



# *Introduction to Tree Identification*



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COOPERATIVE EXTENSION

# *How To Be Good at Tree ID*



- Read and study, build a library
- Observe trees, tree parts
- Learn terminology
- Visit arboreta, botanical gardens, nurseries
- Key out a lot of trees at first

# *How To Be Good at Tree ID*



- Learn genera, species will come later
- Learn families for common traits
- Learn what is found in your area
- Learn tree/forest ecology
- Enjoy doing it

# Keying

- Process of sorting, narrowing down choices
- First choices easy, later difficult
- Leaves, twigs (pith), buds, flowers, fruit, bark
- Usually either/or (dichotomous)
  - Broad leaved/scaly or needle
  - Opposite/alternate (or whorled)
  - Simple/compound (or both)
- Ideal key has all local flora, no non-local flora
- Teaches observation, terminology

# *Utah Tree Keys & ID Info*

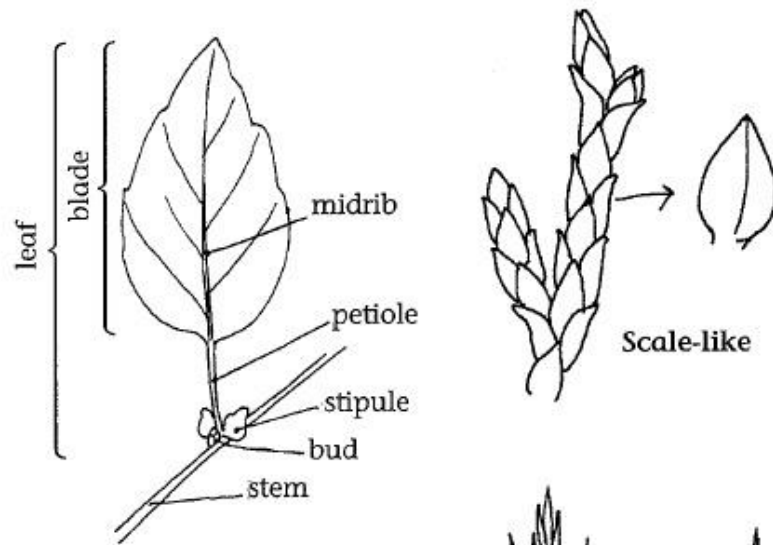
- *Guide to the Trees of Utah and the Intermountain West*, Kuhns – native and most introduced
- USU Extension Forestry Web Resources – <https://forestry.usu.edu/tree-identification/index>
- *USU Tree Browser* – [www.treebrowser.org](http://www.treebrowser.org)
- *Trees of Utah*, Brough & Weber – Utah natives
- *Vascular Plants of Northern Utah*, Shaw – native & many introduced
- *A Utah Flora*, Welsh et al. – native & many introduced; no illustrations

# *Keying Criteria*

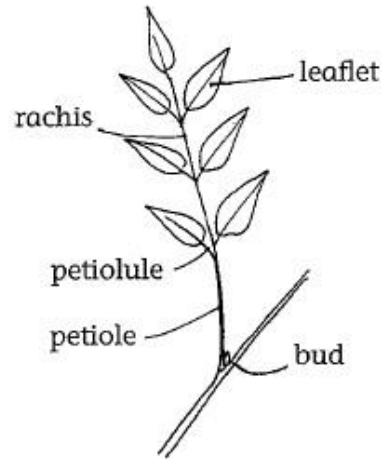
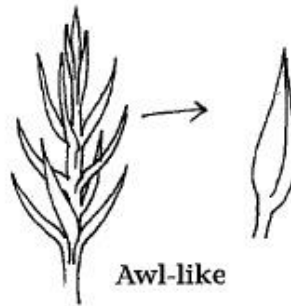
- Leaf – Type, arrangement, composition, shape, margin, tip, base, surfaces
- Twig – Pith, buds, leaf scars, lenticels
- Flowers, fruit
- Bark – Young and old
- Others



