

Great Sand Lakes Pond Weed Assessment  
7/9/15

Sand Lake

- Pickeral Weed near edges. Purple flower with single leaf below. Amy originally thought these were Water Iris but later sent a correction. Native.
- Water lily: large floating leaves with split. White flowers. Native.
- Water Shield throughout the pond although interestingly missing from along northeast shoreline of the "island" (aka: "keyhole"). Oval shaped pad with slimy red underside. Amy's initial thought it was invasive but upon further research determined it was not. Surprising as it seems to be pushing out the lily pads.
- Sedge, a grass like 3 sided stalk in the shallow edges. Native.
- Purple loosestrife along shoreline. Likes its feet wet. Invasive. Can dig out but tough to get all the roots.
- Water Willow along shoreline, particularly near Barry Bessett's and on the Orleans Rd side of the pond. Invasive.
- Some significant grape invasion along Orleans Rd side and on the north shore.
- Butter Bush: showing green berries now but eatable when they turn red. Native plant.
- Bladderwort: identification not finalized during our visit but we suspected milfoil. Amy later came back with a remote chance it could be bladderwort. Has whorls of 5-6 leaves that clump together when removed from the water. Amy photographed and sent it to her aquatic plant guru. Already forming mats along the water surface. Appears highly invasive as it may be pushing out the water shield.

Dave Callaghan sent a picture of the plant to his daughter's friend, Katie DeGoosh, who works for the RI Department of Environmental Resources, Office of Water Resources. She wrote the PPT presentation Amy Usowski referenced

<http://www.dem.ri.gov/programs/benviron/water/quality/surfwq/pdfs/aqinvspe.pdf>

Which lists bladderwort as "subversive" but not invasive.

Based on the photograph Katie reported, "that is bladderwort ☺ there are several species...one is invasive called Utricularia inflata... There would have been yellow flowers in May on stems 6 inches above the Water, buoyed by snowflake looking floats. The native bladderworts reproduce with just small fragments, so they can become a nuisance. It's a floating plant, doesn't root in soil!"

Kiddie's Pond

- Water shield pushing out White Water Lilies just like on Sand Lake.
- Bladderwort appearing under the water shield.

Buck's Pond

- No significant plant infestations at this time

John Joseph

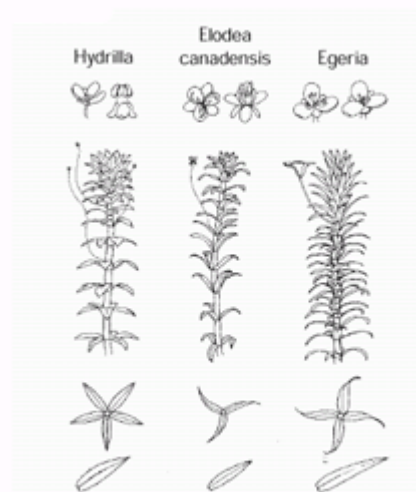
- Did not have time to paddle around this time. Future task.

## Links

- Invasive plant identification:
  - <http://www.mainevolunteerlakemonitors.org/mciap/FieldGuide.pdf> great resource for invasive and native pond plant life in New England
  - <http://www.dem.ri.gov/programs/benviron/water/quality/surfwq/pdfs/aqinvspe.pdf>
  - <http://www.dnr.state.mn.us/shorelandmgmt/apg/index.html>
  - <http://aquaplant.tamu.edu/plant-identification/visual-index/>
  - <http://your.kingcounty.gov/dnrp/library/water-and-land/lakes/2014-aquatic-plants.pdf>
  - <http://longbeach.wsu.edu/spartina/documents/fieldguidetoidaquaticweed.pdf>
- Bladderwort: <http://aquaplant.tamu.edu/plant-identification/alphabetical-index/bladderwort/>
- Pickerweed: <http://aquaplant.tamu.edu/plant-identification/alphabetical-index/pickerelweed/>
- Purple loosestrife: <http://www.invasiveplants.net/plants/purpleloosestrife.htm>
- Sedge: <http://aquaplant.tamu.edu/plant-identification/alphabetical-index/sedges/>
- Water Shield: <http://aquaplant.tamu.edu/plant-identification/alphabetical-index/water-shield/>
- White Water Lily: <http://aquaplant.tamu.edu/plant-identification/alphabetical-index/white-water-lily/>
- Willow: <http://aquaplant.tamu.edu/plant-identification/alphabetical-index/willow/>
- Other resources
  - <http://www.mainevolunteerlakemonitors.org/>
  - <http://www.dem.ri.gov/programs/benviron/water/quality/surfwq/pdfs/identify.pdf>
  - <http://www.uri.edu/ce/wq/ww/Plants/Resources-Plants.pdf> Extensive bibliography of additional resources.

