

# BC's Coast Region: Species & Ecosystems of Conservation Concern

## Apple Moss (*Bartramia stricta*)

Global: GU Provincial: S2 COSEWIC: E, BC List: Red



Notes on *Bartramia stricta*: Mosses of the family Bartramiaceae grow in damp locations and are known for the conspicuous orange-red sex organs of male plants. Species of the genus *Bartramia* are collectively referred to as “apple mosses” making the common name for *B. stricta*, (revised from the previous name “rigid apple moss”), somewhat confusing for identification. This species is also referred to as “upright apple moss” and “bartramia moss”. Three other species of apple moss occur in BC: *B. halleriana*, *B. ithyphylla* and *B. pomiformis*.

### Description

*Height .7-2 cm.* Apple moss occurs in dense clumps that range in colour from pale to bright green to yellow. The base of the moss has no sheathing and leaves are relatively long, erect and straight. Leaf margins are flat or slightly curled under. The leaves spread in small clumps and are yellow-green when the plants are wet, but turn brownish-green and press close to the stem when dry. Male and female reproductive organs can be found on the same leafy structure. The capsules (spore sacs), are round or apple-shaped in young plants but become furrowed and dried as the plant ages. The mouth (stoma) of the capsule is surrounded by a single row of small lance-shaped tooth-like appendages or “peristome” that control the release of spores.

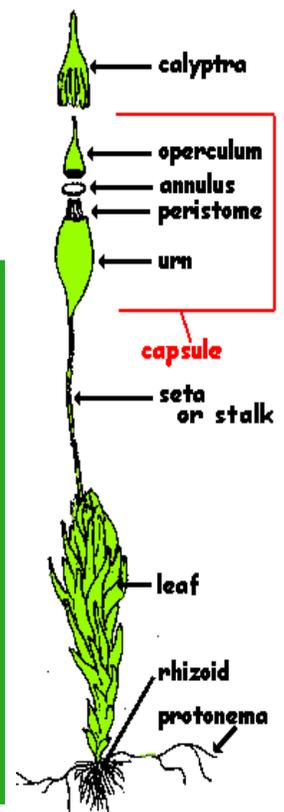
### Look's Like?

Other species of apple moss are either larger, have sheathing at the base or lack the erect habit of *B. stricta*. Common apple moss (*B. pomiformis*) is probably one of the easiest to confuse with *B. stricta*. However *B. pomiformis* capsules are not as round or symmetrical and when moist the leaves are less erect. Anacolia moss, found in the same habitats as apple moss can be misidentified as apple moss though it lacks the distinct vertical furrows on the dried capsules, has stems that are matted with small hair-like structures (rhizoids), and has smaller and more angled basal leaf cells.



