

Erratum

A synopsis of lycophytes in Manitoba, Canada: their status, distribution, abundance, and habitats

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The second half of couplet 7 in the key should be to couplet 12, not 11.

Key to Lycophytes of Manitoba

The following key includes all lycophyte taxa confirmed from Manitoba. It is based on the keys in Staniforth (2012) as modified by subsequent literature (e.g., Gilman and Testo 2015; Testo *et al.* 2016; Palmer 2018; Grigoryan *et al.* 2020) and personal experience of D.F.B. Each taxon is individually addressed in the Annotated Checklist.

1. Terrestrial, creeping; with above-ground or subterranean rhizomes (horizontal stems); upright shoots covered by numerous small, evergreen leaves **4**
 - Submerged aquatic; globose corm topped by a crown of long, quill-like leaves (Isoetaceae) **2**
2. Individuals larger than typical plants of the population; megaspores polymorphic, often lens-shaped (aborted); densely congested ornamentation pattern includes both spines and muri (ridges) *Isoetes* ~~*hickeyi*~~
 - Plants uniform in size within the population; megaspores uniformly globose (viable); ornamentation either exclusively echinate or with muri **3**
3. Leaves light green; moderately to strongly reflexed; megaspores small (450–525 µm), ornamentation uniformly, densely echinate (spiny); no equatorial band *Isoetes echinospora*
 - Leaves dark green to green-brown; straight to slightly recurved; megaspores large (650–800 µm), broken reticulate pattern ornamentation of thin-walled muri; prominent equatorial band of densely distributed papillae (minute tubercles) *Isoetes macrospora*
4. Sporangia in the axils of specialized leaves (sporophylls) clustered into strobili (cones) at shoot summit; no gemmae (vegetative buds) **5**
 - Sporangia in the axils of ordinary stem leaves and not arranged in strobili; gemmae conspicuous on shoots (*Huperzia*) **17**
5. Plants tall (>4 cm), resemble large moss plants or miniature coniferous trees; strobili cylindrical, megaspores small (<100 µm) **6**
 - Plants short (<4 cm), resemble small (often matted) moss plants; strobili typically four-sided, megaspores large (>300 µm) (Selaginellaceae) **20**
6. Plants annual, small; stem prostrate and creeping; strobili “bushy” with green leaves; spores rugulate *Lycopodiella inundata*

- Plants perennial, robust; sprawling or erect; stem upright or low arching, strobili narrow with appressed scales, on thin, erect stems; spores reticulate 7
- 7. Leafy shoots (branches) narrow (2–6 mm), flat; leaves 4–5 ranked along stem (*Diphasiastrum*) 8
- Leafy shoots wide (5–12 mm), round; leaves many-ranked along stem 12
- 8. Horizontal stems on or near soil surface (often hidden under litter); peduncles with 1–2 strobili 9
- Horizontal stems deeply buried in soil; peduncles with 2–4 strobili 10
- 9. Solitary strobilus sessile; abaxial (underside) leaves arched, trowel-shaped, slightly shorter than other branch leaves *Diphasiastrum alpinum*
- 1–2 strobili peduncled; abaxial leaves appressed, narrowly deltoid, much shorter than other branch leaves *Diphasiastrum complanatum*
- 10. Plants short (<10 cm); strobili sessile or stalked <1 cm; leaves divergent, ascending, separate or partially overlapping *Diphasiastrum sitchense*
- Plants short (10–15 cm tall); strobili long stalked (2–10 cm); leaves strongly appressed, overlapping ... 11
- 11. Branches narrow (<2 mm), round to square in cross-section; strongly ascending (“popped-umbrella” form); leaves glaucous blue-green colour *Diphasiastrum tristachyum*
- Branches wide (>2 mm), flat; sprawling arrangement; leaves glossy dark-green colour *Diphasiastrum ×zeileri*
- 12. Strobili long stalked; leaves densely arranged about stem in groups of 6–10, softly hair-tipped (not prickly) (*Lycopodium*) 13
- Strobili sessile; leaves loosely arranged about stem in groups of 3–5, acute to spine-tipped (prickly) 14
- 13. Peduncles typically with solitary strobilus; stems sparsely branched, ascending to erect; leaves 3–5 mm long, appressed *Lycopodium lagopus*
- Peduncles typically with 1–5 strobili; stems frequently branched, sprawling; leaves 4–6 mm long, divergent *Lycopodium clavatum*
- 14. Leaves about the stem in groupings of 4–5; leafy rhizome superficial (*Spinulum*) 15
- Leaves about the stem in groupings of 3; naked rhizome subterranean (*Dendrolycopodium*) 16
- 15. Strobili 1.5–4.5 cm long; leaves toothed, 5–10 mm long; those immediately above annual constriction widest at or near mid-length *Spinulum annotinum*
- Strobili <1.7 cm long; leaves entire, 3–6 mm long; those immediately above annual constriction widest at or near base *Spinulum canadense*
- 16. Leaves along stem strongly appressed (stem smooth); single rank (row) of leaves on abaxial side of branches *Dendrolycopodium hickeyi*
- Leaves along stem strongly divergent (stem prickly); double rank (rows) of leaves on abaxial side of branches *Dendrolycopodium dendroideum*
- 17. Leaves wide (1.5–2.0 mm), toothed, parallel-sided or widest above middle, dark green; always shiny; annual constrictions on stem conspicuous 18
- Leaves narrow (1.0–1.25 mm) entire, widest near base; yellow-green to green; dull to somewhat shiny; annual constrictions on stem inconspicuous 19
- 18. Leaves coarsely toothed, widest above middle; spore regular in shape (viable) *Huperzia lucidula*
- Leaves entire or with few teeth, parallel sided; spores misshaped (aborted) *Huperzia ×butter sii*
- 19. Gemmae arranged in single whorl at apex of annual growth segment *Huperzia selago*
- Gemmae scattered along stem or arranged in several whorls at apex of annual growth segment *Huperzia continentalis*
- 20. Delicate, mat-forming; leaves divergent, flat, narrow, acute-tipped and with numerous coarse marginal cilia *Selaginella selaginoides*
- Dense tufted clumps; leaves strongly appressed, oblong, bristle-tipped, with few fine marginal cilia 21
- 21. Leaf tip bristles 1.25–2.0 mm long; dense clumps appearing “frosty”; upper leaves longer than lower *Selaginella densa*
- Leaf tip bristles 0.5–1.0 mm long, loosely arranged to dense clumps green; upper and lower leaves

approximately equal in length *Selaginella rupestris*

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