

Plant Identification



Oregon State University
Extension Service
Columbia County

Goals for our class today

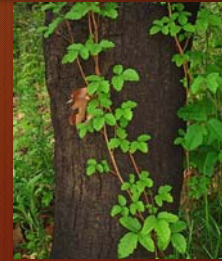
- Learn about plant classification and naming
- Recognize identifying characteristics of plants
- Appreciate the value in learning (and using!) latin!
- Gain confidence in a new skill (plant identification)
- Learn something new... and have fun!!

Why identify plants?



- curiosity
- learn propagation methods
- ability to write & talk about plants
- learn common disease or pest problems
- ability to look up info about plants
- is it edible or medicinal?
- learn cultural requirements
- IS IT POISONOUS?

What is this plant? Hint: it can be a climbing or ground vine, or even a shrub.

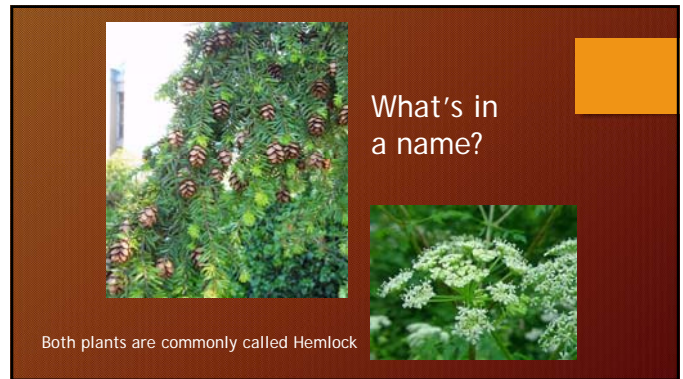


Toxicodendron =
Toxic + Dendron (Tree)



Giant Black
Willow Aphid





Tree	Shrub
<ul style="list-style-type: none"> • One main stem • Over 20' tall (maturity) 	<ul style="list-style-type: none"> • Woody perennial plants • Multiple stems • Less than 20' tall (maturity)

"A trub is a plant that cannot decide if it is a tree or a shrub. It gets bushy, but it grows to a height of more than 15 feet, which classifies it as a true trub...."

~ Jerry Goodspeed, Utah State University
Extension horticulturist

"Hazelnuts...should be trained and grown as a tree because they are more productive as a tree and make a mean-spirited, lousy shrub...When trained as a tree, hazelnuts can grow to about 20 feet high, with an equal spread...They require cross-pollination, so two different varieties need to be planted."

Botanical Nomenclature

- the systematic naming of plants
- developed by Carl Linnaeus in the 1700's and still used today
- plants names are primarily in Latin

Prior to Linnaeus, plants were named using descriptive terms:

The scientific name for carnation was:

"Dianthus floribus solitariis squamis calycinis subovatis brevissimis corollis crenatus"



Carnation



Kingdom: Plantae
Division: Magnoliophyta
Class: Magnoliopsida
Order: Caryophyllales
Family: Caryophyllaceae
Genus: Dianthus
Species: Caryophyllus

Botanical Latin

• Plants	Plantae
• Flowering plants	Magnoliophyta
• Dicotyledons	Magnoliopsida
• Group of families	Rosales
• Currant family	Grossulariaceae
• Currant	Ribes
• Red flowering currant	Ribes sanguineum
• Blood currant	Ribes sanguineum var. melanocarpum

Hierarchical System of Biological Classification of an Organism

• Kingdom	Plantae
• Subkingdom	Embryophyta
• Phylum	Tracheophyta
• Subphylum	Pterophytina
• Class	Angiospermae
• Subclass	Diocotyledonae
• Order	Sapindales
• Family	Aceraceae
• Genus	Acer L.
• Species	Acer rubrum L.

Common name vs. Scientific name

- Blood currant
- *Ribes sanguineum*
var.
melanocarpum



Divisions in the Plant Kingdom

- Bryophytes
Mosses and allies
24,000 Species
- Pteridophytes
Ferns and allies
1,043 Species
- Coniferophyta
Conifers and allies
600 Species
- Angiospermophyta
– Flowering plants - Dicot
200,000 Species
- Angiospermophyta
– Flowering plants –
Monocots, 30,000 Species

Did You Know?

A palm tree has more in common with a blade of grass than other trees. Say what?



Appearance isn't everything...



A strawberry plant is more closely related to an apple tree than to a clover!

