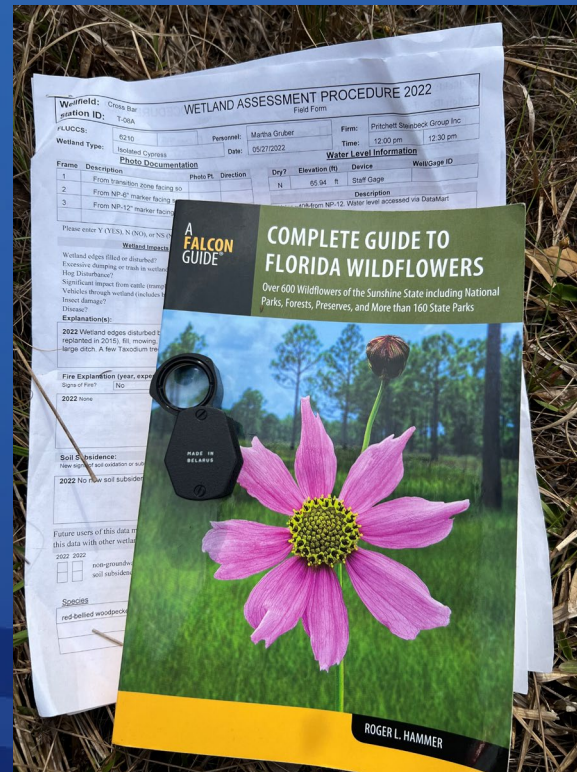




2024 WAP Training

Plant ID 101

Prepared by:
Francisco Faria
Staff Environmental Scientist



- *Panicum verrucosum* → *Kellochloa verrucosa*
 - *Pluchea rosea* → *Pluchea Baccharis*
- *Polygonum hydropiperoides* → *Persicaria hydropiperoides*
- *Rubus argutus* → *Rubus pensilvanicus*
- *Sapium sebiferum* → *Triadica sebifera*
- *Ampelopsis arborea* → *Nekemias arborea*
- *Conyza canadensis* var. *pussilla* → *Erigeron canadens* L.
 - *Myrica cerifera* → *Morella cerifera*
 - *Panicum anceps* → *Coleataenia anceps*
 - *Panicum rigidulum* → *Coleataenia rigidula*
 - *Oldenlandia uniflora* → *Edrastima uniflora*



PLANTS

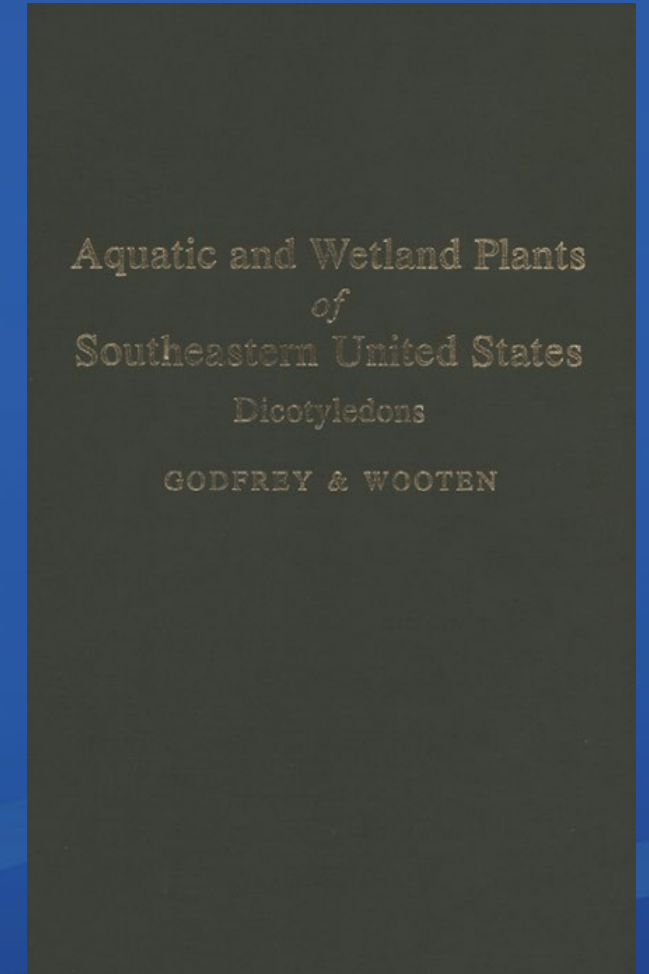
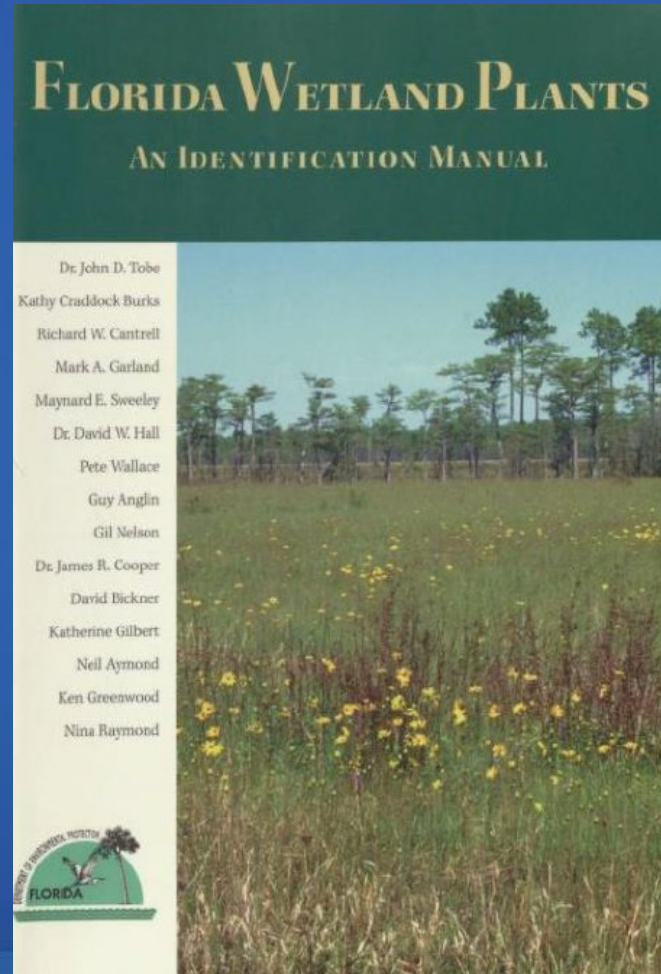
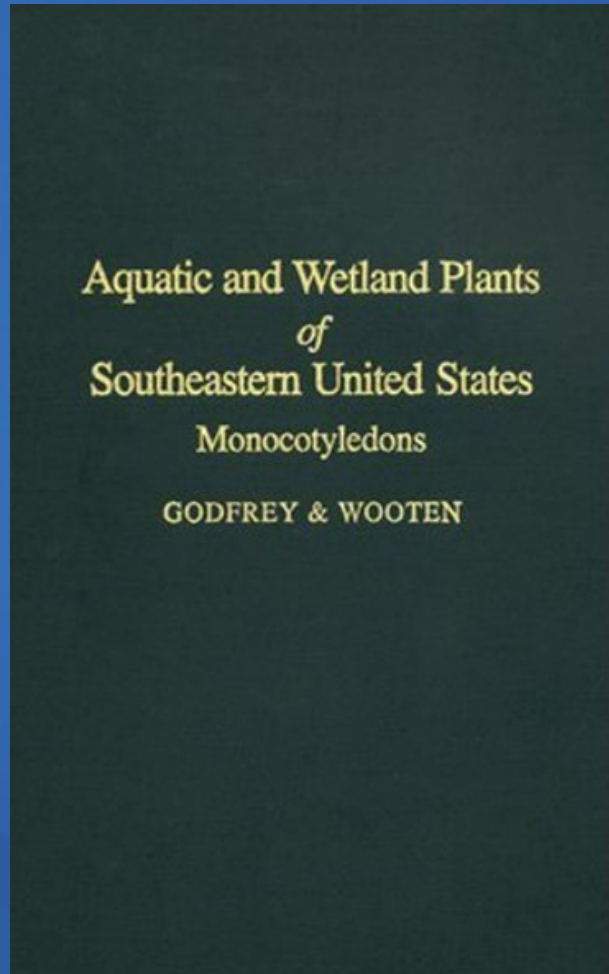


Field Identification Guide to
Plants Used in the
Wetland Assessment Procedure (WAP)



