

New England Botanical Club – Minutes of the 972nd Meeting

2 November 2001 Karen Searcy, Recording Secretary *pro tempore*

The 745th meeting of the New England Botanical Club, Inc., being the 972nd meeting since the original organization, met in the Lecture Hall of the Fairchild (Biochemistry) Building, Harvard University, Cambridge, Massachusetts, on Friday, 2 November 2001. President Lisa Standley called the meeting to order with 41 members and guests present. Two new student members were announced. Lisa announced that the CD-ROM version of Robert Bertin's "Vascular Flora of Worcester, Massachusetts" is available for \$12.00. Paul Somers also announced that the Sorrie and Somers "The Vascular Plants of Massachusetts: A County Checklist" is available for \$5.00. Les Mehrhoff mentioned that it was Albion Hodgdon's birthday. He also brought in a couple of invasive plants, kudzu, which can now be found in Massachusetts, and *Hydrilla*, an invasive aquatic that has apparently established in Connecticut.

Paul Somers introduced the evening's speaker. Jennifer Forman is a graduate student in the Ph. D. program in the Biology Department at the University of Massachusetts-Boston and is also the student representative to the NEBC Council. She presented a talk titled "Through the Looking Glass: History and Consequences of the Introduction of American Species into Europe."

Jennifer introduced the topic by pointing out that although there was a high level of concern about invasive plants in the United States, many of which were introduced from Europe, few have explored the fate of American introductions into Europe. Jennifer has conducted an extensive literature review and developed a database of 6000 American (North, Central, and South American) plant introductions into Europe to address that issue. Her talk was focused on how the exchange of plant species between Europe and America affected the floras of each region and the history and current status of American plants introduced into Europe.

In developing her database, Jennifer grouped introduced plants into four categories. In the first category are benign introductions; this group includes plants that cannot grow on their own in the new area. The second group includes casuals and escapes that are occasionally found outside cultivation, but are not able to maintain their populations. The third group consists of naturalized plants that are able to establish populations and reproduce in the wild. Finally, there are the invasive or weedy species that are established and spreading.

Approximately 26% of the flora of North America consists of naturalized plants, with European introductions having a particularly large impact. Most introductions were intentional and followed colonization, but plants were also introduced accidentally. Currently, about 7% of the North American flora can be considered invasive. Examples of European plants that are now invasive weeds include *Lythrum salicaria*, *Cytisus scoparius*, and *Vincetoxicum nigrum*.

As with European introductions to America, most introductions of American plants into Europe were deliberate. Trees such as *Pinus strobus*, *Picea sitchensis*, and *Prunus serotina* were introduced so they could be used in ship building and for fuel. Other plants were sent to physic gardens where they were valued for their medicinal properties (e.g., *Sassafras albidum*, *Podophyllum peltatum*) or because of their horticultural interest (e.g., *Chrysolepis chrysophylla*, *Cypripedium acaule*). Many of the prominent names in North American botany, such as Mark Catesby, John Bartram, André Michaux, and John Tradescant, were responsible for introductions through the seed and other plant material they sent back to Europe. For example, Tradescant and his son introduced *Robinia pseudoacacia*, *Rhus typhina*, and *Liriodendron tulipifera* to England. As in America, other introductions were accidental and arrived in Europe along with textiles, in ship's ballast, or with transported animals. Some of the American species introduced into Europe, including the orchid *Bletia purpurea* and the cactus *Echinocereus triglochidiatus* remain in cultivation to this day. Others, such as *Tradescantia pallida*, are occasional escapes. A few, including *Pinus radiata*, *Lysimachia terrestris*, and *Mimulus guttatus*, have become naturalized. Some of the naturalized plants, such as *Rhus typhina*, *Rudbeckia hirta*, and *Phytolacca americana* are weedy in the United States. Of the approximately 6000 introductions to Europe from America in her database, about 8% have become either naturalized or weedy in Europe.

Jennifer pointed out that there have been a number of explanations as to why so many European plant species are invasive in America, but not vice versa. One suggestion is that the Old World species are better weeds in that they grow faster and produce more seeds. A second explanation is related to the fact that immigration rates were much greater from the Old World to the New. It may also be that ecosystem damage due to deforestation and post-colonization grazing facilitated the establishment of introduced species.

Using contingency tests, Jennifer was able to test several ideas about the species introduced to Europe from America. She was able to show species from some families (e.g., Poaceae and Amaranthaceae) were more likely than those from other families to become weedy. In addition, the latitude of the origin of the species affected the probability that a species would become naturalized in Europe. For example, more species from North America are naturalized in Europe than those introduced from Central or South America. She also showed a very clear positive relationship between the number of methods of introduction and the likelihood that a particular species would become established. Finally, she pointed out that the weediness of a species in America was a good predictor of whether a species would become established in Europe. She concluded by

suggesting that a warning list be made available for the 222 weedy American species introduced into Europe that are not yet invasive there.