

# KEY TO THE COMMON AQUATIC AND EMER- GENT PLANTS OF REELFOOT LAKE<sup>1</sup>

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## HOW TO USE THE KEY

Decide under which of the two general types a particular plant falls and turn to that section of the key. If the statement made at "A" applies to the plant which is being identified, proceed to the subdivisions under "A." If "A" is untrue and does not apply to the specimen, skip directly from there to "A." Continue in this manner until the specimen is identified. Check identifications and get more detailed descriptions from Gray's *New Manual of Botany* or other

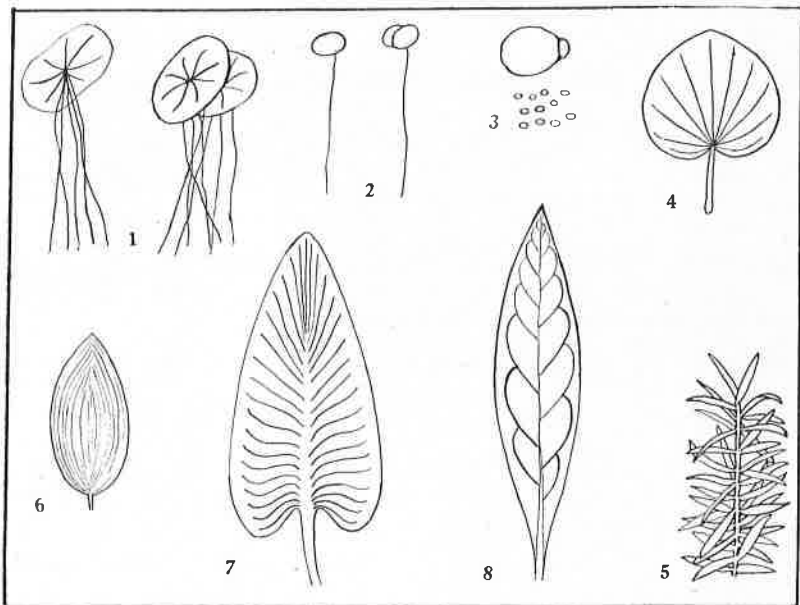


Fig. 1. 1, *Spirodela polyrhiza*; 2, *Lemna minor*; 3, *Wolffia columbiana*; 4, *Caltha natans*; 5, *Elodea* spp.; 6, *Potamogeton* spp.; 7, *Pontederia cordata*; 8, *Rumex verticellatus*.

references listed at the end of this paper. Only the plants most common between June and September are included in this key. A glossary of botanical terms is given at the end of this paper.

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*Type I. Floating Vegetation.* Plants usually free-floating. They may be completely submerged, some leaves may float on the surface, or some may rise above the surface—duckweed, waterweed, buffalo grass, etc.

*Type II. Attached Vegetation.* Plants usually rooted in the bottom mud. Stems and leaves submerged, floating on the surface of the water, or rising above the surface. Sometimes growing at the margin just above the water—water lilies, saw-grass, button bushes, etc.

#### TYPE I. FLOATING VEGETATION

Plants usually free-floating. Certain species which sometimes are rooted in the bottom mud are also included in this section of the key. Such species are starred.

- A. Entire plant usually not exceeding 1 inch in diameter. Locally known as "moss-seed."
- B. Flat plant  $\frac{1}{4}$  to 1 inch broad; finely branched stems bearing minute leaves; often forming a green to reddish surface covering where water is quiet ..... *Asolla caroliniana*.
- BB. Plant body without definite leaves and stems. Duckweed.
- C. Plant body about one-third inch long, often purple beneath; several rootlets (Fig. 1, 1).....*Spirodela polyrhiza*.
- CC. Plants having one rootlet or none.
- D. Plant ovoid, thick,  $\frac{1}{4}$  inch or less long; one rootlet (Fig. 1, 2).  
..... *Lemma minor*.
- DD. Plant body globose, a minute green grain; no rootlets (Fig. 1, 3),  
..... *Wolffia columbiana*.
- AA. Mature plant body greater than 1 inch in diameter.
- E. Plants without distinctly elongated stems.
- F. Plants with divided (fern-like or with numerous thread-like parts) leaves, thread-like segments  $\frac{1}{2}$  to 2 inches long; stems and petioles swollen and inflated; stems 7 to 20 inches long; flowers minute, white.....  
..... Featherfoil. *Hottonia inflata*.\*
- FF. Plants with undivided leaves.
- G. Leaf blades usually not more than  $1\frac{1}{2}$  inches wide, bluntly heart-shaped, deeply lobed at base (Fig. 1, 4), conspicuous spongy tissue beneath; short petioles; usually associated with the four plants given under "A" but not so abundant as they are.....  
..... Marsh marigold. *Caltha natans*.\*
- GG. Leaf blades 1 to  $2\frac{1}{2}$  inches wide, usually bluntly heart-shaped; petioles 1 to 10 inches long; adjoining plants often connected by roots; flowers white, imperfect, not conspicuous.....  
..... Frog's bit. *Limnobium Spongia*.\*
- EE. Plant with distinctly elongated stems.
- H. Plants with divided leaves.
- J. Leaves thread-like, bearing numerous small bladders; usually only the flower—yellow in species here and resembling a small sweet pea—rises above the water..... Bladderwort. Several species of *Utricularia*.\*
- JJ. Leaves thread-like, without bladders.
- K. Flowers bright yellow, about 1 inch in diameter, 5 to 8 petals; leaves repeatedly 3-forked into long thread-like divisions; stems floating or immersed, may be several feet long.....  
..... Yellow water crowfoot, *Ranunculus delphinifolius*.\*
- KK. Flowers not bright yellow.