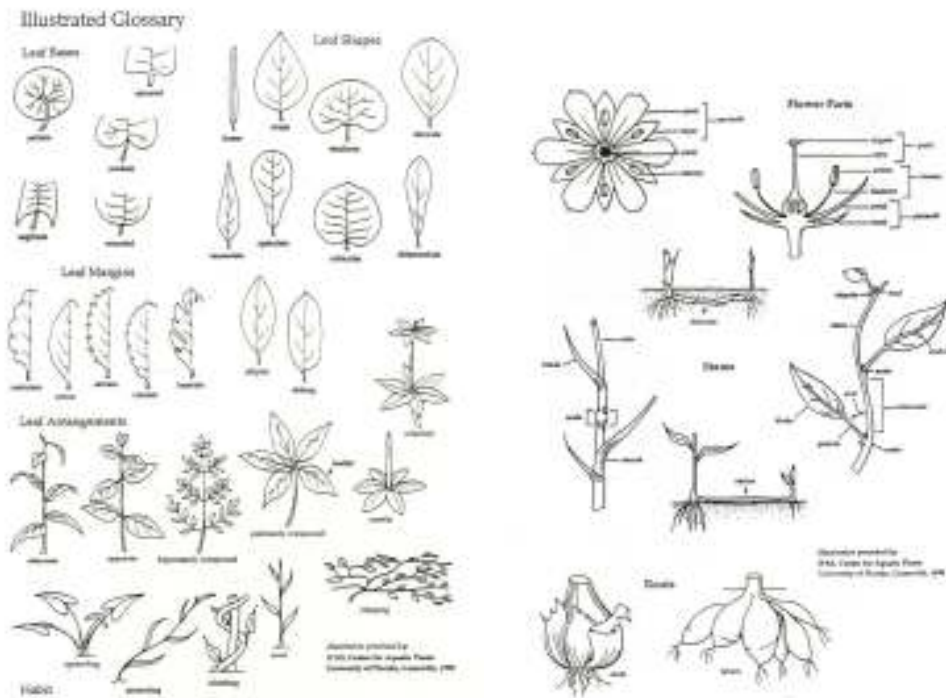
New plants acquired 8/5/15

- Jo Schriebman's sample
  - 1-2 leaves alternating. Not in whorls. Leaves curly.
  - Most likely it is Clasp Leaf Pondweed, a native plant (<http://longbeach.wsu.edu/spartina/documents/fieldguidetoidaquaticweed.pdf>)
  - could be
    - Brazilian waterweed (see picture in <http://www.dem.ri.gov/programs/benviron/water/quality/surfwq/pdfs/aginvspe.pdf>). Aka B. elodea. Aka Egeria densa
    - Hydrilla has one or more teeth on the underside of the midrib, neither Elodea nor Egeria have these midrib teeth. The teeth make Hydrilla feel rough when drawn through your hand from base to tip. Flowers of Egeria are larger than Hydrilla.
    - Hydrilla: is a perennial plant that forms dense colonies and can grow to the surface in water over 20 feet deep. Hydrilla branches profusely and after reaching the surface it extends across it forming thick mats. Hydrilla can reproduce by fragmentation, from seeds, from turions (axillary buds), and from tubers. Leaves are blade-like about 1/8 inch and 3/8 inch long with small tooth margins and spines on the underside of the midrib which make them feel rough. Leaves are usually 4 to 8 in a whorl.
      - Hydrilla is native to Europe and Asia and was probably brought to the U.S. for the aquarium industry. It is considered a noxious pest because it grows so rapidly, out competing and eliminating native species, and forming surface mats that hinder recreation, navigation, and water intakes.
    - Egeria leaves are larger than elodea and in whorls of 4 to 6 and not 3 as with elodea.
    - Egeria: dark green lance-like leaves are in whorls of 4 to 6 which become more dense near the tip of the stem (near the surface). Leaves are about 1/2 inch wide and from 3/4 to 1 1/4 inches long with finely toothed margins. Flowers are white about 3/8 to 3/4 inches in diameter on short stalks which commonly are emergent.
    - Elodea: multi-branched perennial plant but can survive and grow as floating fragments. The dark green blade-like leaves (3/5 inch long and 1/5 inch wide) are in whorls of three with finely toothed margins. The flowers of Elodea have three white petals with a waxy coating that makes them float. (<http://aquaplant.tamu.edu/plant-identification/alphabetical-index/elodea/#photos>)
      - Aka Canadian Waterweed ([http://www.dnr.state.mn.us/aquatic\\_plants/submerged\\_plants/canada\\_waterweed.html](http://www.dnr.state.mn.us/aquatic_plants/submerged_plants/canada_waterweed.html))