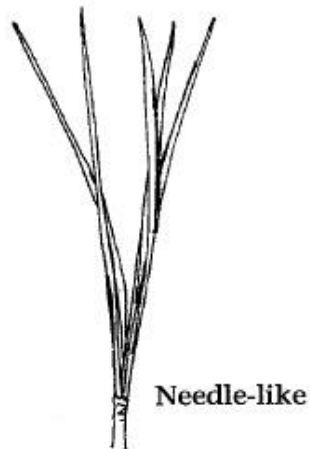
# Leaf Type



**Broad Simple**

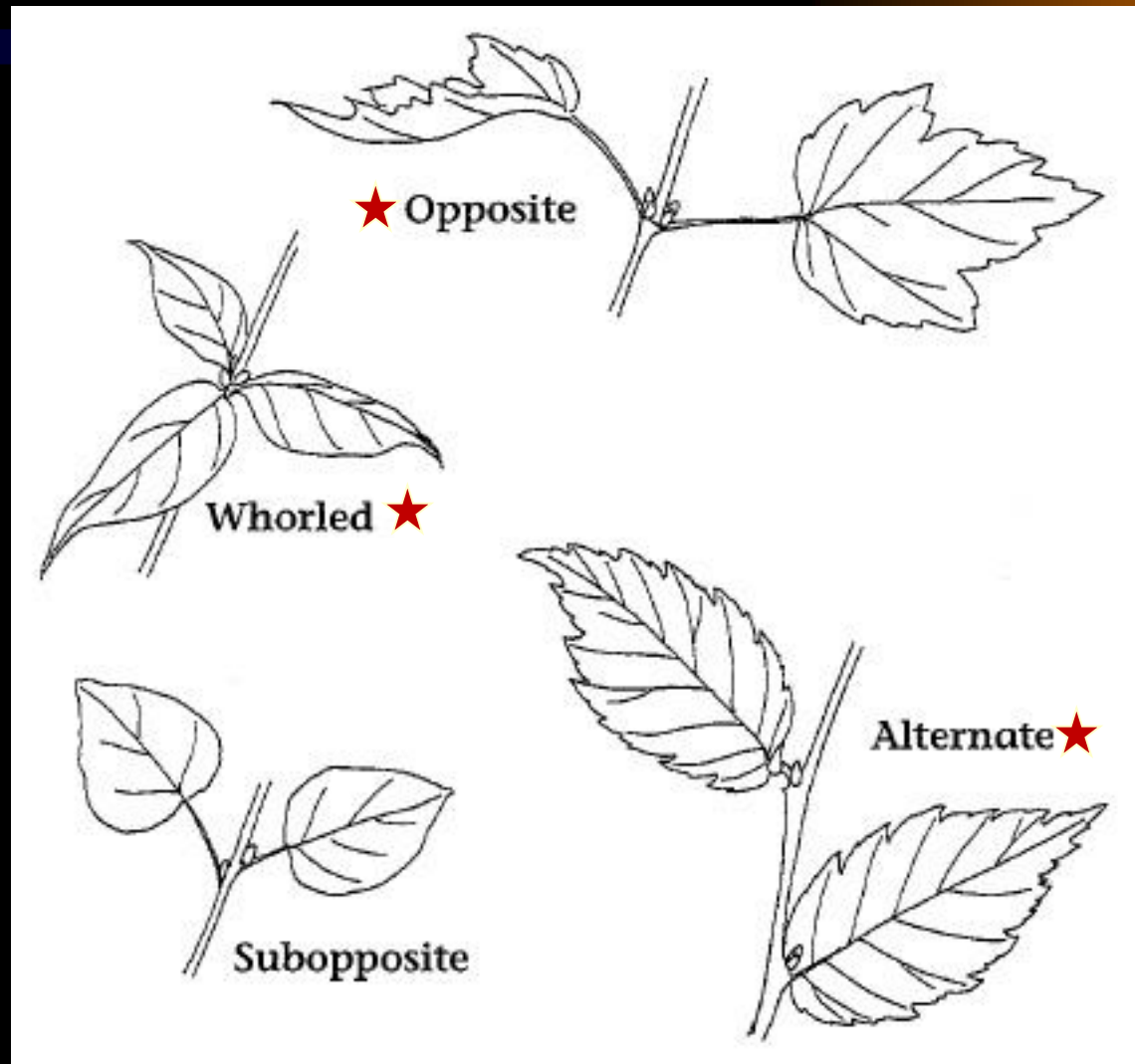


**Broad Compound**





# Leaf Arrangement (On Stem)

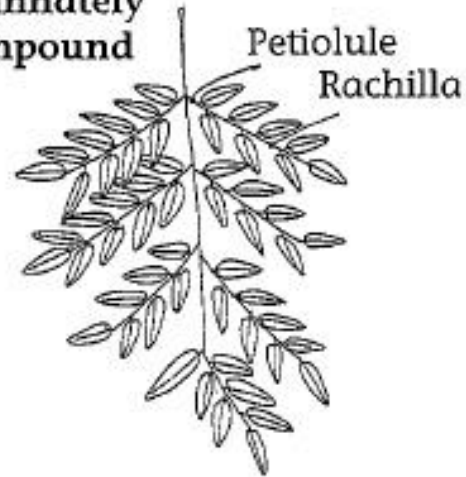


# Leaf Composition

★ Even Pinnately Compound



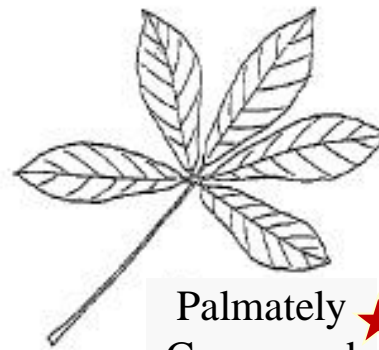
★ Bipinnately Compound



Odd Pinnately ★ Compound

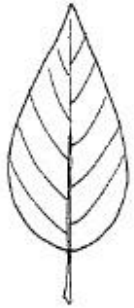


Simple (Lobed) ★



