

BRANDON T. SINN, Dept of Biology, West Virginia University, Morgantown, WV 26506, CHRISTINA DARAGAN and JOHN V. FREUDENSTEIN, Dept. of Evolution, Ecology and Organismal Biology, Ohio State University, Columbus, OH 43212. Phylogenomics in *Asarum* section *Hexastylis*: serial innovations in floral form spawned from two geographically-widespread species.

*Asarum* section *Hexastylis* (Aristolochiaceae), is a group of flowering plants endemic to the southeastern United States whose variable floral morphologies and overlapping distributions have long caused taxonomic confusion. Individual species distributions range from the entirety of the southeastern US to only a single gorge. The flowers of section *Hexastylis* species, to various degrees, appear to have converged on a basidiomycete-like morphology and are putatively pollinated by fungus gnats. Earlier attempts to resolve species boundaries and the evolution of floral traits in the group with commonly-used phylogenetic markers have largely been uninformative at the lowest taxonomic levels. To uncover species-level relationships, we sequenced thousands of regions dispersed throughout the nuclear genome using Double-Digestion Restriction Enzyme-Associated DNA Sequencing. Data matrices were assembled using the Pyrad pipeline. Phylogenomic inference was conducted under both maximum likelihood and coalescent frameworks. Sequencing was conducted for 97 individuals, representing all taxa in section *Hexastylis*. Phylogenomic inference recover two major diversification events within section *Hexastylis*. Phyletic grades of a geographically-widespread, paraphyletic progenitor species have repeatedly spawned geographically-restricted derivative species with novel floral shapes. Recovered phylogenetic relationships evidence parallel evolution of similar calyx tube shapes, suggesting the operation of geographically partitioned adaptive pressures, most likely associated with fungus gnat pollination. This work was supported by the National Science Foundation (DEB-1406732) and a William Chambers Coker Fellowship from Highlands Biological Station.