Vascular Plants of Williamson County

Callitriche heterophylla – VARIED-LEAVED WATER STARWORT, COMMON WATER STARWORT, TWO-HEADED WATER STARWORT, GREATER WATERWORT

[Plantaginaceae/Callitrichaceae]

Callitriche heterophylla Pursh (if recognized, var. ***heterophylla***), VARIED-LEAVED WATER STARWORT, COMMON WATER STARWORT, TWO-HEADED WATER STARWORT, GREATER WATERWORT. Aquatic annual, fibrous-rooted and often free-floating (submersed plant fine-taprooted in substrate), not rosetted at base, with ascending to spreading lateral branches from submersed lower node lacking flowers, mostly submersed with rosettes of canopy leaves floating on water surface, plants eventually stranded on mud; monoecious; shoots weak-stemmed and lax with dimorphic leaves (submersed versus floating leaves), glabrous; adventitious roots 1 or 2 per submersed node, roots frequently >> internode, whitish. **Stems:** initially with 4 low ridges aging cylindric then somewhat compressed, to 1 mm diameter, with 2 decussate ridges from each leaf, light green, submersed internodes mostly 10–15 mm long, glabrous, lacking stomates; having 2 conspicuous air canals within each internode. **Leaves:** opposite decussate, simple and sessile (submersed leaves) and petiolate (floating and emergent leaves) fused across node with a pair of narrow ledges, without stipules; submersed leaf blade thin, linear and narrowly strap-shaped, to 15 × 1 mm, light green, 1-veined, entire, gradually tapered to a shallowly notched tip, lacking stomates, submersed leaves approaching surface narrowly ovate rounded at tip, with midvein palmately 3-forked at midpoint; floating rosette leaves closely spaced in 4 ranks, leaf = petiole + blade obovate to spatulate, to 15 × 4.5 mm, narrow and thin petiolar basal portion pale green and 1-veined, broader upper portion palmately 3-veined at base and green, entire, rounded at tip, surfaces on aerial blades with many sunken stomates (upper surface appearing pitted at 10×), veins not raised. **Inflorescence:** axillary, solitary, unisexual flowers, nonshowy, paired at submersed and emergent nodes of shoots, at a node having either 2 sessile to minutely subsessile pistillate flowers or 1 pistillate and 1 staminate flower, bracteate, glabrous; bracteoles (bractlets or "bracts") subtending pistillate flower and staminate flower 2 and opposite, lateral, elliptic to ovate initially somewhat flat aging fleshy and awl-shaped, 0.5–0.8 × 0.3–0.35 mm, translucent and often persistent at base of maturing fruit; pedicel < 0.15 mm long. **Staminate flower:** radial, to 0.45 mm across (anther), to 2 mm long; **sepals** absent; **petals** absent; **stamen** 1, free; filament colorless, 1.2–2.2 mm long and somewhat > bracteoles; anther exserted, basifixed, somewhat kidney-shaped, 0.3–0.4 mm long, initially light green maturing pale yellow, of submersed axes indehiscent; pollen reported to germinate within anther so pollen tubes grow downward through filament and across node to pistillate flower; **pistil** absent. **Pistillate flower:** bilateral, to 1.5 mm across (= divergent styles), 1.2–3 mm long = pistil; **sepals** absent; **petals** absent; **stamen** absent; **pistil** 1; ovary superior, mostly concealed by bracteoles, heart-shaped, ± 0.5 mm long, pale green, conspicuously 2-lobed with notch at top, septum grooved base-to-top, 2-chambered, each chamber with 2 ovules attached to septum; styles 2, attached in ovary notch, at anthesis divergent later appressed, threadlike, 0.75–3 mm long and equal or subequal, colorless, apparently not stigmatic, styles often persistent until fruit mature. **Fruit:** schizocarp splitting downward into 4 dry, 1-seeded mericarps ("4 achenelike nutlets"; microbasidium); maturing fruit subsessile, heart-shaped compressed side-to-side and ⊥ septum, deeply 2-lobed with each half having a longitudinal

furrow, 0.75–0.9 × 0.7–0.8 mm, fruit wall layer colorless and visible “seed coat” dark red-purple aging blackish; mericarp narrowly D-shaped, 0.7–0.9 × 0.3–0.4 mm, dark surface minutely pitted (= sunken cell walls).

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