose, terminal panicle in May or June. Female, 12" long, male 4" long. Usually separate trees.
- Fruit - Leathery, olive-brown pod, 5" - 10" long, persistent. Hard shell. Large round seeds.
- Habit - Large, dense shade tree. Upright, narrow at base, wider at top. To 40' tall. Interesting branching pattern in winter.
- Culture - Low water requirements once established. Full sun, well drained.



**ALTERNATE - COMPOUND LEAVES
MORE THAN THREE LEAFLETS
LEAFLET MARGINS SMOOTH EXCEPT AT LEAF BASE
LOBES ON EACH SIDE, LIKE EARLOBES.**



TREE OF HEAVEN - *Ailanthus altissima* (a-lan'-thus al-tis'-i-ma)

Family: Quassia (*Simaroubaceae*)

- Leaf - Oddly pinnate, 11-41 leaflets, each 3" - 5" long, not toothed except for a pair of gland-tipped teeth near leaflet base. Leaf 12" - 24" long. Smells bad when crushed. Petiole hairy.
- Bud - True terminal bud absent. Lateral buds small, half round, hairy, 2 or 4 scales showing. Reddish-brown.
- Leaf scar - Very large, triangular. Lots of bundle scars.
- Stem - Stout, yellow-brown, usually hairy on young growth. Smells very bad. Whitish lenticels.
- Pith - Yellow to light brown, large, continuous.
- Flower - Mostly separate male and female trees. Yellow-green, 8" - 16" long panicle. Male flower smells bad. Female odorless.
- Fruit - Dry, 2-winged samara, narrow, one-seed in center of wing. Reddish-brown. Spirally twisted in dense clusters.
- Habit - Large, upright, coarse, scraggly. Branches are stout and sparse. 50' x 40' Weak because of fast growth.
- Culture - Very adaptable.



**ALTERNATE - COMPOUND LEAVES
MORE THAN THREE LEAFLETS
LEAFLET MARGINS ARE MEDIUM-TOOTHED**

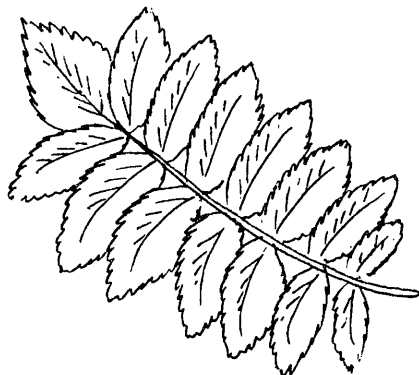
Chambered pith in older stem growth

BLACK WALNUT - *Juglans nigra* (joo'-glanz ny'-gra)

Family: Walnut (*Juglandaceae*)

- Leaf - 7-23 narrow, irregularly toothed leaflets, hairy beneath. Leaflets broadest at base. May not have end leaflet. Entire leaf is 12" - 24" long. Fragrant when crushed. Hairy, glandular petioles.
- Bud - Pale brown to whitish, woolly. Terminal bud up to 1/2" long. Two pairs of opposite scales on terminal bud. Side buds smaller and paler. Buds may be above each other (superposed).
- Leaf scar - Large, raised, shield shaped or 3-lobed. Upper edge notched. No hair at top. Three bundle scars, one in each lobe.
- Stem - Stout. Young stems are hairy. Light brown.
- Bark - Dark brown to black, furrowed.
- Pith - Chambered on older growth. New growth usually doesn't have chambered pith. Light brown.
- Flower - Male flower in drooping catkins on last year's wood. Female at end of current wood, short spikes of one to four flowers. Both male and female on same tree. Yellowish-green.
- Fruit - Furrowed nut in thick, round husk. Green to black.
- Habit - Large shade tree. Round, open canopy. 40'+ tall. Strong, central leader.
- Culture - Moist, well drained, full sun. Allelopathic (may be hard to grow some plants near walnut trees).

Solid pith - short leaflets (to 2-1/2" long); no milky sap from cut stem



EUROPEAN MOUNTAIN ASH - *Sorbus aucuparia* (sor'-bus aw-kew-pay'-ree-a)

Family: Rose (*Rosaceae*)

- Leaf - Leaf 5" - 7" long, 9-19 small leaflets, each 3/4" - 2-1/2" long. Toothed margin upper 2/3 of leaflet. Lower 1/3 margin may be smooth. Oval shaped, short-pointed tip. May be hairy.
 - Bud - Terminal buds are long (over 1/4"), tapered, pointed at end, and are slightly twisted. Scales open up to expose grayish-white hairs. The hairyness gives the bud the appearance of a rabbit's foot. Lateral buds are smaller, reddish-brown.
 - Leaf scar - Narrow, raised, "V" shaped. Five bundle scars.
 - Stem - Reddish-brown, woolly, light lenticels.
 - Bark - Shiny, orange-brown, very attractive.
 - Pith - 5-sided or roundish, brown, continuous.
 - Flower - 5 creamy-white petals in May. Large upright, flat-topped clusters, 4" - 6" wide.
 - Fruit - Large clusters of bright reddish-orange, 1/4" diameter berries.
 - Habit - Small ornamental. Upright, oval. 25' x 15'. Short-lived (20-30 years average)
 - Culture - Moderate moisture requirements. Full sun. Prone to fireblight.
- Sorbus scopulina*** - CO native, multi-stemmed shrub or small tree, foothills to sub-alpine, cool ravines.

**ALTERNATE - COMPOUND LEAVES
MORE THAN THREE LEAFLETS
LEAFLET MARGINS ARE MEDIUM-TOOTHED**

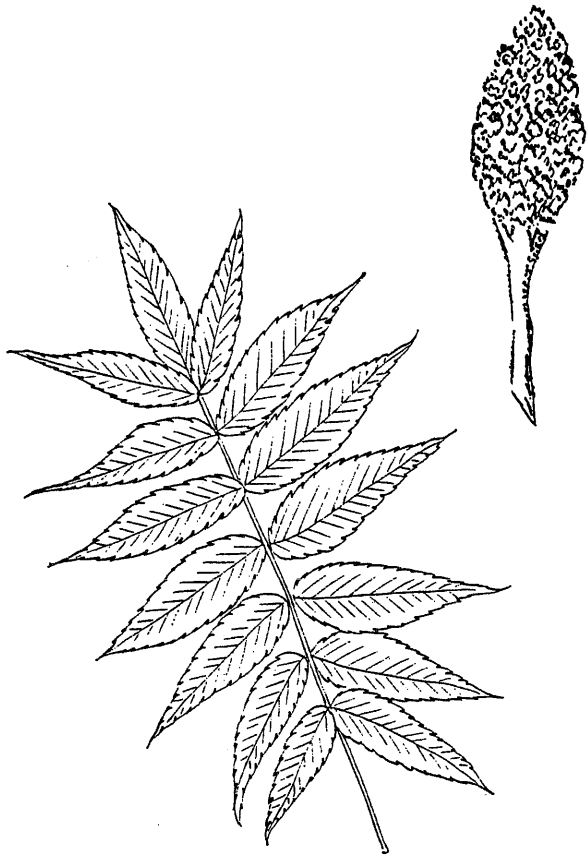
Solid pith; long leaflets (2" to 5"), ranging from short to long; milky sap exuding from cut stem

STAGHORN SUMAC - *Rhus typhina* (roos ti-fin'-a)

Family: Cashew or Sumac (*Anacardiaceae*)

- Leaf - Pinnately compound, 12" - 24" long. 11-31 leaflets, each 2" - 5" long, toothed all the way around, round base, long tapered tip. Petiole is very hairy, enlarged at base to encircle bud.
- Bud - Hairy, surrounded by leaf scar.
- Leaf scar - U-shaped.
- Stem - Very hairy, especially on new growth. Round, over 1/2" thick, very small lenticels. No line encircling stem at scars.
- Pith - Large, consumes most of the diameter of the stem. Brownish-yellow.
- Flower - Yellowish-red - male. Red - female. On separate plants.
- Fruit - Red, long, hairy spike-like, terminal upright cluster.
- Habit - 15' to 20' tall. Open branching, resembling the horns of a male deer. Suckers.
- Culture - Low moisture requirements.

CUTLEAF STAGHORN SUMAC (*R. typhina* 'Laciniata') - Leaflets finely and deeply toothed.



**ALTERNATE - COMPOUND LEAVES
MORE THAN THREE LEAFLETS**

Leaflet margins coarsely and irregularly toothed and/or lobed

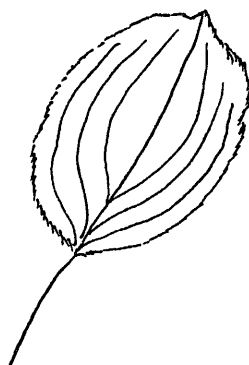
GOLDENRAINTREE - *Koelreuteria paniculata* (kol-ru-te'-re-a pan-ik-u-la'-ta)

Family: Soapberry - *Sapindaceae*

- Leaf - Up to 14" Long. Pinnately compound or bipinnately compound - 7-15 leaflets, terminal leaflet present. Leaflets are lobed and/or coarsely and irregularly toothed. Hairy on veins underneath.
- Bud - Small, roundish, brown, dull. Looks as though a football is "stuck" halfway into the stem, or like a "hershey" kiss. Two exposed scales. True terminal bud absent.
- Leaf scar - Large, raised, shield-shaped, 3 bundle scars.
- Stem - Fairly stout, brown. Orange-brown lenticels.
- Bark - Medium brown, not deeply furrowed.
- Pith - Large, round, continuous, white.
- Flower - Bright yellow, large, loose terminal panicle. Very showy in July.
- Fruit - Papery 3-valved capsule that opens up to release black hard seeds. Capsule may persist through the winter. Starts out green in the summer and by late fall is a rich golden brown.
- Habit - Rounded canopy. Good small ornamental. Twisted branching pattern. 15' - 25' tall.
- Culture - Low moisture requirements once established. Salt tolerant. Experiences dieback in cold winters.



**LEAVES AND BUDS ARE SUB-OPPOSITE
 ARCUATE VENATION
 THORN AT TIP OF STEM**



COMMON BUCKTHORN - *Rhamnus cathartica* (ram'-nus ka-thar'-ti-ka)

Family: Buckthorn (*Rhamnaceae*)

- Leaf - Usually sub-opposite, a few leaves may even be alternate. Fine-toothed margin. Hairless. 3" long x 1-1/2" wide. Round to oval, broadest at or above the middle. Smooth, rounded or obtuse at base, with sharp point at tip. Dark green above, paler below. 3-5 pairs of veins that start at the center vein (midrib) and end at the center vein, like a dogwood leaf.
- Bud - May be pressed against stem, brownish-black, 1/4" long. Several scales.
- Leaf scar - 1 to 3 bundle scars. No connecting line between leaf scars.
- Stem - Dark, unlined, slender, pale reddish-brown to brownish-black. Short stems bear flowers & tufted foliage. Yellow inner bark. Narrow, vertical lenticels. Stem usually ends in a sharp spine about as long as the bud.
- Bark - Gray-brown, rough-textured; similar to plum trees.
- Pith - Pale brown, solid.
- Flower - Small, greenish, axillary clusters, 2-5 flowers, after leaves. Flower parts are in 4's. Plants are dioecious (male flower on one plant, female flowers on a separate plant).
- Fruit - Dark, berrylike drupe, shiny, 3-4 bony nutlets. Single or clustered. Fruit not edible.
- Habit - Large, open shrub or small tree, 8' - 15' tall in our area. Spreading branches.
- Culture - Adaptable once established.

Note - Considered a noxious weed in eastern U.S. and Canada.

SUMMER KEY TO BROADLEAF SHRUBS (Multi-Stemmed)



Foliage is extremely small (less than 1/4" long) and "scale"-like - **Salt Cedar** – page 124

OR

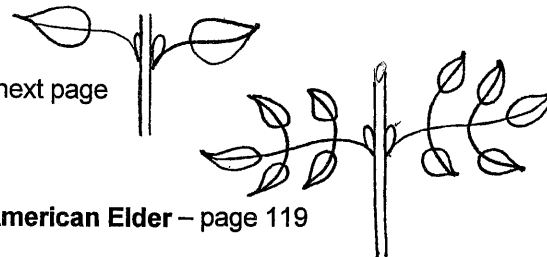
Foliage is "leaf"-like,
larger than 1/4" long →



All leaves and buds are opposite

Simple – See next page

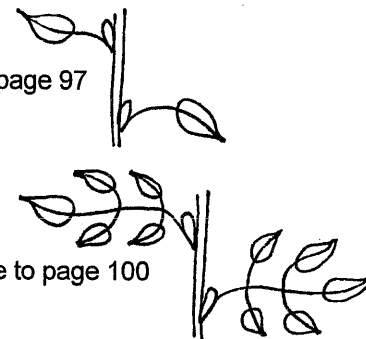
Compound - **American Elder** – page 119



All leaves and buds are alternate

Simple – Continue to page 97

Compound – Continue to page 100



Leaves and buds are subopposite,
opposite and/or alternate

Thorn at end of stem - **Common Buckthorn** – page 92

No thorn at end of stem - **Dwarf Arctic Willow** – page 145



OPPOSITE - SIMPLE LEAVES

Most leaves have 3 (rarely 5) lobes,
central lobe much longer than two side lobes - **Amur Maple** - page 101

All leaves on
plant are lobed →

OR



Lobes are
relatively all
the same size



Small glands on petiole are round; petiole has wide, shallow groove;
hairy along veins on underside of leaf - **American Cranberrybush Viburnum** - page 102

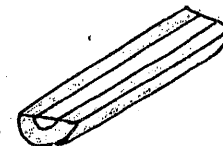


Large glands on petiole are stalked, then sunken on top; petiole has narrow
deep groove; hairy on underside of leaf - **European Cranberrybush Viburnum** - page 102

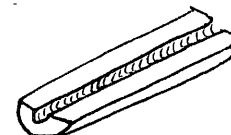
No glands on petiole; some leaves so deeply lobed that
they become trifoliate - **Rocky Mountain Maple** - page 103

Some leaves on plant are lobed, some are not →

Leaf margins are all serrated; solid pith - **Tatarian Maple** - page 104



Leaf margins are either lobed, smooth or serrated;
pith is hollow or chambered between nodes - **Snowberry** - page 104