- L. Leaves opposite or whorled, slightly slimy, segments shorter than those of the yellow water crowfoot; only the terminal white flower, about  $\frac{1}{2}$  inch in diameter, rises above the water. Locally known as "water-moss."..... *Cabomba caroliniana*.
- LL. Leaves 3-forked, similar to those of *Cabomba*, but sessile, rigid, and rough or slightly spiny; minute flowers and seeds in axiles; entire plant usually submerged. Also known locally as "water-moss.".....Hornwort. *Ceratophyllum demersum*.
- HH. Plants with undivided or entire leaves, may be grass-like, linear, thread-like, or lanceolate.
- M. Leaves linear, thread-like, or grass-like.
- N. Leaf blades linear, 1 to 4 inches long, sessile; stem 2 to 3 feet long; foliage usually submerged, but the small yellow flowers rise above the water.....Water star-grass. *Zosterella dubia*.\*
- NN. Leaf blades thread-like or linear.
- O. Thread-like leaves 1 to 6 inches long; completely submerged; very small flowers borne on a short spike.....  
.....Buffalo grass. Species of *Potamogeton*.
- OO. Leaves  $\frac{1}{4}$  inch or less wide, 1 to 3 inches long; stem 8 to 30 inches long, sparsely branching; forming dense mats just beneath the surface; flower produced under water, 2 to 6 in a cluster; the small seed bears a sharp spike.....  
.....Horned pondweed. *Zannichellia palustris*.
- MM. Leaves lanceolate.
- P. Leaves less than 1 inch long, opposite or whorled, sessile; stem and branches leafy throughout (Fig. 1, 5).....  
.....Water-weed. Species of *Elodea*.
- PP. Leaves more than 1 inch long.
- Q. Leaves 1 to 4 inches long (Fig. 1, 6), floating flat on the surface; submerged leaves thread-like, several inches long; flowers small, borne on a spike that rises to the surface.....  
.....Species of *Potamogeton*.
- QQ. Stem creeping, floating or rooting; freely rooting at nodes; leaves alternate, glossy, 1 to 4 inches long, narrowed at base, some rising above the water; flowers axillary, 1 inch in diameter, 5 yellow petals.....Primrose-willow. *Jussiaea diffusa*.\*

## TYPE II. ATTACHED VEGETATION

Plants rooted in the bottom mud. Certain species which sometimes are free-floating and sometimes attached are given under Type I.

- A. Stems woody; shrubs or small trees 3 to 12 feet tall; simple leaves; small sessile white flowers in dense balls 1 inch in diameter.....  
.....Elbow bush. Button bush. *Cephalanthus occidentalis*.
- AA. Stem not woody.
- B. Leaf blades linear or grass-like.
- C. Stem sharply 3-angled; leaves only at base; long leaf-like bracts in involucre at summit; 3 inches to 3 feet tall....Sedge. Species of *Cyperus*.
- CC. Stem not sharply 3-angled, usually round.
- D. Leaf blades thin and grass-like, 4 to 15 feet long; very common along unshaded shores.....Saw-grass. *Zizaniopsis miliacea*.
- DD. Leaf blades thick and spongy, several feet long,  $\frac{1}{4}$  to 1 inch broad; stout stems 4 to 8 feet tall and bearing a conspicuous "cat tail-like" spike near the summit.....Cat-tail. *Typha latifolia*.

