

Seventy-three calicioid lichens and allied fungi from across 18 genera are documented for Alberta as of June 2025. Some collections remain unidentified and we anticipate additional discoveries, so as always, we encourage you to also check keys that are more inclusive of species across North America or even globally. It is also best practices to critically review more traits than the keys encompass the first few times you key out a new-to-you species, paying particular attention to traits such as tissue types, spores and asci.

We include some genera and species not known from Alberta but which we think have the potential to occur based on their ecology and known distribution. We also include *Caliciopsis calicidioides*, an unlichenized fungus not traditionally treated with calicioids. This genus is characterized by a unique elongate ascomata with an elevated and bulging ascigerous cavity (Fitzpatrick 1942). We include it here because of its strong indicator potential, a result of its size, unique appearance and its restricted niche, shared with other sensitive lichens in Alberta (including *Heterodermia*, *Lobaria pulmonaria*, and Collemataceae).

TERMINOLOGY

Keying calicioids requireing mastering some new terminology. Resources include drawings of allied fungi by H. Tuovila (Tuovila 2013; Tuovila & Huhtinen 2020), as well as dedicated compendiums of botanical terminology (e.g, Harris & Harris 2001).

Most calicioids are tiny and consist of a thallus (varying from immersed in the substrate to well-formed and squamulose), and a stalk bearing a small, ball-like head or capitulum. The stalk and the capitulum form the fruiting body or ascomata. The capitulum contains the hymenium with spore sacs and typically thin supportive hyphae called paraphyses, and is contained by a distinct, outer layer called an excipulum, and topped with epithelial tissues that may or may not persist. Of course there is variation. Some larger macrolichens such as *Sphaerophorus* are included in calicioids because of their mazaediate ascomata, and some calicioids are sessile and lack a stalk. A mazaedium is a loose mass of spores that result from the early breakdown of the asci, leaving spores to disperse passively, perhaps on the feet of passing insects or birds.

A detailed overview of terminology as well as illustrations of key terms, pictures of each species and distribution maps can be found in Haughland et al. (2025).

01. KEY TO THE GROUPS OF GENERA

This key addresses calicioid lichens and allied fungi that are either i) erect, unbranched to branched <2x and <2 cm across, or ii) lichens that form ascomata with loose, sooty piles of spores (mazaedium). Larger fruticose lichens are addressed in the Key to Fruticose Lichens of Alberta. Genera keys can be found in Goward (1999), Tibell (1999), Selva (2014), and Peterson (2012) if you want to try another approach.

1. Thallus of rounded, coralloid stalks that branch $\geq 2-3\times$, thalli often $> 5\text{cm}$ across..... **Sphaerophorus**
The only record of this genus in Alberta is *S. globosus* (Johnson et al. 1993).
Given we have not located this specimen, we do not treat this genus further.
1. Thallus sessile to stalked, if stalked not branching more than $2\times$ 2
2. Thallus sessile, lacking a stalk..... **02. Key to Sessile Calicioids**
2. Thallus stalked..... 3
3. Stalks conspicuously tapered or constricted..... 4
3. Stalks relatively even and cylindrical throughout 6
4. Stalks hollow, barrel-shaped, pale, forming colonies 2-3 cm in diameter, topped with mazaediate capitula
..... **Tholurna dissimilis**
Not recorded in AB but present in shared ecoregions in BC; this monotypic genus is not addressed further.
4. Stalks solid, lacking mazaedia 5
5. Stalks black with with a bulge half-way housing the asci and a fringe of hyphae at the tip
..... **Caliciopsis calicioides**
Not typically included as an allied fungus. Molecular work is needed to confirm this species identity;
this genus is not treated further.
5. Stalks pale, pruinose, with a small capitulum composed of a paler outer layer and a darker inner layer
that extrudes upwards with maturity **Albocalicium candidum**
- 6.(3) Mazaedium present, spores forming loose pale to black mass that comes off like soot on your finger,
asci disintegrating early and sometimes difficult to find in squash 7
6. Mazaedium not present, some some loose spores may be present but typically just a few, most remain in
intact asci within the capitulum 10
7. Mazaedium pale, yellowish or brown **03. Key to Chaenotheca, Chaenotricha & Sclerophora**
7. Mazaedium black or aeruginose green 8
8. Mazaedium at least tinged with aeruginose green..... **04. Key to Microcalicium**
8. Mazaedium black..... 9
9. Capitulum with constricted margins (sphintrinoid), spores with thick gelatinous outer coat when immature
..... **Sphinctrina anglica**
9. Capitulum not conspicuously constricted and more cup-like, spores lacking a gelatinous outer coat
..... **05. Key to Calicium & Allocalicium**
- 10.(6) Growing on exposed bark of various hosts; ascomata brown, lacking pruina, olive-brown to reddish
brown in squash; asci $49-110(-210)\ \mu\text{m}$ long, spores $9-20(-35)\ \mu\text{m}$ long
..... **06. Key to Brevicalicium, Paracalicium, Phaeocalicium & Stenocybe**
10. Growing on lignin, resin or bark associated with resin, or parasitic on other lichens, more rarely strictly
corticolous and then often on sheltered bark; ascomata pale to black, pruinose or not, color variable in
squash; asci $20-70\ \mu\text{m}$ long, spores $5-13(-20)\ \mu\text{m}$ long
..... **07. Key to Chaenothecopsis & Mycocalicium**