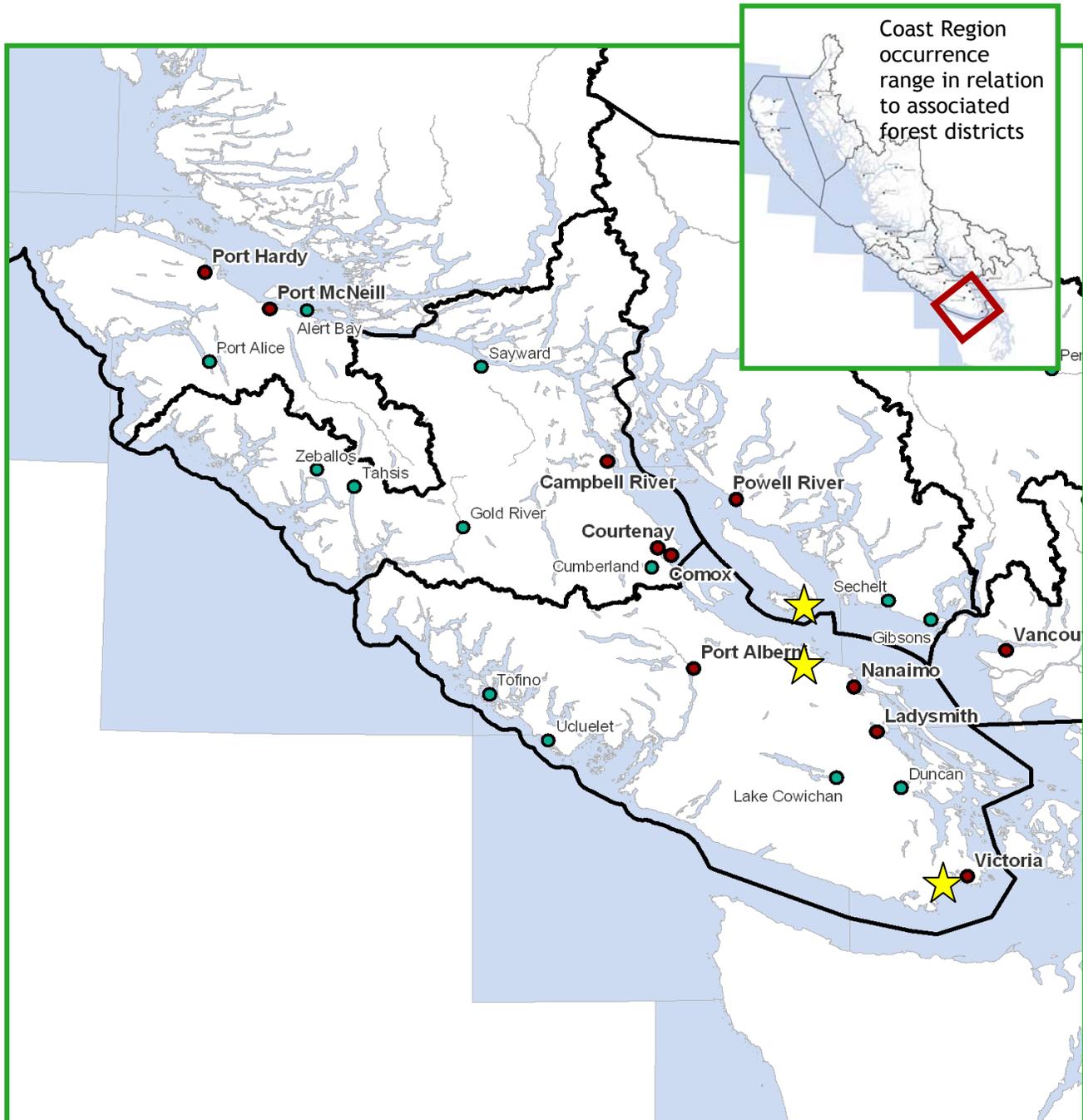
Common Apple Moss

### Moss anatomy



**Distribution**

*Elevations: 5-190 m.* In BC, *B. stricta* is limited to grassy rock outcrops associated with Garry oak and dry Coastal Douglas-fir zones on southeastern Vancouver Island. The range extends from southwest of Victoria to Lasqueti Island and possibly Hornby Island. Most sites are low elevation areas with warm, moist micro-climates. Five occurrences are known from Notch Hill near Nanoose, Lasqueti Island, Wymond Point Sidney Island, Observatory Hill near Saanich and Mary Hill near Metchosin. One historic population at Pedder Bay is now presumed extirpated, likely due to invasive vascular plants. It is likely that other populations may exist, particularly around the less developed perimeters of urbanized areas.



Apple Moss (*Bartramia stricta*), known range of population occurrences (yellow stars) for the Coast Region

**Habitat Preferences**

Associated plant species include grasses and open stands of Garry oak and arbutus as well as invasive species such as Scotch broom and Himalayan blackberry.

**Critical Features**

Within the maritime aspects it grows in, apple moss is restricted to two distinct micro-sites. These are bare rock faces, ledges or crevices in rock outcrops, usually located under overhanging rock or on vertical faces (protecting the plants during severe rains and runoff events). The other is shallow mineral to humus-rich soils (8-20 cm), accumulated on open exposed rock material.



Sites preferred have winter/spring runoff and seepage to maintain a moist microclimate and tend to be open, steep south-facing slopes with shallow soils dry in summer and saturated in winter.

**Seasonal Life Cycle**

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Spores produced – likely windborn dispersal											
					Dormant during summer dry periods						

Apple moss may form new colonies through small vegetative fragments dispersed over short distances.

**Threats**

- ◆ The preferred ecological associations of this species are geographically limited and subject to loss of natural or historic maintenance regimes (e.g. browsing of shrubs by deer, use of fire by First Nations). Suppression or removal of these mechanisms has contributed to spread and encroachment of invasive and competitive vascular plant species which can also contribute to changes in soil moisture and chemistry.
- ◆ Habitat loss, encroachment and fragmentation may contribute to local extirpation events from genetic isolation and increased vulnerability to disease.
- ◆ Impacts from land management practices (e.g. mowing or pesticide application) and outdoor recreation activities (e.g. trampling).
- ◆ Competition for nutrients and shading from associated vascular plants and expansion of other more shade tolerant moss species.

**Conservation & Management Objectives**

- ◆ Apply conservation and management objectives for this species and its habitat as set out in the “Recovery Strategy for Rigid Apple Moss (*Bartramia stricta* Bridel) in British Columbia.”
- ◆ Collection activities should be limited and apply practices identified in the Province’s “Voucher Specimen Collection, Preparation, Identification and Storage Protocol: Plants & Fungi.” Inventory activities should consider approaches and references identified in E-Flora’s “Protocols For Rare Vascular Plant Surveys.” Integrate inventory recommendations and approaches developed in “Bryophytes of British Columbia: rare species and priorities for inventory”.

## Specific activities should include:

- ◆ A targeted inventory is needed to determine if undiscovered populations exist elsewhere within the Coast Region.
- ◆ Conduct outreach to raise awareness of this species and how to identify it to improve distribution knowledge.
- ◆ Monitor existing populations on an ongoing basis to assess viability and reduce potential disturbance from land use activities.
- ◆ Where suitable habitat occurs, work with land managers and land owners to ensure development or recreational activities occur with minimal disturbance to sensitive areas and soil moisture conditions.
- ◆ Ensure controls to protect and enhance Garry oak meadow communities (e.g. removal of deer grazing pressures on oak seedlings) do not result in unfavourable changes to soil and cover conditions for other native plant species.
- ◆ Effective long-term control and reduction in competition from invasive or aggressively spreading vascular plants (e.g. invasive grasses, Scotch broom, Himalayan blackberry, species of snowberry), must form part of strategies to protect and recover populations. Disturbance to rare plant species and communities must be minimized during control activities.

This species is listed under the Federal Species at Risk Act (SARA) and may be subject to protections and prohibitions under the BC Wildlife Act. Habitat for this species may also be governed under provincial and federal regulations including the Fish Protection Act and Federal Fisheries Act as well as Regional and local municipal bylaws.

## Content for this Factsheet has been derived from the following sources

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Every effort has been made to ensure content accuracy. Comments or corrections should be directed to the South Coast Conservation Program: [info@sccp.ca](mailto:info@sccp.ca). Content updated August 2010.

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