OR

All leaves are unlobed →

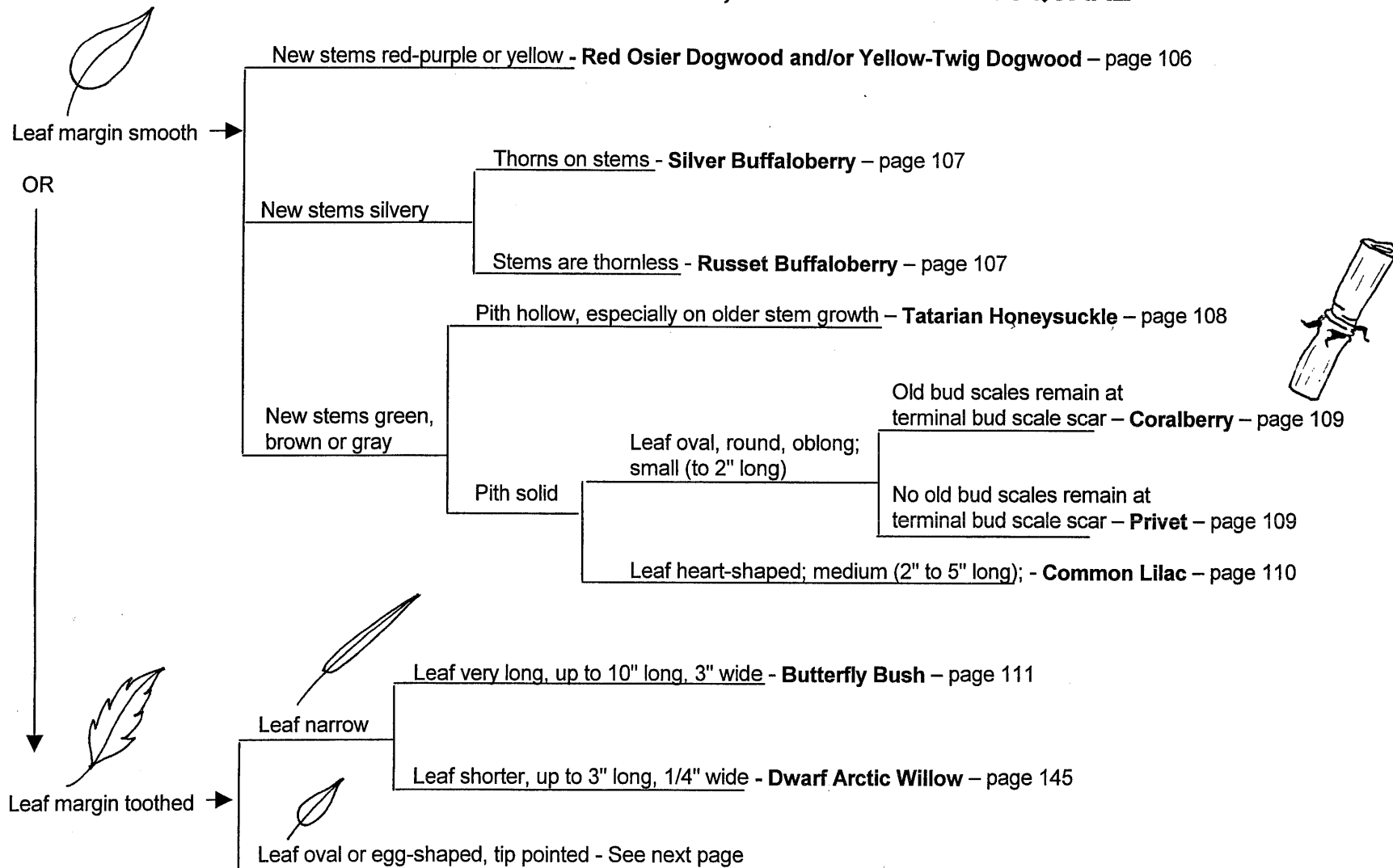


Branches "winged" (squarish in cross-section) - **Winged Euonymus** - page 105

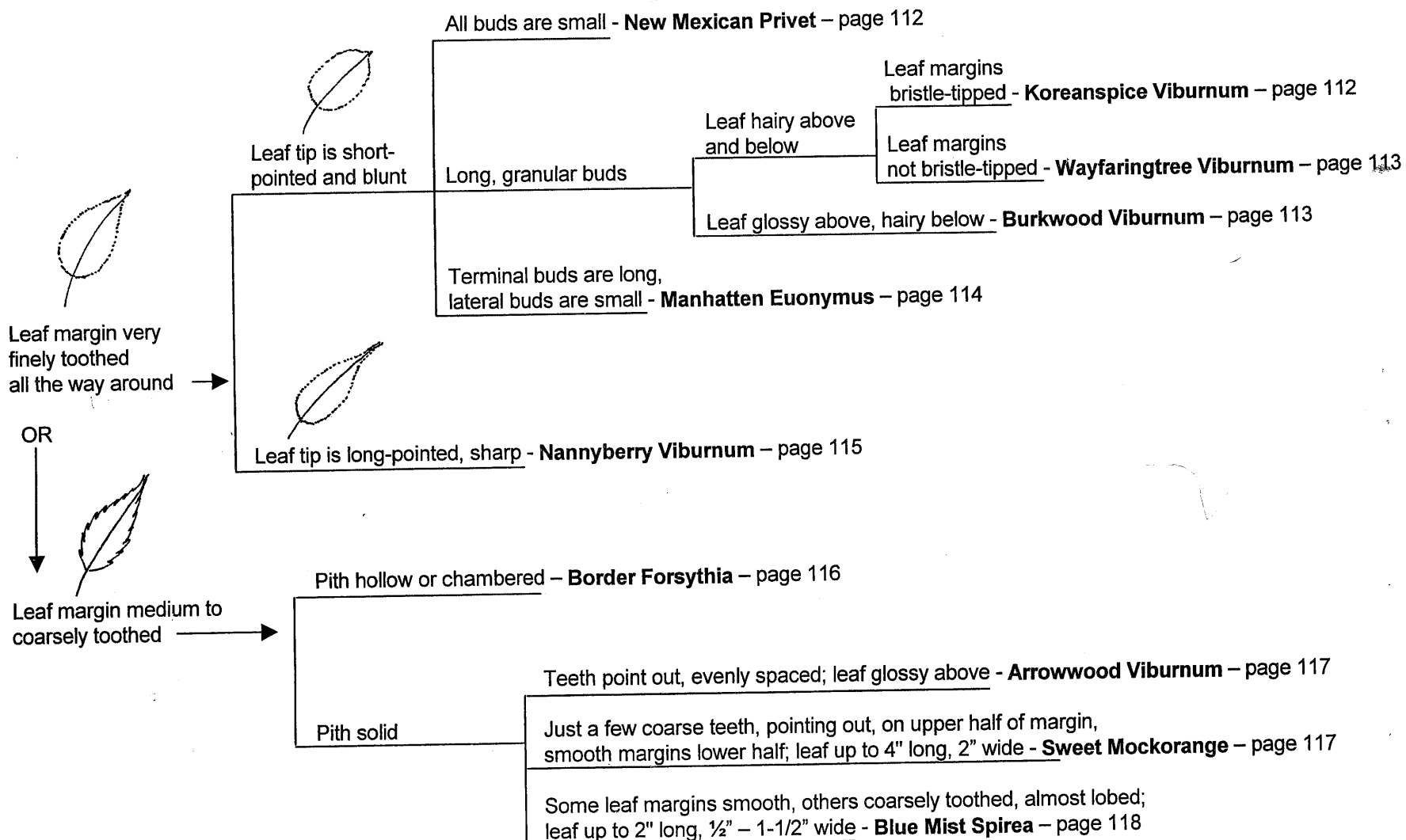


Branches round, not "winged" or square - See next page

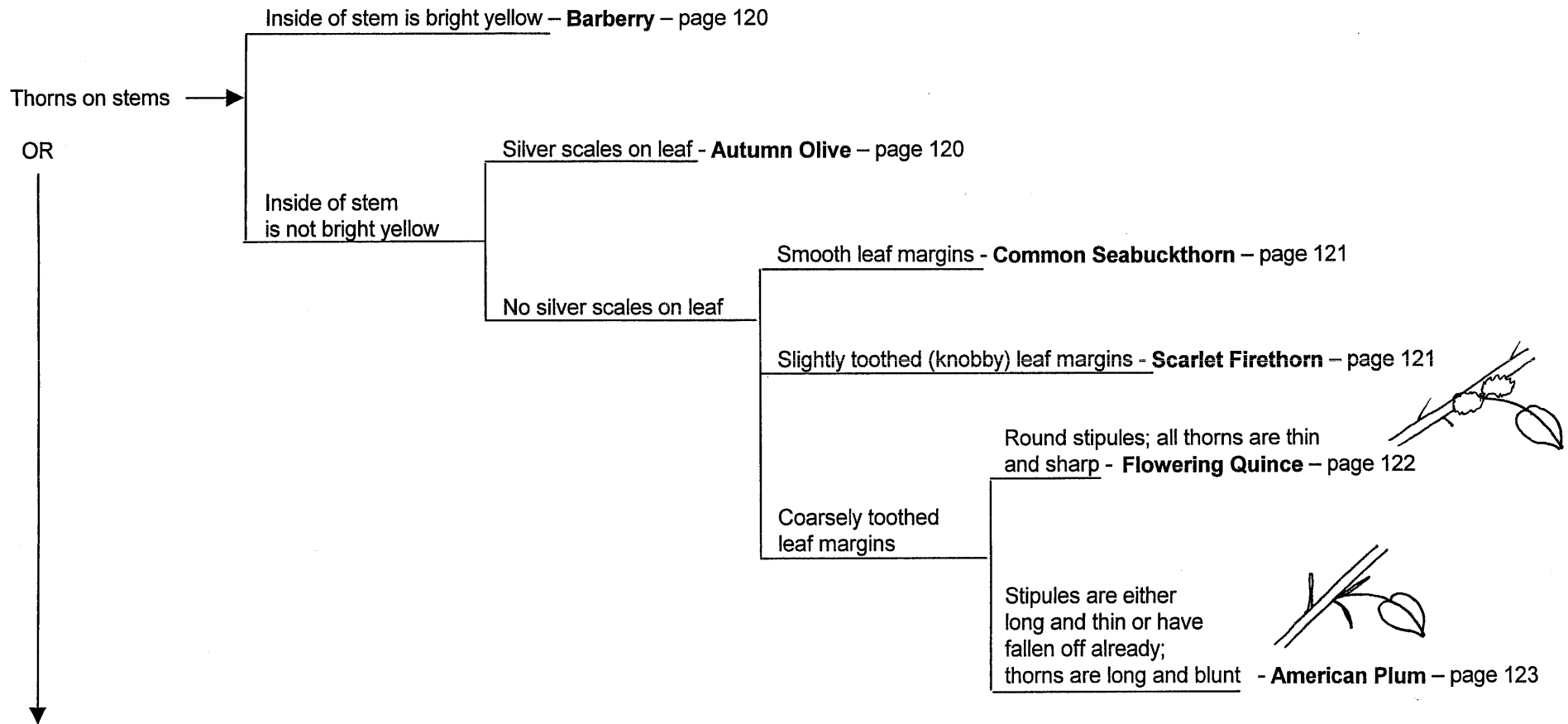
**OPPOSITE - SIMPLE - UNLOBED LEAVES
BRANCHES ROUND, NOT 'WINGED' OR SQUARE**



OPPOSITE - SIMPLE - UNLOBED LEAVES
BRANCHES ROUND, NOT WINGED OR SQUARE
LEAF MARGIN TOOTHED - LEAF OVAL OR EGG-SHAPED, TIP POINTED



ALTERNATE - SIMPLE LEAVES



Stems are thornless - See next page

ALTERNATE - SIMPLE LEAVES - THORNLESS STEMS

Leaf extremely tiny ($\frac{1}{4}$ " or less) – **Salt Cedar** – page 124

OR

Leaf longer than $\frac{1}{4}$ "

Leaves are lobed →

Leaf is very tiny ($\frac{1}{2}$ " long) - **Apache Plume** – page 125



Pinnate venation - **Scrub Oak** – page 125



Leaf is medium-sized (3" - 6" long)

Palmate venation



New stem growth straw colored; buds stalked - **Alpine Currant** – page 126



New stem growth red-pink-brown; buds not stalked – **Common Ninebark** – page 126

OR

Leaves unlobed →

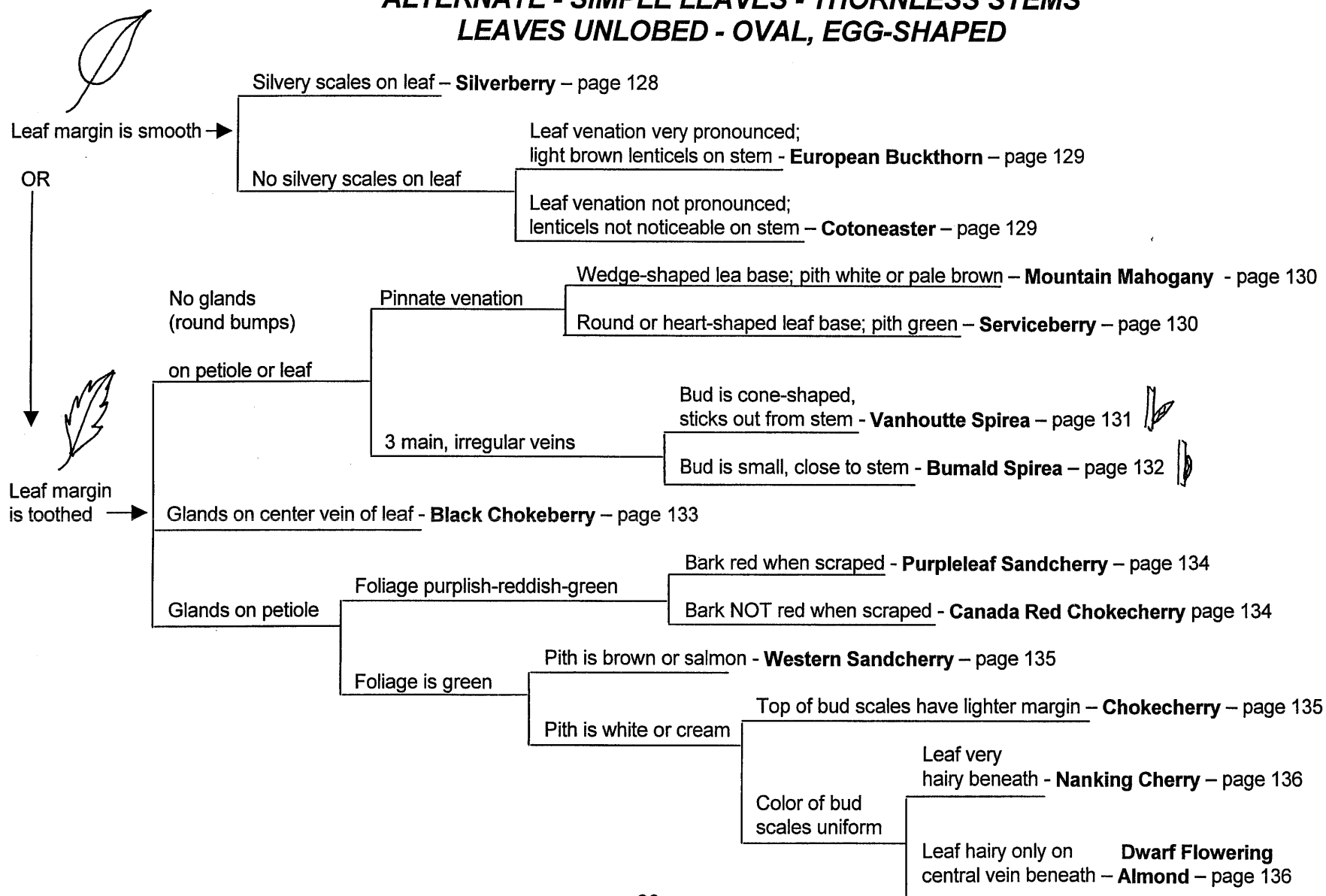
Leaf very thin and short (1" - 2" long) – **Rabbitbrush** – page 127



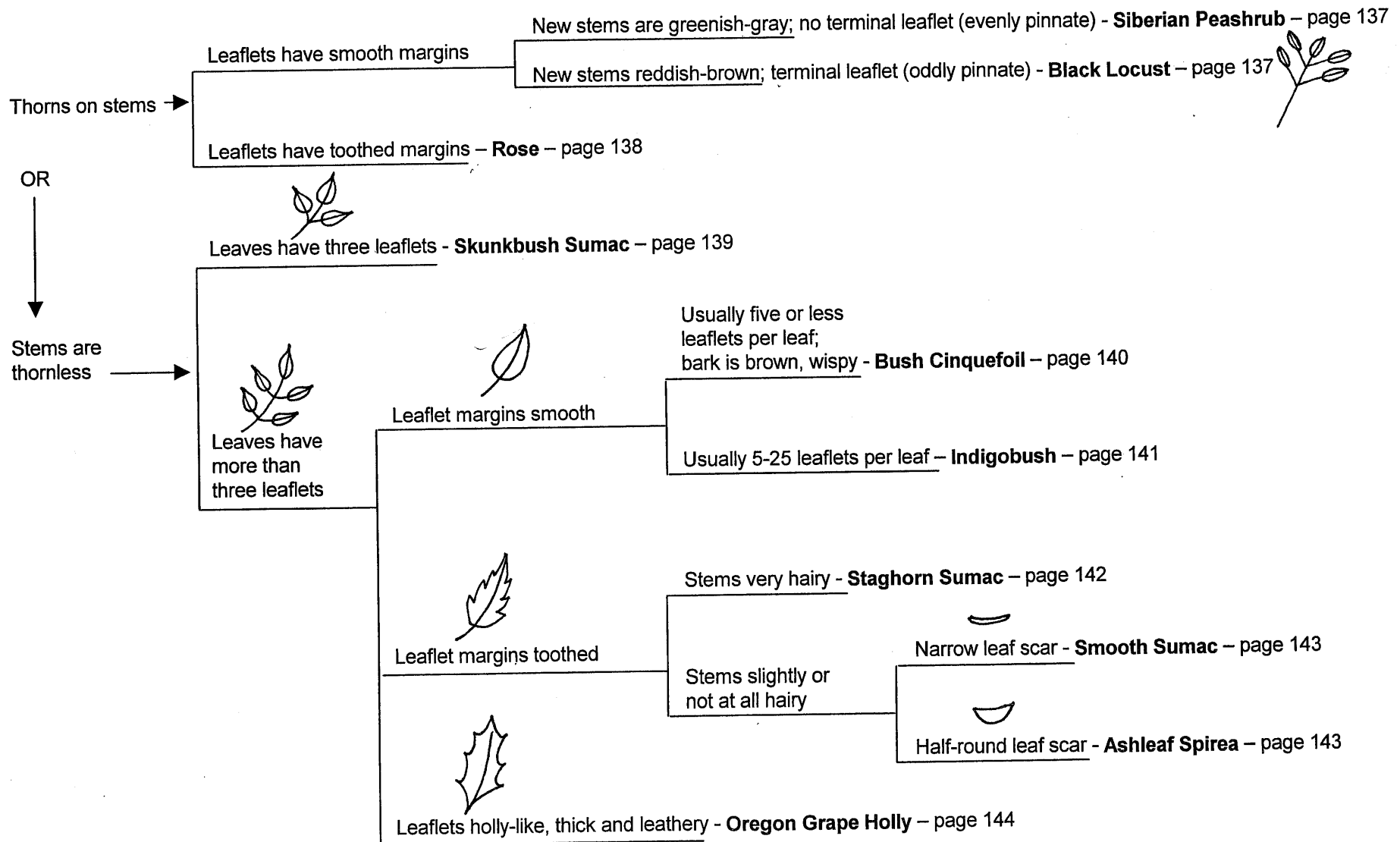
Leaf oval, egg-shaped - See next page



ALTERNATE - SIMPLE LEAVES - THORNLESS STEMS
LEAVES UNLOBED - OVAL, EGG-SHAPED



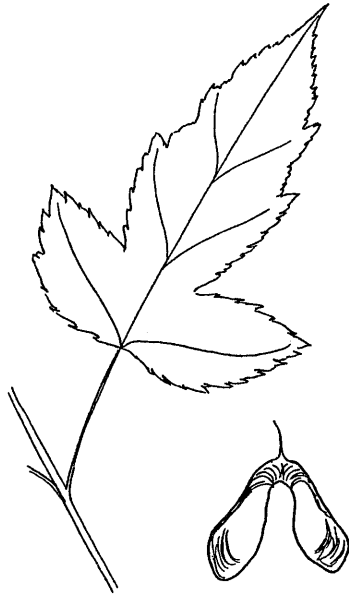
ALTERNATE - COMPOUND LEAVES



BROADLEAF SHRUBS

OPPOSITE - SIMPLE - LOBED LEAVES

Most leaves have 3 (rarely 5) lobes, central lobe much longer than two side lobes



AMUR MAPLE - *Acer ginnala* (ay-sir ji-nay'-la)

Family: Maple (*Aceraceae*)

- Leaf - Margins doubly toothed. 3-7 main veins. Red-orange autumn foliage early, for a short time.
- Bud - Small, reddish, several scales. Usually solitary. Shiny.
- Leaf scar - Horizontal line across stem connecting narrow crescent-shaped leaf scars.
- Stem - Thin, gray, hairless.
- Flower - Yellow-white, fragrant, small panicles. Blooms same time as the leaves appear.
- Fruit - Samaras. Wings nearly parallel, in clusters. Fruit stalk may persist through winter.
- Habit - Small, ornamental shrub or tree. Either multi-stemmed and dense, or may have a single trunk. 20' - 25' tall.
- Culture - Does better with slightly acidic soil conditions, and moderate to high moisture. Prefers full sun but tolerates part shade.