Palmately ★ Compound

# Leaf Shape



Ovate



Lanceolate



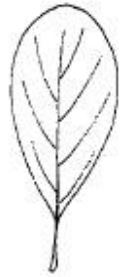
Cordate



Elliptical



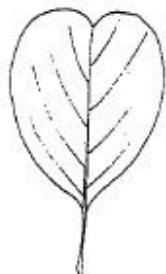
Spatulate



Obovate



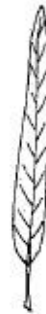
Oblanceolate



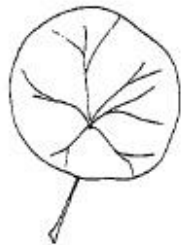
Obcordate



Oblong



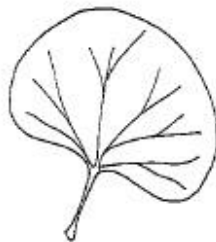
Linear



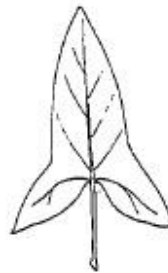
Peltate



Cuneate

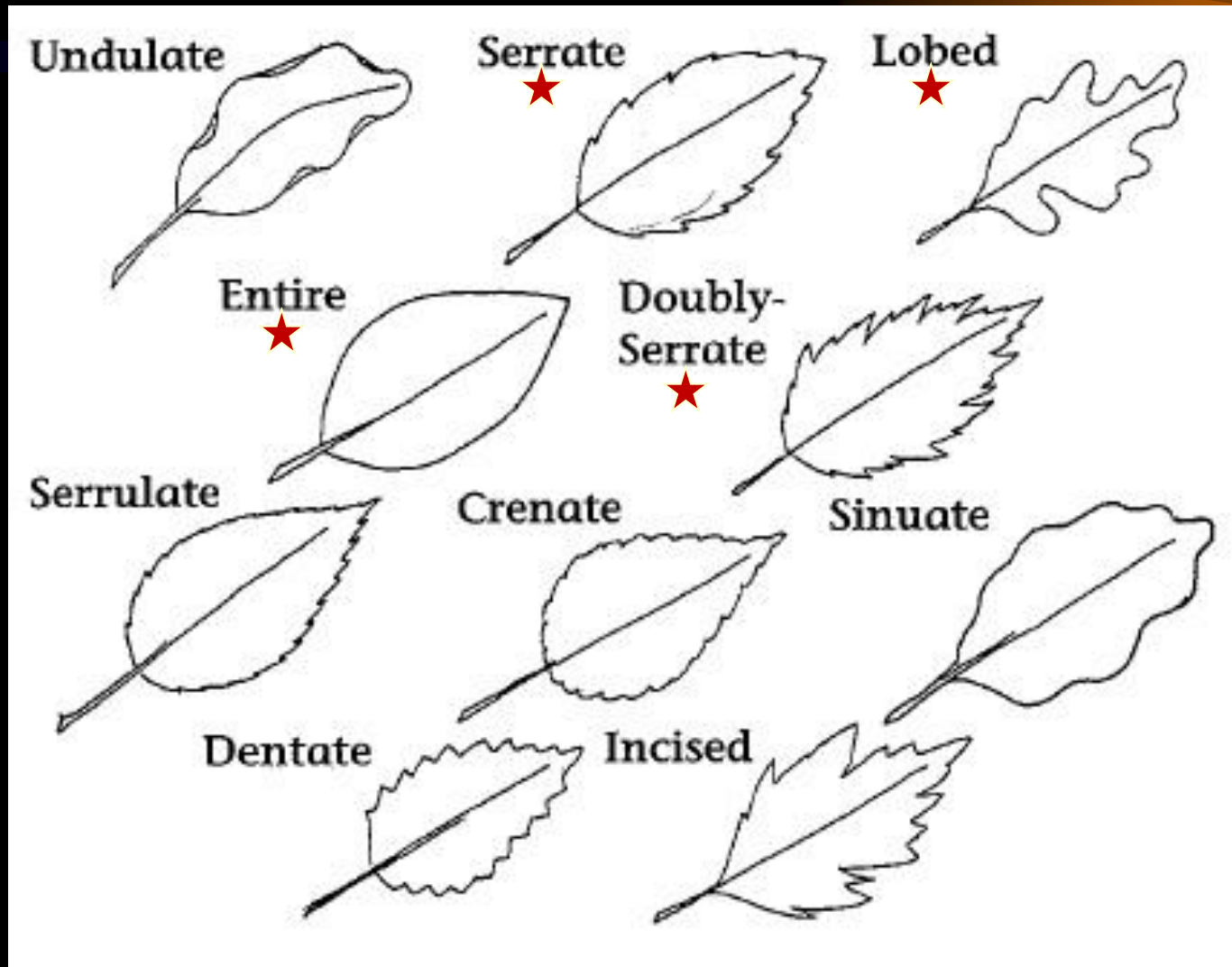


Reniform

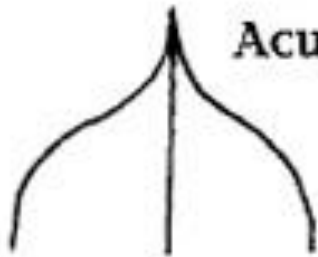


Hastate

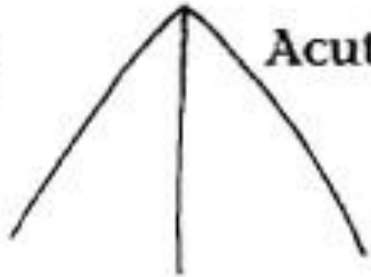
# Leaf Margins



# Leaf Tips



Acuminate



Acute



Obtuse



Truncate



Cuspidate



Obcordate

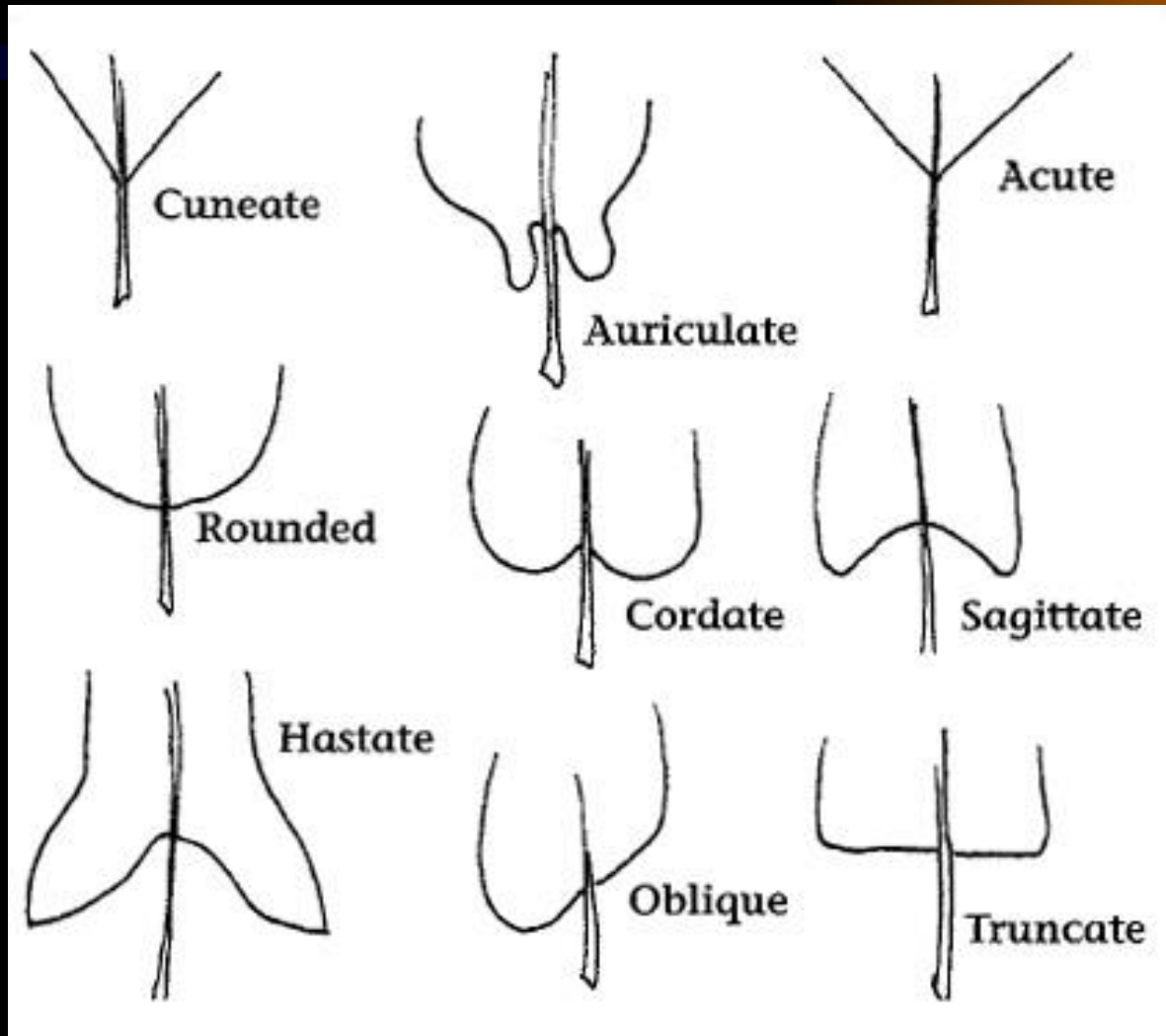


Emarginate

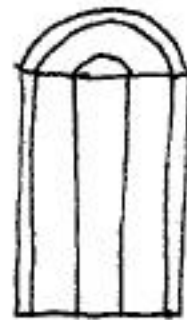
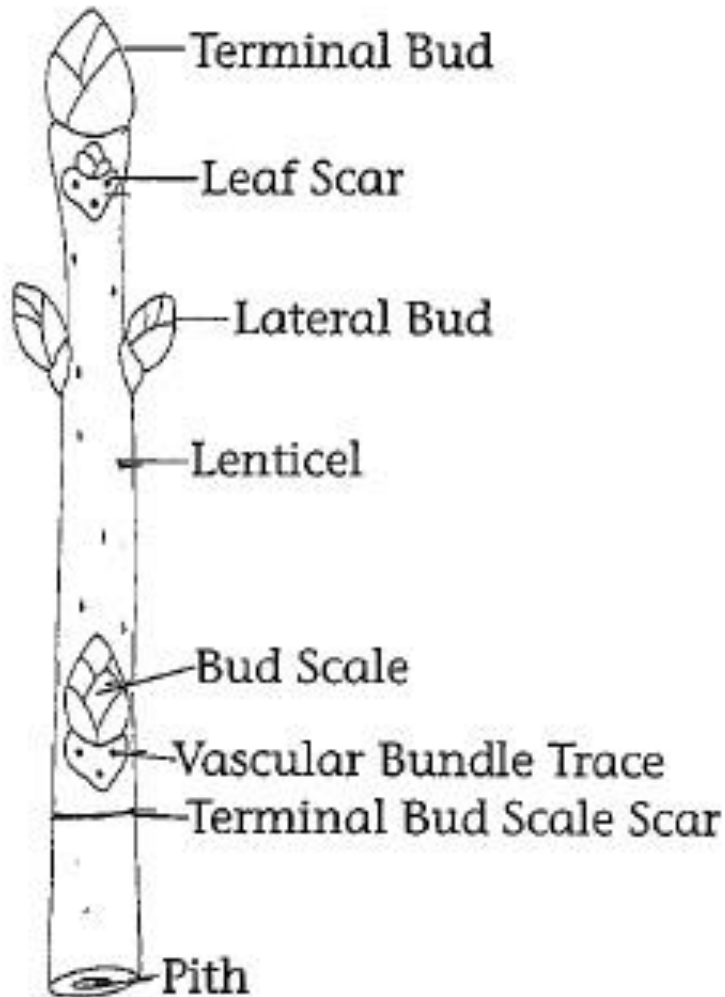


