

Vascular Plants of Williamson County

Thalia geniculata – BENT ALLIGATOR-FLAG, FIRE FLAG, ARROWROOT [Marantaceae]

Thalia geniculata L., BENT ALLIGATOR-FLAG, FIRE FLAG (RED-STEMMED FIRE FLAG), ARROWROOT. Aquatic perennial herb, clonal, rhizomatous, fibrous-rooted, not rosetted, clump several-stemmed at base arising from top of each mature rhizome segment, each flowering shoot unbranched below inflorescence, erect to steeply ascending, in range with inflorescence 250–400+cm tall; shoot with only basal leaves, of aboveground leaves to 3 basal leaves lacking blade and petiole and robust shoot having to 6 basal leaves with blade and petiole, blades large and widely spaced, especially foliage glabrous but sheaths and petioles with some villous hairs, lacking glandular hairs; rhizome erect with axillary bud or buds on lower rhizome forming new rhizomes, shallow, subspheroid, to 25 mm across, white, on emerging rhizome with colorless scale to 60 mm belowground, membranous; adventitious roots abundant, mostly nodal. **Stem:** = peduncle erect from rhizome, \pm cylindrical, to 12 mm diameter at base decreasing gradually upward, to midplant concealed by leaf sheaths of basal leaves, where covered white, where exposed green; solid (not spongy, lacking air canals). **Leaves:** alternate distichous, simple, petiolate, with long sheath, without stipules; sheath open, tightly appressed to older sheaths, of the lowest ones lacking blade to 310 mm long, of bladed leaves mostly > 1000 mm long (increasing upward), back = angle (not folded), in range red to dark red, tissue spongy in \times -section with a set of chambered base-to-top with the widest to 8 mm across opposite the back decreasing gradually in a ring to the winglike margins, villous approaching margins; petiole cylindrical, when present < 40–250 \times to 12 mm elliptic in \times -section, green, forming a ridge at top overarched base of blade, glabrous, in \times -section with a set long air canals being the narrowest on the upper side increasing to the widest midpoint on the lower side surrounding a very wide central air canal; blade ovate to elliptic, < 60–620 \times 40–300 mm, green not glaucous, broadly tapered at base, entire, short-acuminate at tip, appearing pinnately veined with broad midrib raised on lower surface, lateral veins parallel from midrib and \pm evenly spaced 9–10 per 10 mm of blade, then parallel to margin, glabrous or several hairs on upper surface adjacent petiole. **Inflorescence:** panicle, terminal, elevated well above clone, primary branches repeatedly (5+) unequally 2-forked with zigzagged internodes, internodes decreasing upward, the ultimate, zigzagged (sympodial) rachis with a 2-flowered cyme at each node (cincinnus), cymes to 20 on spreading to drooping axes with nodes evenly spaced 7–10 mm, bracteate, portions short-villous to villous at base and top; peduncle (exposed) to 500 mm long below the lowest node; bract fully sheathing, at the lowest node to 450 mm long, reddish; axis of lateral branch with pulvinus to 4 mm long at base, with villous hairs at top approaching node; at each node a longer, larger axis, a shorter axis, and a bud hidden by the bract, prophyll at base of shorter axis, prophyll open, 2-keeled, < 30–45 mm long, with wide membranous margins, with greenish veins, somewhat concave between heels, obtuse to subtruncate at tip, glabrous to sparsely villous; at flowering node outer bract (bractlet of the lower flower) inrolled ca. 22 mm long, aging purplish red with membranous margins, parallel-veined with \perp bridges, villous with pimplelike hairs bases aging papery with red pigmentation (minutely dotted); cyme stalk barrel-shaped, 1 \times 1 mm, pale green, short-villous; bractlet of upper flower concealed and < outer bract, pale green with colorless margins. **Flower:** bisexual, not regularly symmetric, < 10 mm across (with spreading petaloid staminode); **sepals** 3, from top of

ovary, appressed to petals, unequal, membranous, cupped-elliptic to cupped elliptic-obovate, $2.5\text{--}3.5 \times 1.5\text{--}2$ mm (flattened), colorless to greenish in center, 3-veined or 5-veined converging to 1 vein entering tip, truncate to shallowly notched at tip, sparsely villous, persistent; **corolla** 3-lobed, membranous, ca. 8 mm long, white at base and red-purple above, lobes strongly overlapping, ascending spaced 120° apart; lobes cupped-obovate, ca. $7 \times 4.5\text{--}5.5$ mm, having wide colorless margins, rounded to short-notched at tip, parallel-veined, 2 often coherent; **stamen** 1 fertile + 3 staminodes, attached to style column on back side; lower staminode exerted from bractlet, petal-like and appearing clawed, 11+ mm long, spatulate to scooplike, claw narrowly flared and off-white, limb broadly ovate, cupped upward, crinkled, and scalloped, ca. 7×6 mm, pale purple, inner staminode hooded (cucullate), cupped-obovate, ca. 7 mm long, whitish, often with 1–several acuminate, slender spreading to deflexed lateral lobes, upper staminode complex and fused to fertile stamen, to 8 mm long, small lobe to the left of fertile stamen, petaloid and pale purple at top, to the right of fertile stamen the broad, cupped, with pale purple, yellowish, and purple patches having a glossy, bright yellow tongue-like projection (“callosed staminode”), the fertile stamen arising from a deep sinus, filament free portion flattened, 1.5×0.5 mm; anther dorsifixed, monothecal, 2 mm long, cream-colored, longitudinally dehiscent toward adjacent stigma; pollen whitish; **pistil** 1; ovary inferior, obovoid, ca. 2×2 mm, light green finely striped with parallel veins, villous above midpoint, 1-chambered (3 carpels) with 1 ovule; style with a reflexed appendage at top from midpoint, lower portion attached off-center, hemicylindric, and fleshy, ca. 4 mm long, whitish with greenish cup at top including stigmatic tissue, cup ca. 1.5 mm across, reflexed appendage wedge-shaped, ca. $4.5 \times 2.5\text{--}3$ mm, greenish tinged rose. **Fruit:** utricle (capsule of some authors), indehiscent and 1-seeded, with fruit wall tightly appressed to seed, ellipsoid, $8\text{--}9.5 \times 6\text{--}6.5$ mm, brown, finally parallel-veined, sparsely villous approaching top; perianth shriveled at top of fruit; enclosed in the 2 principal bractlets on short stalk of cyme. **Seed:** ellipsoid mimicking fruit shape within thin fruit wall, with a heart-shaped rim at base.

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