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OBSERVATIONS AND NOTES ON THE BIOLOGY AND ECOLOGY OF FEATHERFOIL
(*HOTTONIA INFLATA*) IN DELAWARE

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Featherfoil (*Hottonia inflata* Ell.) of the Primulaceae, the Primrose Family, is an obligate wetland plant with a curious appearance and a fascinating lifecycle.

In Delaware, featherfoil is found growing primarily in Coastal Plain seasonal ponds and occasionally in beaver ponds. Coastal Plain seasonal ponds are ground-water depression wetlands that occur within woodlands and forests. They are typically flooded in the early spring when the ground-water table is high, and are dry in late summer when the ground-water table is low. Coastal Plain seasonal ponds are home to a diverse suite of plant species, many of which are rare or uncommon in Delaware. In addition, Coastal Plain seasonal ponds provide critical breeding habitat for frogs and salamanders.

Featherfoil has a very unique and interesting appearance. The plant is branched apically (at the tip) into many erect, hollow, inflated, leafless flowering stems that are contracted at the nodes (position on the stem where leaves, flowers, or branches originate). The pedicellate (with a stalk to a single flower) flowers, which are white with 5 petals, occur in whorls (a ring-like arrangement) at the nodes, and the fruiting capsules are many seeded. At the base of the flowering stems are submersed leaves that are pectinate (comb-like) in form and have the appearance of a feather, hence its common name.

Featherfoil is an annual species and its life cycle is totally dependent on the fluctuating water levels that occur in wetland types such as Coastal Plain seasonal ponds. In early spring, usually in April when the ponds are flooded, featherfoil begins to flower. The hollow, inflated stems actually float at the water's surface and are rooted in the pond bottom by a long, nearly naked vegetative stem. Flowering usually lasts for two-to-three weeks and seeds mature soon after flowering ceases. Mature seeds then fall from the plant and sink through the water column of the still flooded pond. The seeds come to rest on the pond bottom, where they wait patiently while the pond slowly draws-down through the summer. In late summer after the pond has been dry for a period of time, seeds of featherfoil begin to germinate, usually in September or early October. After germination, a small rosette (a dense radiating cluster of leaves at ground level) develops that is about two inches across and pectinate in form. The rosette will remain green through the winter even as the ground-water table rises and the ponds flood. The high waters likely protect the rosettes from cold winter temperatures. After a long winter sleep, something then triggers the plant to develop a stem that climbs to the water's surface. I have observed featherfoil flowering

in over three feet of water, so that climb to the surface can sometimes be quite an effort. From the stem, flowers develop and once again the reproductive process begins and the cycle repeats.

Featherfoil has been known to perform a disappearing act, meaning, it can be present in high numbers at a particular site one year, but be completely absent the next, then reappear in the future. This appearance/disappearance regime may be a result of several factors. One factor being less than satisfactory growing conditions, e.g., the ponds never draw-down in a particular year allowing time for winter rosettes to develop. Another factor, as some researchers have suggested, may be that featherfoil functions on a two-year lifecycle instead of annually, i.e., seeds germinate after two years and not during the first.

In the eastern U.S., featherfoil is more southern in its distribution. It occurs sporadically along the Atlantic Coastal Plain from Maine to Florida, but is rare and uncommon in the northern portions of its range. In Delaware, featherfoil is considered to be a rare species and is known from less than 20 distinct populations.