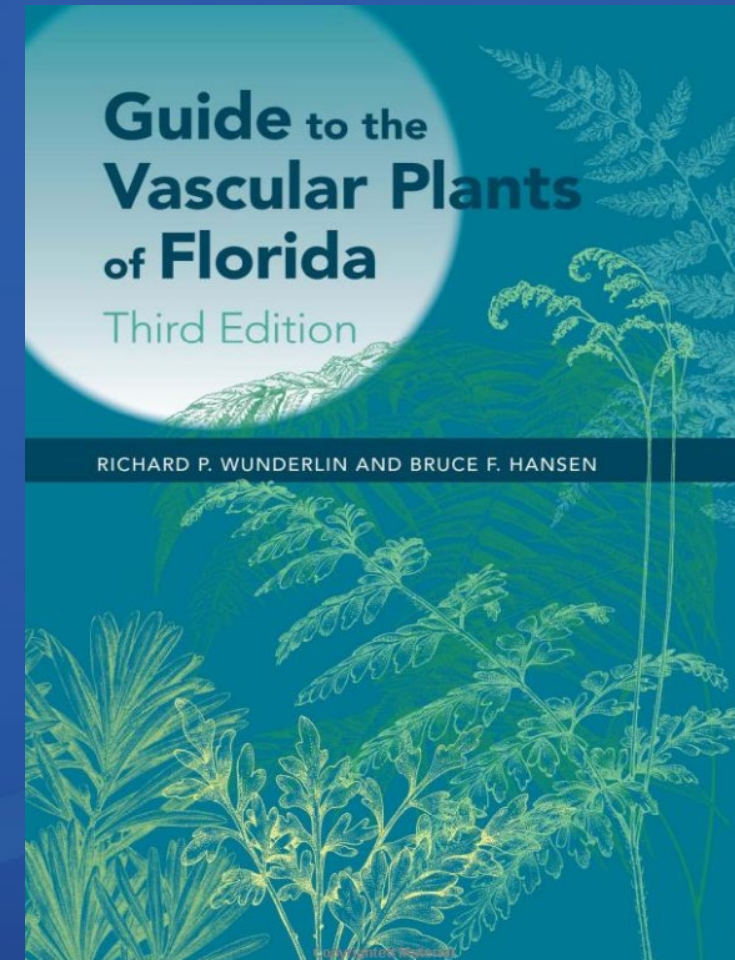
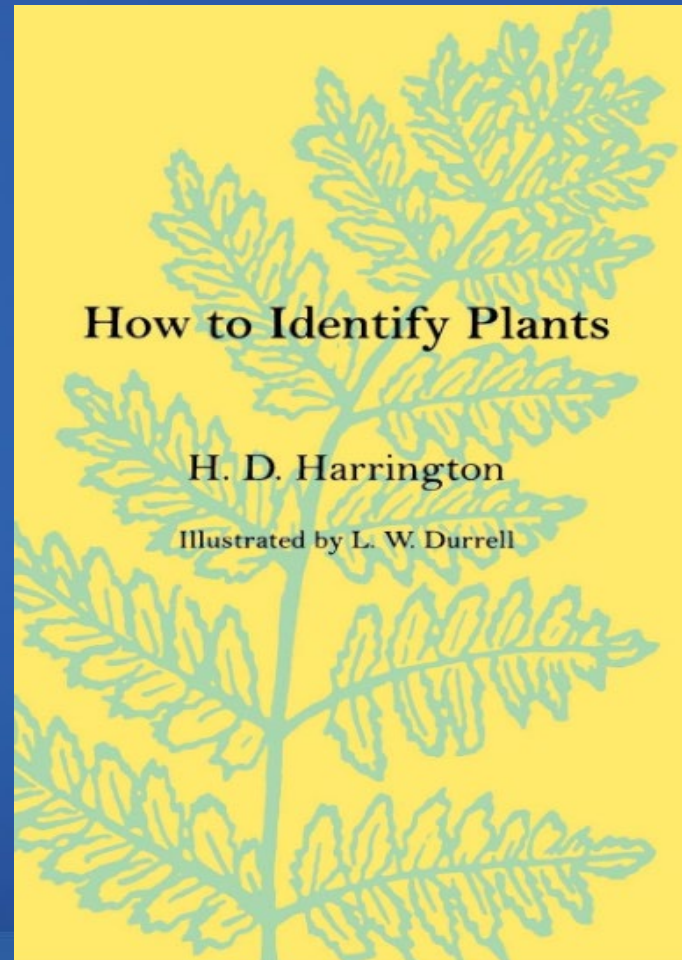
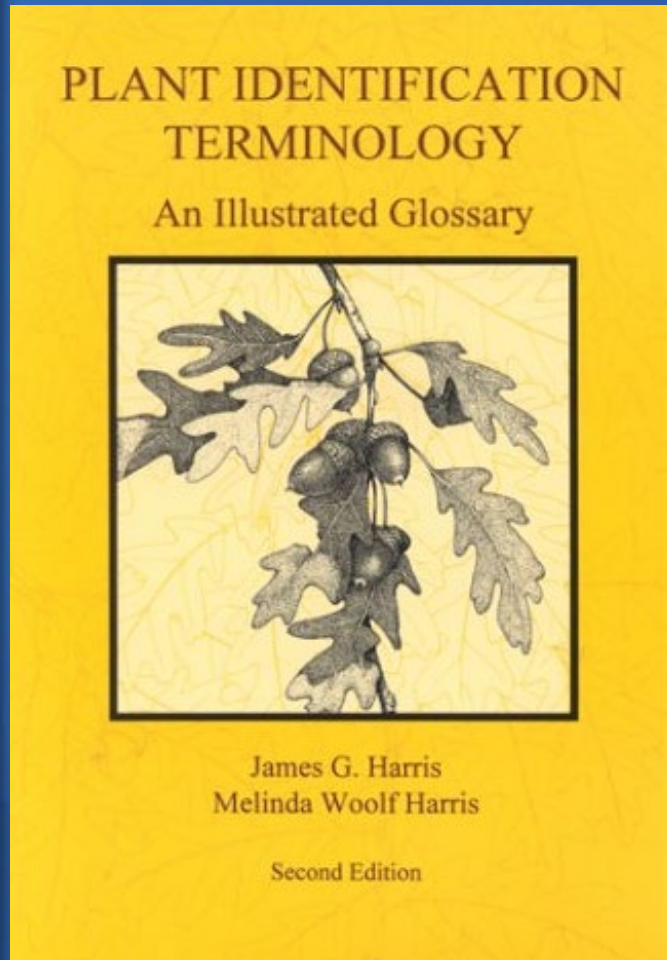
April 2008, Third Edition

Recommended Resources



<https://archive.org/details/floridawetlandplants>

Additional Resources



Online Resources



Atlas of Florida Plants
Institute for Systematic Botany

Scientific Name Search

Q Advanced Search Search Help

Home Browse By Search Herbarium Specimen Search Institute for Systematic Botany Links About References

Plant Photos

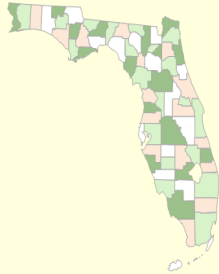
Andropogon scoparius
Panicum & Eragrostis

About the Plant Atlas

Florida has over 4,700 species of native or naturalized plants in Florida, including over 4,300 species of vascular plants and over 400 species of bryophytes (plants known only from cultivation are not included). The Atlas of Florida Plants is a joint effort by the Institute for Systematic Botany, the University of South Florida, and the USF Water Institute to provide a comprehensive searchable database of plants in the state of Florida. This website also provides access to the **USF Herbarium**, which houses more than 300,000 specimens from around the world (about 2/3 of these are databased and available online).
[Learn more about the Plant Atlas »](#)

Browse the Plant Atlas By Map

Select a county below to view plant species for that county. Hover over a county to view the county name.



[Browse Photos](#)

Institute for Systematic Botany

The Institute for Systematic Botany of the Cell Biology, Microbiology, and Molecular Biology Department at the University of South Florida was established in 1990 to promote basic research in plant systematics and to coordinate research, educational and service programs in plant systematics.
[Learn more about the ISB »](#)
[View the Specimen Database »](#)

Outside Links

Links to other plant related resources.
[View relevant external links »](#)

How to link to the Plant Atlas

The Plant Atlas has been designed to allow external websites to dynamically link to individual species and issue URL-based searches. This method allows you to link to the Atlas without knowing individual unique species identifiers.

1. Use the following syntax to link to a species page on the Atlas:
<http://www.florida.plantatlas.usf.edu/Results.aspx?q=Genus+species>
2. Search for species within a specific family (and link to family page) using this syntax:
<http://www.florida.plantatlas.usf.edu/Results.aspx?cat=Family&text=Orchidaceae>
3. Use the following syntax to search for a specific genus:
<http://www.florida.plantatlas.usf.edu/Results.aspx?cat=genus&text=Abies>

[Click here to see examples »](#)

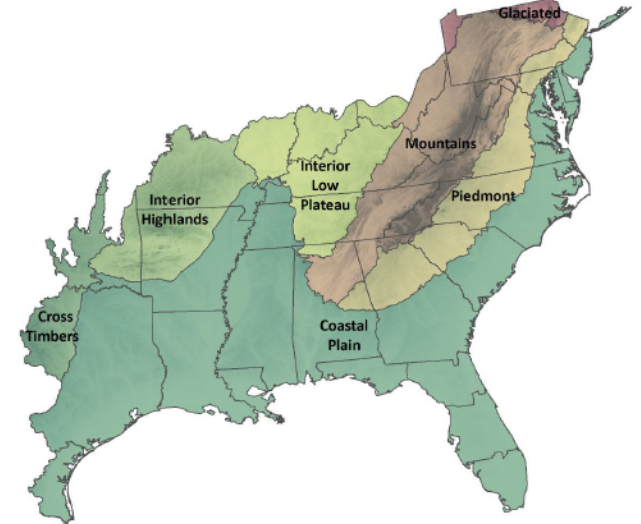
<https://florida.plantatlas.usf.edu/>

<https://www.inaturalist.org/>



Flora of the Southeastern United States

Edition of April 24, 2022



by
Alan S. Weakley and the Southeastern Flora Team*
University of North Carolina at Chapel Hill Herbarium (NCU)
North Carolina Botanical Garden
University of North Carolina at Chapel Hill
Campus Box 3280
Chapel Hill NC 27599-3280