'Flame' Amur Maple (*A. ginnala* 'Flame') - Red fruit, red fall color, up to 12' tall. Prone to iron chlorosis.

OPPOSITE - SIMPLE - LOBED LEAVES LOBES ARE RELATIVELY ALL THE SAME SIZE

Small glands on petiole are round; petiole has wide, shallow groove;
hairy along veins on underside of leaf

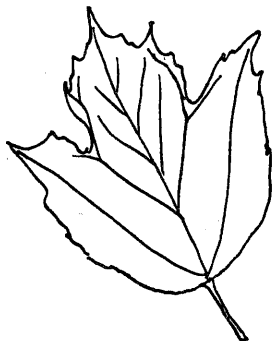


AMERICAN CRANBERRYBUSH VIBURNUM - *Viburnum trilobum*

Family: Honeysuckle (*Caprifoliaceae*)

- Leaf - 3 long-pointed lobes. Rounded or truncate base. 3 main veins (palmate venation). Margin coarsely toothed, middle lobe may not have as many teeth. Leaf is 2" - 5" long, usually smooth, hairless. Glands at top of a grooved petiole are small, round, may be stalked. Round stipules.
- Bud - Short, plump. Two sticky scales. Looks like a single scale cap but it isn't. Greenish-red-brown. Short stalks.
- Leaf scar - Narrow, crescent shape. Three bundle scars. Small. Hard to notice.
- Stem - Hairless, angular. Yellow-gray.
- Pith - Solid, white. Not perfectly round in cross section.
- Flower - Flat white flower head, to 4" wide. Inner flowers don't bloom, outer flowers large and sterile, May/June.
- Fruit - Clustered, red, tart, edible. Flat, ungrooved seed. Showy, persistent.
- Habit - To 12' tall.
- Culture - Medium to high moisture requirements. Sun to part shade.
- V. trilobum* 'Compactum' - Dense, round, 4' - 6' tall.

Large glands on petiole are stalked, then sunken on top; petiole has narrow deep groove;
hairy on underside of leaf



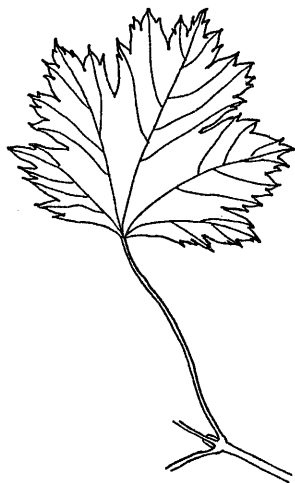
EUROPEAN CRANBERRYBUSH VIBURNUM - *Viburnum opulus*

Family: Honeysuckle (*Caprifoliaceae*)

- Leaf - 3-5 lobes. Lobes shorter, more rounded than American cranberrybush. May be hairy beneath. To 4" long. Stipules slightly pointed.
- Bud - Two fat, sticky scales, giving the appearance of being fused together. Greenish-red-brown.
- Leaf scar - Narrow, crescent shape. Three bundle scars.
- Stem - Hairless, angular. Yellow-gray.
- Pith - Solid, white.
- Flower - Flat flower head, white, to 4" across, May to June. Inner flowers don't bloom.
- Fruit - Red, bitter.
- Habit - To 12' tall.
- Culture - Medium to high water requirements! Sun to part shade.
- Snowball Viburnum (*V. opulus* 'Roseum' or 'Sterilis') - Round, snowball shaped flowers instead of flat heads. Flowers are sterile, therefore no fruit.
- V. opulus* 'Compactum' - 4' - 6' high, persistent fruit.

OPPOSITE - SIMPLE - LOBED LEAVES
LOBES ARE RELATIVELY ALL THE SAME SIZE

No glands on petiole; some leaves so deeply lobed that they become trifoliate



ROCKY MOUNTAIN MAPLE – *Acer glabrum* (ay'-sir glae'-brum)

Family: Maple (*Aceraceae*)

- Leaf - Three larger main lobes, sometimes 2 smaller lower lobes. Middle lobe sometimes wide at base, sometimes so narrow at base it divides and becomes a compound leaf. Margins of lobes coarsely serrated. Petiole smooth, thick, red, 1" - 6" long.
- Bud - Red, pointed, 1/8" – 1/4" long.
- Leaf scar - Crescent-shaped
- Stem - Slender, smooth. Reddish or pale green when young. Gray when older.
- Bark - Tight, thin, smooth, dark red-brown to gray.
- Flower - Yellow-green in small clusters in early spring.
- Fruit - Samara, two wings, each wing one-inch long, reddish, hanging in clusters.
- Habit - Can be multi-stemmed, small, clump-forming. CO native, foothills, montane, streambanks.
- Culture - Shade tolerant. Moderate moisture requirements

OPPOSITE – SIMPLE
SOME LEAVES ON PLANT ARE LOBED, SOME ARE NOT

Leaf margins are all serrated; solid pith



TATARIAN MAPLE – *Acer tataricum* (ay'-sir ta-ta-reek'-um)

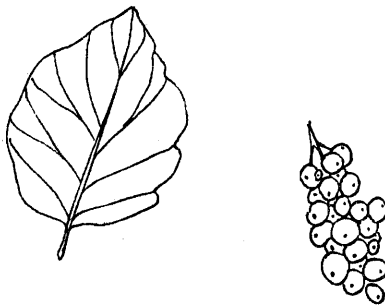
Family: Maple (*Aceraceae*)

- Leaf - 2" - 4" long; irregular, double-serrated margin. Some leaves lobed, some not. If lobed, middle lobe is longer than two side lobes and wide at base. Medium green. May have hairs on veins beneath. Petiole 1" - 2" long.
- Bud - ¼" long, red-brown-black overlapping scales, may be slightly hairy.
- Leaf scar - 3 bundle scars.
- Stem - Slender, smooth, red-brown, lenticels visible.
- Flower - Greenish-white, blooming in mid-spring.
- Fruit - Red samara, parallel wings.
- Habit - Small tree or large, bushy shrub.
- Culture - Tolerant of dry, alkaline soils.

Leaf margins are either lobed, smooth or serrated;
pith is hollow or chambered between nodes

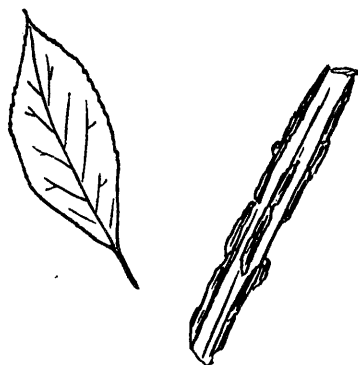
COMMON SNOWBERRY - *Symphoricarpos albus* (sim-fo-ri-kar'-pos al'-bus)

Family: Honeysuckle (*Caprifoliaceae*)



- Leaf - Oval, nearly circular. Rounded tip, round base. Margin usually smooth, but may be slightly toothed and/or lobed on newer growth. Leaf 1" - 4" long, dark bluish green. Sometimes wavy edged. Short petiole. May have tiny hairs on leaf margin, and on veins beneath.
- Bud - Short. Never above each other. Yellowish-brown, egg-shaped, pointed at tip. 2-6 scales.
- Leaf scar - Raised, small, inconspicuous. Line runs across stem at leaf scars. One bundle scar.
- Stem - Almost hairless. Slender, light colored. Old bud scales present at terminal bud scale scar.
- Bark - Shreddy. Older stems split lengthwise.
- Pith - Hollow, brownish.
- Flower - Bell-shaped, pinkish, short stalked, terminal clusters on current season's growth.
- Fruit - Large, white, clustered, round, 1/4" - 5/8". Persistent. Two seeds.
FRUIT IS CONSIDERED TOXIC TO HUMANS.
- Habit - Arching, dense, spreading. 3' - 4' tall. CO native to foothills, montane. Thicket forming.
- Culture - Low to moderate water requirements once established. Sun to part shade.

**OPPOSITE – SIMPLE – UNLOBED LEAVES
BRANCHES “WINGED” (SQUARISH IN CROSS-SECTION)**



**WINGED EUONYMUS (BURNING BUSH) - *Euonymus alatus*
(ewe-on'i-mus a-lay'-tus)**

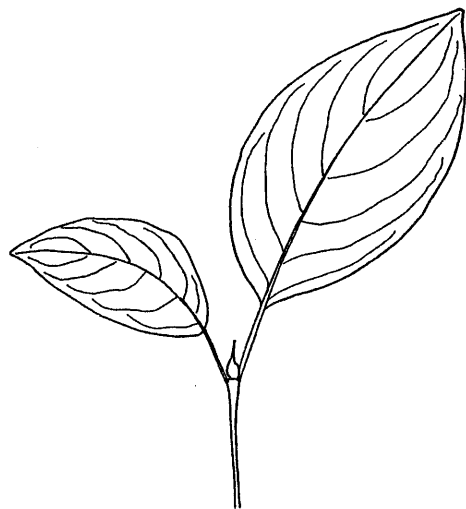
Family: Spindle (*Celastraceae*)

- Leaf - Egg-shaped, gradually tapering tip, finely toothed margin. Leaves turn a brilliant rose-red in fall.
- Bud - Terminal buds may be clustered. Many bud scales.
- Leaf scar - Very tiny, hard to see.
- Stem - Winged or square. 2-4 slender, corky, irregular wings run length of stem at right angles to each other.
- Flower - Yellowish-green. Small, inconspicuous.
- Fruit - Red-orange seeds may be present.
- Habit - To 15' tall. Branching pattern gives the plant a layered look. Dwarf cultivar, *E. alatus* 'Compactus', grows 4' – 6' tall.
- Culture - Moderate water requirements. Does best in sun.

NOTE: POISONOUS - LEAVES, BARK AND FRUIT.

**OPPOSITE – SIMPLE – UNLOBED LEAVES
BRANCHES ROUND, NOT “WINGED” OR SQUARE
LEAF MARGIN SMOOTH**

New stems red-purple or yellow



**RED OSIER (REDTWIG) DOGWOOD - *Cornus sericea* (formerly *C. stolonifera*)
YELLOW-TWIG DOGWOOD - *Cornus sericea* 'Flaviramea' (kor'nus sir-e'-se-a)**

Family: Dogwood (*Cornaceae*)

- Leaf - Oval. Smooth margin. Long pointed tip, round base. 3-7 pairs of curved veins, starting at base and ending near tip (arcuate venation). Green above, paler beneath.
- Bud - Small, long, pointed, brown, narrow. One pair of scales that may look like a pair of developing leaves. Flower buds are swollen at base and pointed at tip. Terminal buds are stalked.
- Leaf scar - Very narrow, usually 3 bundle scars. Line between scars. Scars raised on new stems.
- Stem - Smooth, usually red or yellow on young growth, especially in winter. White lenticels. Newest growth may be hairy.
- Pith - White, solid.
- Flower - Flat-topped clusters, 1" - 3" wide, at tip of new growth. Small, white, 4 petals. May to June.
- Fruit - Dull, white berry, 1/4", round, in clusters.
- Habit - To 10' tall, arching, spreading. CO native, up to 11,000'. Riparian.
- Culture - High water requirements. Sun to part shade.

NOTE: **Isanti Dogwood** (*C. sericea* 'Isanti') - Shorter internodes, dense, compact plant.
Bailey Dogwood (*C. sericea baileyi*) - Darker red-brown stems. Woollier under leaves and on stems.
Kelsey Dogwood (*C. sericea* 'Kelseyi') - Compact, mounded, less colorful than Red Osier. Up to 2' tall.

**OPPOSITE – SIMPLE – UNLOBED LEAVES
BRANCHES ROUND, NOT “WINGED” OR SQUARE
LEAF MARGIN SMOOTH
NEW STEMS SILVERY**

Thorns on stems

SILVER BUFFALOBERRY - *Shepherdia argentea* (shep-er'-dee-a ar-jen'-tee-a)

Family: Oleaster (*Elaeagnaceae*)

- Leaf - Silvery scales on both sides. To 2" long, 1/2" wide, smooth margin. Rounded tip, oval shape.
- Bud - Silver and brown.
- Leaf scar - Half round, tiny, slightly raised. One bundle scar.
- Stem - Slender, round. Thorns, 1/2" long, at end of branches. Newer growth is silvery-green, scaley. Older growth is brown-gray.
- Pith - Small, round, solid. Yellow-brown.
- Fruit - Bright red or yellow, round, edible but tart. CO native, foothills and plains.
- Habit - Thicket forming. Suckers. 6' - 10' tall.
- Culture - Low to moderate water requirements.



Stems are thornless

**RUSSET (CANADA) BUFFALOBERRY - *Shepherdia canadensis*
(shep-er'-dee-a kan-a-den'-sis)**

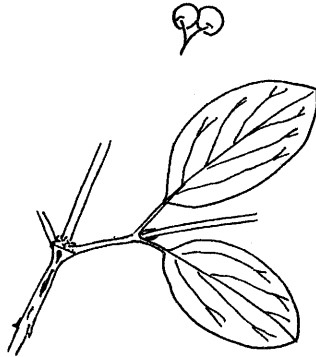
Family: Oleaster (*Elaeagnaceae*)

- Leaf - Egg-shaped, round base, narrower at tip but not pointed. Smooth margins. Covered with mixed brown and silver scales beneath. Shiny, dark green above, somewhat hairy. Stipules may be present.
- Bud - Two to four bud scales. Narrow bud base. Stalked. Solitary or multiple. White and/or brown scales.
- Leaf scar - Half round, tiny, raised. One bundle scar.
- Stem - Covered with mixed brown, silver or white scales. Not angled. Thornless. Older bark is not papery.
- Pith - Small, round, solid, brownish.
- Flower - Small, greenish yellow, solitary, in bell-shaped clusters, April to June. Male/female on separate plants.
- Fruit - Yellow or reddish, berrylike. Contains bitter substance that foams in water. Inedible to humans.
- Habit - To 5' tall, spreading, round crown. CO native, montane/subalpine.
- Culture - Prefers moist conditions. Shade tolerant.



**OPPOSITE – SIMPLE – UNLOBED LEAVES
BRANCHES ROUND, NOT “WINGED” OR SQUARE
LEAF MARGIN SMOOTH
NEW STEMS GREEN, BROWN OR GRAY**

Pith hollow, especially on older stem growth



TATARIAN HONEYSUCKLE - *Lonicera tatarica* (lon-iss'-a-ra ta-tar'-i-ka)

Family: Honeysuckle (*Caprifoliaceae*)

- Leaf - Oblong, egg-shaped, short pointed tip. Smooth margin. Pale beneath. To 2 ½" long.
- Bud - Very tiny, sometimes one above the other. Flattened, pressed close to stem.
- Leaf scar - Small, raised. Three bundle scars. Leaf scars connected across stem by lines.
- Stem - Very slender (less than 1/8" thick), grayish, papery. Bark threads off on gray, older growth. Young stem may be reddish. Old bud scales may remain at terminal bud scale scar.
- Pith - Brown, hollow through the center. Most honeysuckles do have hollow pith between nodes, but there are a few varieties where the pith is not hollow (Morrow's Honeysuckle).
- Flowers - In pairs, on slender stalks, in May. Pink, white or yellow. Usually fragrant.
- Fruit - Small red berries, two, usually united at their bases. Round.
- Habit - To 10' tall. Multi-stemmed, arching, depending on variety.
- Culture - Low to moderate water requirements. Sun to part shade.

NOTE: 'Remains' of Honeysuckle Witches Broom may be evident, a good clue to identification.

***L. involucrata* – Twinberry** – CO native, montane/subalpine, to 10' tall. Black fruit enclosed in a red "cup". Likes rich, moist soil.