How is that so? Let's prove it!



A strawberry plant is more closely related to an apple tree than to a clover!

Strawberry: Angiosperms, Eudicots, Rosids, **Rosales**, **Rosaceae**, *Fragaria*
 Apple: Angiosperms, Eudicots, Rosids, **Rosales**, **Rosaceae**, *Malus*
 Clover: Angiosperms, Eudicots, Rosids, **Fabales**, **Fabaceae**, *Trifolium*

And then... there's the oddball...

A Ginkgo tree is so different from other plants that it has a **phylum by itself**. But if you have to group it with other plants it belongs with conifers such as pines.



Reasons not to use common names

- Well known plants often have more than one common name
- not universal
- two or more plants may have the same common name
- many species, particularly rare ones, do not have common names

Carpinus caroliniana

American hornbeam

Also known as blue beech, ironwood, musclewood, etc.



Thuja plicata

Western redcedar

Also known as giant arborvitae, Pacific redcedar and shinglewood



Nymphaea alba European White Waterlily

- 15 English names
- 44 French names
- 105 German names
- 81 Dutch names

• 245 TOTAL common names!



The names of plants

- The scientific name for a plant consists of two words:

1. Genus or generic name
 2. specific epithet
- } species

i.e. *Quercus rubra*

Quercus rubra

- By using the binomial system of nomenclature, plant names are the same in all languages!
- Every plant has a "first and last name." But... the last name is written first!

Binomial Nomenclature clarifies relationships & avoids confusion

- Western redcedar • *Thuja plicata*
- Port-orford-cedar • *Chamaecyparis lawsoniana*
- Alaska-cedar • *Chamaecyparis nootkatensis*
- Deodar cedar • *Cedrus deodara*
- Atlas cedar • *Cedrus atlantica*
- Incense cedar • *Calocedrus decurrens*

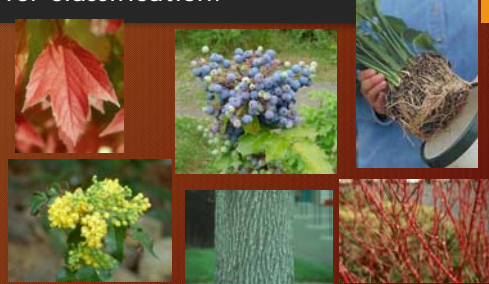
Plant Classification

- Process of categorizing plants into groups with similar characteristics.
- There are over 1 million botanically different plants in existence named by the binomial system of nomenclature.

Plants Are Classified

- Reproductive characteristics
- Tissue structure - non-vascular/vascular
- Seed structure - naked seeds, covered seeds, spores
- Stature - mosses, ferns, shrubs, vines, trees, and herbs

Which part of the plant is used for classification?



Plant Classification

- Nearly all classifications are based on the **sexual** parts of the **fruit** and the **flower**.



Family

- a group of plants with similar characteristics especially flowers, fruits, and seeds, the reproductive structures are used for distinction.
- The size of a family varies from 1 to 100+

i.e. Ginkgoaceae has one genus *Ginkgo biloba*
Rosaceae has 100 genera (Malus, Spiraea, Rosa)



Genus (plural genera)

- An assemblage of species having many structural similarities in common and closely related by descent from a common ancestor
- First word in a botanical name

The genus can serve to describe one of the following:

- a plants appearance- *Hemerocallis* (day and beauty)
- supposed medicinal qualities- *Pulmonaria* (lungwort)
- resemblance to something else- *Hepatica* (liver)
- honor a person by using their name - *Kalmia* (Peter Kalm)

Specific epithet

- second word in the botanical name
- usually an adjective used to describe size, color, leaf shape, growth habit, origin of the plant or to commemorate a person

The specific epithet can give us hints about the plant:

- *Cotoneaster horizontalis*
- *Coreopsis gigantea*
- *Godetia grandiflora*
- *Cistus x purpureus*

Hint? • *Cotoneaster horizontalis*



Hint? • *Coreopsis gigantea*



Hint? • *Godetia grandiflora*



Hint? • *Cistus x purpureus*



Species

- Genus + specific epithet
- difficult to define
- basic taxonomic unit
- group of organisms that have similar characteristics whose offspring have the ability to interbreed

Hybrids

Closely related but separate species interbreed
Hybrids are often sterile

- If a plant is a hybrid of two species, an x appears between the genus and specific epithet
 - *Cornus x rutgersensis* (hybrid of *C. florida* and *C. kousa*)
- If a plant is a hybrid of two genera, an x appears before the genus
 - x*Heucherella* (hybrid of *Heuchera* and *Tiarella*)

Hybrid

Platanus occidentalis crossed with
Platanus orientalis



Platanus x acerifolia

Writing plant names correctly

- scientific names should always be underlined or in *italics*
- the genus is capitalized, the specific epithet (species) is not (*last name first!)
- the name is only complete if it is followed by the name of the person who first described or named it, though uncommon.