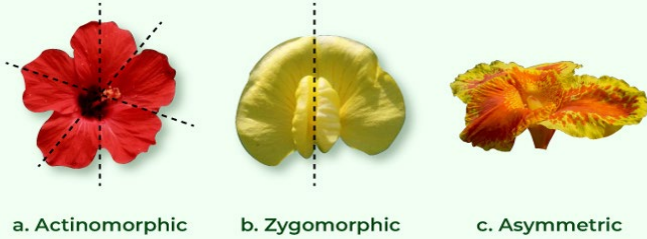
Produced from the FloraManager database system
by Michael T. Lee

<https://ncbg.unc.edu/research/unc-herbarium/flora-request/>

	Monocot	vs	Dicot
Seed	 1 cotyledon		 2 cotyledons
Root	 Fibrous roots		 Tap roots
Flower	 Have petals in multiples of 3		 Have 4 or 5 petals
Leaf	 Narrow, parallel veins		 Oval or palmate, net-like veins
Vascular Bundles	 Scattered		 Ringed
Pollen Grains	 Have 1 pore or furrow		 Have 3 pores or furrows

Monocot vs. Dicot Breakdown

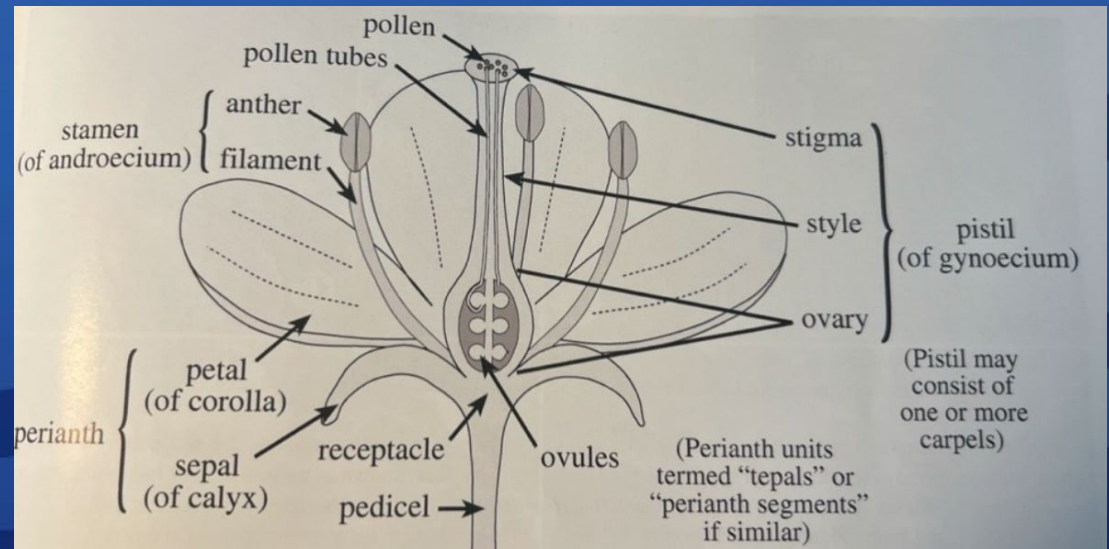
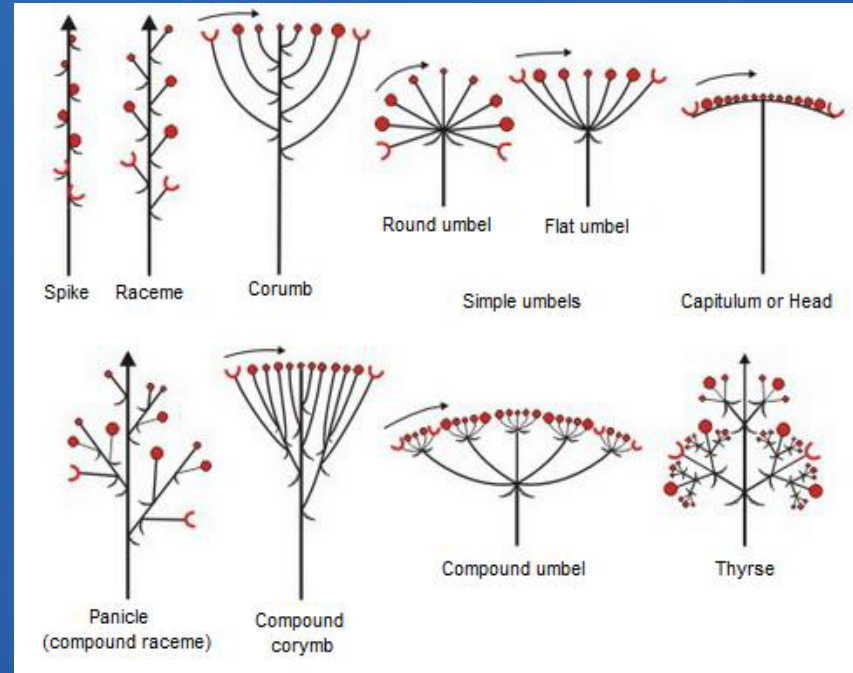
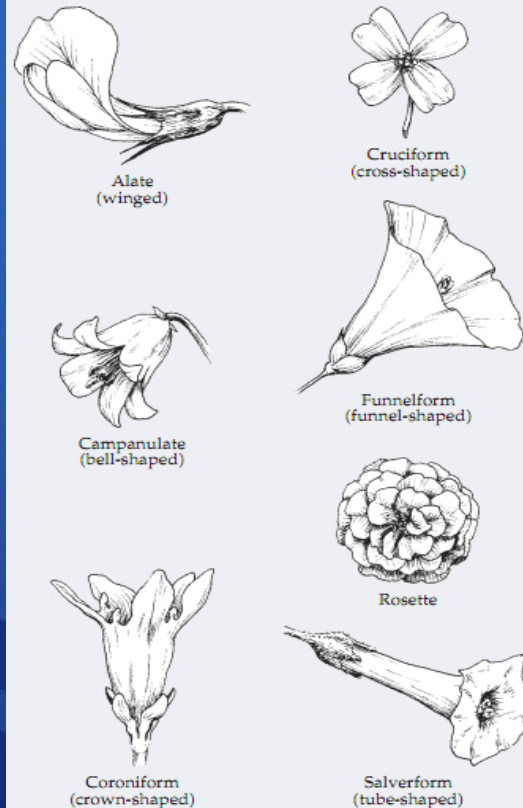
Flower Terminology/Growth Descriptions

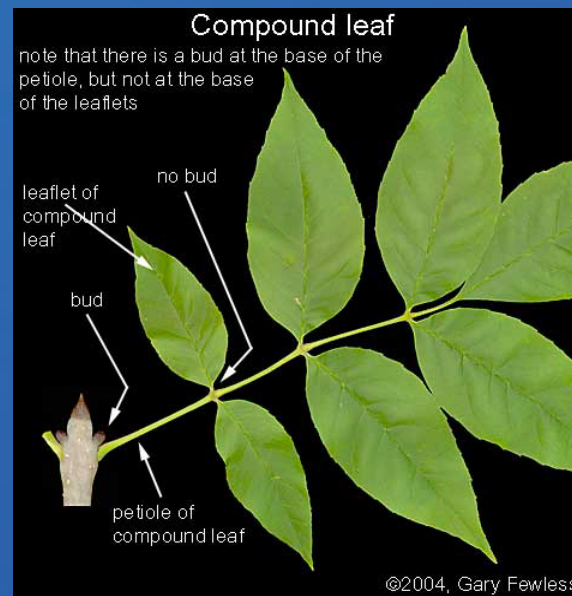
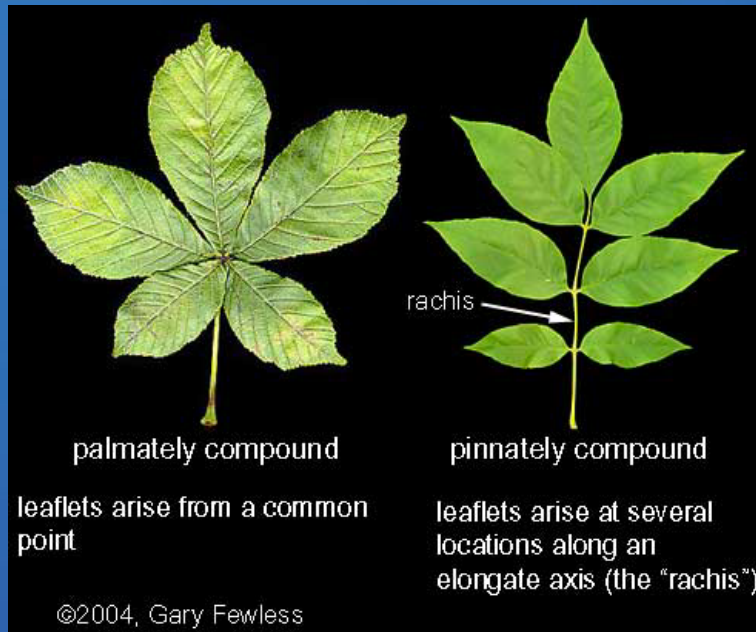


