

Guide for beginners

Bryophytes or Early Land Plants

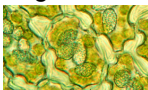

A Broad Comparison between Mosses, Liverworts and Hornworts

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Bryophytes are small plants divided into three distinct lineages: Liverworts, Mosses and Hornworts. All share the common feature of having a dominant gametophytic growth form and reproducing via spores. They lack true vascular tissue and have the ability to take up and lose water rapidly. They rely on moisture for photosynthetic activity, and are commonly found in moist environments. They are relatively small organisms that often produce species-diverse mats over rock, soil, and tree bark, and can survive periods of drought in non-metabolic stages.

	Gametophyte	Gametophyte	Sporophyte	Sporophyte
Liverworts				
Marchantiophyta [ca. 9500 species]	Leafy	Simple Thallose	Cylindrical capsule	Round capsule
Mosses				
Bryophyta [ca. 13,000 species]	Radial symmetry	Aquatic <i>Sphagnum</i>	Sporophyte persistent	Sporophyte Teeth
Hornworts				
Anthocerotophyta [ca. 100 species]	Thallose	Thallose rosette	Horn sporophytes	Split sporophytes

Ecological & biological significance: Bryophytes are of ecological significance in a variety of ecosystems, and participate in key ecological functions such as erosion prevention, water retention, plant succession, decomposition, and as primary producers in the cycling of carbon and nitrogen. This group of organisms also have interesting biological properties such as anti-microbial secondary compounds. They provide habitat for invertebrates and microorganisms and vascular plant seedlings. **Habitat:** Bryophytes are an important and conspicuous component of the vegetation in many regions of the world, constituting a major part of the biodiversity in moist forest, wetland, remote mountain top and tundra ecosystems.

Summary of similarities & differences	Liverworts	Mosses	Hornworts
General Growth Form	Leafy or thallose	Leafy	Thallose
Symmetry	Bilateral	Radial	Asymmetrical
Sporophyte Shape	Capsule with 4 valves; Seta clear and ephemeral	Capsule with apical opening; Seta persistent.	"Horn" splitting along two longitudinal valves
Cell Anatomy	Oil bodies present; trigones 	Indistinct, leaves often with midrib 	Cells with single large chloroplast 