OPPOSITE – SIMPLE – UNLOBED LEAVES
BRANCHES ROUND, NOT “WINGED” OR SQUARE
LEAF MARGIN SMOOTH
NEW STEMS GREEN, BROWN OR GRAY
PITH SOLID; LEAF OVAL, ROUND, OBLONG; SMALL (TO 2” LONG)

Old bud scales remain at terminal bud scale scar

CORALBERRY (INDIAN CURRANT) - *Symphoricarpos orbiculatus*
(sim-fo-ri-kar'-pos or-bik-u-lay'-tus)

Family: Honeysuckle (*Caprifoliaceae*)

- Leaf - Oval or circular. Smooth, wavy edge. To 2" long, round base. Hairy underneath. Blue-green.
- Bud - Gray-brown.
- Leaf scar - Small, inconspicuous, crescent shape. One bundle scar.
- Stem - Old bud scales remain at terminal bud scale scar. Young stem hairy, round. Older, papery.
- Pith - White or brown, solid.
- Flower - Yellowish-white, bell shaped, in dense clusters and terminal spikes, in July and August.
- Fruit - 1/4" round, red, coral, purple. Persistent.
- Habit - 2' - 5' high, 4' - 8' wide, arching.
- Culture - Moderate moisture requirements. Sun to part shade.
- NOTE: Chenault - *S. x chenaultii* 'Hancock' - 2' tall by 12' wide. Flower pink, fruit white to pink.



No old bud scales remain at terminal bud scale scar

COMMON EUROPEAN PRIVET - *Ligustrum vulgare* (ly-gus'-trum vul-gare')

Family: Olive (*Oleaceae*)

- Leaf - May be sub-opposite. 4/5" - 2" long, hairy beneath or at center vein. Smooth margin. Lanceolate, oblong, oval. Short petiole. Leathery, dark green. Leaves are poisonous.
- Bud - Tiny. 4+ blunt scales. Brown. On peg-like projection. True terminal bud present.
- Leaf scar - One bundle scar. Leaf scar very raised, small and narrow.
- Stem - Young, slender, green. Gray when older. Light brown lenticels. May be very slightly hairy.
- Flower - White, small, terminal, cone-shaped clusters or rarely from lateral buds. Fragrant. June, July.
- Fruit - Small, black, bloomy, 1/4" long, 1-4 celled. Not edible.
- Habit - To 15' tall.
- Culture - Moderate moisture; sun to part shade. If sheared, no flowers or fruit.
- NOTE: Border Privet (*L. obtusifolium*) - To 10' tall, nodding flower panicles.
 Regal Privet (*L. vulgare* var. 'Regal') - Stems very hairy, leaf tip blunt. Horizontal branching.
 Golden Vicary Privet (*L. x vicaryi*) - Yellowish foliage.
 Lodense - *L. vulgare* 'Lodense' - 4' tall - dark green foliage.
 Cheyenne - *L. vulgare* 'Cheyenne' - white flowers, black fruit, 10' tall.



OPPOSITE – SIMPLE – UNLOBED LEAVES
BRANCHES ROUND, NOT “WINGED” OR SQUARE
LEAF MARGIN SMOOTH
NEW STEMS GREEN, BROWN OR GRAY
PITH SOLID; LEAF HEART-SHAPED; MEDIUM (2” TO 5” LONG)



COMMON LILAC - *Syringa vulgaris* (suh-ring'-ga vul-gay'-ris)

Family: Olive (*Oleaceae*)

- Leaf - Heart-shaped base, long pointed tip, to 5" long. Smooth margin. Stout petiole. Dull green.
- Bud - Stout, green or reddish, with 2-3 thick scales. There are usually two plump, round buds at end of stem. May have several buds next to each other. Terminal bud may be absent.
- Leaf scar - One bundle scar in crescent-shaped leaf scar.
- Stem - Green-brown when young, gray when older. Stout. No stipule scars.
- Pith - Whitish and consumes 1/2 or less of the diameter of the stem.
- Flower - Produced on new wood at end of stems after leaves are out (May). Very fragrant. Small, dense clusters.
- Fruit - Small capsules split open. Remain at the end of stems through the winter.
- Habit - To 20' tall.
- Culture - Full sun for best bloom. Low to moderate water requirements.

NOTE: No other shrub has heart-shaped leaves and a single bundle scar in the leaf scar.

Persian Lilac (*S. x persica*) - Smaller stems and smaller, more pointed buds than the Common Lilac and the leaves are narrower and smaller, 2-1/2" long. From 6' to 10' tall.

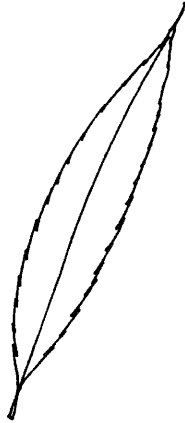
Miss Kim Lilac (*S. patula* 'Miss Kim') - Dark red-purple fall color, smaller size 3' - 5' high x 3' - 6' wide. Round to oval form. Small dark green leaves with wavy margin. Round, dense habit.

Dwarf Korean Lilac (*S. meyeri* 'Palibin') - Leaf oval, 1-1/2" long, hairy on veins beneath. 3" long lateral flower panicle. 4'-8' high. Round, dense habit.

Canada Lilac – *S. x prestoniae* 'James McFarland' – blooms later in season.

**OPPOSITE – SIMPLE – UNLOBED LEAVES
BRANCHES ROUND, NOT “WINGED” OR SQUARE
LEAF MARGIN TOOTHED; LEAF NARROW**

Leaf very long, up to 10" long, 3" wide



BUTTERFLY BUSH - *Buddleia davidii* (bud-lee'-ah day-vid'-ee-i)

Family: Butterflybush (*Buddleiaceae*)

- Leaf - Lanceolate, 4" - 10" long, 1" - 3" wide, finely toothed; whitish, hairy beneath. Dark green above.
- Bud - Naked, hairy, gray-green, small. Buds may be above one another.
- Leaf scar - Triangular or crescent-shaped. One bundle scar.
- Stem - Gray. Stipule scars connect across the stem from leaf scars. Herbaceous, stout, 6-8 sided, green and hairy when young, shiny, peeling and light brown when old.
- Pith - Relatively large, white, solid.
- Flower - Fragrant, 4" - 10" long, upright or drooping spikes, usually lilac colored, June and July. Flowers on new wood.
- Fruit - 2-valved, 1/3" long capsule.
- Habit - Large, arching, 5' - 10' tall. Usually dies back every winter.
- Culture - Moderate water requirements. Sun to part shade.

OPPOSITE – SIMPLE – UNLOBED LEAVES
BRANCHES ROUND, NOT “WINGED” OR SQUARE
LEAF MARGIN VERY FINELY TOOTHED ALL THE WAY AROUND
LEAF OVAL OR EGG-SHAPED
LEAF TIP IS SHORT-POINTED AND BLUNT

All buds are small



NEW MEXICAN PRIVET (DESERT OLIVE) - *Forestiera neomexicana*
(for-est-eye-ee'-ra nee-o-mex-ee-ca'-na)

Family: Olive (*Oleaceae*)

- Leaf - Medium gray-green. 1-1/2" long, 1/2" wide, finely toothed.
- Bud - Small, light tan. Buds may be one above the other. Scales overlap.
- Leaf scar - Kidney shaped.
- Stem - Golden-tan, rarely hairy. Newest stem growth almost black. May be spiny. Not angled at nodes. Spur shoots present. Conspicuous lenticels.
- Pith - Solid, light green to white.
- Flower - Yellow, before leaves. April to May. Separate male and female.
- Fruit - Blue-black on female plants, 3/8" long, berry. Short stalks.
- Habit - 10' - 12' tall x 6' - 8' wide. Upright. CO native, upper sonoran
- Culture - Prefers moist but adapts to dry environments. Full Sun.

Long, granular buds; leaf hairy above and below; leaf margins bristle-tipped

KOREANSPICE VIBURNUM – *Viburnum carlesii* (vy-burn'-num kar-lee'-see-eye)

Family: Honeysuckle (*Caprifoliaceae*)

- Leaf - Oval, dull, to 4" long, hairy on both sides. Margin teeth pointed, almost bristle-tipped. Round base, short pointed tip.
- Bud - Naked, hairy. Flower bud fat.
- Leaf scar - Solid. Three-lobed.
- Stem - Light brown/gray. New growth hairy.
- Pith - Solid, white.
- Flower - White to pinkish, fragrant, 3" across, April to May.
- Fruit - Red changing to blue-black.
- Habit - To 5' tall. Round, dense, stiff.
- Culture - Low to moderate once established. Prefers part shade.



OPPOSITE – SIMPLE – UNLOBED LEAVES
BRANCHES ROUND, NOT “WINGED” OR SQUARE
LEAF MARGIN VERY FINELY TOOTHED ALL THE WAY AROUND
LEAF OVAL OR EGG-SHAPED
LEAF TIP IS SHORT-POINTED AND BLUNT

Long, granular buds; leaf hairy above and below; leaf margins NOT bristle-tipped

WAYFARINGTREE VIBURNUM - *Viburnum lantana* (vy-bur'-num lan-tay'-na)

Family: Honeysuckle (*Caprifoliaceae*)

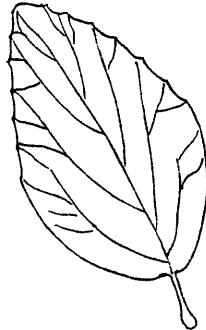


- Leaf - 2" - 5" long, egg or heart-shaped; margin is smooth to finely toothed. Thick, wrinkled, hairy on both sides. Petiole hairy. Very dense venation. Dark green. Persist into winter.
- Bud - Large, covered with fine gray hairs. Naked - no protective scales over the bud, just a set of grayish-green, developing, pleated leaves protecting the round flower bud at the tip of the stem. Lateral buds are long and slender.
- Leaf scar - Broadly triangular, 3-lobed. Three bundle scars.
- Stem - Straight, ashy gray. Fine gray hairs on newer growth. Older growth shiny brown.
- Pith - Whitish and consumes 1/2 or less of the diameter of the stem. Solid.
- Flower - Creamy white, flat cluster, 4" across, April to May.
- Fruit - Red changing to black. Seed has 3 grooves.
- Habit - To 15' tall x 15' wide. Roundish, upright.
- Culture - Low to moderate water requirements once established. Sun to part shade.

Long, granular buds; leaf glossy above, hairy below

BURKWOOD VIBURNUM - *Viburnum x burkwoodii* (vy-bur'-num berk-wood'-ee-eye)

Family: Honeysuckle (*Caprifoliaceae*)



- Leaf - Oval, egg-shaped, to 4" long. Slightly toothed. Glossy green above; rough, hairy beneath. Veins rusty brown. Hairy petiole. Persist into winter.
- Bud - Hairy, 'naked' (no hard scales).
- Stem - Hairy, tan.
- Pith - Solid, white.
- Flower - Pinkish to white, 3-1/2" wide cluster. Fragrant. April to May.
- Fruit - Red to black.
- Habit - 6' - 10' tall.
- Culture - Moderate water requirements. Sun to part shade.

OPPOSITE – SIMPLE – UNLOBED LEAVES
BRANCHES ROUND, NOT “WINGED” OR SQUARE
LEAF MARGIN VERY FINELY TOOTHED ALL THE WAY AROUND
LEAF OVAL OR EGG-SHAPED
LEAF TIP IS SHORT-POINTED AND BLUNT

Terminal buds are long, lateral buds are small



MANHATTEN EUONYMUS - *Euonymus kiatschovicus* 'Manhattan'
(ewe-on'-i-mus ky-at-chove'-i-kus)

Family: Spindle (*Celastraceae*)

- Leaf - Glossy, dark green, to 2-1/2" long, finely toothed. In winter, leaves stay on the plant but may turn brown.
- Bud - Cone-shaped, sharp, greenish in summer, tan in winter. Scales are overlapping. Tiny lateral buds. Large, long terminal bud.
- Leaf scar - Horizontal oval shaped.
- Stem - Slender, green, round.
- Pith - Greenish-white, spongy.
- Flower - Greenish-white, small, 4-parted.
- Fruit - Pink, 4-parted capsule.
- Habit - 4' - 6' tall x 4' - 6' wide. Usually rounded. Broadleaf evergreen.
- Culture - Protect from sun and wind, especially in winter. Prefers at least part shade, north or east exposure.

OPPOSITE – SIMPLE – UNLOBED LEAVES
BRANCHES ROUND, NOT “WINGED” OR SQUARE
LEAF MARGIN VERY FINELY TOOTHED ALL THE WAY AROUND
LEAF OVAL OR EGG-SHAPED
LEAF TIP IS LONG-POINTED, SHARP

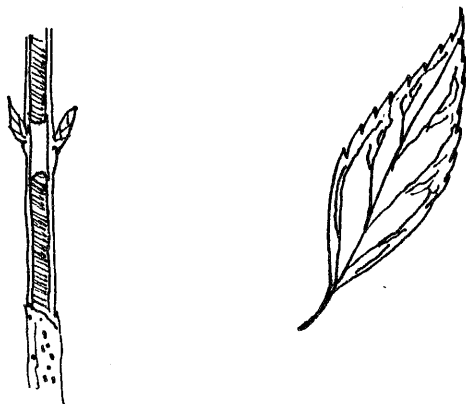


NANNYBERRY VIBURNUM - *Viburnum lentago* (vy-bur'-num len-tay'-go)

Family: Honeysuckle (*Caprifoliaceae*)

- Leaf - Hairless, 2" - 5" long, pointed tip; broad, round base. Egg-shaped. Finely toothed. Petiole reddish, hairless, with flattish, wavy margin. Leaf is shiny, dark green above, light green beneath with tiny black scattered dots.
- Bud - Gray to pinkish. Hair-like, rough, granular scales; 2 sizes - larger flower buds are completely covered by two scales - fat at base. Lateral buds 3/4" long, lance-shaped. One lateral bud is usually larger than its opposite.
- Leaf scar - Angular, 3 bundle scars.
- Stem - New growth rough, granular. Side stems flexible (may smell bad), slender, reddish brown to ashy gray.
- Pith - Whitish, consumes 1/2 or less of the diameter of the stem. Solid.
- Flower - 5 petals, not stalked. Round-topped flower head, 5" across. Blooms in May.
- Fruit - Blue/black berry with white 'powdery' bloom. Clusters.
- Habit - 15' - 18' tall, 10' - 12' wide. Open, vase-shaped. Round canopy.
- Culture - Moderate moisture requirements. Sun to part shade.

OPPOSITE – SIMPLE – UNLOBED LEAVES
BRANCHES ROUND, NOT “WINGED” OR SQUARE
LEAF MARGIN MEDIUM TO COARSELY TOOTHED
LEAF OVAL OR EGG-SHAPED; TIP POINTED
PITH HOLLOW OR CHAMBERED



BORDER FORSYTHIA - *Forsythia x intermedia* (for-sith'-ee-a in-ter-mee'-dee-a)

Family: Olive (*Oleaceae*)

- Leaf - 3" - 4" long, lance-shaped, top 2/3 very coarsely toothed, bottom 1/3 of leaf margin smooth. Medium/dark green.
- Bud - May be clustered or single above each leaf scar. Spindle shaped. Lots of bud scales.
- Leaf scar - Shaped like a fat "U" with short wings. Raised.
- Stem - Very prominent, raised lenticels. Ridges run down the stem from each side of the leaf scar, giving the stem a 4-angled or square appearance and texture. Olive-green or brownish.
- Pith - Greenish-white. Solid at the nodes, but chambered or hollow between the nodes.
- Flower - Yellow, bell-shaped, in April before leaves appear.
- Fruit - Dry capsule.
- Habit - Upright, arching, to 10' tall.
- Culture - Full sun, well drained. Prefers moderate moisture.

**OPPOSITE – SIMPLE – UNLOBED LEAVES
BRANCHES ROUND, NOT “WINGED” OR SQUARE
LEAF MARGIN MEDIUM TO COARSELY TOOTHED
LEAF OVAL OR EGG-SHAPED; TIP POINTED
PITH SOLID**

Teeth point out, evenly spaced; leaf glossy above

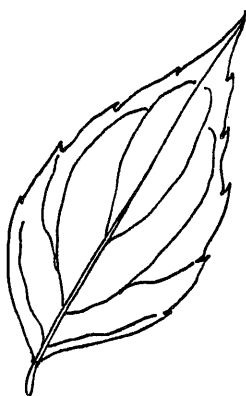


ARROWWOOD VIBURNUM - *Viburnum dentatum* (vy-bur'-num den-tay'-tum)

Family: Honeysuckle (*Caprifoliaceae*)

- Leaf - Roundish, to 3" long, large coarse teeth pointing out. Glossy.
- Bud - Small, red-brown, pressed against stem. 4 scales. Lower scales half as long as the bud.
- Leaf scar - Hairy at margin.
- Stem - Angular, 6-ridged sides, gray-brown, shiny smooth.
- Pith - Solid.
- Flower - White with yellow stamens, long stemmed, 3" across, flat-topped cluster.
- Fruit - Seed has deep, narrow groove, bluish-black, pea-sized berries, in clusters.
- Habit - To 10' tall. May arch at maturity.
- Culture - Moderate moisture requirements. Sun to part shade.

Just a few coarse teeth, pointing out, on upper half of margin, smooth margins lower half;
leaf up to 4" long, 2" wide



SWEET MOCKORANGE - *Philadelphus coronarius* (fil-a-del'-fus kor-o-nay'-ree-us)

Family: Hydrangea (*Hydrangeaceae*)

- Leaf - Egg-shaped, long pointed tip, rounded base. Lower part of leaf margin smooth, upper part of leaf has widely spaced teeth. Leaf to 4" long x 2" wide. Hairy petiole. Veins closely parallel to leaf margin. Veins hairy beneath.
- Bud - Small, hidden beneath petiole base. Solitary, two hairy scales. True terminal bud absent.
- Leaf scar - Half round, widely crescent or triangular (horseshoe-shaped). Three bundle scars. Line connecting leaf scars across stem.
- Stem - Dark brown. Lined. Long, spreading hairs. Older bark exfoliates, showing light and dark colors. Hairless.
- Pith - Round, pale, solid.
- Flower - Yellowish-white, fragrant (orange blossom smell). 5-9 in cluster. On old wood. 1-1/2" blossom.
- Fruit - Capsule splits into 4.
- Habit - Large, to 12' tall; stiff, straight branching.
- Culture - Moderate to high moisture requirements. Sun to part shade.