FLOWER TYPES

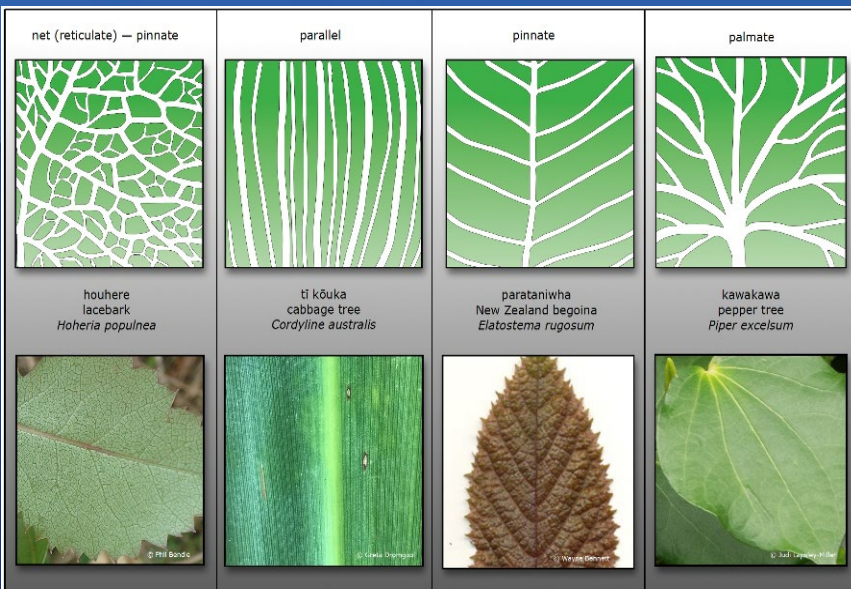
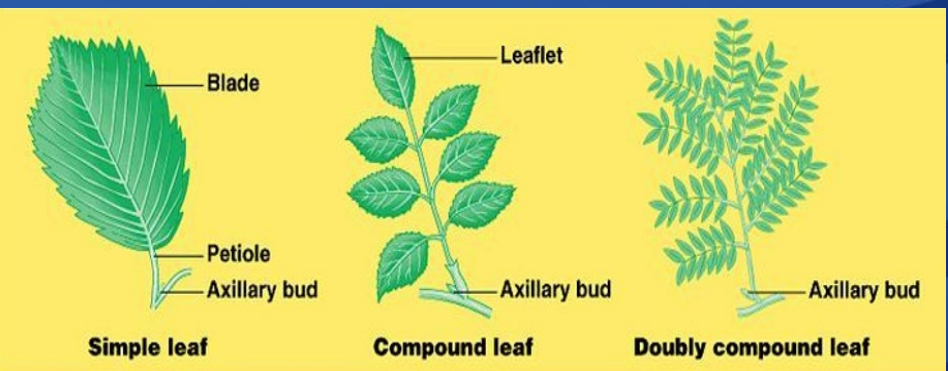
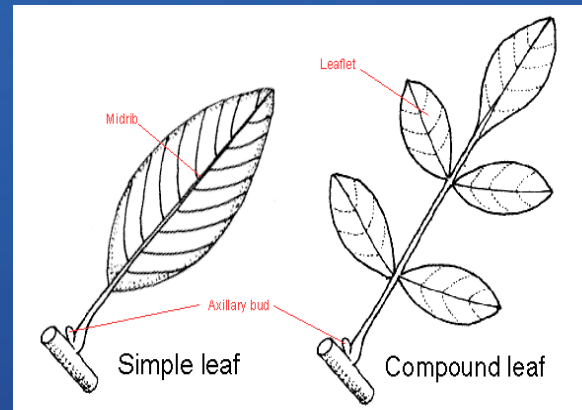
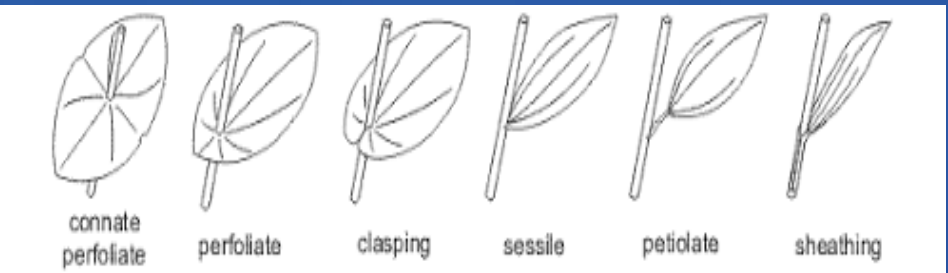
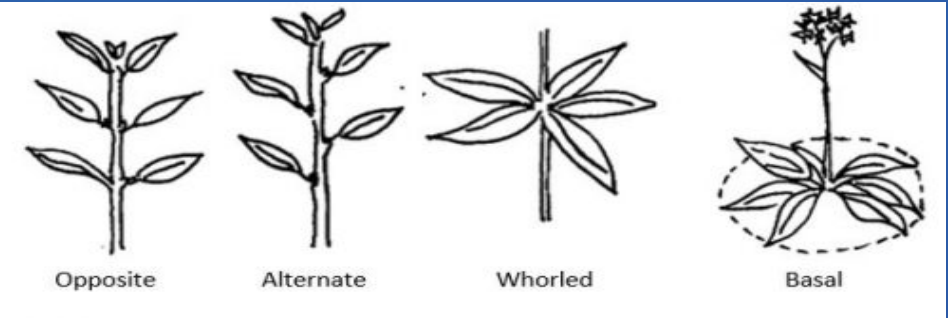


Flower Shapes: Perianth Forms



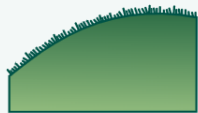


Leaf Description



Leaf Description Continued

MARGIN



Ciliate
with fine hairs



Denticulate
with fine dentition



Lobate
indented, but not to midline



Sinuate
with wave-like indentations



Crenate
with rounded teeth



Doubly Serrate
serrate with sub-teeth



Serrate
teeth forward-pointing



Spiny
with sharp stiff points



Dentate
with symmetrical teeth



Entire
even, smooth throughout

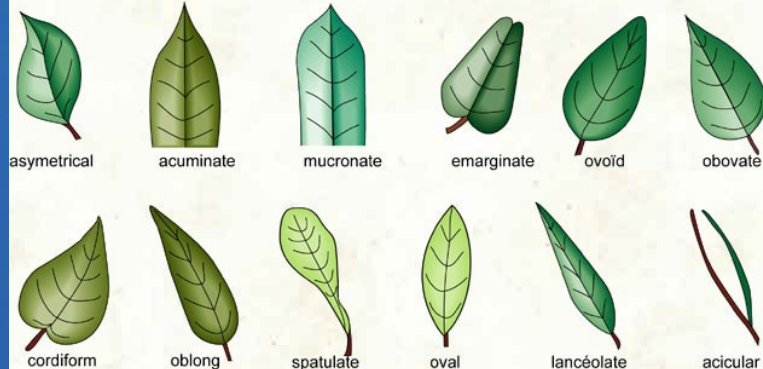


Serrulate
with fine serration

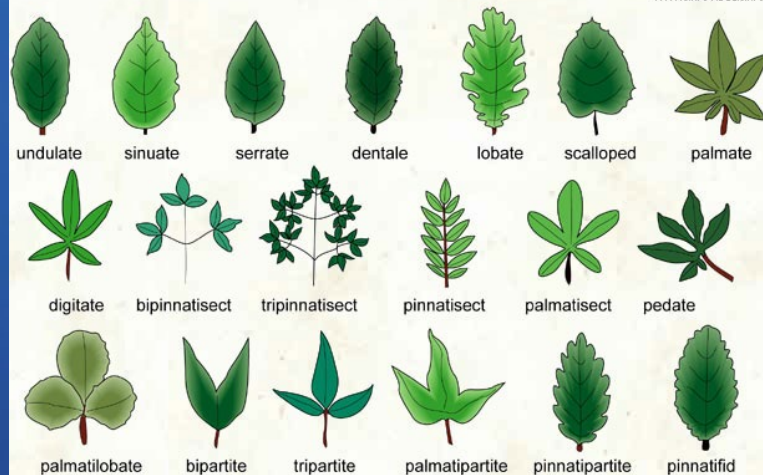


Undulate
widely wavy

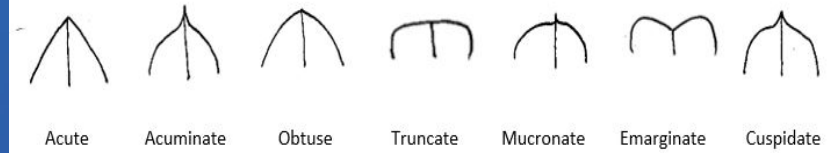
LEAF SHAPES



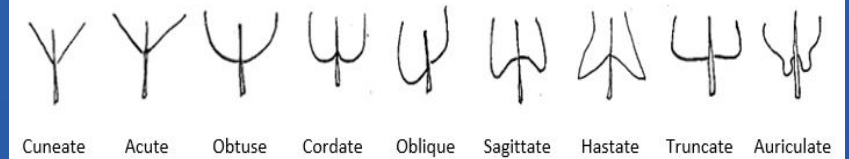
LEAF MARGINS



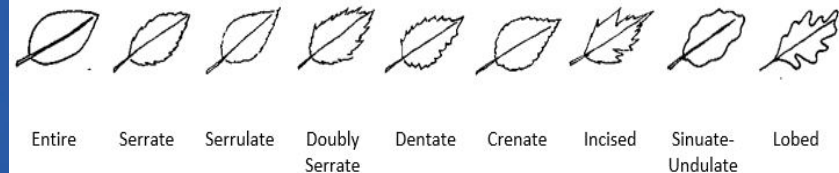
Apices (Tips)



Bases



Margins



SOUTHWEST FLORIDA WATER MANAGEMENT DISTRICT

- ❖ Important to identify EVERYTHING along transect
- ❖ **EXTRA** important to properly identify WAP species as accurately as possible
- ❖ Mistakes impact scoring
- ❖ Mistakes over a span of years inaccurately portray system being assessed ****DATA CREDIBILITY****

Upland (U) - Plant species that are not expected to be seen in wetlands. It is possible that a few of these species may be found along wetland edges, but are not expected throughout the transition zone.