For example: Red Oak

Quercus rubra Linnaeus or *Quercus rubra* L.

Quercus rubra or *Quercus rubra*



Plant species can be divided more specifically into:

- Variety
- Cultivar

Variety

- naturally occurring subset of species
- a plant which retains most of the characteristics of the species but differs in some identifiable, consistent way, i.e. flower color, plant size

Variety names

- Added to binomial, preceded by var.
- *Pinus contorta* var. *contorta* Shore Pine
- *Pinus contorta* var. *latifolia* Lodgepole Pine



Cultivar

- "cultivated variety"
- horticulturally developed and maintained
- distinguished by characters which are retained when reproduced

Cultivar names

written in plain text, capitalized and set off by single quotes

Viburnum opulus 'Roseum'
(*Viburnum opulus* cv. Roseum)

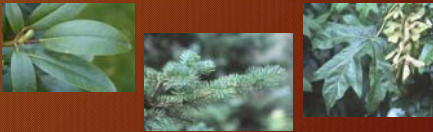


Genus	Specific epithet	Variety or Cultivar	Common Name
1. <i>Acer</i>	<i>saccharum</i>		Sugar Maple
2. <i>Fraxinus</i>	<i>pennsylvanica</i>	'Patmore'	Patmore Green Ash
3. <i>Gleditsia</i>	<i>triacanthos</i>	var. <i>inermis</i>	Thornless Common Honeylocust

Integrated Approach to Plant Identification

- Visual inspection of plant characteristics
- Photographic references
- Plant classification keys
- Expert advice

Collect information about what you see:



- herbaceous, conifer, broadleaved evergreen, deciduous?

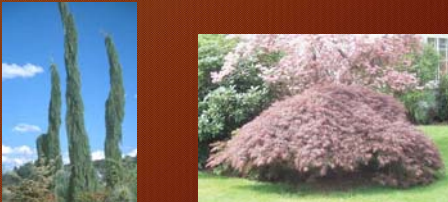
Collect information about what you see:

- where does it grow?



Collect information about what you see:

- What is the overall form of the plant?



Collect information about what you see:

- what are the characteristics of individual plant parts?



Leaf characteristics

•Broadleaves



•Needles



Conifers

Pines

Needles/
fascicle



Conifers

Spruce

Pegs



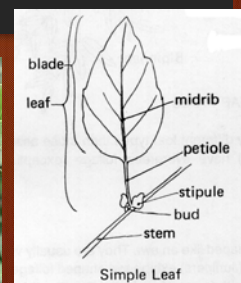
Always exceptions, as in
this tamarack (deciduous
evergreen)



Hemlock has distinct
needles of varying lengths



Leaf type: Simple



Leaf type: Simple, Compound?



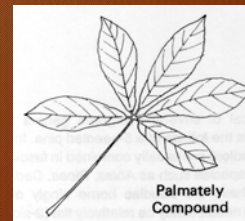
Leaf type: Pinnately Compound



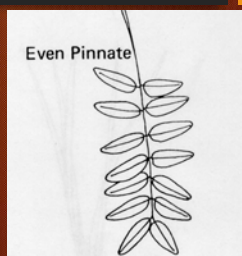
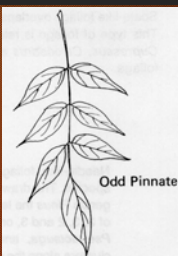
Leaf type: Bipinnately Compound



