

Najas marina L., SPINY NAIAD, HOLLY-LEAVED WATER-NYMPH. Submersed aquatic annual, somewhat spinescent, clonal via fragmentation, fibrous-rooted, main axes when rooted in bottom horizontal with ascending branches, the branches typically with divergent forks, if fertile having 1 flower per fork in the axil of the narrower axis; dioecious; shoots typically armed with prickles along stems and on lower surface of leaves along midrib, the prickles alternate, pyramidal, 0.5–1.7(–2) mm long, often aging purplish red, glabrous; adventitious roots at buried nodes, very long. **Stems:** cylindric, 1–1.8 mm diameter (excluding prickles), internodes to 160+ mm long with several–14 prickles per 10 mm, prickles on buried horizontal internodes several (sometimes absent). **Leaves:** subopposite (visually opposite), pinnately lobed (= coarsely toothed), sheathing, without stipules, the lower leaf of pair commonly subtending flower and a divergent, slightly narrower branch; sheath monomorphic, open, overlapping (but margins separating with formation of flower or thickening of branch), ca. 3–4 mm long, entire and rounded below shoulder, with a few hard teeth along shoulder; blade stiff and brittle, oblong to linear, 5–30(–39) × 4–5 mm, the widest at base, pinnately lobed to toothed, the lobes toothlike and 5–13 per edge, opposite to alternate, deltate with a short, hard point, often aging purplish red, blade acute at tip, 1-veined, with 2–4 projecting prickles along lower midrib. **Inflorescences:** solitary unisexual flowers, axillary, bracteate (staminate flower), glabrous; bractlets (staminate flower) reportedly 2 fused into 1 spathe-like structure, fully sheathing anther, 3.7–5 mm long, membranous, pale purple prior to anther maturation changing to colorless when anther mature, constricted above anther into either a short neck 4-lobed with fingerlike, fleshy, translucent lobes or fused to form triangular to rectangular lobes and a 2-lipped tip above neck; pedicel (staminate flower) ca. 0.2 mm long and sometimes elongating at anthesis, whitish. **Staminate flower:** perianth present, clear, mostly fused with anther wall except at tip; **stamens** 1, free, sessile; anther dithecal and 4-chambered, oblong-ovate, 3–3.5 mm long, white, longitudinally dehiscent; pollen white. **Pistillate flower:** perianth absent; **stamens** absent; **pistil** 1, 2.7 × 0.8–1 mm; ovary superior, ellipsoid, ca. 1 mm long, 1-chambered with 1 basal ovule; style ca. 2 mm long, 2–3-branched, the branches stigmatic, spreading to recurved, equal or not, flat and narrowly acuminate, 1(–1.7) mm long, without sterile spiny processes. **Fruit:** utricle-like achene, indehiscent (decaying), 1-seeded, narrowly ovoid, ca. 5 mm long (including short beak and persistent stigmatic branches), the wall translucent with fine purplish streaks and adherent to seed. **Seed:** slightly compressed-ovoid, 3.5–4 × 2–2.2 mm, reddish brown, netlike and shallowly pitted. Mid-August–late October.

Native. Submersed aquatic herb to date found at low densities in Lake Sherwood but expected elsewhere in shallow, sunny fresh or brackish water during hot summer months. *Najas marina*, sometimes called spiny naiad, is the most distinctive submersed aquatic in range, by having hard prickles on the stem and hard, spinose leaves with stiff, deltate lobes (teeth). The axillary staminate flower is enclosed by a spathe, which is fairly easy to see in this species, and pollen is released as the pedicel forms, pushing the anther upward to force the pollen into the water column, where pollen grains must become attached to stigmas on other plants.

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