Adaptive (AD) - Plant species designated as FAC or Upland by the Florida Department of Environmental Protection (DEP), but are commonly seen in the transition zone in limited numbers. Adaptive plants are considered transition zone plants when they are found in the outer deep or deep zones. It is not abnormal to find AD species in low numbers and distribution in the transition zone.

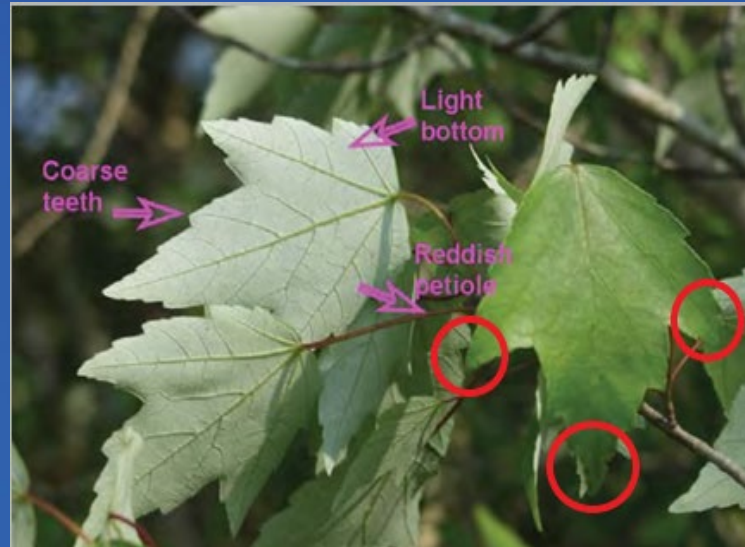
Transition (T) - Plant species commonly found in the transition zone, and designated either FACW or OBL by DEP.

Outer Deep (OD) - Plant species commonly found in the outer deep zone, and designated either FACW or OBL by DEP.

Deep (D) - Plant species commonly found in deep zone, and designated either FACW or OBL by DEP.

WAP Plants	U = 16
111	AD = 36
	T = 32
	OD = 22
	D = 5

Acer rubrum (OD) vs. *Liquidambar styraciflua* (T)



Acer rubrum

- 3 leaf lobes
- Leaves opposite
- Winged seeds (samaras)
helicopters



Liquidambar styraciflua

- 5 leaf lobes
- Leaves alternate
- Seeds are spiny & “woody”

Ampelopsis arborea (AD) vs. *Campsis radicans* (T)



Ampelopsis arborea
Photo by Fred Nation



Ampelopsis arborea

- Doubly compound leaves, widest at base
 - Red petioles
- Leaves alternate but opposite on tendrils
 - Flowers small, greenish-white



Campsis radicans
Photo by Alan R. Franck



Campsis radicans

- Singly compound leaves
- Green petioles
- Leaves opposite, NO tendrils
- Trumpet-shaped, red-orange flower

Amphicarpum muehlenbergianum (OD) vs. *Panicum hemitomon*

Amphicarpum muehlenbergianum

- White hyaline margin along leaf edge
- Leaves bluish-green. Blades up to 4"
- Old leaves curl
- Stems up to 3' long (decumbent)



Panicum hemitomon

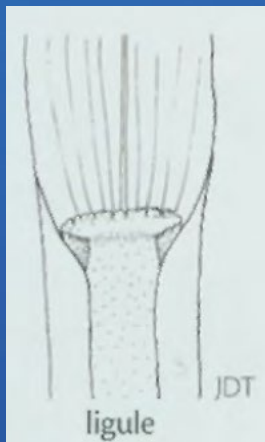
- White hyaline margin NOT present
- Bright green leaves. Blades up to 12"
- Old leaves straight
- Stems up to 6' long



Andropogon glomeratus (T) vs. *Andropogon virginicus* (AD)

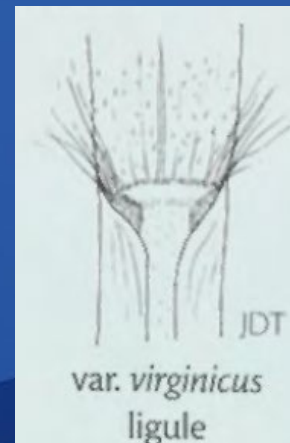
Andropogon glomeratus

- Leaves will fold but not far up the stalk
- Leaves are medium in size, green, & often blotched with red spots
- Greater inflorescence branching
 - Longer ligules



Andropogon virginicus

- Leaves tend to stay folded further up the stalk
- Blades shorter than *A. glomeratus*, more bluish in color, more hairy
- Less inflorescence branching (not as bushy)
 - Shorter ligules



Andropogon glomeratus var. *glaucopsis* (OD) vs. *Andropogon virginicus* var. *glaucus* (U)

Andropogon glomeratus var. *glaucopsis*

- Longer leaves
- Bushier than *A. virginicus*
- Purple color at base and whitish chalkiness



Andropogon virginicus var. *glaucus*

- Blue-white chalky character typically in dry uplands
- Leaves shorter than 35 cm
- NOT purple-colored at base



Baccharis spp. (AD) vs. *Ilex glabra* (AD)

Baccharis spp.

- Leaves with shallow lobes or coarse teeth
- Fruit heads appear feathery or cottony

Baccharis halimifolia
Photo by T. Ann Williams



Baccharia glomeruliflora
Photo by Pat Howell



Stanley Dunham, February 2006

Ilex glabra

- Leaves have a few blunt teeth near the tip
- Fruits a black drupe (NOT edible)

Ilex glabra
Photo by Betty Wargo



Ilex glabra
Photo by Mary Keim



Bacopa caroliniana (OD) vs. *Bacopa monnieri*



Bacopa caroliniana

- Lemon scent when crushed
- Leaves clasping
- Stems hairy
- Flowers purple



Bacopa monnieri

- NO lemon scent
- Leaves NOT clasping
- Stems NOT hairy
- Pinkish-white flowers

Callicarpa americana (U) vs. *Cephalanthus occidentalis* (D)



Callicarpa americana

- Leaves opposite with stiff hairs, crenate-serrate
- Fruit is 4-stoned, small globose (round) berry-like drupe
- Flowers pale lavender-pink. Produced on new growth in leaf axils (no stalk) densely clustered.

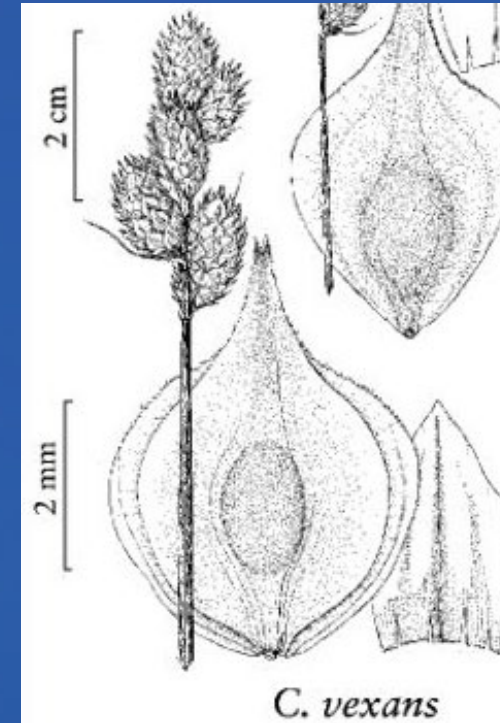
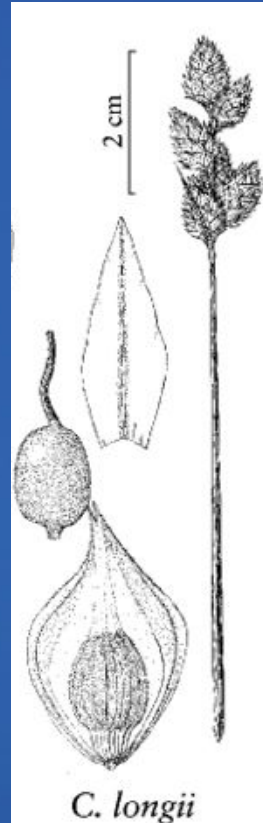
Cephalanthus occidentalis

- Leaves opposite to whorled (3), glabrous (no hairs), NO teeth
 - Fruit a dense ball (“buttons”)
- White flowers in a dense round head

Carex longii (T) vs. *Carex vexans*

Carex longii

- Spike scales notably more appressed = narrower inflorescence
- Perigynium smaller with “wings” less prominent



Carex vexans

- Spike scales less appressed and therefore more spread = notably wider inflorescence
- Larger perigynium with more prominent “wings”

Centella asiatica (T) vs. *Dichondra carolinensis* (AD)

Centella asiatica

- Leaves larger, shaped like a rounded arrowhead
- Margins slightly dentate (coarse teeth)