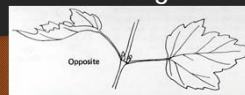
Leaf type: Palmately compound



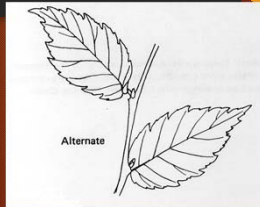
Leaf type: Odd vs. Even Pinnate



Leaf Arrangement: Opposite



Leaf Arrangement: Alternate



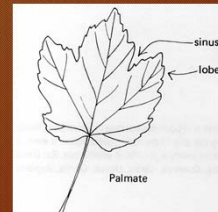
Leaf Arrangement: Whorled



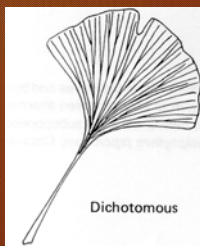
Venation: Pinnate



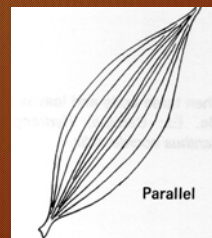
Venation: Palmate



Venation: Dichotomous



Venation: Parallel



Leaf margins



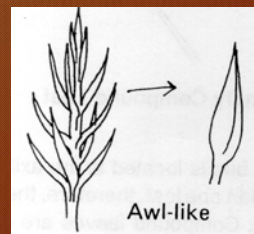
Leaf margins



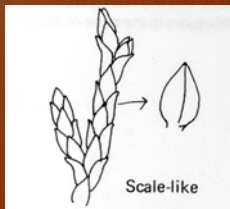
Leaf shapes



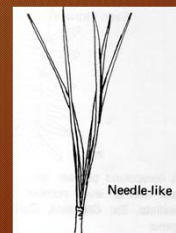
Needle type: awl



Needle type: scale



Needle type: clustered needles



Needle type: single needles



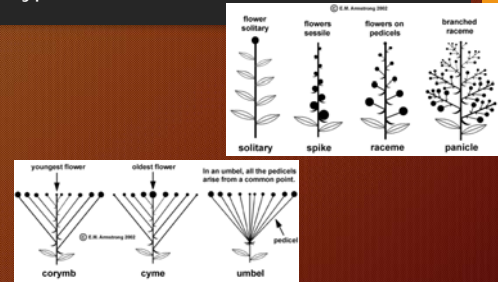
Conifer I.D. - Cones



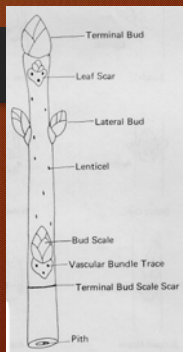
Other I.D. features - flowers



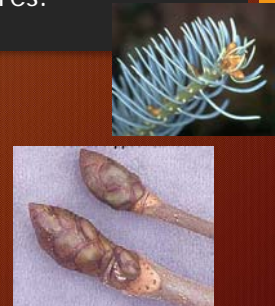
Types of Inflorescence



Stems and Buds



Other I.D. features: Buds



Other I.D. features:
Bark



Other I.D. features: thorns



Other I.D. features:
fruit



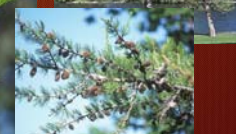
Other I.D. features:
fruit



Western Red Cedar



Larch





Using dichotomous keys to identify plants

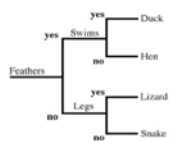
A.
B.
BB.
C.
D.
DD.
CC.
AA.
E.
EE.
F.
FF.
G.
H.

A dichotomous key offers users a choice between two characters.

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

What is a dichotomous key?

- tool that allows the user to determine the identity of a certain item (like, for example, a tree, a flower, an animal or a simple object)
- "Dichotomous" means "divided into two parts". Therefore, dichotomous keys always give two choices in each step.



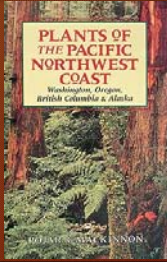
Using a key is like following the branches of a tree -- each additional branch gets smaller and smaller until you reach a single branch tip.

All the species described in a tree are represented by the trunk, while each branch tip represents a single species of tree.

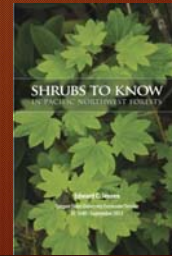
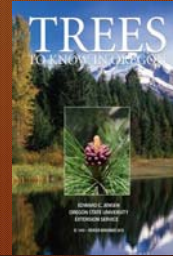
COMMON TREES of the PACIFIC NORTHWEST



Plant Identification Resource for PNW Native Plants



OSU publications



More resources



<https://landscapeplants.oregonstate.edu/>