**OPPOSITE – SIMPLE – UNLOBED LEAVES
BRANCHES ROUND, NOT “WINGED” OR SQUARE
LEAF MARGIN MEDIUM TO COARSELY TOOTHED
LEAF OVAL OR EGG-SHAPED; TIP POINTED
PITH SOLID**

Some leaf margins smooth, others coarsely toothed, almost lobed;
leaf up to 2" long, 1/2" to 1-1/2" wide



BLUE MIST SPIREA - *Caryopteris x clandonensis* (kar-ee-op'-ter-ise klan-doe-nen'-sis)

Family: Verbenaceae (*Verbenaceae*)

- Leaf - Egg-shaped, 1" - 2" long, dull green-blue above, hairy beneath. May have smooth margin or be coarsely toothed.
- Bud - Small, 2 or 4 scales. May be one bud above another.
- Leaf scar - Tiny, half round, almost straight across the top.
- Stem - Four-sided, hairy, nodes flattened, slender.
- Pith - Large, round, white, solid.
- Flower - On new growth, along the stem. Blue tones. Dried flower heads are tan, remain through winter.
- Habit - Rounded, dense habit, to 3' - 4' tall.
- Culture - Low to moderate moisture requirements. Sun to part shade. Cut back old growth by March.

OPPOSITE - COMPOUND



AMERICAN ELDER - *Sambucus canadensis* (sam-boo'-kus kan-a-den'-sis)

Family: Honeysuckle (*Caprifoliaceae*)

- Leaf - Usually odd pinnate. From 5 to 11 (usually 7) narrow leaflets, sharply and coarsely toothed; narrow, pointed tip. Lowest pair of leaflets may be lobed. Side leaflets are almost stalk-less. Terminal leaflet has a longer stalk. Hairy at veins underneath. Leaflets are 2" - 6" long each. Green petiole. Entire leaf is 4" - 11" long.
- Bud - Round. Green or brown. Sticks out away from stem. Usually true terminal bud absent. Buds may be one above the other.
- Leaf scar - Large, crescent-shaped with 3-7 bundle scars. Connecting line between leaf scars.
- Stem - Stout. Small wart-like lenticels. Hairless. Not very woody. Nodes swollen.
- Pith - Large. Consumes over half the diameter of the stem. Solid. White or brown.
- Flower - Dense, flat-topped clusters, 4" - 10" across, white, June to July.
- Fruit - Less than 3/16" diameter berry, juicy. 3-5 tiny seeds. In dense clusters. Deep purple/black.
- Habit - Dense, to 12' tall.
- Culture - Moderate to high moisture requirements. Full sun.

NOTE: **Golden Elder** (*S. canadensis* 'Aurea') - Red fruit, yellowish leaves.
Red-Berried Elder (*S. pubens*) - Red fruit, purple petiole, red-brown pith, 15' high. Berries not edible. Large, round buds. Young stems green.
S. racemosa - CO native, foothills/subalpine. 5-9 leaflets; 6' - 9' tall, red berries. Shiny leaves.

Raw elderberries may cause nausea, vomiting, diarrhea.

ALTERNATE - SIMPLE LEAVES THORNS ON STEMS

Inside of stem is bright yellow

REDLEAF JAPANESE BARBERRY - *Berberis thunbergii* 'Atropurpurea' (ber'-ber-is thun-ber'-jee-i)

Family: Barberry (*Berberidaceae*)



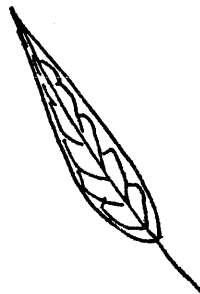
- Leaf - Round tip, narrowed, wedge-shaped base. Smooth margin. 1/2" - 1-1/5" long. Clustered on short spurs. Side veins not visible from either side. Reddish purple in sun, greener in shade.
- Bud - Small, unstaked, 6 pointed bud scales. Buds found in axils above thorns.
- Leaf scar - Half round, small, 3 bundle scars. No stipule scar.
- Stem - Inner bark and wood always buttery yellow or yellowish-green. Purple on outside, grooved, 1-3 thorns together.
- Pith - Brown.
- Flower - Yellow in center, red on outside, 1-4 in cluster.
- Fruit - Red, long or globular, persists in winter.
- Habit - Round, 3'-6' high x 3'-6' wide. Dense, compact.
- Culture - Full sun for best red color. Tolerates dry conditions once established.

NOTE: **Korean Barberry** (*B. koreana*) - 1-5 branched flat spines - usually 3. Grooved stem, reddish. 3/4" long floral raceme, red fruit. Persistent leaf bases. Leaf is largest of barberries - 1"-3" long, wavy toothed. Medium green in summer, red in fall. Veins not visible.
Mentor Barberry (*B. x mentorensis*) - Fruit is sparse, usually dull, dark red. Three spines together. Leaf is 1" long, 3-4 tiny teeth on margin. 6-7' tall.
'Crimson Pygmy' Barberry (*B. thunbergii* atropurpurea 'Crimson Pygmy') - Low and wide, 2'-3' high x 2'-3' wide. Sun to part shade.

Inside of stem is NOT bright yellow; silver scales on leaf

AUTUMN OLIVE - *Elaeagnus umbellata* (el-ee-ag'-nus um-bell-lay'-tah)

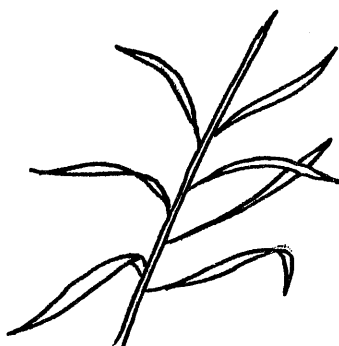
Family: Oleaster (*Elaeagnaceae*)



- Leaf - 1" - 3" long, green with silvery scales above and beneath. Leaf broader than Russian olive leaf.
- Bud - Elongated terminal bud, small lateral buds. Silvery-brown, 4 scales.
- Stem - Silvery or brown scales. May have lots of thorns. Very slender.
- Pith - Rich brown.
- Flower - Silvery- white or cream, in May. 1/2" long, funnel-shaped, fragrant. 1-3 flowers in leaf axils.
- Fruit - Start out silver and brown, then turn red. Short stalked. Fruits appear to encircle the stem.
- Habit - To 18' tall and 18' wide. Rounded, arching. Suckers.
- Culture - Full sun, well drained. Low to moderate moisture requirements.

**ALTERNATE - SIMPLE LEAVES
THORNS ON STEMS; INSIDE OF STEM NOT YELLOW
NO SILVER SCALES ON LEAF**

Smooth leaf margins

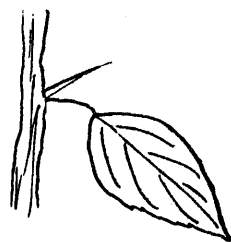


COMMON SEABUCKTHORN - *Hippophae rhamnoides* (hy-pof'-ay-ee ram-noy'-deez)

Family: Oleaster (*Elaeagnaceae*)

- Leaf - Willow-like, long, narrow, 1" - 3" long, 1/4" wide, dark grayish-green above, silver beneath. Smooth margin. No leafstalk.
- Bud - Shriveled, tiny and ragged with 2 thin, very loose scales. True terminal bud absent. Male flower buds round. Female buds are small. Golden-brown.
- Leaf scar - Half round, tiny. One bundle scar.
- Stem - Spines at terminal and axils. Hairy, silver and brown scales. Slender.
- Pith - Small, round, brown, solid.
- Flower - Yellow, tiny, in clusters, before leaves. Male round, female small - on separate plants.
- Fruit - Drupelike, bright orange, edible. Clustered along branches. Persists thru winter.
- Habit - Large, 15' x 15'. Suckers. Upright to spreading.
- Culture - Drought and salt tolerant.

Slightly toothed (knobby) leaf margins



SCARLET FIRETHORN - *Pyracantha coccinea* (py-ra-kan'-tha kok-sin'-ee-ah)

Family: Rose (*Rosaceae*)


- Leaf - Narrow, wavy edged, wedged base, thick, usually evergreen. Short tip. Petiole is hairy. Leaf margin glandular (knobby).
- Bud - True terminal bud present.
- Leaf scar - Narrow crescent or 3-lobed. Somewhat raised. Three bundle scars.
- Stem - Short thorns at end and along stems, 1/2" - 3/4" long. Stem is woolly at first, then glossy, reddish to gray-brown.
- Pith - Small, solid.
- Flower - White, large clusters.
- Fruit - Orange to red, 1/4" diameter berries in clusters, persist through winter.
- Habit - Spreading, dense. Height and width vary according to species.
- Culture - Broadleaf evergreen. Protect from wind and winter sun. East or northeast location best. Very drought tolerant once established.

**ALTERNATE - SIMPLE LEAVES
THORNS ON STEMS; INSIDE OF STEM NOT YELLOW
NO SILVER SCALES ON LEAF
COARSELY TOOTHED LEAF MARGINS**

Round stipules; all thorns are thin and sharp

**JAPANESE FLOWERING QUINCE - *Chaenomeles japonica*
(ke-nom'-e-lez ja-pon'-i-ka)**

Family: Rose *Rosaceaea*)

- 
- Leaf - 1" - 3" long, oblong, shiny above, smooth. Medium-dark green, new growth reddish. Leaf margin sharply toothed. Stipules are round, small, toothed.
 - Bud - Lateral buds are small, unstalked, round, few exposed scales, reddish. True terminal bud absent. Flower buds are large and fat.
 - Leaf scar - Small, linear or crescent, strongly raised. Three tiny bundle scars. Elongated stipule scars on each side of leaf scar.
 - Stem - Slender, light brown, slightly hairy to smooth. May have slender spines at leaf axils and at terminal. Angled at nodes.
 - Pith - Small, pale, round, solid.
 - Flower - Blooms before leaves on old wood, April to May. 1" - 2" wide, red, pink, white, coral. 5 petals.
 - Fruit - Pome, 1-1/2" round, yellowish-green, like a small, gnarled apple. Held close to stem.
 - Habit - 4' - 6' high x 3' - 5' wide, round, dense.
 - Culture - Moderate water requirements. Sun to part shade.

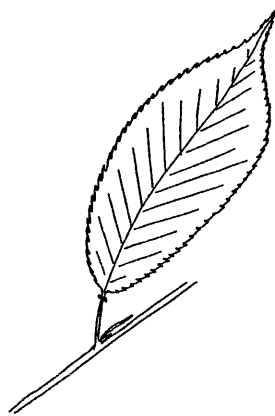
NOTE: **Common Flowering Quince (*C. speciosa*)** - Bud and fruit are larger. Upright, 6' tall.

ALTERNATE - SIMPLE LEAVES
THORNS ON STEMS - INSIDE OF STEM NOT YELLOW
NO SILVER SCALES ON LEAF
COARSELY TOOTHED LEAF MARGINS

Stipules are either long and thin or have fallen off already; thorns are long and blunt

AMERICAN (WILD) PLUM - *Prunus americana* (proo'-nus ah-mere-uh-kah'-nah)

Family: Rose (*Rosaceae*)



- Leaf - 1" - 5" long, hairless or nearly so. Petiole hairy on upper side. Leaf somewhat sharply pointed, narrowing abruptly to a long tip. Broadest at or above the middle. Sharply and often doubly toothed. May or may not have glands (tiny bumps or knobs) at top of petiole. Net-like veins. Long, narrow stipules usually present.
- Bud - True terminal bud absent. Lateral buds are reddish-brown, 1/8" - 1/2" long. Sharp pointed. Lighter colored and downy at scale margins.
- Leaf scar - Raised, oblong, more than 1 bundle scar (hard to see). Base of scar is darker than rest of scar or stem.
- Stem - Stout and stiff. May be angled at nodes. Light colored lenticels. Typically hairless, grayish film. Usually has long, blunt thorns on older branches. Spinelike lateral spurs 2nd year. Shaggy older bark. New growth is orange-brown.
- Pith - Solid, small, round. May be brown in some areas of stem, white in other areas.
- Flower - White, fragrant, 1" across, 5 petals, blooms just as leaves appear. Clusters of 3-5 flowers together, at end of spur or from lateral buds.
- Fruit - Red, yellow or purple plum with slight bloom (powdery); 1" diameter; large seed, somewhat flattened.
- Habit - Small tree. Low, broad crown. Suckers - can be multi-stemmed and form a thicket. Usually 20' tall or smaller. CO native - plains and foothills, canyons and slope bottoms.
- Culture - Low moisture requirements; cold and drought tolerant.

ALTERNATE – SIMPLE LEAVES – THORNLESS STEMS



Leaf extremely tiny (1/4" or less)

SALT CEDAR - *Tamarix hispida* (tam'-a-riks his'-pa-da)

Family: Tamarix (*Tamaricaceae*)

- Leaf - Alternate, small, scale-like and slightly hairy, deciduous. No petiole. Leaf clasps stem at leaf base. Foliage is juniper-like but deciduous.
- Bud - Small, sessile, rounded, compressed against stem, solitary, 3 exposed scales.
- Leaf scar - Very tiny, barely visible.
- Stem - Slender, elongated, round.
- Pith - Small, round, solid. Situated off center within the stem.
- Flower - Perfect, rosy pink, dense, slender 1" - 3" long racemes which form large terminal panicles.
- Fruit - Capsules, cylindrical clusters.
- Habit - To 18' tall. Wispy, very fine texture. Deciduous and bare in winter.
- Culture - **NOXIOUS WEED. DO NOT PLANT.**

**ALTERNATE - SIMPLE LEAVES – THORNLESS STEMS
LEAF LONGER THAN 1/4" – LEAVES ARE LOBED**

Leaf is very tiny (1/2" long)

APACHE PLUME - *Fallugia paradoxa* (fa-lu'-je-a pair-a-dox'-a)

Family: Rose (*Rosaceae*)

- Leaf - 3-7 long, narrow lobes, tapered at tip. Clustered, usually on short, spur branches. Scaly, rusty. Untoothed leaf margins are rolled. Dark green above, yellow-rusty, hairy beneath. Petiole absent or very short. Stipules present.
- Bud - Hairy, gray, unstalked.
- Leaf scar - Half round, tiny, raised. One bundle scar.
- Stem - New growth light, tannish-white. Slender, sparsely hairy. Older bark shreddy, reddish-brown.
- Pith - Round, solid.
- Flower - Five white round petals, solitary, 1" wide. May to October. Similar to wild rose.
- Fruit - 5-10 plummy, pinkish-white dried 'achenes'. 1-1/2" long. Soft, feathery.
- Habit - 3' - 4' high. Many branches. Irregular branching pattern; clump-forming.
- Culture - Low moisture requirements.

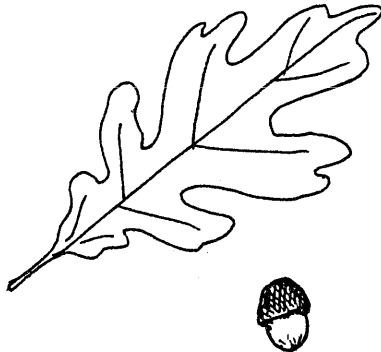


Leaf is medium-sized (3" - 6" long); pinnate venation

SCRUB OAK - *Quercus gambelii* (kware'-kus gam-bell'-ee-eye)

Family: Oak or Beech - *Fagaceae*

- Leaf - Rounded, deep lobes (variable), no bristle tip. Lobes may begin about halfway up from the base of leaf. Sinuses are small and shallow. Leaf is glossy above, slightly hairy beneath.
- Bud - Bud scales overlap each other, and there are 10+ scales.
- Leaf scar - Raised, half round. Twelve or more bundle scars.
- Stem - Fairly slender, light brown-gray.
- Pith - Solid, 5-angled or star-shaped.
- Flower - Catkin. Male 1" long; female tiny, in clusters in leaf axil.
- Fruit - Acorn. Cap encloses about half the acorn. No fringe on acorn cap.
- Habit - Dense thicket. Multi-stemmed. 15'-30' tall.
- Culture - Full sun, low moisture requirements. Well drained, low alkalinity preferred.



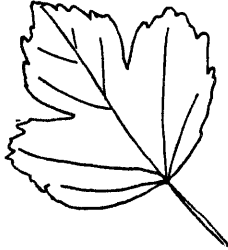
ALTERNATE - SIMPLE LEAVES – THORNLESS STEMS
LEAF LONGER THAN 1/2" - LEAVES ARE LOBED
LEAF IS MEDIUM-SIZED (3" - 6" LONG) - PALMATE VENATION

New stem growth straw colored; buds stalked

ALPINE CURRANT - *Ribes alpinum* (ry'-beez al-pie'-num)

Family: Rose (*Rosaceae*)

- Leaf - 3-5 lobes, palmate venation, toothed. Medium-dark green, slightly glossy. Base is straight across or heart-shaped. Petiole is hairy, glandular (with bumps).
- Bud - Stalked, large, gray-tan. 6-10 loose, overlapping bud scales.
- Leaf scar - Very narrow, U-shaped. Three bundle scars.
- Stem - Shiny, smooth. Ridges from leaf scar. New stems straw-colored. Older growth shreddy.
- Flower - Greenish-yellow racemes, before leaves. Male 20-30 flowers in 1" - 2" raceme. Female smaller. Male and female flowers on separate plants.
- Fruit - 1/4" red berry on female.
- Habit - 3' - 6' high x 3' - 6' wide, upright to round.
- Culture - Low to moderate moisture requirements. Sun to part shade.