Dichondra carolinensis

- Low/creeping
 - Leaves reniform or shaped like a horse hoof
- Base deeply cordate (heart shaped)

Cinnamomum camphora (U) vs. *Persea palustris* (OD)



Cinnamomum camphora

- Leaf underside glaucous
- Three veins on leaf base
- Crushed leaves camphor smell



Persea palustris

- Leaf underside pubescent
- One vein on leaf base
- Crushed leaves bay smell
- Insect galls common on older leaves

Cirsium nuttallii (T) vs. *Cirsium horridulum*



Cirsium nuttallii
Photo by Shirley Denton



Cirsium nuttallii
Photo by Matthew Merritt



Cirsium horridulum
Photo by Walter Hodge
USF Herbarium Slide Collection



Cirsium horridulum
Photo by Patricia Howell

Cirsium nuttallii

- Typically unbranched from a basal rosette
 - Lower stem conspicuously winged



Cirsium nuttallii
Photo by Nancy Soucy



Cirsium horridulum
Photo by Betty Wargo

Cirsium horridulum

- MORE spines, especially on the phyllaries below flowers
- Outer whorl of spiny bracts that hide the true involucre

Commelina diffusa (T) vs. *Commelina erecta*

Commelina diffusa

- Low growing typically creeping habit
 - ALL petals blue
 - Leaves tend to be wider



Commelina erecta

- Erect perennial habit
- Petals (2 blue & 1 white)
- Narrow lanceolate leaves

Diodia virginiana (OD) vs. *Gratiola ramosa* (T)



Diodia virginiana

- Teeth absent from leaves
- Flowers white, NOT tubular



Gratiola ramosa

- Leaves stiffly upward pointing with a few teeth
- Flower white and tubular

Diospyros virginiana (AD) vs. *Nyssa sylvatica* var. *biflora* (D)

Diospyros virginiana

- Leaves often hairy when young, shiny and glabrous (not hairy) when older
- Leaves widest at middle
- Net patterned veins on leaf underside



Nyssa sylvatica var. *biflora*

- Often swollen at trunk base
- Leaves variable, longer than wide, may be widest at or above middle
- Lack net pattern veins on leaf bottom



Drymaria cordata (AD) vs. *Lindernia grandiflora* (T)



Drymaria cordata

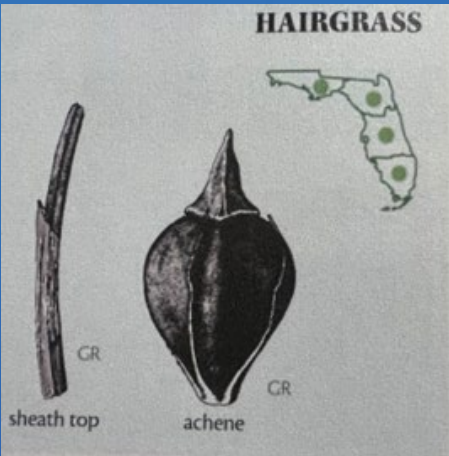
- Stems stiff
- Flowers small, white, sticky (will stick to shoes/pets/socks)

Lindernia grandiflora

- Stems weak
- Flowers light lavender spotted with violet, bilateral symmetry

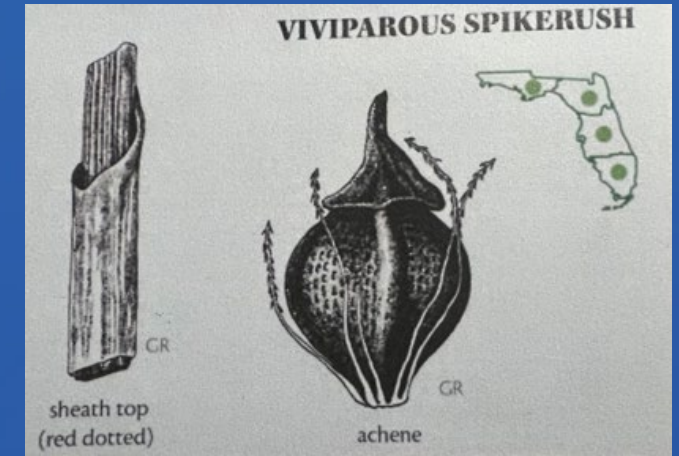
Eleocharis baldwinii (T) vs. *Eleocharis vivipara*

*****Both species can exhibit vivipary*****



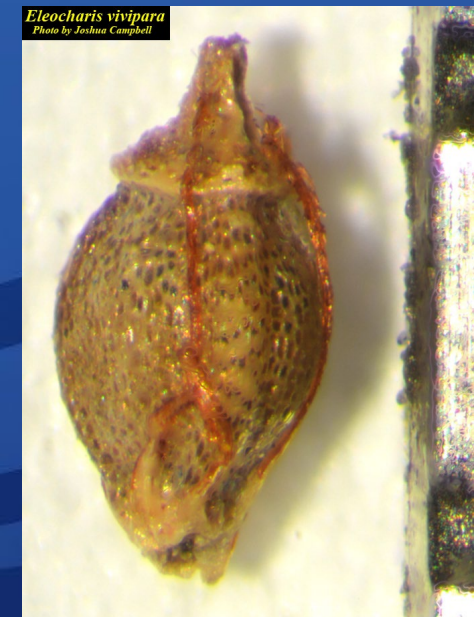
Eleocharis baldwinii

- NO red spot on sheaths
- Achene bristles less pronounced



Eleocharis vivipara

- Red spot on sheaths
- Achene bristles pronounced



SOUTHWEST FLORIDA WATER MANAGEMENT DISTRICT

Eupatorium capillifolium

- Adults can reach 3m tall
- All leaves bright green and glabrous
- Narrower leaf segments (cauline) 0.5mm or less
- Plants NOT viscid to touch



Eupatorium compositifolium

- Adults reach 1.5m tall
- Leaves dull grayish-green
- Leaf segments (cauline) > 1mm wide
- Plants viscid to touch when fresh

Eupatorium capillifolium (AD) vs. *Eupatorium compositifolium*

Fraxinus caroliniana (D) vs. *Fraxinus pennsylvanica*

Fraxinus caroliniana

- 5-7 leaflets
- Medium sized, often multi-trunk
- Fruit: a winged, single samara



Fraxinus pennsylvanica

- 5-9 leaflets
- Large sized, often single-trunk
- Fruit: samara, narrower compared against *F. caroliniana*

Gordonia lasianthus (OD) vs. *Magnolia virginiana* (OD)



Gordonia lasianthus

- Older bark furrowed and light gray
- Leaf margins crenate to serrate



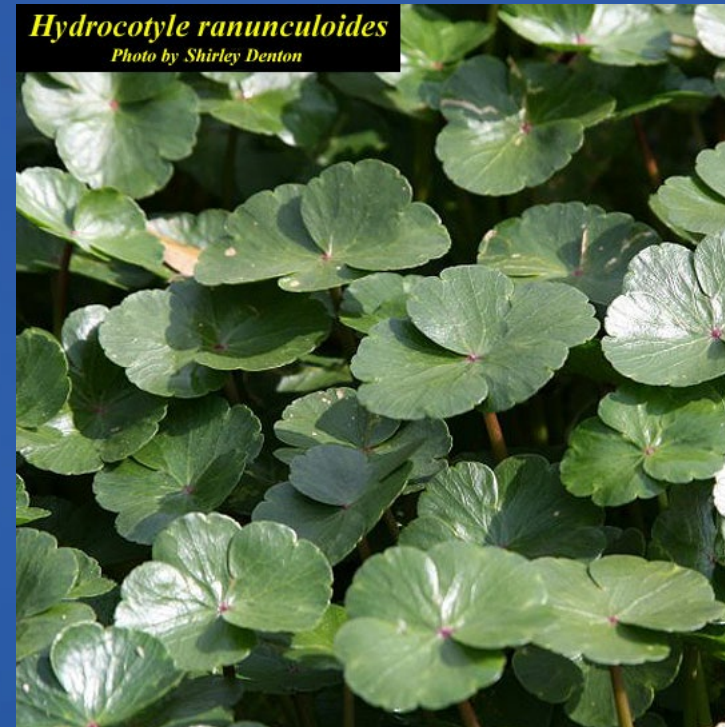
Magnolia virginiana

- Bark smooth and light gray
- Leaves have NO teeth, are white on underside
- Produces conelike cluster of follicles, each with red seeds

Hydrocotyle umbellata (OD) vs. *Hydrocotyle ranunculoides*

Hydrocotyle umbellata

- Petiole attached in center of blade, round, deeply crenate



Hydrocotyle ranunculoides

- Not peltate, notched almost to petiole base

Hypericum myrtifolium (T) vs. *Hypericum tetrapetalum* (AD)

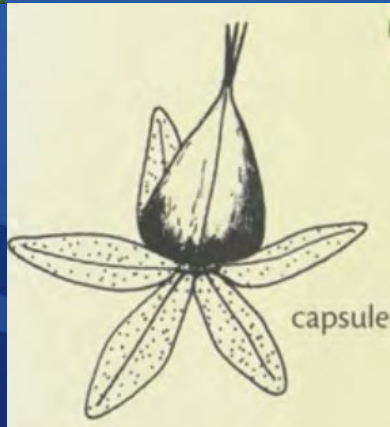
Hypericum myrtifolium

Photo and © by Roger Hammer
Wildflowers of the Everglades



Hypericum myrtifolium

- Leaves ovate-triangular
- Sepals large and leafy, 5 equal-sized, may remain on plant after petals fall



Hypericum tetrapetalum

- Leaves broadly ovate, clasp the stem, sessile
- 4 petals and 4 sepals (2 large and 2 small)



Hypericum tetrapetalum

photo by Gil Nelson, from his book
Shrubs and Woody Vines of Florida



Itea virginica (OD) vs. *Cyrilla racemiflora*

Itea virginica

- Leaf margins finely toothed, with lower surface being sparsely pubescent
- Bark thin & brownish



Cyrilla racemiflora

- Simple veins across leaf, conspicuous on both sides; ends in a flattened stem.
- Bark brownish gray (peel back bark surface to reveal pinkish inner bark!)

