

New England Botanical Club - Minutes of the 996th Meeting 2 April 2004

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The 769th meeting of the New England Botanical Club, being the 996th since its original organization, was held on Friday, April 2, 2004, in the Lecture Room of the Fairchild Biochemistry Building, Divinity Avenue, Cambridge MA. There were 33 members and guests in attendance.

President Art Gilman called the meeting to order. Following introduction of new members and several announcements, the club heard from Pat Swain, who announced this year's recipient of the Graduate Student Award, Krissa Skogen of the University of Connecticut. George Newman then wowed everyone with a bouquet of pitcher plant flowers, large pink blooms with cream-colored styled from the potential new species *Sarracenia rosea*.

Vice President Karen Searcy then introduced the night's speaker: Julie Dragon, a Ph.D. candidate at the University of Vermont. Julie, who received the club's Graduate Student Award in 2003, spoke about "*Carex lenticularis* and its allies: Phylogeny, biogeography, and species delimitation."

Carex is a cosmopolitan genus of approximately 2500 species of sedges. When Julie first became interested in the genus, she spoke with Lisa Standley, past NEBC President and resident *Carex* expert. Lisa recommended exploring the acuta complex, 12 species in section *Phacocystis*, with a chromosome range of 42 to 46. For her Master's Thesis, Julie investigated the cohesiveness of the acuta complex and its possible sister complexes. She began by collecting samples of all of the acuta species, along with other *Carex* in section *Phacocystis*, and some from sections with a putative sister affiliation. The species she collected came from many locations, including Vermont (*C. lenticularis*) and Quebec (*C. palaceae*). She also received samples from places as diverse as Washington state (*C. lenticularis* var. *lipocarpa*), Iceland (*C. nigra*, *C. rufina*, *C. bicolor*), Argentina (*C. decidua*), and Denmark (*C. trinervis*).

Julie sequenced DNA from each sample, focusing on two ribosomal DNA spacers: ITS and ETS. With strict consensus of two parsimonious trees, she found that *C. torta*, *C. gynandra* and *C. crinita* were separated from the rest of the taxa by *C. podocarpa* of section *Scitae*, indicating that *Phacocystis* is a polyphyletic section. The data further revealed that the *Carex acuta* complex was not a natural complex, but rather consisted of two groups, with major taxa between them. Further support for the clades identified by the data included geographic cohesiveness, with species grouping according to their native ranges: Eurasia, Austral Asia, and America.

For her Ph.D. research, Julie is looking more closely at the American clade, group *lenticularis*, which includes *Carex lenticularis* and its allies, and *Carex aquatilis*. While *C. aquatilis* is monophyletic, *C. lenticularis* is not, with its western varieties sister to *C. aquatilis* and its eastern varieties sister to the amphi-Atlantic *C. rufina* and South American *C. decidua*. She has completed additional sampling within the clade and will be adding chloroplast DNA sequences to the molecular analysis. Sedges from Mexico (*C. hermannii*), the Western U.S. (*C. lenticularis* var. *dolia* and var. *impressa*), and Alaska (*C. utriculata*, *C. microchaeta*, and *C. mertensii*) were collected for this portion of her research. Julie noted that during her field season in Alaska, her most remarkable find may have been *C. lenticularis* var. *dolia*, a rare species she happened upon along a roadside.

Julie then constructed a new phylogenetic tree that included the new samples from Alaska along with the rest of the American clade and outgroup taxa. Preliminary analysis indicates that the Alaskan species *C. microchaeta* and *C. podocarpa*, which are placed together in Section *Scitae*, are part of a single clade. However, another member of the same section, *C. microchaeta*, is sister to *C. aquatilis*. While much of the topology of the tree remains the same, samples of *C. lenticularis* var. *dolia* (Montana) and *C. eleusinoides* (Siberia) remain part of an Austral-East Asian clade, separate from the same taxa and other varieties of *C. lenticularis* in the American clade. Samples of *Carex biglowii*, collected from both Alaska and Vermont, formed a clade, but were separated by *C. scopulorum*, a species native to the Northwest U.S. Her future research will include using the molecular phylogeny to re-examine the morphology of the *lenticularis* group, determining what morphological characteristics reflect the evolutionary history of the clade, and revising the taxonomy of the *lenticularis* group as necessary.