



## HORNWORTS: BIOLOGY & SYSTEMATICS

Hornworts represent the smallest phylum among land plants, with only 220 species. Despite the reduced species number, they have a fascinating biology and hold clues on the evolution of symbiotic interactions and chloroplast evolution. Most of the diversity of hornworts is found in tropical and subtemperate areas from the Americas and Asia (especially India and China). Despite the evolutionary and, recently, genomic importance of the group, the taxonomy remains challenging and little known. This seminar will provide an introduction to the diversity of hornworts, with focus on the American continent (from Canada to Patagonia) and Europe. We will first identify study the morphology and anatomy of hornworts and discuss last decade studies on morphology, phylogenetics, symbiosis, systematics, and genomics. Then, we will focus on the regions of interest, giving special attention to genera and species present. The participant will be guided through the taxonomical literature available for regional taxa, and the morphological particularities when using the few available keys. To dive into the hornworts, we will explore their great variety, exploring their most common species in different substrates and ecosystems, including páramos, montane, premontane rain forest, and lowland tropical rain forest. The seminar will provide a deep knowledge of this fascinating group of plants and discover why they have become important and popular in the field of evolutionary biology!

**Juan Carlos Villarreal Aguilar** (juan-carlos.villarreal-aguilar@bio.ulaval.ca), is currently an assistant professor at Laval University, Québec, Canada, a research associate of the Smithsonian Tropical Research Institute and the Royal Botanic Garden, Edinburgh and former Eagle Hill student (2001). His bryological research has included systematics, phylogenetics, symbiosis, genomics of hornworts, and fieldwork in different regions, including Canada, Colombia, Costa Rica, Germany, Dominican Republic, India, Southern Appalachians (USA), California (USA) and Venezuela. His taxonomic expertise has centered on hornworts for over fifteen years, for which he published over 40 articles on the group. Currently, he's heading to a new challenge working on lichens and cycads.

**March 1, 15, 22, 29; April 5, 2026**

**7PM–9PM ET**

**\$225**

*Participants need to have a Zoom account (<https://zoom.us> sign up for zoom is free). You will receive a secure link to join the instructor before each class. Classes will be recorded so participants can review them or make up missed ones.*

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