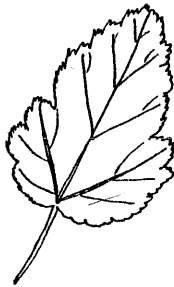
NOTE: **Golden Currant (*R. aureum*)** - 3 lobes. Flower tubular, spicy odor; yellow, short petals tipped in red. Black-reddish-brown berry. Stems don't shred as much as Alpine Currant.

New stem growth red-pink-brown; buds not stalked

COMMON NINEBARK - *Physocarpus opulifolius* (fy-so-kar'-pus op-u-li-fo'-lee-us)

Family: Rose (*Rosaceae*)

- Leaf - 3-5 major lobes, toothed, hairless, 1" - 5" long. Leaf usually a little longer than broad. Palmate venation. Leaf wedge-shaped or flat across the base.
- Bud - Five small, loose, brown, shiny overlapping scales. Unstalked, pressed close to stem, pointed.
- Leaf scar - 3-5 bundle scars, lowest one the largest. Raised leaf scar, 3 descending lines, 3-lobed.
- Stem - Hairless, angled from base of leaf scars. Slender. 5-lined from nodes, zig-zaggy. New growth shiny reddish-brown, smooth. Old growth, papery and shreddy. Small stipule scars.
- Pith - Large, round, solid. 6-angled.
- Flower - Small, 1/4", whitish-pink, umbrella-like clusters in May or June. 10-30 flowers in cluster.
- Fruit - Small, dry, follicles, smooth. Red-green-brown. Usually 3-5 together.
- Habit - Up to 10' tall, usually smaller. Arching branches.
- Culture - Moderate moisture requirements. Full sun to part shade.



NOTE: **Dwarf Ninebark (*P. nanus*)** - Dense, compact.
Dart's Golden Ninebark (*P. opulifolius* 'Dart's Golden') - Yellow-green foliage.

**ALTERNATE - SIMPLE LEAVES – THORNLESS STEMS
LEAVES UNLOBED**



Leaf very thin and short (1" - 2" long)

RABBITBRUSH - *Chrysothamnus nauseosus* (kris-so-tham'nus naw-se-o'-sus)

Family: Sunflower (*Compositae*)

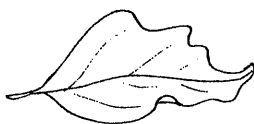
- Leaf - Small, blue/gray-green, very slender, sharp pointed. Smooth margin. May be glandular dotted. Never clustered. Aromatic.
- Bud - Small, hidden, green.
- Leaf scar - 3 bundle scars.
- Stem - Round, often ridged. Gray/green/blue. Leafy, strongly scented, hairy, woolly.
- Pith - Solid.
- Flower - Small, massed in large, round, golden-yellow heads in September. Attracts butterflies.
- Fruit - Inconspicuous.
- Habit - Roundish, 1' - 6' tall, spreading. Self-seeding. Aggressive.
- Culture - Drought tolerant and salt tolerant. Cut back in March to promote fullness.

**ALTERNATE - SIMPLE LEAVES - THORNLESS
LEAVES UNLOBED - OVAL, EGG-SHAPED
LEAF MARGIN IS SMOOTH**

Silvery scales on leaf

SILVERBERRY - *Elaeagnus commutata* (el-ee-ag'-nus kom-u-ta'-ta)

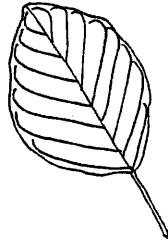
Family: Oleaster (*Elaeagnaceae*)



- Leaf - Narrow, oval shape. To 3-1/2" long, up to 1-1/2" wide. Silver scales on both sides. May also have brown scales. Leaf often folded lengthwise. Stipules may be present.
- Bud - Two bud scales, reddish-brown, scaly inside and out.
- Leaf scar - Small, half round or crescent. One bundle scar.
- Stem - Thornless. Brown scales on new growth.
- Pith - Brown, continuous.
- Flower - Yellow, fragrant, tubular, 1-3 in leaf axils.
- Fruit - Silvery, 1/3" drupe, on very short stalk. Hard outer coat.
- Habit - To 12' tall x 12' wide. Suckers. Forms colonies. Native to North America.
- Culture - Low moisture requirements once established. Full sun.

**ALTERNATE - SIMPLE LEAVES - THORNLESS
LEAVES UNLOBED - OVAL, EGG-SHAPED
LEAF MARGIN IS SMOOTH
NO SILVERY SCALES ON LEAF**

Leaf venation very pronounced; light brown lenticels on stem



EUROPEAN BUCKTHORN - *Rhamnus frangula* (ram'-nus frang'-ewe-la)

Family: Buckthorn (*Rhamnaceae*)

- Leaf - Smooth, wavy margin. Dark green, glossy above; hairy beneath on central vein. Egg-shaped. To 2-1/2" long, 8-9 pairs of very pronounced veins. No stipules.
- Bud - Terminal bud hairy, large, naked. Lateral buds smaller and brown.
- Leaf scar - Raised. Horizontal oval shape.
- Stem - New growth hairy. Brown. Light brown lenticels. Thornless.
- Pith - Solid, white.
- Flower - Creamy green. Umbel. Five parts.
- Fruit - Two-seeded, no groove. Red, turning black when ripe. 1/4" diameter, round. Single on stalk.
- Habit - To 12' tall, upright.
- Culture - Moderate moisture requirements. Sun to part shade.
- NOTE: *R. frangula* 'Columnaris' – vertical habit.

Leaf venation not pronounced; lenticels not noticeable on stem

COTONEASTER - *Cotoneaster* spp. (ka-toe'-nee-as'-ter)

Family: Rose (*Rosaceae*)



- Leaf - Small (less than 1" long) - oval or rounded. Usually dark glossy above, hairy beneath.
- Bud - Greenish gray hairs on terminal bud. Outer bud scales open to reveal hairy interior.
- Leaf scar - Raised, very tiny, narrow. One bundle scar.
- Stem - May be hairy. Older portion of stem shiny, may peel off like papery, white onion skin. May have fishbone or herringbone branching pattern on younger growth. Stipule scars.
- Pith - Small, solid, white.
- Flower - Small, pinkish-white in May. Inconspicuous.
- Fruit - Red or black single berries may be present.
- Habit - Depends on individual species.
- Culture - Most species like a protected exposure. Usually low to moderate moisture. Sun to part shade.
- NOTE: **Peking (*C. acutifolius*)** - Black fruit. Hairy stems and leaf. To 10' tall.
- Spreading (*C. divaricatus*)** - Red fruit. To 6' tall. Usually broader than tall. Shiny dark green above, hairy beneath. 2-4 pink flowers together.
- Cranberry (*C. apiculatus*)** - Red fruit. To 3' - 4' tall. Leaf may have wavy margin.
- Rockspray (*C. horizontalis*)** - Red fruit, to 3' tall; horizontal, tiered branching habit.

ALTERNATE – SIMPLE LEAVES - THORNLESS
LEAVES UNLOBED - OVAL, EGG-SHAPED
LEAF MARGIN TOOTHED
NO GLANDS (Round Bumps) ON PETIOLE OR LEAF
PINNATE VENATION

Wedge-shaped leaf base: pith white or pale brown

MOUNTAIN MAHOGANY - *Cercocarpus montanus* (sir-ko-kar'-pus mon-tay'-nus)

Family: Rose (*Rosaceae*)

- Leaf - Gray-green, leathery or thick in texture, with 3-10 pairs of prominent, straight veins and coarsely toothed margins on upper 1/2 of leaf. Smooth margin from base to middle. Hairy beneath. Wedge-shaped base. Leaf margin may be curled under. Leaves may be clustered at end of spur branch. Deciduous.
- Bud - Very hairy, round. Reddish-brown.
- Leaf scar - Tiny, crescent-shaped. Three bundle scars.
- Stem - Brownish-gray, hairy. Many short spur branches.
- Pith - White or pale brown, 5 sided, solid.
- Flower - Small creamy bells on short spur-like branches.
- Fruit - Fuzzy, silvery, corkscrew style which straightens when moist. Long, feather-like.
- Habit - To 6' tall, upright, open. CO native to foothills/montane. Dry, rocky slopes.
- Culture - Full sun. Dry conditions. Well-drained.
- NOTE: **Curl-Leaf Mountain Mahogany (*C. ledifolius*)** - To 15' tall. Broadleaf evergreen. Thick, glossy, dark green, narrow, elliptic leaves, 1/2" – 1" long. Smooth margins. Clustered on spur shoots.

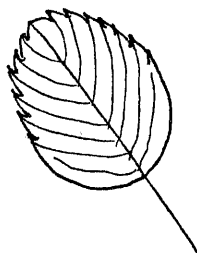


Round or heart-shaped leaf base: pith greenish

SERVICEBERRY - *Amelanchier canadensis* (am-e-lang'-ke-er ca-na-den'-sis)

Family: Rose (*Rosaceae*)

- Leaf - Broadly oblong, 1" - 3", fine-toothed nearly to base, mostly rounded at tip. White, woolly young, hairless mature. Unequally distant, irregular veins. Bluish-green coloration. Dull.
- Bud - 5-7 long, red-brown bud scales with silver hairs. Buds twist at tip. Narrow, conical. True terminal bud present. Lateral buds press close to stem.
- Leaf scar - Narrow, crescent. Three bundle scars.
- Stem - Slender, brown with gray onion-skin effect.
- Pith - 5-angled, continuous, pale. May be tinged with green.
- Flower - Drooping white clusters before or with leaves at or near end of branches. Petals are narrow, white; flower looks like a 5-bladed propeller.
- Fruit - Small, apple-like pome, tiny, purplish-blue, 1/2", usually edible. 5-10 chestnut-brown seeds.
- Habit - Small ornamental, oval. Usually multi-stemmed. To 15' - 25' tall.
- NOTE: **Saskatoon Serviceberry (*A. alnifolia*)** - Coarsely toothed above the middle, blunt tipped; nearly circular, heart-shaped base. Hairy petiole. 6' – 8' tall.



**ALTERNATE – SIMPLE LEAVES - THORNLESS
LEAVES UNLOBED - OVAL, EGG-SHAPED
LEAF MARGIN TOOTHED
NO GLANDS (Round Bumps) ON PETIOLE OR LEAF
THREE MAIN, IRREGULAR VEINS**

Bud is cone-shaped, sticks out from stem (divergent)

VANHOUTTE SPIREA - *Spiraea x vanhouttei* (spy-ree'-a van-hoot'-ee-eye)

Family: Rose (*Rosaceae*)



- Leaf - To 1-1/2" long. Margin coarsely toothed, almost lobed. Usually smooth lower 2/3 of leaf. Blue-green above. Base tapers gradually. Wider above the middle. Three main veins.
- Bud - Very tiny, several exposed scales. Cone-shaped, medium brown. Leans away from the stem at almost a right angle (divergent).
- Leaf scar - Very tiny. One bundle scar.
- Stem - New growth is very slender and wispy. Older bark may exfoliate in long strips.
- Pith - Small, round, solid.
- Flower - Small, white, 1/3" across, all along the branch in flat heads 1"-2" wide. May-June.
- Fruit - Dried follicle.
- Habit - To 6' tall, round, arching. Vase-shaped as it gets older. Graceful.
- Culture - Low to moderate moisture requirements once established. Sun to part shade.

NOTE: **Bridalwreath Spirea (*S. prunifolia*)** - Pointed leaf tip & base, double flower, hairy young stem.

**ALTERNATE – SIMPLE LEAVES - THORNLESS
LEAVES UNLOBED - OVAL, EGG-SHAPED
LEAF MARGIN TOOTHED
NO GLANDS (Round Bumps) ON PETIOLE OR LEAF
THREE MAIN, IRREGULAR VEINS**

Bud is small, close to stem



BUMALD SPIREA - *Spiraea x bumalda* (spi-ree'-a boo-mald'-ah)

Family: Rose (*Rosaceae*)

- Leaf - 1" - 3" long, mostly doubly toothed margin. Dark green. Pointed tip, narrow base.
- Bud - Small, round. Solitary or several together, unstalked, about 6 scales.
- Leaf scar - Half round or crescent, tiny, may be raised. One bundle scar.
- Stem - Brown, slightly angled in cross section, ridged. Not hairy. Very wispy. Mostly unbranched.
- Pith - Small, round, solid.
- Flower - White to deep pink, 4" - 6" wide flat-topped cluster. Flowers on new growth.
- Fruit - Dry, brown follicle.
- Habit - Broad, round, dense. Approximately 3' tall.
- Culture - Moderate moisture requirements. Sun to part shade.

NOTE: **'Anthony Waterer'** - Flowers deep carmine pink/rose, 3' tall, 5' wide.
'Frobellii' - Deep pink flower, 3' tall.
'Goldflame' - Deep rose-pink flowers. Foliage mottled pink, orange, copper in spring and fall, greenish-yellow in summer. 3' tall.
'Gold Mound' - Taller and wider spreading than Gold Flame.



Similar species:

Snowmound Spirea (*S. nipponica* 'Snowmound') - Narrow leaf, oblong, wedged base. Tiny teeth at rounded tip. Dark blue-green. 4' - 5' tall, small white flower, round clusters.
Little Princess Spirea (*S. japonica* 'Little Princess') - To 3' tall, compact, dense, mound. Pink flower clusters. June to July.

ALTERNATE - SIMPLE LEAVES - THORNLESS
LEAVES UNLOBED - LEAF OVAL, EGG-SHAPED
LEAF MARGIN TOOTHED
GLANDS (Round Bumps) ON MIDRIB (Center Vein) OF LEAF



BLACK CHOKEBERRY - *Aronia melanocarpa* (a-roe'-nee-a mel-an-o-kar'-pa)

Family: Rose (*Rosaceae*)

- Leaf - Egg-shaped. Smooth beneath. To 3-1/2" long, 3/4" wide. Row of black hair-like glands on central vein on upper side of leaf. Fine-toothed margin. Teeth may be tipped with black. Leaf is shiny, dark green. Short petiole.
- Bud - 1/4" - 1/2" long, 5 overlapping scales. Red tinged with green, shiny. Solitary, unstalked, oblong, flattened, pressed close to stem. Scale tips notched.
- Leaf scar - U-shaped. Three bundle scars.
- Stem - Slender, hairless. May have a silvery coating.
- Pith - Round, pale, almost solid.
- Flower - Small, pink, or white. At end of stem. May to June.
- Fruit - Black, to 1/2" diameter, berry.
- Habit - 3' - 5' tall. Suckers.
- Culture - Moderate to high moisture requirements. Sun to part shade.

NOTE: **RED CHOKEBERRY (*A. arbutifolia*)** - Leaf is hairy beneath, bud and stem are hairy, fruit is red. To 12' tall.

**ALTERNATE - SIMPLE LEAVES - THORNLESS
LEAVES UNLOBED - OVAL, EGG-SHAPED
LEAF MARGIN TOOTHED - GLANDS (Round Bumps) ON PETIOLE**

Foliage is purplish-reddish-green

PURPLELEAF SANDCHERRY - *Prunus x cistena* (proo'-nus sis-tee'-na)

Family: Rose (*Rosaceae*)



- Leaf - Reddish-purple all season, with tinge of green. Almost hairless. May have long, prominent stipules with stalked glands on margin. Trace of fuzz at base of center vein beneath (hard to see). Usually two tiny bumps at top of petiole.
- Bud - Tiny, round, reddish-brown.
- Leaf scar - Narrow horseshoe shape.
- Stem - Reddish-brown. When scraped, is reddish-pink beneath.
- Pith - White, solid.
- Flower - Pinkish-white, two flowers together, or 3 or 4 from spur. May to June.
- Fruit - Black-purple. Sparse, inconspicuous.
- Habit - To 8' tall, upright, spreading.
- Culture - Low to moderate moisture requirements once established. Full sun for good red color.

NOTE: **CANADA RED CHOKECHERRY (*Prunus virginiana* 'Shubert')** - Also has purplish red foliage, but not for the whole season. It starts out green, turns red, and new growth is green then turns red. The bark, when scraped, is green, not red. Flowers are white, not pinkish, and in racemes, not on a single stalk. See Chokecherry for more information.

**ALTERNATE - SIMPLE LEAVES - THORNLESS
LEAVES UNLOBED - OVAL, EGG-SHAPED
LEAF MARGIN TOOTHED - GLANDS (Round Bumps) ON PETIOLE
FOLIAGE IS GREEN**

Pith is brown or salmon

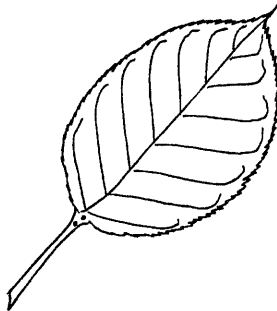


WESTERN SANDCHERRY - *Prunus besseyi* (proo'-nus bes'-ee-eye)

Family: Rose (*Rosaceae*)

- Leaf - Less than 2" long, leathery, sharply toothed on upper 2/3 of leaf. Grooved petiole may have glands at top near leaf. Leaves are often clustered at ends of short branch.
- Bud - Oblong, reddish-brown, shiny. Buds may be two/three together. Scales may be keeled.
- Leaf scar - Half round, small. Three bundle scars.
- Stem - Red and smooth first year, gray and slightly shreddy the second. Orange lenticels.
- Pith - Salmon or brown, solid, small.
- Flower - White, 5 petals, rounded tips. Usually two flowers together on last year's growth. Fragrant.
- Fruit - 5/8" diameter, edible, purple black, fleshy, sweet. Clustered in leaf axils or on side of spur.
- Habit - 4' tall x 6' wide. Spreading.
- Culture - Low to moderate moisture. Well drained soils.