Lycopus rubellus (OD) vs. *Hyptis alata*

Lycopus rubellus

- Flowers with bilateral symmetry in clusters at leaf axils.
- Leaves 5-12cm long (lance-ovate shaped)



Hyptis alata

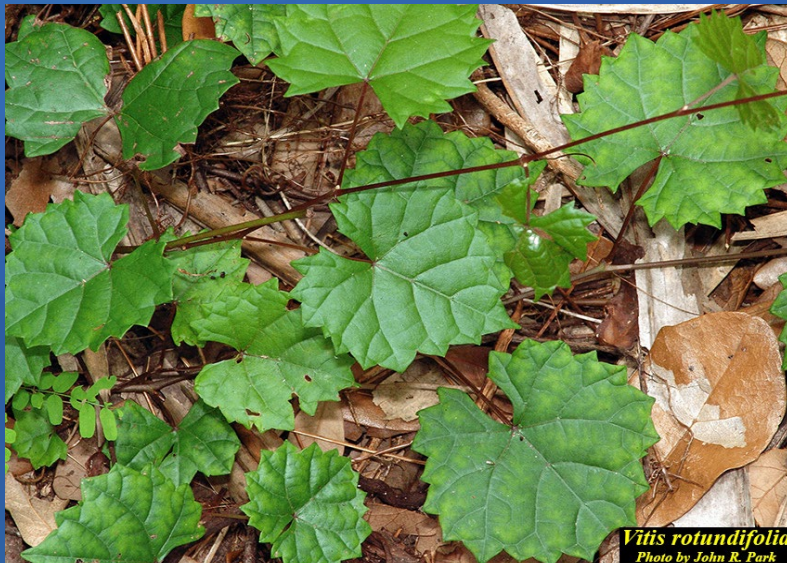
- Flower clusters on long stalks
- Leaves shorter & wider (diamond-shaped)

Melothria pendula (T) vs. *Vitis rotundifolia* (AD)



Melothria pendula

- Leaves alternate, small (2 – 8 cm), round, heartshaped base, 3-lobed.
- Fruit = mini “cucumber”



Vitis rotundifolia

- Leaves opposite tendrils; glabrous (not hairy), heart-shaped, coarsely toothed.
- Fruit = muscadine grape (edible)

Osmunda cinnamomea (T) vs. *Woodwardia virginica*

Osmundastrum cinnamomeum
Photo by Mary Keim



Osmunda cinnamomea

- Fronds grow in clumps
- Petiole dark brown base, mostly darker rachis
- Veins not reticulate

Woodwardia virginica



Woodwardia virginica
Photo by Rob Curtis/The Early Birder



Osmundastrum cinnamomeum
Photo by Elizabeth Parnis
University of Wisconsin

O. cinnamomea



W. virginica

Woodwardia virginica

- Does NOT grow in clumps
- Chainlike areoles lining the mid-veins of pinnules and midrib



Woodwardia virginica
Photo by Dennis Girard

Panicum anceps (AD) vs. *Panicum rigidulum* (OD)



Panicum anceps

- Scaly rhizomes
- Less “heavy” panicles mostly appressed to main axis



Panicum rigidulum

- NOT rhizomatous
- “Heavier” panicles generally less appressed
- Often plant has some dark purple coloration



Paspalum laeve (T) vs. *Paspalum setaceum* (AD)

Paspalum laeve

- Leaves rough to touch, more hairs on upper surface
 - Flowering stem up to 3.7' tall
 - Grows in tufts

Paspalum setaceum
Photo by Shirley Denton



Paspalum setaceum
Photo by John R. Park

Paspalum laeve
Photo by Bob Upcavage



Paspalum laeve
Photo by Bob Upcavage



Paspalum setaceum

- Leaves shiny with evenly spaced hairs on margins
- Flowering stem up to 2.8' tall
- Grows in FLAT circular tuft

Paspalum setaceum
Photo by Shirley Denton



Pinus elliottii

- Needles 2 or 3 per fascicle
- Young shoots (candles) beige and small
 - Cones somewhat egg-shaped, prickly, and open.
- Lack grass stage
- Needles NOT clustered at tips of branches
- Smaller sheath on fascicle

Pinus elliottii (AD) vs. *Pinus palustris* (U)



Pinus palustris

- Needles always 3 per fascicle.
- Young shoots (candles) large (fat) and white.
- Cones large and long, prickly
- Young trees have grass stage
- Needles tufted at end of branch
- Larger sheath on fascicle

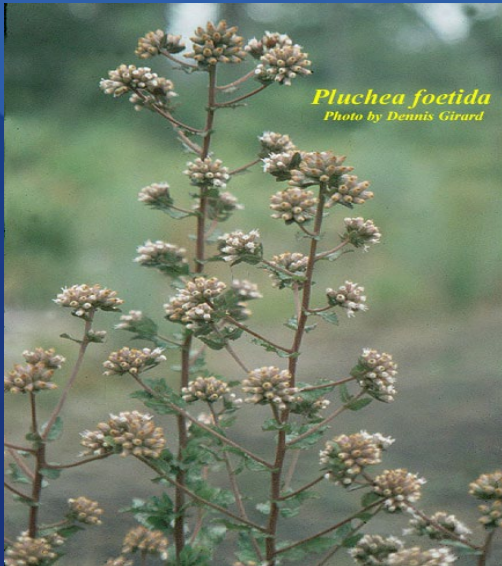


Pluchea rosea (OD) vs. *Pluchea foetida*



Pluchea rosea

- Alternate leaves, clasping leaf base, margins serrate, often pink on edge
- Pink flowers



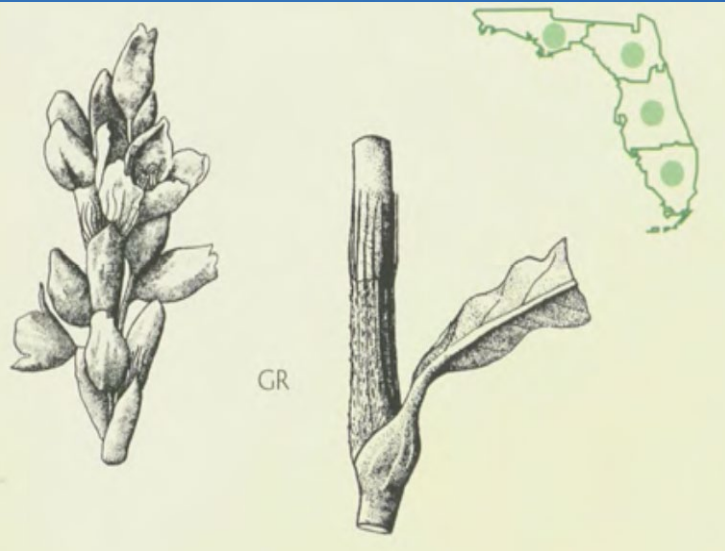
Pluchea foetida

- Leaves shorter & rounder, alternate, sessile (no petiole), clasping, rough pubescent.
- Flowers in rounded cymes, white in color

Polygonum hydropiperoides (OD) vs. *Polygonum punctatum*

Polygonum *hydropiperoides*

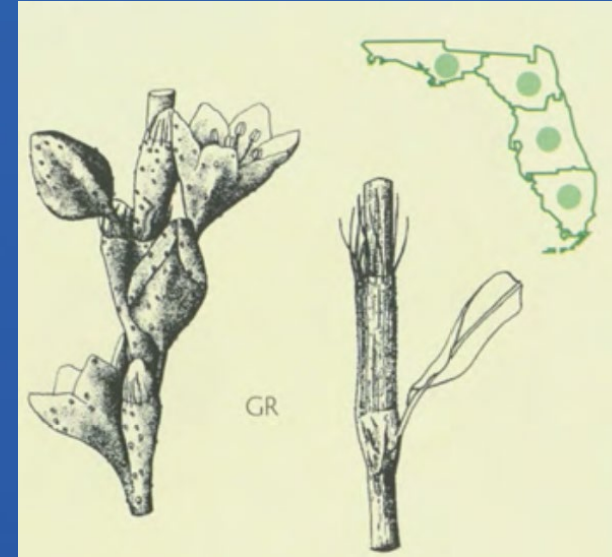
- Flowers in long axillary racemes, pink to greenish-white
- Lack raised dots (HAND LENS!!)



