New England Botanical Club- Minutes of the 991st Meeting
3 October 2003 Jennifer Forman, Recording Secretary

The 764th meeting of the New England Botanical Club, being the 991st since its original organization, met on Friday, October 3, 2003, in the Lecture Room of the Fairchild Biochemistry Building, Divinity Avenue, Cambridge MA. There were 56 members and guests in attendance.

President Paul Somers called the meeting to order, and announced four new club members. Council members presented summaries of this past summer's outings to Ashburnham, MA and Nantucket (photos to be posted on the club's web site). The club also took a moment to recognize members who have recently passed on: Craig Greene, Richard A. Howard and Wesley N. Tiffney, Jr.

Following other announcements, Art Gilman introduced the night's speaker, Bill Patterson, from the University of Massachusetts, Amherst. The club had long been looking forward to Bill's talk, which was postponed last February due to inclement weather. Bill, who has been interested in fire ecology since his undergraduate years, is currently a National Park Service certified "Burn Boss" and also instructs The Nature Conservancy in burning techniques.

Bill noted that for over 60 years, American society has been trained to follow the mantra of Smokey the Bear: forest fires are bad. Providing land managers and the public with the historical background of an ecosystem aids in convincing them to trust in the ability of fire to maintain that ecosystem. Historical records indicate that Native Americans practiced regular burning of the landscape. However, some people now believe that there has been some exaggeration as to how frequent and widespread the burning was. To investigate this, Bill and his team laid a series of $20m^2$ plots at the Cape Cod National Seashore (CCNS). These plots, monitored over the past 18 years, were subjected to combinations of the following treatments: burning/mowing during the growing season, at 1-4 year intervals, or left unburned. After 2-3 years, the plots that were burned annually had so little fuel remaining, it was difficult to even start fires in them. New species were not recruited with this burning regime, and the plots did not convert to grassland, indicating that although Native Americans may have burned land annually, they could not have been burning the same tracts of woodlands as frequently as has been assumed.

Determining an ecosystem's "fire history" can be difficult in New England, because there are so few older trees that scientists can examine for scarring patterns in order to estimate when fires occurred. One technique that has been successful is the examination of the sediment of pond cores. Using pollen grains and charcoal present in these cores, scientists have been able to determine the composition of ancient forests as well as the occurrence of fires.

To determine how best to manage the Atlantic white cedar swamp at Marconi Station on the CCNS, the only major population of this species on Park Service land in 1980, a core of the swamp peat was taken. The Park Service was concerned that with total fire suppression, the cedar was in danger of being replaced by red maple. The 1000-year-long core revealed that the cedar had only become abundant over the past 350 years, possibly due to a major fire that occurred. Prior to the fire, the population had fluctuated continuously in response to periodic fires, which probably originated in the upland. The amount of charcoal in the core indicated that these fires were large, and therefore too risky to reproduce in modern times. Because the cedar continues to thrive without fire, there was no need to harvest or burn the stand in the immediate future.

There are a variety of techniques now used to develop and implement a burn plan. Past fire occurrences are investigated with satellite photography, and burn crews frequently have helicopters to assist them. Crews sometimes use chemical-filled "ping pong balls" to start mini-fires before the main burn; sending in the ping pong balls ahead of time ensures that there are burned out areas inside the targeted plot, which keeps the fire from spreading out of control. For safety reasons, Bill and other burn bosses have had to work closely with fire departments, and for most burns there is backup equipment present in case of emergency. The Air Quality Division of the Department of Environmental Protection monitors smoke production, further constraining the burning that can be done. Bill noted that he has never had a fire escape from the control of one of his crews, but is well aware of the nuisance that occurred when a seven-acre fire planned in Albany, NY, a few years ago instead burned through 75 acres of land.

Dr. Patterson shared some of the valuable experience he has acquired in his twenty years of practicing fire ecology. For many years, it was standard to burn only in the spring, and Massachusetts granted permits only for that time of the year. While working on Nantucket in 1983, his crew was granted a permit to burn in August, for a project to prevent shrub succession in sandplain grasslands. He has since learned that the best way to control many hardwood species is to cut or burn them in mid-summer. At that time of year, the fires are intense, but don't spread as fast as those set in the spring, reducing the chance of the fire escaping from the control of the burn crew. Bill ended his talk by recommending that land managers seeking to control shrubs and trees should employ a burning regime during the growing season; if land is burned during the dormant season, the treatment will have to be repeated annually just to maintain the status quo.