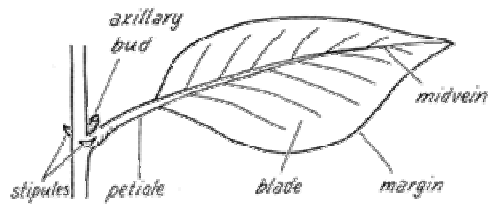
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- Sample found off Carol McKenna's point
  - Could be Red Pondweed. Leaf shape is right. Picture shows flower at the top of plant but our sample has some off lower leaves. Native. (see <http://longbeach.wsu.edu/spartina/documents/fieldguidetoidaquaticweed.pdf>) Not seeing the "distinct red tinge when dried" though. We don't have any floating leaves either (as of Aug 5<sup>th</sup>)
  - May be Bushy Pond Weed (aka Naiad). See [http://www.dnr.state.mn.us/aquatic\\_plants/submerged\\_plants/bushy\\_pondweeds.html](http://www.dnr.state.mn.us/aquatic_plants/submerged_plants/bushy_pondweeds.html)
  - Illinois Pondweed has stout stems that emerge from a thick rhizome. Most of the submerged leaves are lance shaped to oval and either attached directly to the stem or have a short stalk. The leaves have 9-19 veins and often have a sharp needle like tip. The stipules are free in the axils of the leaves and have two prominent ridges called keels. (<http://www.lakeandpondsolutions.com/helpful-info/aquatic-plant-identification>)