02. KEY TO SESSILE CALICIOIDS

All genera of mazaediate lichens lacking a stalk are treated herein, including *Acolium*, *Calicium* (formerly *Cyphelium*), and *Microcalicium*. Adapted and modified based on Peterson (2012), and Tibell (1969, 1975).

1. Mazaedium with at least a hint of aeruginose green, spores cylindrical with spiral wall ornamentation **04. Key to *Microcalicium*, couplet 3**
1. Mazaedium black, no hint of green, spores elliptical, spore wall ornamentation varied 2
2. Apothecia immersed within thalline warts 3
2. Apothecia sessile, situated or perched on top of the thallus 5
3. Thallus gray, restricted to southern Alberta ***Calicium trachylioides***
3. Thallus intensely yellowish green, distribution varied 4
4. Spores submuriform, to date found from Edmonton south ***Calicium notarisii***
4. Spores 1-septate, most abundant in the Boreal but present in every ecoregion ***Calicium tigillare***
- 5.(3) Thallus gray or faintly greenish gray 6
5. Thallus intensely yellowish green 7
6. Thallus faintly greenish gray, spore walls not striated, instead very roughly cracked-areolate (reminiscent of a tank track); rare, 1 montane record to date ***Acolium karelicum***
6. Thallus gray, spore walls finely striated, minutely cracked; mostly montane with occasional colonies in other forested regions ***Acolium inquinans***
7. Apothecia epruinose, montane ***Calicium pinicola***
7. Apothecia yellow-pruinose, rare, 1 record to date from Shield region ***Calicium lucidum***

03. KEY TO CHAENOTHECA, CHAENOTRICA, CONIOCYBE & SCLEROPHORA

This key includes lichenized calicioids that have pale to brown mazaedia. Modified from McMullin et al. (2018).

1. Apothecia with yellow, yellow-green, red, reddish-brown, brownish-orange, or brown pruina on excipulum stalk, or both excipulum and stalk 2
1. Apothecia with white pruina on excipulum, stalk, or both excipulum and stalk, or epruinose 12
2. Thallus with a *Trentepohlia* photobiont; pruina yellow- or brownish; most spores spherical 3
2. Thallus with a *Stichococcus* or trebouxoid photobiont; pruina and spore shape variable 4
3. Ascomata pale, mature spores 7–9 µm diameter, with smooth to lightly ornamented walls ***Sclerophora pallida***
3. Ascomata typically black but pale forms are known for Alberta; mature spores 4.5–7.5 µm diameter, with irregular reticulate cracks surrounding polygonal areas ***Chaenotheca hispidula***