Pith is white or cream; top of bud scales have lighter margin



COMMON CHOKECHERRY - *Prunus virginiana* var. *melanocarpa* (proo'-nus vir-jin-e-an'-a mel-an-o-car'-pa)

Family: Rose (*Rosaceae*)

- Leaf - Egg shaped or oval, 2" - 5" long, tiny, sharp, pointed teeth, hairless central vein. Poisonous when wilted. Two round knobby glands at top of petiole near the base of the leaf.
- Bud - 3/16" long, dull brown. Bud scales rounded at tips with gray margins. Terminal bud present.
- Leaf scar - Oval, 3 bundle scars.
- Stem - Rank odor. No spurs, no thorns. Gray film. Stout, smooth, dull. Light colored.
- Flower - White, creamy, 5-petaled, round tipped blossoms, on a long, central stalk. Fragrant.
- Fruit - Reddish-purple to black, elongated clusters. Long central fruit stalk may remain through winter. Flesh of fruit edible. Seed poisonous.
- Habit - Single trunked or multi-stemmed shrub or small tree. Suckers. To 15' - 25' tall.
- Culture - Prefers moist conditions, but will tolerate dry to moderate. Sun to part shade.

NOTE: Bark and wilted leaves extremely poisonous. Flesh of fruit okay. Seed is questionable.

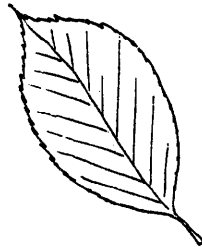
**ALTERNATE - SIMPLE LEAVES - THORNLESS
LEAVES UNLOBED - OVAL, EGG-SHAPED
LEAF MARGIN TOOTHED - GLANDS (Round Bumps) ON PETIOLE
FOLIAGE IS GREEN – PITH IS WHITE OR CREAM
COLOR OF BUD SCALES UNIFORM**

Leaf very hairy beneath

NANKING CHERRY - *Prunus tomentosa* (proo'-nus toe-men-toe'-sa)

Family: Rose (*Rosaceae*)

- Leaf - Egg-shaped, abruptly narrowed tip, very hairy beneath. To 2-1/2" long. Toothed margin. Medium to dark green. Light green beneath. Glandular petiole. Stipules very narrow and bristle-like.
- Bud - Terminal bud present. Lateral buds sometimes three together.
- Leaf scar - Half-round, small. Three bundle scars.
- Stem - Reddish-brown, exfoliating. Hairy. Youngest stems very hairy. Cherry-like older bark.
- Pith - Round, solid.
- Flower - Before leaves, pink, opening to white, solitary, 1" across. Blooms in April.
- Fruit - Scarlet, 3/8", edible, ripens early summer.
- Habit - To 8' tall. Wide, round, open, spreading.
- Culture - Low to moderate moisture requirements. Sun to part shade.



Leaf hairy only on center vein beneath

DWARF FLOWERING ALMOND - *Prunus glandulosa* (proo'-nus gland-u-lo'-sa)

Family: Rose (*Rosaceae*)

- Leaf - Oblong, pointed tip, finely toothed, slightly hairy on center vein beneath. 1/4" petiole. Leaf to 4" long. Light medium green. Long, narrow stipules with gland-tipped teeth.
- Bud - Smooth. Terminal bud usually present.
- Leaf scar - Half-round, small. Three bundle scars.
- Stem - Slender.
- Pith - Round, solid.
- Flower - Pink or white, single or double, 1/2" across.
- Fruit - Dark red, 3/8" diameter.
- Habit - 4' - 5' tall by 3' - 4' wide. Multi-stemmed, straggly.
- Culture - Moderate moisture requirements. Full sun.



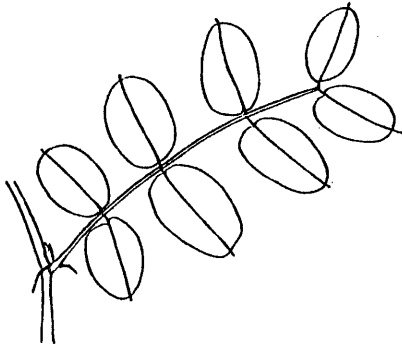
**ALTERNATE - COMPOUND LEAVES
THORNS ON STEMS
LEAFLETS HAVE SMOOTH MARGINS**

New stems are greenish-gray; no terminal leaflet (evenly pinnate)

SIBERIAN PEASHRUB - *Caragana arborescens* (care-a-gay'-na ar-bo-res'-enz)

Family: Bean (*Fabaceae*)

- Leaf - Six to 14 leaflets, each 1" long, oval to oblong, smooth margin, pale green, rounded at tip, ending with thin, tiny bristle. Hairy when young. Stipules usually spiny. Entire leaf to 4" long.
- Bud - Scales slightly overlapping, light brown, rough.
- Leaf scar - Raised, tiny, half round. One bundle scar.
- Stem - Gray-green. Pale horizontal lenticels. Usually has short, thin, sharp spines in leaf axils.
- Pith - Somewhat angular. Solid.
- Flower - Resembles flowers of pea plants. 1-4 together. Small yellow, on old wood, with leaves. May.
- Fruit - Small pea pods, 3-5 seeds. Pod 1" - 2" long. Makes popping noise as pods open. Tan.
- Habit - To 12' - 15' tall x 10' - 12' wide. Upright, narrow. Suckers. Arching with age.
- Culture - Tolerates poor soils, dry conditions. Full sun.



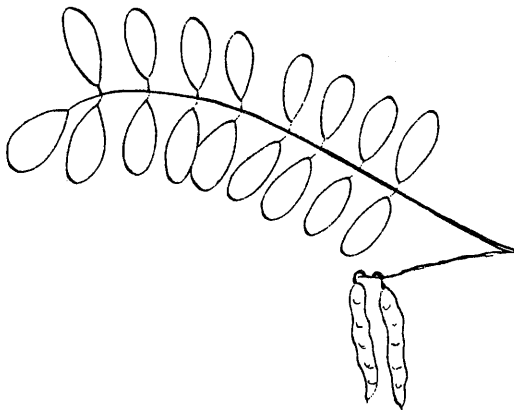
NOTE: **PYGMY PEASHRUB (*C. pygmaea*)** - To 4' tall, golden yellow bark. Leaves nearly stalkless. Two to four leaflets, 3/8" long, very narrow. Petiole spiny.

New stems reddish-brown; terminal leaflet (oddly pinnate)

BLACK LOCUST - *Robinia pseudoacacia* (row-bin'-ee-a soo-doe-a-ka'-see-a)

Family: Bean (*Fabaceae*)

- Leaf - Oddly pinnate - 7-19 egg-shaped leaflets, each leaflet 1" - 2" long. Smooth margins. Each leaf 6" - 14" long. Center vein is flat on upper surface, grooved and rounded beneath.
- Bud - Tiny, may be submerged into stem. Rusty-colored hairs. 3-4 buds clustered, covered with overlapping scales. True terminal bud absent. Scales brown outside, woolly inside.
- Leaf scar - Nearly circular. Three bundle scars, look like three irregular cracks.
- Stem - Hairless. Pair of thick, hard thorns at leaf axils. Reddish-brown. Brittle, zig-zaggy. Ridges along stem.
- Pith - Brown, solid.
- Flower - Creamy white, fragrant clusters, 4" - 8" long. Pea-like blossoms.
- Fruit - 2" - 6" long, flat pods, thin, papery. Reddish-brown, smooth, persistent, usually in clusters.
- Habit - Irregular branching. Suckers. Can form a thicket.
- Culture - Adaptable.



NOTE: **ROSE LOCUST (*R. neomexicana*)** - Pink flowers, fruit pods smaller, have glandular hairs. Hairy flower stalks and buds. Glandular, rusty hairs on stems. Naturalized. Stems are bristly.

**ALTERNATE - COMPOUND LEAVES
THORNS ON STEMS
LEAFLETS HAVE TOOTHED MARGINS**



ROSE - *Rosa* spp. (ro'-sa)

Family: Rose (*Rosaceae*)

- Leaf - Mostly oddly pinnate. 3-9 leaflets.
- Bud - Small, unstalked, 3-4 exposed scales.
- Leaf scar - Narrow, shallow, linear. Three bundle scars.
- Stem - Round. Many prickles, mostly at leaf nodes.
- Pith - Large, brown, roundish.
- Flower - Depends on variety - usually 5-petalled.
- Fruit - Red/orange fleshy hip.
- Habit - Depends on variety
- Culture - Depends on variety. Usually moderate moisture requirements. Full sun for best bloom.

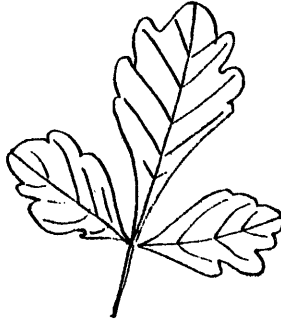
NOTE:

Woods Rose (*R. woodsii*) - To 6' tall, 5-7 leaflets, pink flowers.

Red-Leaf Rose (*R. rubrifolia* or *glauca*) - 6'-7' tall, few straight or hooked prickles. Stems pinkish.

Austrian Copper (*R. foetida*) - Few unequal straight prickles, 5-9 leaflets, doubly toothed leaf margins, hairy and glandular beneath. To 10' tall. Stems red-brown.

**ALTERNATE - COMPOUND LEAVES - THORNLESS
LEAVES HAVE THREE LEAFLETS**



SKUNKBUSH SUMAC (Threeleaf Sumac) - *Rhus trilobata* (roos tri-lo-bay'-ta)

Family: Cashew (*Anacardaceae*)

- Leaf - Three leaflets - rounded lobes, smooth margins. Middle leaflet is largest. Odor when crushed. Glossy, dark green above; paler, slightly hairy beneath.
- Bud - Buds are hidden under persistent petiole base.
- Leaf scar - Raised, circular.
- Stem - New stem growth is of medium thickness (1/8" to 1/3" diameter). Distinctive odor when scratched. Gray.
- Pith - Round, brown, solid.
- Flower - Male/female on separate plants. Male catkins, look like long buds, persist thru winter. Female on short panicles at end of branches.
- Fruit - Hairy red fruit (multiple berries) may persist through winter on female plants.
- Habit - 6' - 8' tall, spreading. CO native, foothills, montane.
- Culture - Low moisture requirements. Sun to part shade.

**ALTERNATE - COMPOUND LEAVES - THORNLESS
LEAVES HAVE MORE THAN THREE LEAFLETS
LEAFLET MARGINS SMOOTH**

Usually five or less leaflets per leaf; bark is brown, wispy

BUSH (SHRUBBY) CINQUEFOIL - *Potentilla fruticosa* (po-ten-til'-a froo-ti-ko'-sa)

Family: Rose (*Rosaceae*)

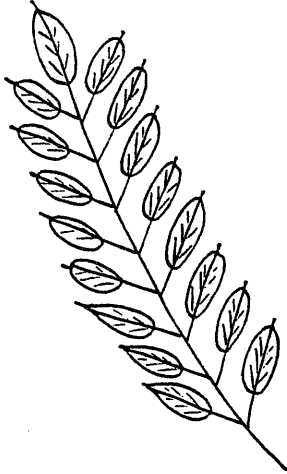


- Leaf - Oddly pinnately compound - 3-7 leaflets - usually 5 - unstalked. Looks like a miniature fan. Upper 3 leaflets may merge slightly at their bases. Oval-linear. Smooth and curling margin. Each leaflet less than 1" long, narrow, hairless to white-silky, tapering at each end.
- Bud - About four scales that open a little, giving bud a hairy, grayish-white appearance.
- Leaf scar - Barely visible, if at all, and there is one bundle scar.
- Stem - New stem growth is very slender and wispy. Stems are brown. Dried flower and seed heads may be present at or near end of stem. Thin papery portions of old leaf stalk persist during winter, encircling most of stem below the bud, encasing bottom portion of bud. Seed heads and stem also hairy. Elongated internodes. Shreddy older bark.
- Pith - Small, roundish, brown, spongy.
- Flower - Tones of yellow or white. 5 petals. Almost round. April to July.
- Fruit - Small, dry, hairy achene, in a head. June to September.
- Habit - Rounded to upright. Size varies, usually 3' - 4' tall. CO native, montane meadows, bogs.
- Culture - Moderate water needs. Full sun is best for flowering, but likes part shade.

NOTE: **Abbottswood** - White flowers, 3' x 4', dark green foliage, arching, spreading.
Goldfinger - Deep yellow, 4' x 4', dark green foliage, round habit.
Jackmanii - Deep golden yellow, large flowers, 4' x 4', dark green foliage, round habit.
Katherine Dykes - Creamy yellow flowers, 4' x 4', gray-green foliage, irregular habit.
Gold Drop - Golden yellow; compact.
Coronation Triumph - Bright yellow; upright.

**ALTERNATE - COMPOUND LEAVES - THORNLESS
LEAVES HAVE MORE THAN THREE LEAFLETS
LEAFLET MARGINS SMOOTH**

Usually 5-25 leaflets per leaf



INDIGOBUSH (False Indigo) - *Amorpha fruticosa* (a-mor'-fa froo-ti-ko'-sa)

Family: Bean (*Fabaceae*)

- Leaf - 5-25 leaflets, oval, each leaflet 1-1/2" long, thin, hairy bristle at tip of leaflet. Smooth margin. Stipules. Greenish-gray. Late to leaf out in spring.
- Bud - One above the other, pressed close to stem, true terminal bud absent. Brownish-gray.
- Leaf scar - Raised, triangular, very tiny. Three bundle scars.
- Stem - Round or finely grooved. Slender, gray to brown. No prickles. Small stipule scars.
- Pith - Round, solid, pale.
- Flower - Deep purplish spikes with orange anthers; spike is 3" - 6" long. June to July.
- Fruit - Small resin-dotted pods, kidney-shaped, persist in winter.
- Habit - To 10' - 15' tall, irregular, open. Foliage near top of branches. Leggy.
- Culture - Tolerates poor soils, salts, drought and high pH. Full sun for good flowering.

NOTE: **LEADPLANT (*A. canescens*)** - White, hairy stem and leaf. Red-brown hairy bud. Leaflet 3/4" long. Gray, hairy fruit. To 2' tall. 2 bundle scars. 15-45 leaflets. 8 longitudinal ridges along stem. Solitary buds, tiny stipule scars.

**ALTERNATE - COMPOUND LEAVES - THORNLESS
LEAVES HAVE MORE THAN THREE LEAFLETS
LEAFLET MARGINS TOOTHED**

Stems very hairy

STAGHORN SUMAC - *Rhus typhina* (roos ty-fee'-na)

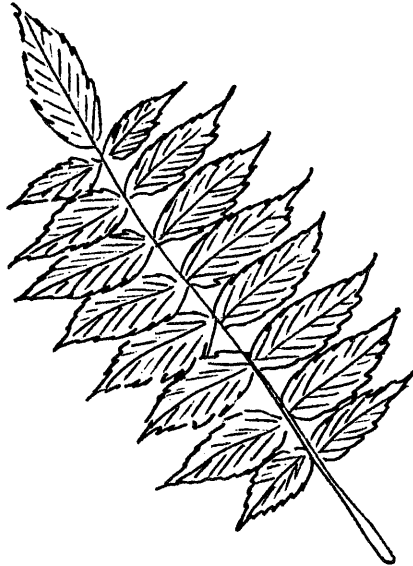
Family: Cashew (*Anacardaceae*)

- Leaf - Pinnately compound, 12" - 24" long. 11-31 leaflets, each 2" - 5" long, toothed all the way around, round base, long tapered tip. Milky juice if torn. Petiole is very hairy, enlarged at base to encircle bud.
- Bud - Small, round, hairy. All are about the same size.
- Leaf scar - U-shaped, surrounding bud.
- Stem - Very hairy, especially on new growth. Round, over 1/2" thick. No line encircling stem at scars. Very small lenticels.
- Pith - Large, most of the diameter of the stem. Brown.
- Flower - Male/female on separate plants. Female greenish-yellow, dense, hairy panicle, 6" - 10" long. Male, looser, larger.
- Fruit - Red, dense, hairy conelike, terminal upright cluster.
- Habit - 15' to 20' tall. Open branching, resembling the horns of a male deer. Suckers heavily.
- Culture - Low to moderate moisture requirements. Sun to part shade.

NOTE: **CUTLEAF STAGHORN SUMAC (*R.typhina* 'Laciniata')** - Leaflets finely and deeply toothed, almost like a fern.



