



2020 Eagle Hill Natural History Science Seminars . . .
. . . on the coast of eastern Maine

DIVERSITY AND EVOLUTION IN THE MOSS ORDER FUNARIALES

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The Funariales compose a diverse lineage that arose from the earliest diversification events in the evolution of mosses with articulate teeth. A single family is currently recognized within the order, namely the Funariaceae. Members of the order are annuals, and grow on soil. The vegetative plants are typically unbranched, and short. They produce both male and female sex organs, and hence almost always produce abundant sporophytes. The architecture of the latter varies from complex, with a long seta, asymmetric, operculate, and double peristomate capsules with a well-differentiated annulus in *Funaria*, to short setae, bearing a spherical, indehiscent and gymnostomous capsule in various species of *Physcomitrium*. Recent phylogenetic inferences revealed that reduction in sporophyte architecture occurred multiple times, in particular throughout the *Entosthodon-Physcomitrium* complex, and that *Entosthodon* composed a grade subtending *Physcomitrium*. Consequently, the family has undergone dramatic revision in its generic circumscription. We aim for participants being able to study plants of the various lineages, primarily from culture collections since the plants are ephemeral in the field. We intend to engage the class in an exercise seeking to identify diagnostic traits of species and species groups. The laboratory time will be complemented with lectures highlighting the history of the Funariaceae, recent advances in our understanding of the diversification of the family and the contribution studies of species such as *Funaria hygrometrica* and *Physcomitrium patens* had on the development of bryology



about the instructors

Bernard Goffinet (bernard.goffinet@uconn.edu) is Professor in Ecology and Evolutionary Biology at the University of Connecticut (www.bryology.uconn.edu). His research focuses on the systematics of mosses, but extend also to population genetics, developmental biology and genome evolution. His current bryological projects focus on the evolution of the Funariaceae, Orthotrichaceae and pleurocarpous mosses. He has also contributed to the development of ecotourism with a hand-lens in the Cape Horn Biosphere Reserve in southernmost Chile. For his studies, he has sampled the bryoflora in North America, Asia, South Africa and Chile.

William Buck (bbuck@nybg.org) is the Emeritus Curator of Bryophytes at The New York Botanical Garden. His main research interests are associated with understanding the relationships of different groups of mosses, especially pleurocarps (with creeping, branched stems and laterally placed spore capsules). To see living mosses in the field, he has traveled throughout much of North and South America, as well as to parts of Europe, Asia, Africa, Australia, New Zealand and Melanesia. As a result, he has a wide experience with morphological variation in mosses.