Common Name: GEORGIA QUILLWORT

Scientific Name: *Isoetes georgiana* Luebke

Other Commonly Used Names: none

Previously Used Scientific Names: none

Family: Isoetaceae (quillwort)

Rarity Ranks: G2G3/S2S3

State Legal Status: Special Concern

Federal Legal Status: none

Federal Wetland Status: none

Description: Perennial **herb**, forming clumps in flowing water and on exposed banks of woodlands streams. **Rootstock (corm)** nearly round, with two lobes. **Leaves** up to 16 inches (40 cm) long, olive green to blackish green, fading to white at the base, flexible, flared at the base

and gradually tapering to a pointed tip. Old, dark brown to black, leaf bases persist on the top of the corm. **Spores** are produced in the **sporangium**, a brown-streaked chamber, about ¼ inch (5 - 9 mm) long, in the leaf base, with a transparent membrane (**velum**) covering 55 - 60% of the chamber opening. Dozens of white **female spores (megaspores)**, 0.6 mm across (relatively large for *Isoetes*) and covered with broad, blunt-crested, and interconnecting ridges, may be seen with 10 - 20x magnification. Light brown, 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 Georgia quillwort's, and also has long, flexible leaves; however, its velum completely covers the spore chamber, which is colorless, not streaked with brown; its megaspores are much smaller and have a bumpy surface. Boom's quillwort (*I. boomii*) is similar but with shorter velum coverage and a more congested, intricate 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 (honey-comb) ornamentation patterns and smaller velum coverage (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: Seasonally or permanently flooded sands and silty sands along small streams in mature swamps with few other associated plants.

Life History: Quillworts are seedless, non-flowering plants that reproduce by spores. Quillworts 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; 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: Five counties in the Coastal Plain of Georgia.

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

Georgia Conservation Status: Thirteen populations are known, none on conservation land.

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

Selected References:

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

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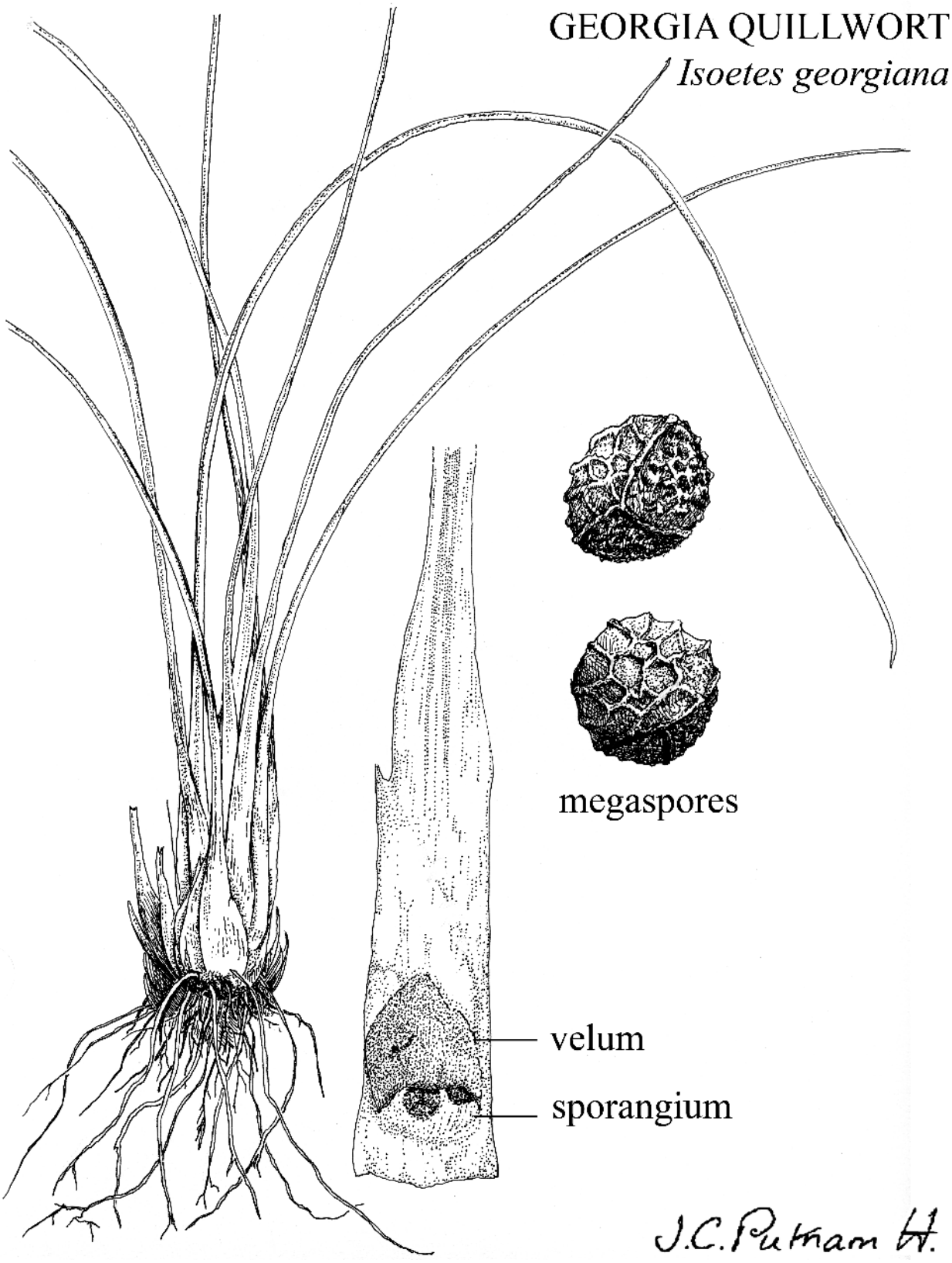
Isoetes georgiana



Habitat