4. Photobiont with spherical cells measuring 7–14 µm in diameter (trebouxoid)	5
4. Photobiont with short, cylindrical cells, which sometimes form short filaments, or with small, irregularly shaped cells in colonies (<i>Stichococcus</i>)	8
5. Spores spherical, 5–10 µm in diameter	6
5. Spores, at least in part, ellipsoidal to cylindrical	7
6. Thallus minutely granular, white, diffuse and (or) with flat greenish-brown verrucae at the base of apothecia	<i>Chaenotheca subroscida</i>
Not known from Alberta, but difficult to distinguish from <i>C. phaeocephala</i> , and relatively common in BC; a species to watch for.	
6. Thallus greyish to greenish-brown, squamulose to verrucose, or growing apparently parasitically on lecanorine crusts in Alberta	<i>Chaenotheca phaeocephala</i>
7. Thallus bright yellow, usually well-developed, granular to verrucose; spores spherical to short-ellipsoidal, typically <8 µm long (5–12 µm in Alberta)	<i>Chaenotheca chrysocephala</i>
7. Thallus immersed or squamulose to verrucose, greyish-green; spores non-septate and ellipsoidal, or cylindrical, septate, and typically >8 µm long (9–27 µm in Alberta)	<i>Chaenotheca laevigata</i>
8. Apothecia with red, reddish-brown, or orange-brown pruina	9
8. Apothecia with yellow or yellow-green pruina	10
9. Pruina red to reddish-brown; apothecia flexuous, typically >1.0 mm tall	<i>Chaenotheca gracillima</i>
9. Pruina orange-brown; apothecia with straight stalks, typically <1.0 mm tall	<i>Chaenotheca selvae</i>
10. Thallus episubstratic, farinose, bright yellow-green	<i>Coniocybe furfuracea</i> s.l.
Temu et al. (2024) found this species to be polyphyletic and described <i>C. eufurfuracea</i> and <i>C. confusa</i> to account for the molecular variation. No material has been sequenced from Alberta, and the morphological traits distinguishing these three species are very subtle; until additional work is done, we refer to this species in the broad sense.	
10. Thallus immersed or episubstratic, but not both farinose and bright yellow-green	11
11. Spores spherical or squarish, 2.5–5 µm in diameter; thallus immersed or thin, green and poorly developed	<i>Coniocybe brachypoda</i>
11. Spores short-ellipsoidal, 7–13 µm × 4–5 µm; thallus well-developed, green to grey-green, granular to verrucose	<i>Chaenotheca chlorella</i>
12.(1) Photobiont with short, cylindrical cells, which sometimes form short filaments, or with small, irregularly shaped cells in colonies (<i>Stichococcus</i>)	13
12. Photobiont with spherical cells, either <i>Dictyochloropsis</i> (cells 15–20 µm in diameter) or trebouxoid (cells 7–14 µm in diameter), or growing on polyporous fungi	17
13. Thallus thin, farinose; capitulum spherical, with poorly-developed excipulum	14
13. Thallus immersed or well-developed, but never farinose; capitulum obconical to lenticular, with well developed excipulum	15

14. Apothecia typically <1.5 mm tall and with straight stalks; bottom of capitulum pale brown, which contrasts with the darker brown mazaedium, thallus glaucous-green; occasional across mesic forests of Alberta ***Chaenotheca stemonea***
14. Apothecia typically >1.5 mm tall and with thin, flexuous stalks; bottom of capitulum the same color as the mazaedium, thallus greyish-green; rare in montane regions of Alberta ***Chaenotheca gracilentia***
15. Stalk of apothecia pale at base, edge of excipulum often torn ***Chaenotheca cinerea***
15. Stalk of apothecia not pale at base, edge of excipulum intact 16
16. Thallus immersed; excipulum, upper part of stalk (and often into the lower part) with thick white pruina; base of excipulum and uppermost part of stalk with anticlinally-arranged hyphae extending outward from surface; lignicolous ***Chaenotheca xyloxena***
16. Thallus rarely immersed, typically well-developed, forming waxy greyish-green squamules; excipulum and, rarely, the upper part of stalk, white-pruinose, though not thickly so, rarely epruinose; base of excipulum and uppermost part of stalk with periclinally arranged hyphae, corticolous or lignicolous ***Chaenotheca trichialis***
17. (12) Growing on the small polypore fungus *Trichaptum abietinum*, on dead gymnosperms ***Chaenotricha obscura***
Chaenotricha cilians occupies the same niche, and was only recently separated from *C. obscurans* (Suija et al. 2023). *Chaenotricha cilians* can be differentiated by catenulate asci (vs. asci arising singly from croziers in *C. obscurans*) and should be watched for in Alberta.
17. Growing on bark or wood of angiosperms and gymnosperms; thallus typically well-developed, white to greenish-white, and with scattered orangy patches or granules that are K+ red; excipulum well-developed, often with gold flecks in mazaedium; spores spherical and mostly >6 µm in diameter ***Chaenotheca ferruginea***
Not known from Alberta, but present in BC; a species to watch for.

04. KEY TO MICROCALICIUM

This key addresses all *Microcalicium* species found in North America. The genus can be distinguished by the aeruginose green tint to their mazaedia, and the spores that are greenish black in wet mount and have walls with spiral ornamentation. The sessile species also are included in Key 02. Modified from Holien and Frisch (2022).