- BB. Leaf blades not linear or grass-like.
- E. Petiole attached at center of uncleft blade.
  - F. Leaf ellipsoidal, 2 to 5 inches long, floating flat on surface; submerged parts mucilage-coated; flowers dull purple, axillary, about  $\frac{1}{2}$  inch wide.....Water-shield. *Brasenia Schreberi*.
  - FF. Leaf blades ovoid, 10 to 20 inches wide, floating on top of water or elevated above surface on stout petioles, with wide cup-like depression at center; flowers pale yellow, 4 to 10 inches wide, many petals; fruits acorn-like, embedded in top of broad receptacle.....Yankapin. *Nelumbo lutea*.
- EE. Petiole attached at base of blade.
  - G. Some or all of leaves cleft or heart-shaped at base.
    - H. Leaf blades at least 6 inches wide when mature.
      - J. Leaf blades oval, 10 to 20 inches long, with a deep sinus, normally elevated above the surface of the water on a stout petiole; flowers yellow, spherical, less than two inches in diameter.....Bonnets. Mulefoot lilies. *Nymphaea advena*.
      - JJ. Leaf blades circular in outline, 6 to 8 inches wide; flowers 2 to 5 inches wide when expanded, with many white petals and a yellow center.....Sweet-scented water lily. *Castalia odorata*.
    - HH. Leaf blades seldom 6 inches wide when mature.
      - K. Flowers borne on spikes.
        - L. Flowers 1 inch long, a conspicuous bright blue, with two yellow spots on one of upper petals, on a stout spike, leaves 2 to 10 inches long (Fig. I, 7).....Pickerel weed. *Pontederia cordata*.
        - LL. Flowers creamy, very small, closely placed on a spike which droops at the apex; leaf blades heart-shaped; stem slender, sparingly branched, 2 to 5 feet tall.....Lizard's tail. *Saururus cernuus*.
      - KK. Flowers borne in an umbel, white, three small thin petals; seeds forming spiny bur; leaves shorter and usually narrower than those of the Pickerel weed.....Bur-head. *Echinodorus radicans*.
- GG. Leaf blades not cleft or heart-shaped at base.
  - L. Leaf blades linear, thread-like, or grass-like.
    - See Type I.
    - LL. Leaves oblong. Also see Type I.
  - M. Flowers small and inconspicuous.
    - N. Flowers green, no petals, in dense whorls, pedicels about  $\frac{1}{2}$  inch long; seeds reddish; stem grooved; leaves narrowly oblong (Fig. I, 8), 4 to 12 inches long; scarcely branching; 2 to 5 feet tall.....Swamp dock. *Rumex verticellatus*.
    - NN. Flowers some color other than green.
      - O. Flowers small and borne in rather dense terminal spikes.
        - P. Leaves lanceolate, rounded at base and sharp at apex, 2 to 8 inches long; flowers rose-colored.....Swamp Persicaria. *Persicaria Muhlenbergii*.
        - PP. Leaves similar to those of preceding species but smaller; flowers white or creamy and very small.....A species of *Persicaria*.
      - OO. Flowers not borne in dense terminal spikes but in groups of 3, not showy, three thin white petals; pedicels about  $\frac{1}{2}$  inch long; leaves elliptic, 4 to 16 inches long.....*Sagittaria platyphylla*.
  - MM. Flowers large and showy, 5 petals; plant 2 to 5 feet tall; usually growing above water level along the margin.
    - Q. Leaves smooth, all or some hastately lobed, margin toothed; petals pink with a purple spot.....Halberd-leaved rose-mallow. *Hibiscus militaris*.

QQ. Leaves usually hairy, broadly ovate, toothed or 3 to 7 lobes; petals white or pink with a dark base.....  
 .....Rose-mallow. *Hibiscus lasiocarpus*.

## GLOSSARY

- Axile*. The point on a stem immediately above the base of a leaf.  
*Axillary*. Situated in an axile.  
*Blade*. Flat expanded part of a leaf.  
*Bract*. A more or less modified leaf subtending a flower.  
*Cleft*. Cut about halfway to the midvein.  
*Fronde*. The leaf of ferns.  
*Hastate*. Triangular, with the basal lobes spreading.  
*Imperfect*. Flowers with either stamens or pistils, not with both.  
*Involucre*. A collection of bracts surrounding a single flower or a flower cluster.  
*Lanceolate*. Consistently longer than broad, lance-shaped.  
*Linear*. Elongate and narrow with sides nearly parallel.  
*Node*. A junction of a stem or branch at which a leaf or leaves are usually borne.  
*Pedicle*. The stalk of a flower in a flower cluster.  
*Petiole*. The stalk of the leaf.  
*Pistil*. Central organ of a flower containing ovules, which become seeds on maturity.  
*Receptacle*. The end of the flower stalk bearing the floral organs.  
*Rootlet*. Small root.  
*Sessile*. Without a stalk.  
*Sinus*. The space between the lobes of a leaf.  
*Spike*. An elongated flower cluster.  
*Stamen*. Organ of the flower that bears pollen.  
*Thallus*. A usually flat vegetative organ without differentiation into stem and leaves.  
*Umbel*. A flower cluster with all the pedicle arising from the same point.  
*Whorl*. A group of three or more similar organs radiating from a node.

## BIBLIOGRAPHY

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## ANNOUNCEMENT OF SPRING MEETING OF THE TENNESSEE ACADEMY OF SCIENCE

The spring meeting of the Tennessee Academy of Science will be held at the University of Tennessee at Knoxville on May 6-7, 1938. General meetings will be held on both days for the presentation of papers and demonstrations. Sectional meetings may or may not be held for Physics, Geology, and Botany (if they should be planned, members of these sections will be notified). Friday afternoon, May 6, a symposium on the Great Smoky Mountains is planned with papers by botanists, zoologists, and geologists. Saturday, May 7, the botanists plan an all-day excursion into the Smoky Mountains, Greenbrier section, and another group plans a trip to Norris and the T. V. A. dam development.

Members are urged to attend this meeting and to present papers. The title of the paper, the section desired, the time necessary for presentation, and whether a projection lantern, motion picture projector, or other equipment will be needed, should be sent to the Chairman of Arrangements, Dr. Stanley A. Cain, Department of Botany, The University of Tennessee, Knoxville, Tennessee, before April 20.