NEW ENGLAND NOTE

LIMNODIUM SPONGIA (HYDROCHARITACEAE)
DISCOVERED IN NEW ENGLAND

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Limnodium spongia (Bosc) Steudel CONNECTICUT: Tolland Co., NE Mansfield, Cabin Rd., 0.15 km S of Windham Co. line, 0.9 km E of Wormwood Hill Rd., S end of Knowlton Pond, wet sandy margin along E side of fire department access, 9 Sep 1998, Les and Capers s.n. (CONN).


Two disjunct, northern populations of Limnodium spongia are known from New York state (Monroe and Yates Counties) and there is one unverified record from Lake Co., Indiana (Catling and Dore 1982; Cook and Urmí-König 1983). Up to this time, L. spongia has not been reported from any of the New England states.

On September 9, 1998, the authors took students in their Aquatic Plant Biology class on a field trip to Knowlton Pond (Tolland Co.), Connecticut. This small pond, approximately 1.5 mi. east of Storrs, has been visited by the senior author every year since 1992. On this occasion, we discovered small plants of a species not seen previously at the site, which we immediately recognized as belonging to either Limnodium or Hydrocharis of the Hydrocharitaceae. We were concerned initially that the plants might be H. morsus-ranae L., an invasive nonindigenous aquatic
plant introduced into the St. Lawrence River region of Canada and the northern United States (Catling and Porebski 1995). Although distinctive in flower, these genera are similar vegetatively and require close examination for correct identification (Catling and Dore 1982; Cook and Urm-König 1983). Using the vegetative features emphasized by Catling and Dore (1982), we subsequently identified the material as *L. spongia*. A voucher specimen has been deposited in the University of Connecticut herbarium (CONN). Interestingly, this is the second new record of aquatic Hydrocharitaceae in New England within the past decade (see Les et al. 1997b).

The Connecticut population of *Limnobium spongia* consisted only of a few small, emergent plants which were rooted in moist sand along the shore of an access site to the pond. A more extensive search by canoe failed to disclose additional occurrences of the species at the site. *Limnobium* overwinters as green plants where winter temperatures remain above 0°C, but in northern latitudes, it must overwinter by modified compact buds or by seeds which cohere in gelatinous masses (Cook and Urm-König 1983). Because the Connecticut *Limnobium* plants occurred considerably north of their normal range, were small and remained vegetative late in the season, and grew rooted (cf. the floating habit usually exhibited by this species), our impression was that the population probably would not persist. The small vegetative plants could not have produced seed, did not appear to possess any vegetative buds, and would likely be killed by the winter freeze. As expected, a survey of the site on May 3, 1999, failed to detect any surviving plants. A larger disjunct northern population discovered in Monroe Co., New York, in 1828 had disappeared from that site by 1895 (House 1924). Mitchell and Tucker (1997) categorized *L. spongia* as a nonpersistence introduction in New York.

The sources of disjunct populations of *Limnobium* in Connecticut and elsewhere in the northern United States are uncertain but they are unlikely due to escapes from cultivation. Although *Limnobium* has been recommended as an aquarium and water garden plant since the turn of the century (Bisset 1907; Tricker 1897), the early New York record substantially predates the popularity of water plant cultivation in the United States. The Connecticut site has no history or association with water plant cultivation.

Lowden (1992) concluded that dispersal of *Limnobium* in the
United States has occurred by natural agents and not by introductions. The immature condition of the Connecticut plants led us to conclude that Limnobium was dispersed to this site by waterfowl. Any escapes from cultivated sources most likely would have been evidenced by the presence of mature, floating plants. The small plants that we observed appeared to be seedlings, which are known to float or eventually establish on the shore (McAtee 1939). Limnobium seeds are consumed by waterfowl and can be fairly important as a local food item within the Mississippi embayment area (Martin and Uhler 1939). Limnobium seeds have been occasionally reported from stomach content analyses of green wing teal and pintail ducks, but they have been found in up to 65–90% of wood duck stomach contents (Mabbutt 1920). Wood ducks have been observed at Knowlton Pond from July to October and probably visit the pond every year (G. Clark, pers. comm.).

Where common, Limnobium fruits are important as a duck food, and have been found in nearly 8% of mallard duck stomachs surveyed, with some individuals containing up to 10,000 seeds (McAtee 1918, 1939). Limnobium is also used by golden-eye, old squaw, and ringneck ducks (Cottam 1939). Although Limnobium may not be a major waterfowl food, its occasional consumption provides an adequate mechanism for seed dispersal. The apparently low establishment rate of North American frogbit in the northeast may be due to its tropical affinities (Lowden 1992), or to the scarcity of alkaline, hardwater, nutrient-rich lakes where it usually occurs (Hoyer et al. 1996).

Although Limnobium spongia is indigenous to North America, it is capable of weedy growth in certain areas. The United States Geological Survey lists L. spongia as a nonindigenous aquatic monocot because it has been introduced outside of its natural range (http://nas.er.usgs.gov/monocots/monocotslist.htm). Steward (1990) characterized L. spongia as potentially problematic in the eastern United States. In other parts of the country (where it is native), L. spongia is as troublesome as some truly nonindigenous species (Knight 1985). Limnobium spongia can assume “water hyacinth-like growth” and it is controlled regularly in certain Florida localities (Bodle 1986). It hinders navigation in Florida’s St. Johns River where it is targeted for control more often than water hyacinth (Knight 1985). Once established, control of L. spongia by standard management approaches is prob-
lematic (Knight 1985). It is appropriate to note that phylogenetically, *Limnobium* is the sister genus (and consequently is similar genetically) to *Hydrocharis* (Les et al. 1997a), which is known to be invasive in northern North America.

It is difficult to evaluate whether the possible range extension of *Limnobium* into New England might pose a serious threat. It has not become established widely in the northeast, possibly because of inappropriate acidic, softwater habitats. Its limited availability as a water garden and aquarium plant would indicate that introductions would occur mainly by waterfowl seed dispersal. However, once established, its capacity for both vegetative and sexual reproduction makes it a potentially invasive species. Consequently, any new localities of *L. spongia* in New England merit surveillance, and efforts should be made to search for new populations, particularly in areas where alkaline hardwater lakes occur.

**ACKNOWLEDGMENTS.** We thank George Clark and Les Mehrhoff for their helpful comments and advice.

**LITERATURE CITED**