Persicaria hydropiperoides
Photo and © by Roger Hammer
Wildflowers of the Everglades



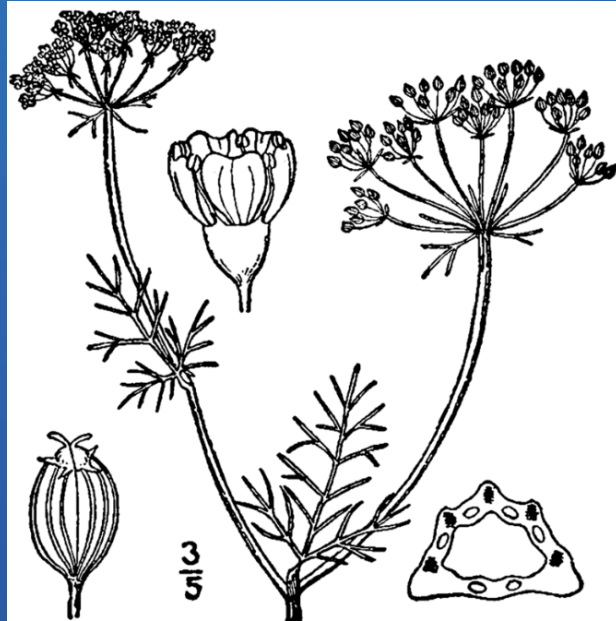
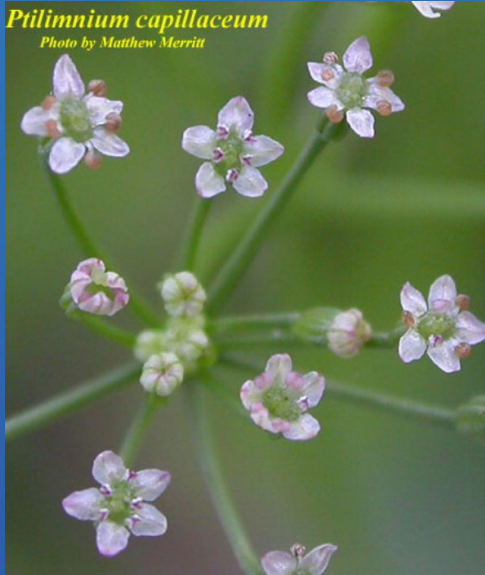
Persicaria punctata
Photo by Matthew Merritt



Polygonum punctatum

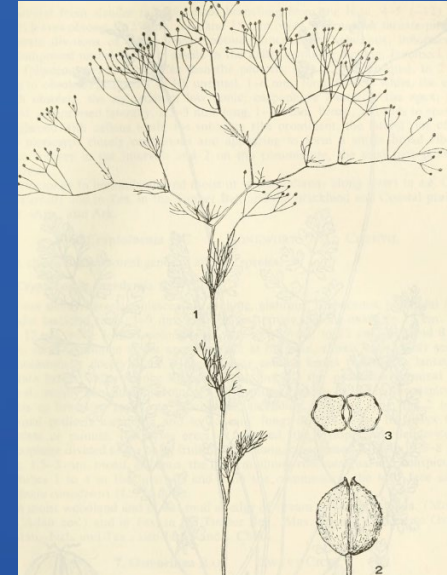
- White flowers (never pink) covered with raised dots (punctate glands)

Ptilimnium capillaceum (T) vs. *Spermolepis divaricata*



Ptilimnium capillaceum

- Purplish anthers & can have minute sepals
- Fruit broadly ovoid (egg-shaped) 1.5 – 3mm long, ribs conspicuous
- Leaf divisions filiform and usually divided into 3 segments at node on axis



Spermolepis divaricata

- Commonly with a single main stem
 - Sepals always lacking
- Fruit oval (broadly elliptic) 1 – 1.5mm long, weakly ribbed

Quercus laurifolia (T) vs. *Quercus virginiana* (U)

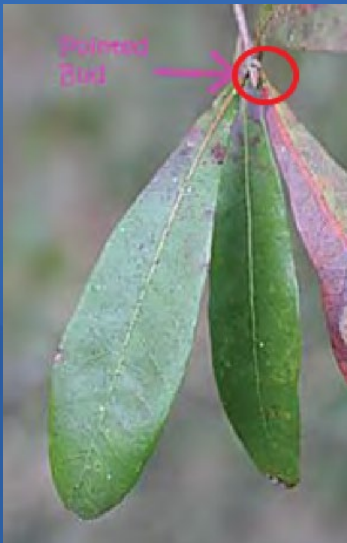
Quercus laurifolia

- Straight trunk
- Smoother bark when young, develops broad flat ridges when older
- Uncurled leaves with few hairs
 - Buds pointed



Quercus virginiana

- Trunk and large branches often leaning
- Rough dark brown bark with raised ridges
- Darker green leaves that are gray-green pubescent on bottom



Saccharum giganteum (OD) vs. *Phragmites australis*

Saccharum giganteum

- Grows in dense tufts
- Leaves long & wide, less prominent on flowering stems



Phragmites australis

- Does NOT grow in tufts
- Many leaves on flowering stems

Sambucus nigra subsp. *Canadensis* (AD) vs. *Cicuta maculata*

Sambucus nigra

- Flower petals are NOT notched at the tip
- Leaves opposite, pinnately compound, leaflets serrated
- Stems woody with prominent lenticels

Cicuta maculata

- Flower petals notched at the tip
- Leaves alternate, lower leaves usually 3-pinnately compound. Coarsely toothed
 - Stems herbaceous/glabrous



Schinus terebinthifolius (AD) vs. *Rhus copallinum*

Schinus terebinthifolius

- Fruit smaller, glossy, bright red “berries” in clusters
- Compound leaf with whitish leaf veins visible; leaf edge typically toothed



Rhus copallinum

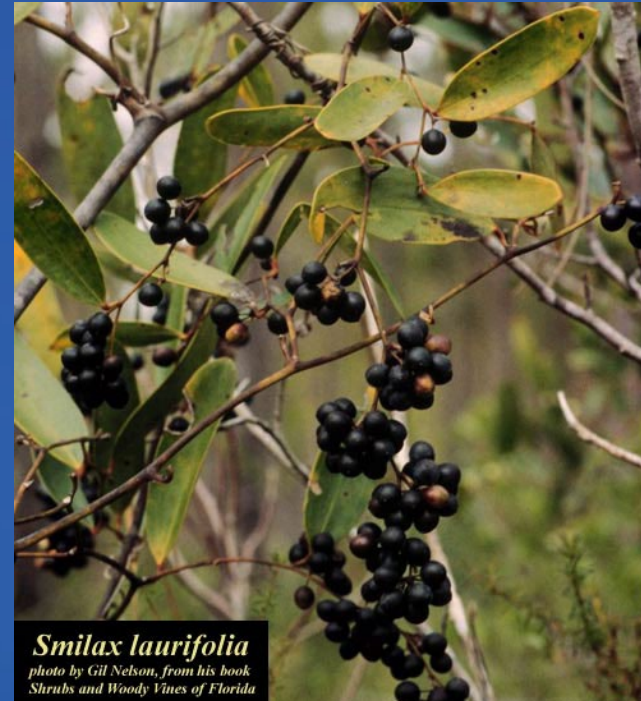
- Fruit in dense cluster of small, round, red, hairy “berries”
- Compound leaf, with a winged leafstalk
- Erect thin trunks with leaves concentrated at tips of branches



Smilax bona-nox (AD) vs. *Smilax laurifolia*

Smilax bona-nox

- At least some leaves have prickles on leaf margin
- Leaves often shiny but blotched (variegated) with distinctive ears (large lobes)



Smilax laurifolia

- Prickles NOT observed on leaf margins
- Variegation far less commonly observed

Toxicodendron radicans (AD) vs. *Parthenocissus quinquefolia*

Toxicodendron radicans

- Alternate, compound leaves with three leaflets and reddish petioles; very variable

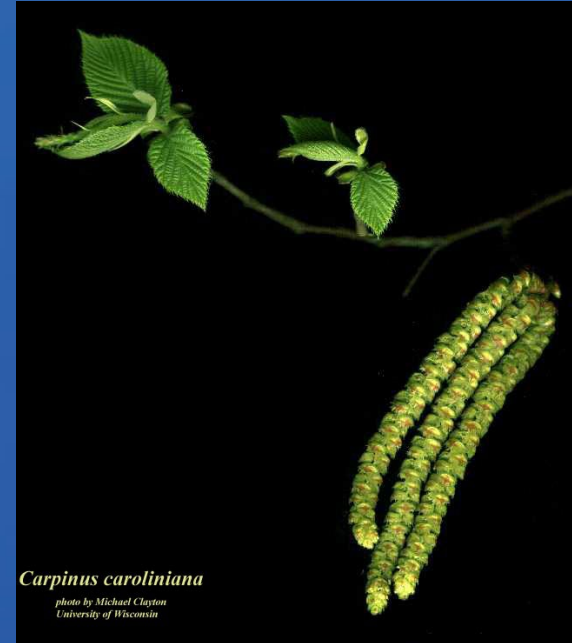


Parthenocissus quinquefolia

- Five leaflets and climbs via coiling tendrils with “feet”

Ulmus americana

- Leaves alternate, two ranked with bases typically unequal (look slanted)
- Bark expressing flat plates



Carpinus caroliniana

- Equal leaf bases
- Smooth bark over wood with “ripples” that look like muscles

Vaccinium corymbosum (T) vs. *Eubotrys racemosus*

Vaccinium corymbosum

- Leaves deciduous alternate, typically more than 3 cm long, NOT serrated
- Fruit a blue berry (edible)



Eubotrys racemosus
Photo by Fred Nation



Eubotrys racemosus

- Leaves deciduous alternate, oval to widely lance-shaped blades with serrated margins
- Fruit is a capsule, brown/copper in color

Video Content



- ❖ Trees 2:47
- ❖ Shrubs 37:31
- ❖ Ground Cover 44:08

Questions?

