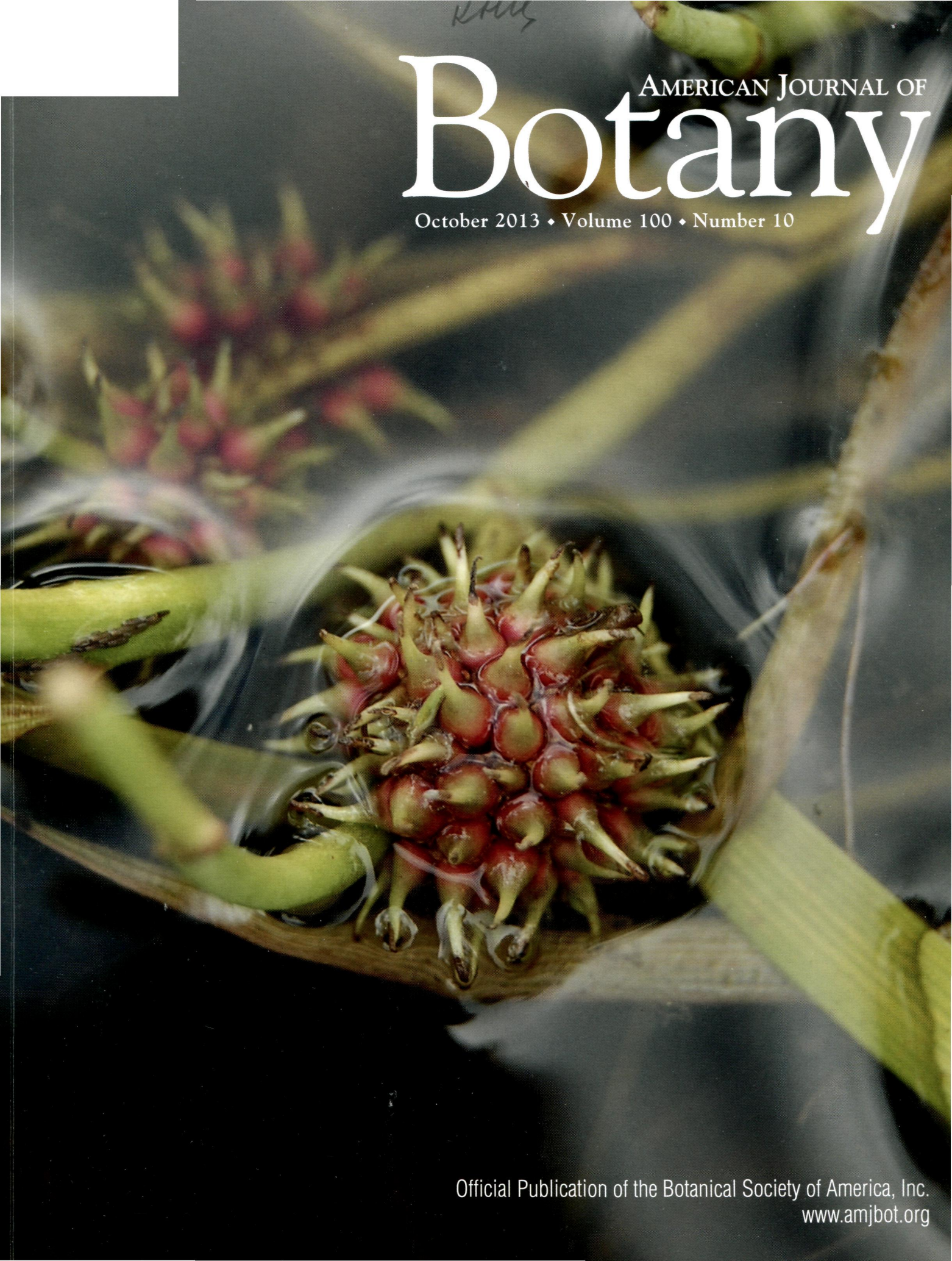


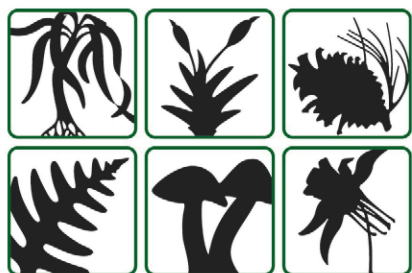
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**Cover Illustration:** *Sparganium fluctuans* (Engelm. ex Morong) B. L. Robinson, photographed at McDonald Lake near Bessemer, Michigan, United States, inhabits cool, oligotrophic lakes in boreal North America. It produces a flexible stem and floating, ribbon-like leaves that spread haphazardly over the water surface. The flowers are aggregated into globose heads, the staminate heads elevated, and the pistillate heads floating on the surface; after pollination, the staminate flowers drop, and only a stub remains at the tip of the stem. The pistillate heads float or are suspended just below the surface as the fruits develop, becoming reddish as they ripen. While all *Sparganium* are aquatic, the genus shows a dichotomy between emergent and floating growth forms. Floating species have flattened, flexible leaves, whereas emergent species have keeled leaves with rigid support tissues. *Sparganium* species with the floating growth form are widely distributed in cold climates; in temperate climates, they appear to be limited to nutrient-poor habitats or deep water. Whether the ancestral habit in *Sparganium* was emergent or floating and whether floating and emergent species form separate, monophyletic groups have long been the subject of speculation and controversy. In "Systematics, biogeography, and character evolution of *Sparganium* (Typhaceae): Diversification of a widespread, aquatic lineage" on pages 2023–2039 of this issue, Sulman et al. explore the evolution of growth form in the genus, using phylogenetic analysis of nuclear and chloroplast DNA. The results of a Bayesian character state analysis suggest that the floating form has arisen multiple times within *Sparganium* from emergent ancestors. (Photo credit: Josh Sulman.)