From <http://www.env.gov.bc.ca/wat/wq/plants/plantkey/glossary.jpg>

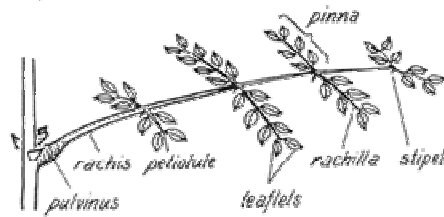


From <http://tenpsnt.tripod.com/glossary.htm>

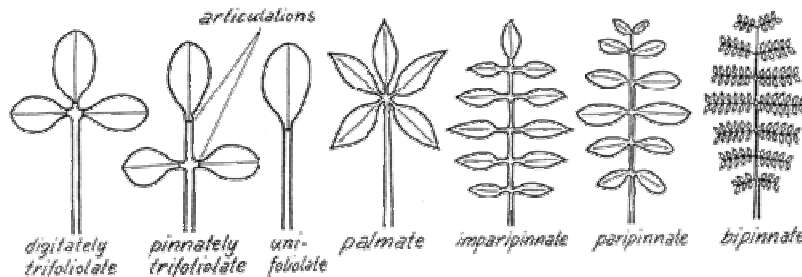
### Simple leaf



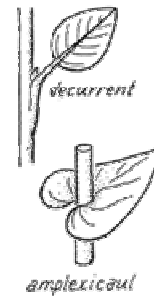
### Compound leaf



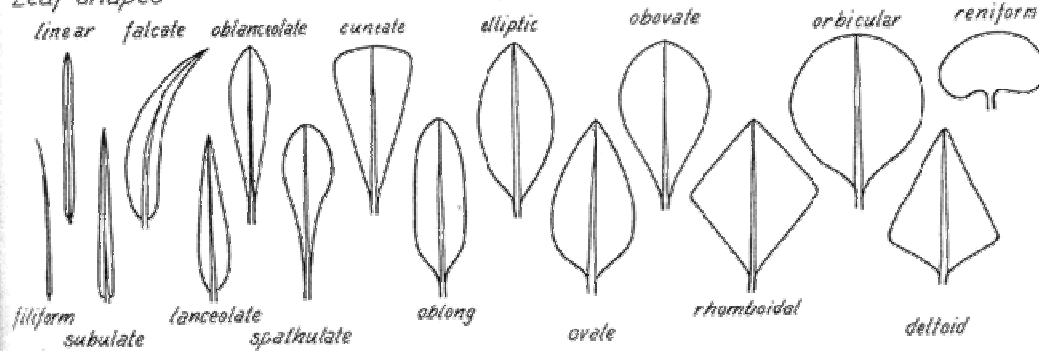
### Compound leaves



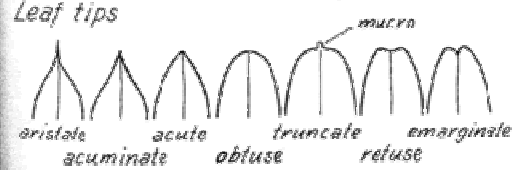
### Attachment



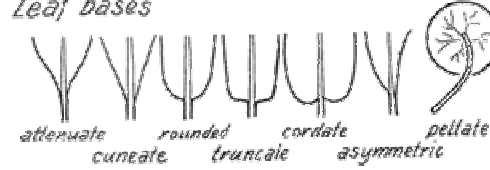
### Leaf shapes



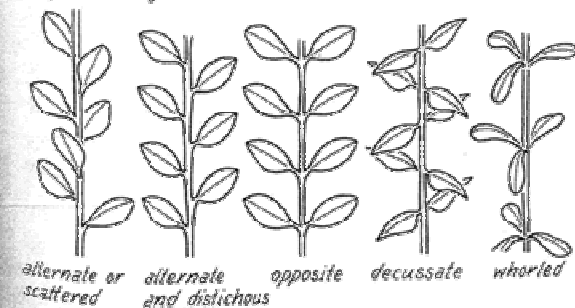
### Leaf tips



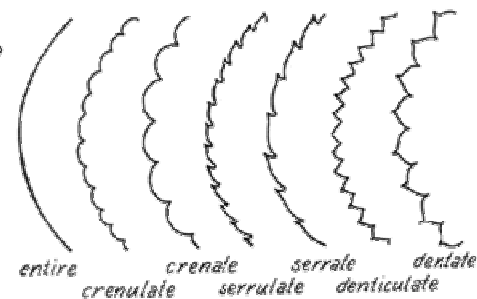
### Leaf bases



### Leaf arrangements



### Leaf margins

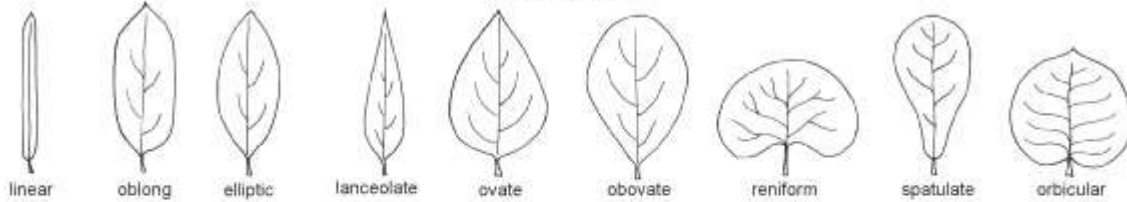


Taken from Dunlop CR, Leach GJ and Cowie ID Flora of the Darwin Region Vol 2

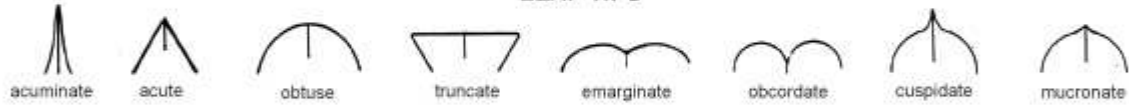
From [http://plants.ifas.ufl.edu/education/images/a\\_glossary\\_leaf\\_shapes.jpg](http://plants.ifas.ufl.edu/education/images/a_glossary_leaf_shapes.jpg)

## ILLUSTRATED GLOSSARY OF LEAF SHAPES

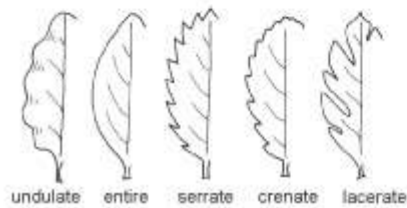
### LEAF SHAPES



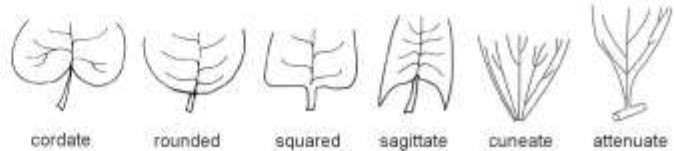
### LEAF TIPS



### LEAF MARGINS



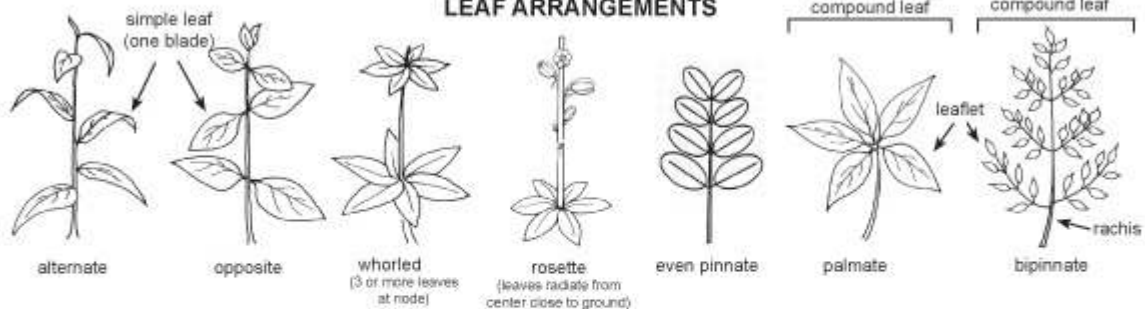
### LEAF BASES



### LEAF ATTACHMENTS



### LEAF ARRANGEMENTS



### HABIT

