

New England Botanical Club – Minutes of the 955th Meeting

4 February 2000 Prepared by Don Hudson, Recording Secretary

The 728th meeting of the New England Botanical Club, being the 955th since its original organization, met on Friday, February 4, 2000 at the Biological Laboratories of Harvard University in Cambridge, Massachusetts with 43 members and guests present.

President Dave Conant introduced the names of four new members and invited announcements and items of business. Announcements included messages about the recent passing of two internationally known and respected botanists: G. Ledyard Stebbins and Warren H. Wagner. Lisa Standley said that Stebbins, who died at the age of 94, attended last year's International Botanical Congress and was seen passing out business cards with his e-mail address. Art Gilman, who just last year spent time botanizing with Herb Wagner in Alaska, told us that Herb's wife, Florence, and Donald Farrar would attempt to complete some of Herb's unfinished work on the genus *Botrychium*. He was in his eightieth year and was a speaker last April at the Centennial celebration for *Rhodora*. New Business featured Don Hudson, Chair of the Nominating Committee, presenting a slate of candidates for Club officers and openings on the Council. Officer changes proposed include Lisa Standley for President, Paul Somers for Vice President, and an unfilled Recording Secretary position. To nominate someone for the latter position, or any other, prior to the March election, Don explained that the nomination should be presented with three signatures of support to the Corresponding Secretary no later than ten days before the next meeting. Lisa Standley then introduced the speaker for the evening.

Michele Dionne, an aquatic ecologist and Research Director at the Wells National Estuarine Research Reserve in Wells, Maine, spoke on the topic: "Is the tide turning for salt-marsh ecology and restoration in the Gulf of Maine?" The presentation centered on ecological research and habitat restoration efforts at the Wells Reserve, one of 25 federally designated coastal research reserves, and a few other salt marsh locations in the Gulf of Maine. Describing salt-marshes as "New England's native grasslands," Dr. Dionne highlighted some of their functions and values. Ecologically, they contribute to shoreline anchoring, storm surge buffering, water quality, and habitat for wildlife, fish, and shellfish. For our human society, she noted that there are recreational, commercial, aesthetic, educational, and historical values. In the Gulf of Maine salt marshes, where mean tide ranges are typically 8-10 ft., there is a close relationship between elevation and vegetational zones, as one might expect. Here one finds *Spartina patens*, salt-marsh hay dominating high marshes and the taller *Spartina alterniflora*, which has the capability of exuding salt from specialized cells on its leaf blades, in the low marshes. She described the niches of some of the other plants of the salt-marshes as well, including *Phragmites australis* and *Typha angustifolia* which occupy the high edges of the salt-marshes and often take over when the hydrologic regime is altered. Dionne described several types of salt-marshes in Maine: 1) back barrier marshes, the typical coastal marsh; 2) fringing marsh, the narrow bands of salt-marsh lining miles of major rivers like the Kennebec and Penobscot, and 3) finger marshes, those found in "drowned valleys" associated with coves and bays.

The oldest salt-marshes in New England are reported to be about 5000 years old. Despite changing sea-levels during this time, they have persisted through accretion of new peat that

builds up in response to new sediments brought in by the tides. Dionne emphasized that, conversely, natural events or human activities, such as the construction of roads, beach barriers, jetties, or stream control gates, can interfere with this accretion, causing rapid erosion of salt-marsh habitat. Tidal restriction can lead to such events as subsidence from oxidation of peat, restricted fish passage, less exchange of nutrients and organic matter, water freshening, encroachment by invasive species, and incremental development. The Little River at the Wells Reserve is one of the few rivers and salt-marsh systems that is minimally impacted in the above ways. The Drakes Island marsh system on the southern edge of the Wells Reserve, on the other hand, has been impacted by a number of things including a road built on a berm across the marsh's north end. A water control gate was installed where the Webhannet River went under the road, thus preventing spring tides from entering the marsh from the estuarine lagoon to the east. The gate fell off this structure in 1988, partially restoring the tidal influence. In 1991, scientists began monitoring the changes to the upper marsh (above the gate) where three feet of elevation had been lost from years of abuse. Salt-tolerant plants and marine fish quickly returned to the area, and by 1998, soils were stabilized and a low marsh vegetation dominated by *Spartina alterniflora* was well established in the area. In 1999, *Spartina patens* was observed colonizing upper edges despite the marsh still being lower than normal. A return to a high marsh is presumed to be many years away yet. In contrast, researchers found a much more rapid restoration of Mill Brook Marsh, located near the mouth of the Squamscott River which flows into Great Bay in Stratham, New Hampshire. It had a somewhat similar history of road impact and gating in 1970 followed by flow restoration in fall 1993. Before restoration, purple loosestrife had become a dominant species in the upstream marsh. Five years after removal of the tide gate and installation of a large culvert, the purple loosestrife was gone and a salt-marsh with three taxa of *Spartina* had been restored.

"Have we stemmed the tide?" Dionne asked rhetorically at the end. Her answer is that we are returning the tide to historical salt-marsh communities in many cases but that many obstacles still exist to maintaining their normal function. There is much concern about development along beaches and upland edges, for instance. Also, there are concerns about predation by the introduced green crab on soft shell clams, an important indigenous species in the marsh ecosystem. It appears that the Wells Reserve is key to research and education on these issues for Gulf of Maine towns where salt marsh restoration is needed and maintenance is forever.