Mucronate

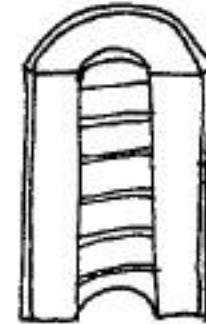
# Leaf Bases



# Twig & Pith



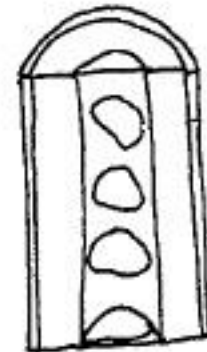
Uniform Pith



Chambered Pith



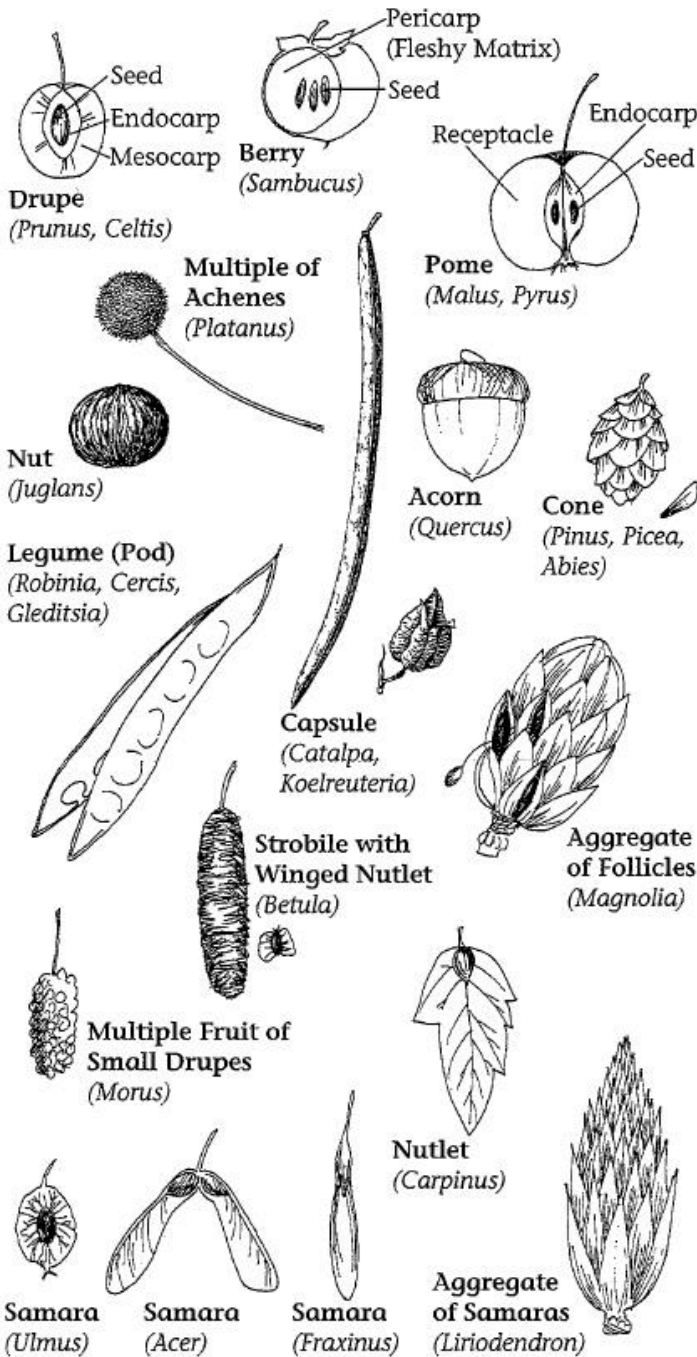
Hollow Pith



Excavated Pith



# Fruit



# Key to Trees of Logan Canyon

To use this key, click on the image that best fits the description of the tree you are trying to identify. Although this is generally a dichotomous key, you will occasionally have three choices. Throughout the key, the most important diagnostic characteristics are **bold**. When the key brings you to a species, click on the link for more information about the tree you have identified. Start by clicking on the image that represents the leaf type of the tree you are keying out.

PDF Version

Does the tree have leaves that are **needle-like** and are usually **evergreen**?



Does the tree have leaves that are small, **scale-like or awl-shaped** and hug the twig; and fruit that is berry-like, often with a whitish, waxy covering? These are junipers.



Does the tree have leaves that are **broad and thin**, and are deciduous (do not stay green or stay on the tree over winter) or evergreen?