1. Ascomata with a distinct stalk 2
1. Ascomata mostly sessile or short-stalked 3
2. Ascomata with stalks, 0.6–1.4 mm high, mazaedium without sclerotized hyphae ***M. arenarium***
2. Ascomata with stalks, 0.4–1.1 mm high, mazaedium with sclerotized hyphae ***M. ahlneri***
Not known from Alberta, but present in BC; a species to watch for.
3. Ascomata pruinose, mazaedia typically barely exceeding the excipulum ***M. loraasii***
3. Ascomata non-pruinose, mazaedia often towering above the excipulum 4
4. Mature ascospores mostly 1–3-septate ***M. disseminatum***
4. Mature ascospores mostly 1-septate ***M. conversum***
Not known from Alberta, but present in northern Washington; a species to watch for.

05. KEY TO CALICIUM & ALLOCALICIUM

Here we address the black mazaediate species traditionally encompassed within the genus *Calicium*. Modified and expanded from Tibell (1999) and Williams & Tibell (2008), with the addition of *Calicium poculatum* (Thor et al. 2024).

1. Capitulum pruinose, especially on excipulum rim and lower surface 2
1. Capitulum lacking pruina 5
2. Pruina yellow to brown 3
2. Pruina white to greyish white; 1 confirmed locality in the Boreal to date ***Calicium glaucellum***
3. Pruina yellow; Alberta's most common *Calicium* species, found largely on lignin across all forested regions and habitats ***Calicium trabinellum***
3. Pruina brown 4
4. Thallus intense green, all spot tests negative; quite variable locally, occasionally with pruina faint and thallus almost entirely immersed or very scrappy and then check for clavate asci with bi- to triseriate spores; most common in the montane region, occasional in the Boreal ***Calicium viride***
4. Thallus immersed, visible as a whitish stain that reacts K+ dull yellow, KC+ dull yellow turning orange, PD+ pale yellow or PD—; asci cylindrical and spore uniseriate; common across the Boreal ***Calicium salicinum***
- 5.(1) Ascomata short-stalked (stalk \leq capitulum in length), lichenicolous or associated with crustose lichens 6
5. Ascomata long stalked, on lignin or bark, not lichenicolous 8
6. Lichenicolous on *Lecanora caesiiorubella* in wetlands ***Calicium poculatum***
6. Lichenicolous or associated with sorediate, crustose lichens in more arid, exposed environments 7
7. Lichenicolous on *Protoparmelia hypotremella* on conifers and wood, rare across forested regions, spores non-septate with with gelatinous outer coat when immature ***Sphinctrina anglica***
7. Not lichenicolous, occurring on bark or wood of *Pinus banksiana* in the eastern Boreal, spores 1-septate, lacking a gelatinous outer coat ***Calicium pinastri***
8. On *Alnus*, often sparse and co-occurring with more abundant *Stenocybe pullatula*, stalk l+ blue, mature spore walls ornamented with spiral ridges ***Allocalicium adaequatum***
8. On conifer bark, branches or wood, stalk l–, spore wall ornamentation various 9
9. Asci clavate, spore arrangement bi- to triseriate 10
9. Asci cylindrical, spore arrangement uniseriate 11
10. Mature spores ornamented with faint irregular cracks; verrucose thallus K+ dull yellow, PD+ weakly yellow, UV+ blue ***Calicium parvum***
Not known from Alberta, but present in BC and the Great Lakes region; a species to watch for.
10. Mature spores ornamented with spiral ridges and/or substantial irregular cracks; all spot tests on thallus negative ***Calicium viride***

11. Mature spores 10–18 μm long, ornamented with minute warts, areolae, or with some irregular cracks when old ***Calicium abietinum***
11. Mature spores 9–13 μm long, ornamented with longitudinally oriented ridges fragmented by irregular cracks ***Calicium glaucellum***

06. KEY TO THE BREVICALICIUM, PARACALICIUM, PHAEOCALICIUM & STENOCYBE

Here we address the brownish allied fungi that grow on bark of many trees and shrubs across Alberta. These species can be difficult to distinguish from some *Chaenothecopsis* species addressed in Key 07. If in doubt, try both keys. Traditionally these groups are discriminated by asci size or apical ascus canals, but that no longer holds true. Chemistry is not very helpful with this group, but knowing the host species is. Modified from Haughland et al. (2025).

