

Lab 02 - Nymphaeids & Magnoliids

I. Families to Know on Sight (no keying allowed for lab quizzes or final)

A. Nymphaeids

1. Nymphaeaceae

Summary: Aquatic herbs with floating, cordate, hastate or peltate blades; Flowers large, showy, solitary & scapose, with many spirally arranged parts and poor differentiation between organ classes; Fruit a spongy berry or spongy, irregularly dehiscent capsule.

B. Magnoliids

2. Magnoliaceae

Summary: Trees/Shrubs with circular stipular scars at nodes; Flowers large, showy, solitary, with many spirally arranged parts on elongate receptacle; Parts more or less aromatic; Fruit an aggregate of follicles or samaras.

3. Lauraceae

Summary: Trees/shrubs with strongly aromatic bark and leaves; Flowers small, whorlar, 3-merous, with yellow-green or white tepals and valvate anthers; Fruit a single seeded berry or drupe.

4. Piperaceae

Summary: Herbs, small trees or lianas with peppery aroma; Flowers minute, reduced, perianth absent, in narrow spadix; Fruit small 1-seed drupe with aromatic mesocarp.

II. Genera to Know (you can write your own key to genera and use on lab quizzes & final)

A. Nymphaeids

Nymphaeaceae

1. *Nymphaea*

2. *Nuphar*

Cabombaceae

3. *Brasenia*

B. Magnoliids

Magnoliaceae

4. *Magnolia*

5. *Liriodendron*

Annonaceae

6. *Asimina*

Lauraceae

7. *Lindera*

8. *Sassafras*

Piperaceae

9. *Peperomia*

III. Some Economic Botany

- Nymphaeids are all aquatic and many, such as water-lilies, are of great horticultural import.
- Magnoliids characterized by special ethereal oil cells in most parts, and these oils are responsible for many of our spices.
- From Lauraceae, commercially important spices or fruit from *Cinnamomum* (cinnamon), *Laurus* (bay laurel), & *Persea* (avocado). *Sassafras* still important today, but nowhere near its import during the colonial period when it was the first large export from colonial America.
- From Piperaceae, important spice black and white pepper (*Piper nigrum*).

IV. Keying Exercise

A **key** is a tool for taxonomic identification. A key to species, for example, is a tool that will enable one to **determine** (identify) an unknown plant to the proper species. A key to genera will enable one to determine an unknown plant to the proper genus. Periodically throughout the semester, you will be asked on a quiz to use your book to determine a plant to species. Alternatively, you may be asked to determine a plant to genus not using your book, but your own key that you constructed. The type of keys that we will use and construct in this class will be **dichotomous, indented** keys. A dichotomous key forces the user to determine the correct path through a nest sequence of **couplets**. A couplet is ideally a pair of mutually exclusive statements (**leads**) about the form a plant or plant part can take. A dichotomous, indented key is one in which each of the two couplet leads will either lead to a taxon or to another couplet and plants that possess the characteristics of the earlier lead. Eventually, one should get to the correct genus.

The process of constructing a key to genera, for example, begins with making systematic observations, notes and drawings of the focal set of genera. Today I will give you the complete set of couplets to a key (below) that will work for the 9 genera of nymphaeids and magnoliids. However, you must place the genera onto the key as endpoints at the appropriate place.

1. Aquatic herbs

2. Lvs peltate.....

2. Lvs not peltate

3. Lf apex completely round or rotund, basal lobes angular...

3. Leaf apex tapering somewhat, basal lobes rounded.....

1. Terrestrial herbs, shrubs or trees

4. Herbs with rotund, more or less succulent leaves.....

4. Shrubs or trees with leaves variously shaped, and without succulent leaves

5. Stems with stipular scars encircling twig at or near nodes

6. Lvs broadly 4 to 6 lobed.....

6. Lvs all unlobed.....

5. Stems without stipular scars encircling the twig

7. Lvs varying from entire to 2-3-lobed on the same branch.....

7. Lvs all entire

8. Lvs > 15 cm.....

8. Lvs < 15 cm.....