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## Key to Trees of Logan Canyon

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Are the needles arranged in **clusters of 2 to 5** and evergreen? These are pines.



Are the needles arranged **singly** and evergreen, the fruit a woody or papery cone of scales with seeds?



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# Key to Trees of Logan Canyon

Are needles **clustered in twos and/or threes**, and the cone scales thick and with or without prickles?



Are the needles mainly **clustered in fives** and the cones 3" to 10" long, the scales without prickles? Clue: the young branches are very flexible. It is a [limber pine](#) (*Pinus flexilis*).



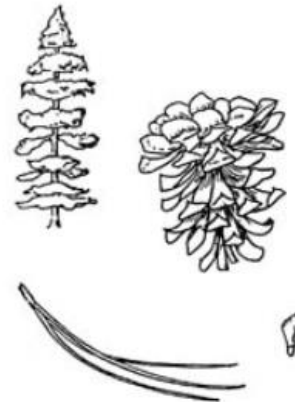
Go back

# Key to Trees of Logan Canyon

Are the needles mainly **clustered in twos**, 1" to 3" long; with the cones unsymmetrical, often remaining closed and attached to the tree for many years, the scales armed with a sharp spine? It is a [lodgepole pine](#) (*Pinus contorta*).



Are the needles **clustered in twos and threes** on the same tree, 4" to 7" long? Is the tree found throughout the West? Clue: these are not native in Logan Canyon, but there are plantings at the Tony Grove turn-off and elsewhere. These are also native to mountainous areas in much of the rest of Utah. It is a [ponderosa pine](#) (*Pinus ponderosa*).



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# *Tree ID Tips*



- Winter ID – missing parts
- Use what works for you – odor, taste, hunch
- Don't look at just one of anything
- Google – “keying” & using Latin names
- Prioritize
  - Maybe focus first on conifers. Then opposite leaves; alternate, compound leaves; alternate, simple, entire leaves; & alternate, simple, lobed leaves
  - Learn alternate, simple, toothed leaves last

# Conifers

- Pinaceae – needles, woody or papery cones
- Cupressaceae – scaly or awl-shaped foliage
- Ginkgoaceae – broadleaved conifer
- Taxodiaceae – 2 genera are deciduous
- Taxaceae – shrubs in Utah

See [USU Conifers for Utah fact sheet](#)

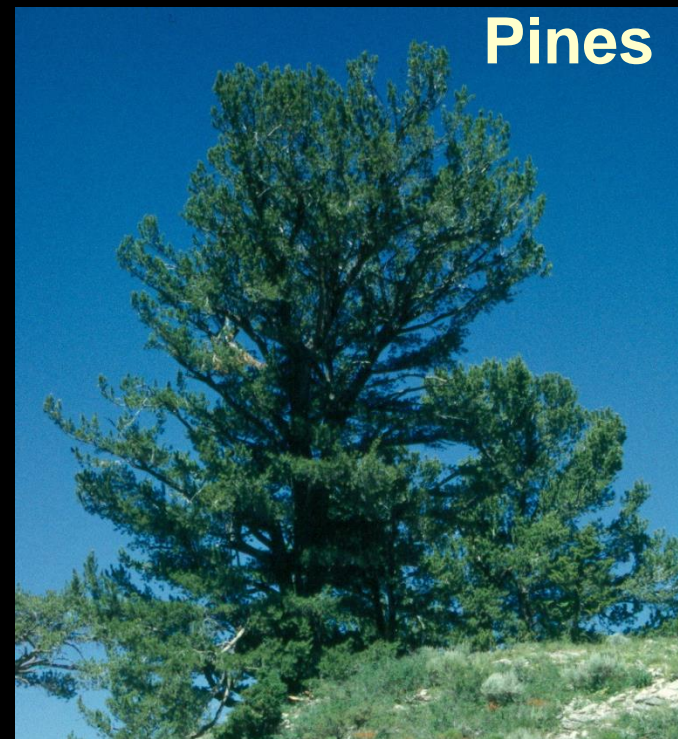


# Utah Conifers - Pinaceae

- *Pinus* – needles in fascicles, woody cones
- *Abies* – flat, non-prickly needles; upright, deciduous cone scales (*flat, friendly, flexible firs*)
- *Picea* – prickly, 4-sided needles; papery cones
- *Pseudotsuga menziesii* – cones w/ mouse-tail bracts
- *Cedrus* – large, upright cones; needles single and in whorls
- *Larix* – needles as w/ *Cedrus*, but deciduous; small, upright cones

# Pines

*Pinus longaeva/*  
*aristata* 5' s



*Pinus flexilis* 5' s





*Pinus ponderosa*  
2' s-3' s



*Pinus nigra*  
2' s







*Pinus edulis*  
2's



*Pinus sylvestris* 2's



Pines



*Pinus monophylla*  
1's





*Abies lasiocarpa*



Firs



*Abies concolor*



# Spruces



*Picea engelmannii*



*Picea pungens*



*Picea abies* v. 'Pendula'



# Spruces

v. 'Conica'



v. 'Pumila'



*Picea glauca* v. 'Densata'



# Douglas-fir

*Pseudotsuga  
menziesii*

v. 'Glauca'

