

New England Botanical Club – Minutes of the 959th Meeting

2 June 2000 Prepared by Lisa Standley, Recording Secretary pro tempore

The 732nd meeting of the New England Botanical Club, Inc. being the 959th since its original organization, met on Friday, June 2, 2000 in the Dwight Hall Auditorium at Mount Holyoke College in South Hadley, Massachusetts with 15 members and guests present.

President Lisa Standley thanked the meeting's host, Dr. Aaron Ellison, for sponsoring and organizing the meeting and field trips. She asked that members return the "Membership Survey" forms included in the June meeting mailing to enable the Club's Council to better plan for the coming year and to update the membership directory. She summarized the afternoon's field trip and reminded members of the upcoming Gaspé field trip in July.

Aaron Ellison introduced the evening's speaker, **Dr. Elizabeth Farnsworth**. Dr. Farnsworth studied botany and ecology at Brown University and the University of Vermont and then obtained her doctorate at Harvard University before serving as The Nature Conservancy's Director of Stewardship in Connecticut. She spoke on "**Present and future impacts of invasive plant species on wetland systems**," discussing the impacts that invasive species currently have on wetland systems and what impacts they may have in a future of climatic change. Thunder rolled as she stood up to speak on three interrelated studies of invasive wetland species.

Based on county-level floras and checklists, Massachusetts and Connecticut currently have the largest number of invasive plant species (approximately 60 and 50, respectively) and observed invasions. GIS mapping indicates that Fairfield County in Connecticut, and Norfolk, Middlesex, and Hampshire Counties in Massachusetts are hot spots. Maine, Vermont, and (interestingly) Rhode Island appear to have relatively few invasive species. Invasive plant species of wetlands show similar trends to the larger pool of terrestrial invasives. There is a positive correlation between the number of invasive species and the size of the human population. This suggests that research in areas with high levels of invasives should focus on understanding the effects of invasive species, while research in the northern New England states should focus on control of new outbreaks.

Dr. Farnsworth described case studies on *Lythrum salicaria* (Purple Loosestrife) and *Phragmites australis* (Common Reed) in Connecticut. Studies of wetlands with *Lythrum* showed that it did not suppress diversity of other plant species, but did reduce biomass of those species. Interestingly, stands dominated by *Lythrum* had 2 to 3 times as much total biomass as stands dominated by native wetland species, suggesting that *Lythrum* may capture resources more efficiently than other species and that the wetland's nutrient and detrital dynamics may change with *Lythrum* dominance. *Phragmites australis* was studied at the Chapman Pond site on the Connecticut River, where 'Phrag' had been removed from 2 sites by spraying glyphosate herbicide. The study found that removal was associated with a dramatic increase in the abundance and diversity of other wetland species. This resulted in a wetland species composition similar to undisturbed freshwater tidal marshes, but also showed that the *Phragmites* recolonized rapidly.

Dr. Farnsworth looked at the future of invasive species dynamics in the probable scenario of continued increases in atmospheric CO₂ and other greenhouse gas emissions, particularly because marshes are currently effective as carbon sinks. She examined the ways that photosynthesis and water use differ among invasive (*Phragmites* and *Typha angustifolia*) and non-invasive (*Leersia orzyoides* and *Spartina alterniflora*) species of freshwater and salt marshes with respect to the seasonal length of effective photosynthesis, photosynthetic rates, and nutrient balance. She concluded that *Phragmites* may be vulnerable to sea level change, because it is less salt-tolerant than other species, but may increase in freshwater marshes because it assimilates and converts carbon to biomass more efficiently. Cattails (*Typha*) may increase in marshes that experience rising CO₂ and sea level. Research is clearly needed on other aspects of the carbon cycle, including the effects of respiration and litter decomposition, in order to fully understand the likely future dynamics of invasive species and their impacts on native wetland ecosystems. Changing species composition in wetlands toward dominance of one or two invasive species will likely alter carbon cycling in wetlands, which in turn may have a feedback effect on climate. We are only beginning to understand the immediate and long-term ecological effects of invasive species.

The meeting adjourned for refreshments at 8:30 PM to the Mt. Holyoke College greenhouses, where members admired rare orchids and Dr. Ellison's experimental *Sarracenia* bogs.

Friday Field Trip 2 June 2000

Mt Tekoa in Westfield, MA, was climbed by 14 members and guests to examine the effects of repeated fires on a rocky outcrop community. The mountain is a prominent rocky ridge behind the former Strathmore Paper Company mills and is a prominent landmark viewed from the eastbound Mass. Turnpike. The ridge has burned twice in the last 6 years. The group hiked up through densely re-sprouting oaks, hickories, red maples, chestnut, mountain laurel, and witch hazel to the summit, where the oak-pitch pine community was starting to regenerate. Several species of *Vaccinium* were dominant and promised good berry-picking later in the season. Highlights of the walk included the ant-dispersed sedge, *Carex umbellata*, *Asclepias purpurascens*, and *Geranium bicknellii* or *carolinana*. Thirteen species of *Carex* were observed blackflies, thunder, lightening, and a brief downpour added to the group's enjoyment of the walk, and presaged the raging torrents of rain, hail, and wind in the early evening that toppled sugar maples on the Mount Holyoke campus.

Saturday Workshop and Field Trip 3 June 2000

Five members participated in a workshop by Lisa Standley on the identification of *Carex* on Saturday. Following a lecture and slide presentation, which included discussion of the best keys and references as well as important diagnostic features, the group hiked up Bare Mountain in the Holyoke Range to look for sedges. Twelve early-flowering woodland species were observed, including *Carex platyphylla*, *C. albursina*, *C. laxiflora*, *C. digitalis*, *C. communis*, *C. albicans*, and *C. hirsutella*. The Woodland Bulrush, *Scirpus verecundus*, was abundant.

A small group journeyed to nearby Lawrence Swamp and Elf Creek Conservation area to hunt for ferns. Led by the intrepid Don Lubin, the group searched successfully for a nice population of

Lygodium palmatum at Elf Creek, but failed to find the reported *Ophioglossum pusillum* (nee *O. vulgare*) at Lawrence Swamp. Other highlights of the natural areas and Caroline Arnold's garden in North Amherst included *Dryopteris clintoniana*, *Botrychium*, and *Selaginella apoda*.