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## Abbreviations

**Miscellaneous:** AFLP, amplified fragment length polymorphisms; a.s.l., above sea level; bp, base pair; BP, before present; BSA, bovine serum albumin; cpDNA, chloroplast DNA; CTAB, hexadecyltrimethylammonium bromide; cv., cultivar; ddH<sub>2</sub>O, double-distilled water; dNTP, deoxyribonucleotide E.C., Enzyme Commission; EDTA, ethylene diamine tetra-acetic acid; f. sp., forma specialis; indels, insertions and deletions; ITS, internal transcribed spacer; LM, light microscopy; mya, million years ago; PAGE, polyacrylamide gel electrophoresis; PCR, polymerase chain reaction; RAPD, random amplified polymorphic dimorphism; SDS, sodium dodecyl sulfate; SEM, scanning electron microscopy; s.l., sensu lato; s.s., sensu stricto; subsp., subspecies; TEM, transmission electron microscopy

**Genetics:** *A*, mean number of alleles per locus; *D*, mean genetic distance; CI, consistency index; *F*, fixation index; *F<sub>IT</sub>*, total deviation from Hardy-Weinberg expectations; *F<sub>ST</sub>*, genetic diversity among populations; *F<sub>IS</sub>*, inbreeding within populations; *G<sub>ST</sub>*, the proportion of genetic diversity among populations; *H<sub>e</sub>*, Hardy-Weinberg expected heterozygosity; *H<sub>o</sub>*, observed heterozygosity; MP, most parsimonious tree; *n*, individual chromosome number; *N<sub>m</sub>*, mean number of migrants per generation; *P<sub>p</sub>*, percentage of polymorphic loci; RI, retention index; *x*, base chromosome number

**Statistics and math:** ANOVA, analysis of variance; CV, coefficient of variation; df, degrees of freedom; *N*, number of individuals; *p*, probability; *P*, level of significance; PCA, principal components analysis; *r*, coefficient of correlation; SE, standard error; SD, standard deviation