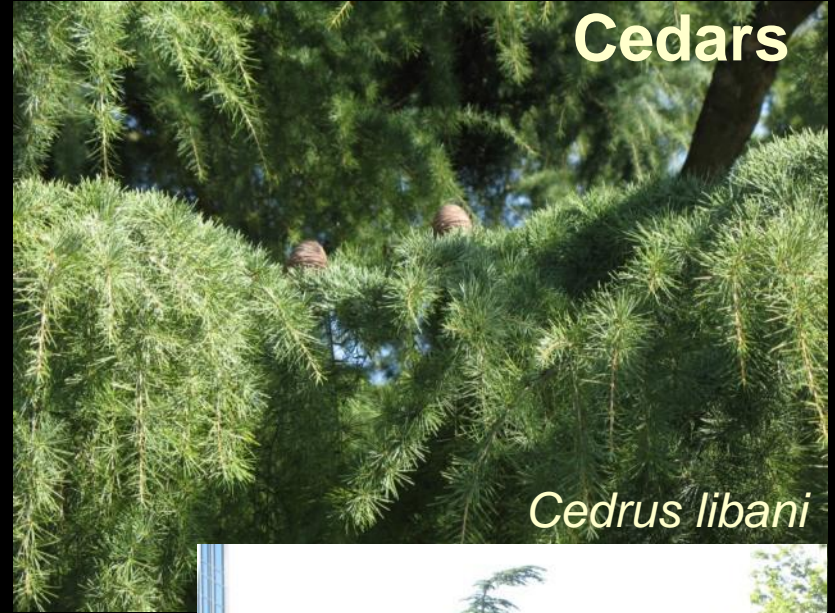






*Cedrus atlantica*

40-50



**Cedars**

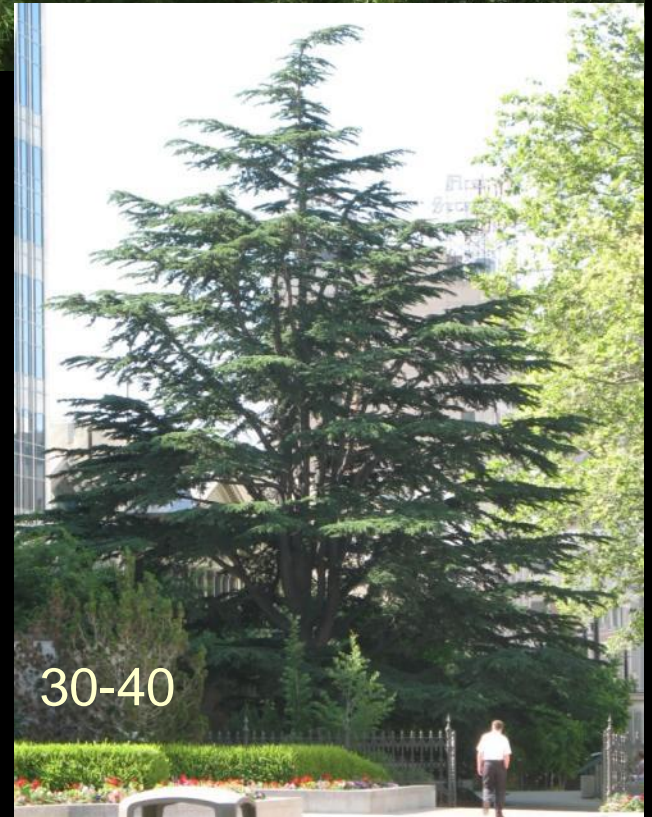
*Cedrus libani*



*Cedrus deodara*



15-20



30-40



# Larches



*Larix kaempferi*

*Larix decidua*

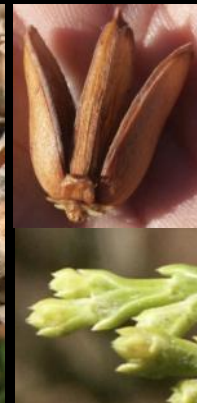


v. 'Pendula'



# Conifers - Cupressaceae

- *Cupressus* – scaly or awl-like foliage, woody cones
- *Juniperus* – scaly or awl-like foliage, “berry” cones
- *Thuja* – scaly foliage, flattened sprays; small cones
- *Calocedrus* – scaly foliage, flattened; duck-bill cones
- *Chamaecyparis* – scaly foliage, small cones
- X *Cupressocyparis* – bluish foliage





# Conifers - Ginkgoaceae

- *Ginkgo biloba* – very distinctive leaves, broadleaves, spur shoots



# Conifers - Taxodiaceae

- *Taxodium distichum* – needles deciduous; round, woody cone
- *Sequoiadendron giganteum* – scaly or awl shaped foliage, distinctive cones
- *Metasequoia glyptostroboides* – needles deciduous; distinctive cones





# Conifers – Taxaceae

- *Taxus* – flat needles; distinctive fruit (aril); mostly shrubs





# Opposite Leaves

- MADCap Horse
  - Maple
  - Ash
  - Dogwood
  - Caprifoliaceae
  - Horsechestnut



- Alternate leaves = alternate branches  
Opposite leaves  $\approx$  opposite branches

# Maple (*Acer*, Aceraceae)

- Opposite, simple and/or **compound**, palmately lobed, double samaras
- Primary – canyon\*, **boxelder\***, **Rocky Mtn.\***, Norway+, silver
- Secondary – sycamore, hedge, red, sugar, Amur, Freeman hybrids, Japanese
- Rare – **paperbark**, black, Tatarian, trident, purpleblow

