Common Name: BOOM'S QUILLWORT

Scientific Name: *Isoetes boomii* N. Luebke

Other Commonly Used Names: none

Previously Used Scientific Names: none

Family: Isoetaceae (quillwort)

Rarity Ranks: G1/S1

State Legal Status: Special Concern

Federal Legal Status: none

Federal Wetland Status: none

Description: Perennial **herb**, forming clumps in flowing water. **Rootstock (corm)** nearly round, with two lobes. **Leaves** numerous (over 50) and up to 18 inches (45 cm) long, bright green fading to pale at the base, flexible, and tapering to a pointed tip. Spores are produced in a **sporangium**, a small, brown-streaked chamber in the leaf base, with a translucent membrane (**velum**) covering approximately 30% of the chamber opening. Dozens of tiny **female spores (megaspores)**, approximately 0.6 mm across, may be seen with 10 - 20x magnification; these are white with brown streaks and covered with a densely congested pattern of narrow, inter-

connecting ridges. Light gray, dust-sized **male spores (microspores)** are produced on separate leaves but are indistinguishable without much higher magnification.

Similar Species: Quillworts are distinguished from flowering, wetland plants by their spongy leaves with conspicuous cross-walls **and** by the presence of sporangia in the flared base of the leaves. Southern quillwort (*Isoetes flaccida*) occurs in habitats similar to Boom's quillwort's and also has long, flexible leaves; however, its velum completely covers the spore cavity, which is colorless, not streaked with brown, and the megaspores are white with a bumpy surface. Georgia quillwort (*I. georgiana*) is similar but with wider velum coverage and a coarser megaspore ornamentation pattern (see full species account elsewhere on this website). Engelmann's quillwort (*I. engelmannii*) and Appalachian quillwort (*I. appalachiana*) have smaller megaspores with reticulate (honeycomb) ornamentation patterns and smaller velum coverages (less than 30%) over their sporangia. Winter quillwort (*I. hyemalis*) also has smaller megaspores with a coarse, low-spiny ornamentation pattern and smaller velum coverage (less than 25%) over the sporangia (see full species account elsewhere on this website).

Related Rare Species: Nine quillwort species are listed or considered of Special Concern in Georgia. Six of these are included on this website: Boom's quillwort (*Isoetes boomii*), Georgia quillwort (*I. georgiana*), winter quillwort (*I. hyemalis*), rush quillwort (*I. junciformis*), black-spored quillwort (*I. melanospora*), and mat-forming quillwort (*I. tegetiformans*).

Habitat: Shallow, flowing water of deeply shaded streams through swamps, with few or no associated plants.

Life History: Quillworts are seedless, non-flowering plants that reproduce by spores and have a short, fleshy, rootstock called a corm; leaves are produced on the upper surface of the corm, roots on the lower surface. The leaves wither during dry periods on exposed plants; however, the corm remains alive and will begin to produce leaves when there is adequate water. The leaves have hollow chambers at the base where two types of spores are produced: tiny, dust-sized microspores develop sperm-producing structures, and larger (though still minute) megaspores produce eggs. Sperm swim to the eggs in available water and unite to form new plants. Quillworts compete poorly with other aquatic plants and are typically found in relatively sterile sand or silt or in frequently water-worn sites that support few or no other vascular plants.

Survey Recommendations: Surveys are best conducted in late spring–early summer when plants are most conspicuous and leaves have not withered; mature megaspores are best developed in mid–late summer but can usually be found (from previous years' growth) in the soil at the base of plants in the spring.

Range: Four counties in the upper Coastal Plain of Georgia, one county in northeast Florida, and possibly one county in southeastern Alabama.

Threats: Ditching, draining, and filling in wetlands; impounding streams; clearcutting in swamps and floodplains; and trash dumping in wetlands.

Georgia Conservation Status: Four populations are known; all occur on private land.

Conservation and Management Recommendations: Protect floodplains and swamps from damming, clearing, draining, filling, and trash dumping. Maintain water quality (including nutrient and water temperature conditions) within local watersheds.

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L. Chafin and D. Brunton, Dec. 2008: original account
K. Owers, Feb. 2010: added pictures

Habitat