**ALTERNATE - COMPOUND LEAVES - THORNLESS
LEAVES HAVE MORE THAN THREE LEAFLETS
LEAFLET MARGINS TOOTHED
STEMS SLIGHTLY OR NOT AT ALL HAIRY**



Narrow leaf scar

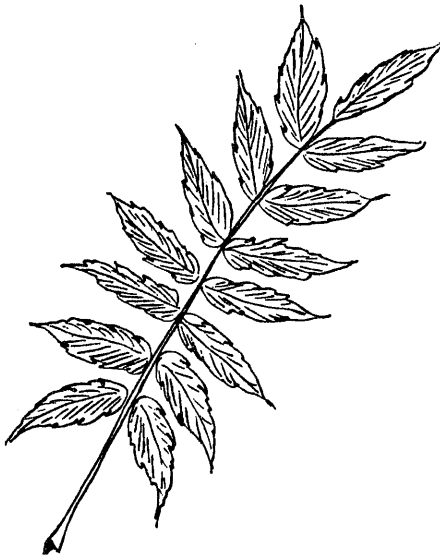
SMOOTH SUMAC - *Rhus glabra* (roos glay'-bra)

Family: Cashew (*Anacardaceae*)

- Leaf - Pinnately compound, 9-31 lance-shaped leaflets, each 5" long, widest at base, tapering to tip. Coarsely toothed. Glossy green above, green-white below. Hairless.
- Bud - Football shaped covered with gray hairs.
- Leaf scar - Narrow, almost surrounding the bud. Seven or more bundle scars.
- Stem - Red-brown-purple, hairless, coarse, rigid, smooth, covered by waxy coating. Stout, flat-sided.
- Pith - Large, solid, yellowish.
- Flower - Male/female on separate plants. Female - greenish, on 6" - 10" pyramidal clusters. Male larger and looser.
- Fruit - Berrylike, red velvety; short. On female plant only. Persist.
- Habit - 9' - 15' tall; thicket-forming.
- Culture - Low to moderate water. Sun to part shade.

NOTE: **SMOOTH CUTLEAF SUMAC (*R. glabra* 'Laciniata')** - Same as *R. typhina* 'Laciniata' except no hair on stem.

Half-round leaf scar

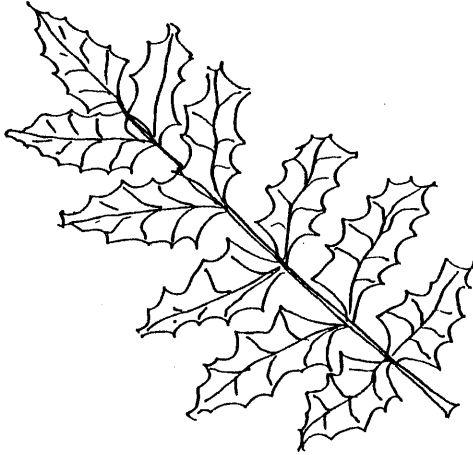


ASHLEAF SPIREA (Ural Falsespirea) - *Sorbaria sorbifolia* (sor-ba'-ree-a sor-bi-fo'-lee-a)

Family: Rose (*Rosaceae*)

- Leaf - Dull blue-green older foliage, new foliage red-green. Pinnate venation. Pinnately compound, 13-23 leaflets, lanceolate, each 2" - 4" long, doubly toothed.
- Bud - Round, 4 exposed scales, more than one bud together. True terminal bud absent. Gray brown.
- Leaf scar - Large, half to round. Three large bundle scars.
- Stem - Green or pink, slightly hairy - young. Gray-brown, shiny - older. round stout, may zig-zag.
- Pith - Large, brown, continuous
- Flower - White, 1/3", large, fleecy terminal 4" - 10" panicle. June to July.
- Fruit - Capsule, glabrous.
- Habit - 8' tall, upright. Suckers. May die back to ground each spring.
- Culture - Moderate water requirements. Sun to part shade.

**ALTERNATE - COMPOUND LEAVES - THORNLESS
LEAVES HAVE MORE THAN THREE LEAFLETS
LEAFLETS HOLLY-LIKE, THICK AND LEATHERY**

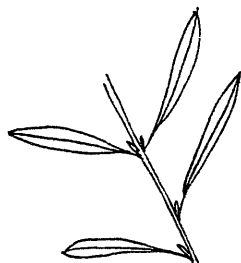


OREGON GRAPE HOLLY - *Mahonia aquifolium* (ma-hoe'-nee-a a-kwi-fo'-lee-um)

Family: Barberry (*Berberidaceae*)

- Leaf - 6" – 12" long; Oddly pinnate, 5-9 leaflets, each leaflet to 3-1/2" long, 6-12 spiny, sharp, bristle-tipped teeth. Glossy dark green above. Stiff and leathery. Persistent thru winter, turning purplish-red. No leafstalks on lateral leaflets – leafstalk on terminal leaflet.
- Bud - Laterals small. Terminal egg-shaped with 6+ scales.
- Leaf scar - Narrow, low, half encircling the stem. Nine or more bundle scars.
- Stem - Round, stout, smooth. Green to gray-brown, usually unbranched.
- Pith - Large, pale, solid.
- Flower - Bright yellow, erect racemes.
- Fruit - True berry, blue-black, white bloom, 1/3" diameter. Looks like grapes.
- Habit - To 6' tall, irregular branching. Broadleaf evergreen.
- Culture - Likes a protected location away from wind and winter sun. Prone to winterkill.

LEAVES SUB-OPPOSITE, OPPOSITE AND/OR ALTERNATE



DWARF ARCTIC WILLOW - *Salix purpurea* 'Nana' (say'-liks pur-pu're-a)

Family: Willow (*Salicaceae*)

- Leaf - Long, narrow, distinct blue-green color. Very linear, usually broadest at top half. 1" - 3" long, 1/4" wide. Opposite, sub-opposite or alternate. Red petiole.
- Bud - Single bud scale cap.
- Leaf scar - Very narrow U-shaped.
- Stem - Reddish-purple on new growth.
- Pith - White, spongy.
- Flower - Catkins.
- Fruit - Capsules, hairy.
- Habit - Under 5' tall, upright branching. Fine texture.
- Culture - Moderate to high water needs. Sun to part shade. Needs winter water.

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GLOSSARY OF PLANT IDENTIFICATION TERMS

ACHENE	A small, dry, one-seeded fruit.
ACUMINATE	Tapering gradually to a point.
ACUTE	Tapering rapidly to a point.
ALTERNATE	Plant parts that are placed individually along a stem, in a zig-zag arrangement, one leaf at each node - not opposite each other.
ANGIOSPERM	A class of plants characterized by the formation of flowers, and seeds enclosed in fruits.
APEX	The extreme top or tip of a plant part.
APPRESSED	Pressed closely and flatly along the length of a plant part.
ARCUATE	Arching, as in leaf venation when veins arch from the midrib and follow the margin back to the tip of the leaf.
AXIL	The upper angle formed by a leaf petiole with the stem.
BARK	The tissues formed on the outside of a woody stem.
BASE	The bottom portion of an object.
BERRY	A fleshy fruit without a stone, usually containing many seeds embedded in the pulp.
BIPINNATE	More than one set of leaflets per leaf.
BLADE	The flat, expanded portion of a leaf.
BLOOM	White, powdery layer on plant parts. Usually easily rubbed off.
BRANCH	One of the divisions of the trunk.
BRISTLE	A stiff, thin hair which may be straight or hooked.
BUD	The undeveloped state of a branch, leaf and/or flower cluster, with or without hard scales.
BUD SCALE	Modified leaves forming a covering which protects the bud from drying out and other injuries.
BUNDLE	A cluster of plant parts.
BUNDLE SCARS	Marks within leaf scar produced when the petiole separates from the stem, indicating the broken ends of the xylem and phloem strands.

CAPSULE	A dry fruit with many seeds, opening near the tip.
CATKIN	A slender, pendulous, dense flower cluster.
CHAMBERED	A solid pith that is interrupted by uniformly spaced partitions of hollow spaces.
COLLATERAL	Being side by side, as in buds on a stem.
COMPOUND	The leaf blade is divided into several separate sections called leaflets.
CONCAVE	Depressed or hollowed out.
CONE	The fruit of a conifer, usually with woody, overlapping scales.
CONIFER	A cone-bearing tree.
CONTINUOUS	Solid - no cavities or hollow spaces.
CONVEX	Arched.
CORDATE	Heart-shaped.
CRENATE	A leaf margin with rounded, shallow teeth.
CROWN	Upper part of a tree - the living branches with their foliage.
DECIDUOUS	Plant having leaves that fall off each season.
DELTOID	Triangular.
DENTATE	Sharp teeth of leaf margin pointed out, not forward.
DISSECTED	Finely divided.
DIVERGENT	Bud sticks out, pointing away from stem.
DOWNY	Plant part is coated with soft hairs.
ELLIPTIC	Widest at the middle, tapering equally to each end.
ENTIRE	Leaf edge (margin) has no indentations or teeth at all; completely smooth.
EVERGREEN	A woody perennial bearing foliage throughout the year.
EXFOLIATE	To peel or flake off in thin layers.
FLOWER	Reproductive organ of an angiosperm.
FLUTED	Regularly marked by alternating ridges and groove-like depressions.
FRUIT	A ripened, mature ovary.

FURROWED	Longitudinal ridges and grooves.
GLABROUS	No hairs, bristles or scales. Smooth.
GLAND	A tissue or protruding structure secreting oils, balsams or resins, usually on a leaf or petiole.
GLAUCOUS	Smooth and covered with a fine, white or blue powder (bloom) which can be rubbed off.
GLOBOSE	Round in form, or nearly so.
GRANULAR	Minutely roughened.
GYMNOSPERM	A class of plants that produce seeds not enclosed in an ovary or fruit, but frequently in cones.
HABIT	General appearance of a plant as seen from a distance.
HERBACEOUS	Not woody; soft tissues.
IMBRICATE	Overlapping, like shingles on a roof.
INTERNODE	The space between nodes that is lacking leaves and buds, such as on a stem.
KEELED	A prominent central ridge, like the keel of a boat.
LANCEOLATE	Tapering gradually from the base to a point; narrow and long.
LATERAL	Situated or produced on the side.
LEAF	Appendage of a stem composed of a flat, veined blade and a stalk attaching the appendage to the stem.
LEAF SCAR	Scar left on the stem at the point where the leaf fell off.
LEAFLET	One of the small, individual blades of a compound leaf.
LENTICEL	A small breathing pore on the stems of plants, may be showing up as a different colored dot on the stem, somewhat corky.
LINEAR	Long and narrow with nearly parallel sides.
LOBE	Rounded or pointed extensions of the leaf blade margin.
LUSTROUS	Shiny, glossy.
MARGIN	The very edge of a leaf blade.
MIDRIB	The mid or central vein of a leaf.
NAKED BUD	Lacking a covering - as in a bud with no protective, hard scales.
NEEDLE	Very narrow leaf, as in conifers.
NODE	The place on a stem where buds and leaves arise, usually a swollen area on the stem.

OBLANCEOLATE	Long and narrow but broadest near the tip.
OBLIQUE	Lopsided.
OBOVATE	Egg-shaped, broadest near the tip.
OBTUSE	Blunt at the tip, almost rounded.
OPPOSITE	Plant parts arise opposite each other along a central axis.
OVATE	Egg-shaped, broadest below the middle.
PALMATE	With divisions spreading from a common center.
PANICLE	A branched flower cluster, the lower branches longest and flowering first.
PENDULOUS	Hanging down, drooping.
PERSISTENT	Remaining attached, not falling off after the growing period.
PETIOLE	The leafstalk which attaches the leaf blade to the stem.
PETIOLULE	The leafstalk of a leaflet in a compound leaf.
PINNATE	Leaflets or veins arranged on each side of a common stem; feather-like.
PITH	The central-most, softer portion of a stem.
PRICKLE	A needle-like outgrowth arising from the outer layer of stem, leaf or fruit cells. (example - rose)
PUBESCENT	Hairy or downy.
RACHIS	The leafstalk of a compound leaf.
REFLEXED	Abruptly bent or turned downward.
RESIN	An excretion product of certain plants.
RETICULATE	Net-like; many small irregular veins throughout a leaf.
REVOLUTE	Rolled back toward the lower side, as in a leaf margin.
ROOT	Underground part of a plant which supplies the plant with nourishment, anchors the plant and is a storage area.
RUGOSE	Coarsely wrinkled, uneven, rough.
SAMARA	A dry, winged, one-seeded, papery fruit.
SCABROUS	Rough to the touch.
SERRATE	Leaf edge (margin) composed of teeth pointing toward the tip of the leaf.

SESSILE	Without a stalk, sitting directly on the base.
SHEATH	A tubular envelope, possibly papery, clasping and enclosing other plant parts, such as the needles of a pine.
SHOOT	A stem bearing foliage.
SHRUB	A woody perennial usually having more than one trunk.
SIMPLE	In one piece; not divided into smaller units.
SINUS	The recess or indentation between two lobes.
SPINE	A sharp, thin modified leaf, arising from a node on the stem, just like a leaf would. (example - cactus)
SPUR SHOOT	A short, stubby branch bearing leaves, flowers or fruit.
STELLATE	Star-shaped.
STEM	The leaf and flower-bearing part of a plant.
STIPULE	A leafy appendage at the base of a petiole, usually one at each side.
STIPULE SCAR	The scar left on the stem when the stipules fall off.
STOMATA	Breathing pores in leaves.
STROBILE	A small cone or cone-like structure.
SUB-OPPOSITE	Almost opposite, not quite.
SUCKER	An extra shoot arising above ground from a root.
SUPERPOSED	One bud above another.
TENDRIL	A modified leaflet, leaf, stipule or branch used as a lateral climbing organ by the plant.
TERETE	Circular in cross section.
TERMINAL	Situated at the end or tip.
TERMINAL BUD SCALE SCAR	The scar remaining on a stem after a bud has elongated and the bud scales have fallen off.
THORN	A modified stem, hard and sharp-pointed, arising from a node. (example - hawthorn)
TOMENTOSE	Densely woolly, hairy.
TREE	A woody perennial with one main trunk.
TRIFOLIATE	Three leaflets, or leaves arranged in threes.

VALVATE

Meeting at the edges, not overlapping.

VEIN

A strand of conducting tissue in a leaf. Continuation of the xylem and phloem from the stem, through the petiole, into the leaf.

VENATION

Arrangement of veins within the leaf.

WHORL

The arrangement of leaves in groups of three or more at nodes.

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Lombardy - <i>Populus nigra</i> 'Italica'	70
White - <i>Populus alba</i>	67
POTENTILLA - <i>Potentilla fruticosa</i>	140
PRIVET	
Common European - <i>Ligustrum vulgare</i>	109
New Mexican - <i>Forestiera neomexicana</i>	112
PYRACANTHA - <i>Pyracantha coccinea</i>	121
QUINCE, JAPANESE FLOWERING - <i>Chaenomeles japonica</i>	122
RABBITBRUSH - <i>Chrysothamnus nauseosus</i>	127
REDBUD, EASTERN - <i>Cercis canadensis</i>	71
ROSE - <i>Rosa</i> spp.	138
RUSSIAN OLIVE - <i>Elaeagnus angustifolia</i>	58
SALT CEDAR - <i>Tamarix hispida</i>	124
SANDCHERRY	
Purpleleaf - <i>Prunus x cistena</i>	134
Western - <i>Prunus besseyi</i>	135

SCARLET FIRETHORN - <i>Pyracantha coccinea</i>	121
SEABUCKTHORN, COMMON – <i>Hippophae rhamnoides</i>	121
SERVICEBERRY – <i>Amelanchier</i> spp.	130
SILVERBERRY - <i>Elaeagnus commutata</i>	128
SNOWBERRY, COMMON - <i>Symphoricarpos albus</i>	104
SPINDLE TREE, COMMON – <i>Euonymus europaeus</i>	54
SPIREA	
Ashleaf - <i>Sorbaria sorbifolia</i>	143
Blue Mist - <i>Caryopteris x clandonensis</i>	118
Bumald - <i>Spiraea x bumalda</i>	132
Vanhoutte - <i>Spiraea x vanhouttei</i>	131
SPRUCE	
Colorado - <i>Picea pungens</i>	10
Dwarf Alberta – <i>Picea glauca</i> 'Conica'	10
Engelmann – <i>Picea engelmannii</i>	10
SUMAC	
Skunkbush (Three-leaf) - <i>Rhus trilobata</i>	139
Smooth - <i>Rhus glabra</i>	143
Staghorn - <i>Rhus typhina</i>	90
SYCAMORE, AMERICAN - <i>Platanus occidentalis</i>	67
TAMARISK – <i>Tamarix hispida</i>	124
TREE OF HEAVEN - <i>Ailanthus altissima</i>	88
VIBURNUM	
American Cranberrybush - <i>Viburnum trilobum</i>	102
Arrowwood - <i>Viburnum dentatum</i>	117
Burkwood - <i>Viburnum x burkwoodii</i>	113
European Cranberrybush - <i>Viburnum opulus</i>	102
Koreanspice - <i>Viburnum carlesii</i>	112
Nannyberry - <i>Viburnum lentago</i>	115
Snowball Viburnum - <i>Viburnum opulus</i> 'Roseum'	102
Wayfaringtree - <i>Viburnum lantana</i>	113
WAHOO, EASTERN - <i>Euonymus atropurpureus</i>	54
WALNUT, BLACK - <i>Juglans nigra</i>	89
WILLOW	
Dwarf Arctic - <i>Salix purpurea</i> 'Nana'	145
Peachleaf - <i>Salix amygdaloides</i>	74
Weeping - <i>Salix babylonica</i>	74
YEW, JAPANESE – <i>Taxus cuspidata</i> 'Nana'	11