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NEBC Meeting News

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December 2010. Bryan Hamlin, Chair of the Friends of the Middlesex Fells and former recording secretary for the NEBC, presented "Changes in the Flora of the Middlesex Fells Reservation. Over the Last Century: Some Disappointments, Several Pleasant Surprises, and Why." The history of the Fells as a reservation began when Elizur Wright, a Medford, Massachusetts mathematician and abolitionist, founded the Middlesex Fells Association in 1880 and deeded property in the Pine Hill area to the future reservation. The Metropolitan Park Commission officially created the reservation in 1894. In that year and in 1895, Warren Manning, an employee of Frederick Law Olmsted, organized a team of botanists to inventory the Fells, Blue Hills, Beaver Brook, and Stony Brook reservations. At the urging of Manning, Walter Deane compiled and published the floristic inventory in 1896. (Interestingly, these floristic inventories have a long relationship with the NEBC, which was also founded in 1896, with Walter Deane as its first vice president.)

Manning and Deane initially documented 677 vascular plant species; 37 ferns, 7 conifers, and 633 flowering plants. Of the 677 species, 580 or 86% were native and only 14% were introduced. For a century, no reports were written but 58 previously unrecorded species were collected in the Fells and deposited at the Harvard University Herbaria. Nathaniel Kidder collected 31 of these species while he was president of NEBC from 1919- 1923. Only one new species was collected between 1932 and the current study when, in 1975, the globally restricted and state watch-listed species *Coreopsis rosea* was pressed by Walter Kittredge, the Club's current assistant curator of vascular plants. Between the time of Deane's flora and today, a great deal of disturbance and land modification has occurred. To list a few major events: Spot Pond was expanded, the Stone Zoo was built, a trolley line was constructed, hardwood trees were logged off and replaced with pines to increase the reservoirs' water quality, the 1938 hurricane hit, an army unit was based in the Fells, and I-93 was constructed through the middle of the reservation. In 1996, Brian Drayton and Richard Primack of Boston University published in the journal *Conservation Biology* that over the past century, 155 vascular plant species had been lost in this biologically isolated reserve, that exotic species had increased from 14 to 26%, and that 36 new species had been found, seven of these being native.

Beginning in 2003, a multi-disciplinary team began to form to tackle a comprehensive assessment of floristic diversity of the Fells.

Bryan Hamlin teamed up with Betty Wright, Don Lubin, and Walter Kittredge, with further help in the field from Irina Kadis, Alexey Zinovjev, Lisa Standley, and Tom Rawinski, and help in identifying samples by other NEBC members. During the eight-year study, Hamlin for example, made nearly five hundred visits to the reservation. The Fells team collected 250 specimens and 1,800 photographs while observing 864 vascular plant species. Both the 2003 and 1895 surveys recorded almost the same number of native species (580 and 579 respectively), though the number of exotics tripled in the current plant list. Though the number of native species stayed the same, the composition changed significantly, with 123 new species observed by the 21st century group that Deane had not reported; and with 124 species present in 1896 that could no longer be found. However, 98 of these had been noted as uncommon in the original survey. In part, the increase in introduced species is likely caused by introduction of more species from elsewhere in the world and also the increase of edge habitat created by the numerous roads and trails that now cut through the reserve. Additionally, climate change and succession are playing roles, with the reserve being more forested and precipitation 29.5% higher than a century ago. This may explain a 10% rise in wetland species being reported, and deep-forest species such as spotted winter green and squawroot increasing dramatically in comparison to Deane's survey. The 21st century survey found that the majority of the species reported as lost by Drayton and Primack, are in fact still present.

Though an urban reserve, the Fells is a jewel covering 2,575 acres with varied plant communities from dry, pitch pine hilltops to lakes, and over 100 vernal pools. Its significant plant diversity is in part due to the three different types of bedrock that lie beneath it, including the higher pH and richer Medford dike. Though it has its challenges, this reserve is a wonderful example of how land preservation can sustain biodiversity even in an urban context, with 85% of the native plant species still found over 100 years later, including two plants on the state endangered species list and 11 others that are on the Massachusetts Natural Heritage and Endangered Species Program's watch list. Bryan and his team's efforts have provided a wonderful baseline for a comparison study to be done by intrepid botanists another 100 years from now.

-- BRYAN CONNOLLY, Recording Secretary.