\*Utah Native

+Utah Naturalized



*Acer glabrum*



*Acer griseum*



*Acer saccharinum*



*Acer grandidentatum*



*Acer tataricum*



# Ash (*Fraxinus*, Oleaceae)

- Opposite, compound (1 is simple), single samaras
- Primary – green+, white, single leaf\*
- Secondary – European, velvet\*

\*Utah Native

+Utah Naturalized





*Fraxinus excelsior*



*Fraxinus anomala*



*Fraxinus americana*  
v. 'Autumn Purple'



# Dogwood (*Cornus*, Cornaceae)

- Opposite, simple, entire, drupes
- Primary – red-stemmed\* (shrub)
- Secondary – flowering, Kousa
- Rare – pagoda, corneliancherry

\*Utah Native





*Cornus kousa*



*Cornus florida* 'Rubra'



*Cornus sericea*



# Caprifoliaceae

- Opposite, simple or compound
- Primary – blue elder\* (shrub to tree)
- Others – many shrubs & vines, including honeysuckles, viburnums, snowberry

\*Utah Native



*Sambucus cerulea*



# Horsechestnut (*Aesculus*, Hippocastanaceae)

- Opposite, palmately compound, serrate, capsule
- Primary – horsechestnut
- Secondary – red buckeye, Ohio buckeye
- Rare – California, yellow



*Aesculus hippocastanum*



*Aesculus glabra*



*Aesculus*  
*x carnea*

# Other Opposite & Whorled Leaves

- *Phellodendron amurense*, Amur corktree
- *Cercidiphyllum japonicum*, katsuratree
- *Lagerstroemia indica*, crapemyrtle
- Bignoniaceae
- *Syringa reticulata*, Japanese tree lilac
- *Chionanthus virginicus*, fringetree





*Phellodendron amurense*



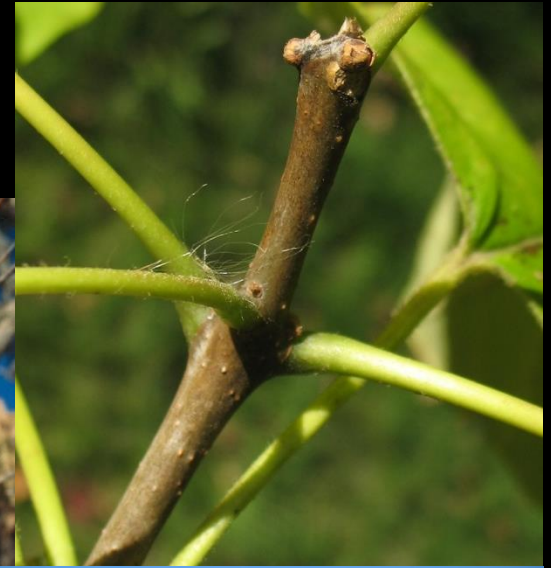
*Cercidiphyllum japonicum*



*Catalpa  
speciosa*  
(Bignoniaceae)



*Lagerstroemia  
indica*







*Syringa  
reticulata*



*Chionanthus  
virginicus*



# Alternate, Compound Leaves

- Fabaceae (except *Cercis*)
- Juglandaceae
- *Sorbus* – mountain-ash (one is simple)
- *Koelreuteria paniculata* – goldenraintree
- *Melia azederach* – Chinaberry
- *Ptelea angustifolia* – common hoptree
- *Ailanthus altissima* – tree-of-heaven
- *Pistacia chinensis* – Chinese pistache



# *Alternate, Simple, Entire (unlobed) Leaves*

- *Elaeagnus angustifolia* – Russian-olive
- *Cercis* – redbuds
- *Maclura pomifera* – Osage-orange
- *Quercus imbricaria* – shingle oak
- *Fagus sylvatica* – European beech
- *Celtis reticulata* – netleaf hackberry
- *Cotinus* – smoketrees
- *Magnolia* – magnolias
- *Cercocarpus ledifolius* – curleaf mtn.-mahogany

# *Alternate, Simple, Lobed Leaves*

- *Quercus* – Many species
- *Morus* – Some leaves lobed
- *Platanus*
- *Populus alba* – Some leaves
- *Liriodendron tulipifera*
- *Malus* – Some species, cultivars
- *Crataegus* – Some species



# Alternate, Simple, Toothed (Unlobed) Leaves

- Salicaceae – *Salix*, most *Populus*
- Betulaceae – *Betula*, *Alnus*, *Carpinus*, etc.
- Fagaceae – *Fagus grandifolia*, *Castanea*, some *Quercus*
- Rosaceae – *Prunus*, *Malus*, *Pyrus*, etc.
- Ulmaceae – *Ulmus*, *Celtis*, *Zelkova*
- *Crataegus* – Some species unlobed
- *Tilia*
- *Ilex*

# *ISA Exam Tree ID*

- 10 multiple (4) choice questions
- Photos
- Requires ID to species
- Common & Latin names given
- Regionalized selections

# References

- USU Extension Forestry – <https://forestry.usu.edu/>
- USU Tree Browser – [www.treebrowser.org](http://www.treebrowser.org)
- *Guide to the Trees of Utah and the Intermountain West* – USU Press (Amazon, Borders, local bookstores, etc.)
- Dendrology at Virginia Tech – <https://dendro.cnre.vt.edu/>
- USDA Plants Database – [plants.usda.gov](http://plants.usda.gov)



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