1. Capitula laterally-compressed, flattened into a fan shape (flabelliform) 2
1. Capitula radially symmetrical, not laterally compressed 4
2. Spores 1–3-septate, corticolous on branches and twigs of *Betula* ***Phaeocalicium flabelliforme***
2. Spores non-septate 3
3. Excipulum with isodiametric cells; usually on *Betula*, rarely on *Alnus incana*; spores pale brown with smooth surfaces ***Phaeocalicium betulinum***
3. Excipulum with periclinally-arranged hyphae; on *Alnus viridis* ssp. *crispa*; spores brown with minutely-ornamented surfaces ***Phaeocalicium compressulum***
4. Shape of capitulum campanulate; corticolous on bark of *Sorbus* spp., branches and twigs of *Populus*, *Salix*, and *Betula* spp ***Phaeocalicium interruptum***
4. Shape of capitula various, but not campanulate, corticolous on a variety of woody species 5
5. Spores predominantly 1-septate, with non-septate and multiseptated spores sometimes present but in lower frequency 6
5. Spores predominantly either non-septate or 2–3-septate 14
6. Excipulum with hyphae isodiametric, puzzle-piece-like, or irregularly-intertwined, at least in part 7
6. Excipulum with hyphae rectangular and periclinally-oriented 12
7. Spores emerging from a stellate, sphinctrinoid opening at the top of the excipulum that eventually widens and becomes well-rimmed; hyphae of excipulum puzzle-piece-like (textura epidermoidea); spore septa constricted in a broad band internally, visible as a girdle-like darkened band under the light microscope with no corresponding outer spore wall constriction; corticolous on *Rosa woodsii* ***Brevicalicium roseum***
7. Spores emerging from a broad epithecium surface that does not have stellate origins; corticolous on substrates other than *Rosa woodsii* 8
8. Hyphae of excipulum regularly puzzle-piece-like, on *Caragana* or *Prunus* in grasslands ***Paracalicium caraganae***
8. Hyphae of excipulum irregular, with a mix of intertwined and isodiametric and/or puzzle-piece-like distally, on *Betula*, *Chamaedaphne*, *Picea*, or *Salix* in more mesic habitats 9

9. Ascomata to >0.6 mm tall, on <i>Betula</i> spp. or conifers.....	10
9. Ascomata to <0.5 mm tall, on other deciduous trees and shrubs	11
10. Capitula excipulum with a horizontal band of constricting hyphae low on mature capitula; corticolous on branches of <i>Betula</i> trees in the Parkland	<i>Paracalicium betulae</i>
10. Corticolous on the trunks of <i>Picea</i> spp., excipulum lacking horizontal banding but occasionally vertically pleated.....	<i>Paracalicium piceae</i>
11. Corticolous on branches of <i>Chamaedaphe calyculata</i> in wetlands, excipulum intact and continuous with epithecium	<i>Paracalicium chamaedaphnes</i>
11. Corticolous on branches and twigs of <i>Salix</i> ; portions of the upper edge of excipulum receding, forming a pronounced irregular distal edge	<i>Paracalicium recedens</i>
12.(5) Apothecia growing on the fungal brackets of <i>Trichaptum biforme</i> (on angiosperms) or, rarely, <i>T. abietinum</i> (on conifers)	<i>Phaeocalicium polyporaeum</i>
12. Apothecia growing on the branches and twigs of deciduous trees and shrubs.....	13
13. Corticolous on branches and twigs of <i>Alnus</i> (often co-occurring with <i>Stenocybe</i>); with purplish crystals that are K+ aeruginose in the hymenium	<i>Phaeocalicium alnophilum</i>
13. Corticolous on branches and twigs of <i>Populus</i> ; lacking purplish crystals that are K+ aeruginose in the hymenium, but sometimes present at the base of the stalk	<i>Phaeocalicium populneum</i>
14.(5) Spores non-septate, on branches and twigs of <i>Alnus</i>	<i>Stenocybe</i> aff. <i>pullatula</i>
14. Spores predominantly 2—3 septate.....	15
15. Ascomata often with branched stalks, spores 12—20 µm long, on <i>Alnus</i> bark	<i>Stenocybe pullatula</i>
15. Apothecia unbranched, spores 20—35 µm long, on <i>Abies</i> bark.....	<i>Stenocybe major</i>

07. KEY TO CHAENOTHECOPSIS & MYCOCALICIUM

Here we address the remainder of the allied fungi. A difficult, diverse, polyphyletic group that can be found on lignin, resin or bark associated with resin, or parasitic on other lichens. Some species do occur on bark, but the ascomata tend to be darker or have pruina, differentiating them from the species addressed in Key 06. Ascomata range from pale to black, pruinose or not, and their color and chemistry in squash are informative. Modified from Haughland et al. (2025). Stordeur et al. 2010 is recommended if you want to try a more global, inclusive key, but it will lack the species newly described from Haughland et al. (2025).

1. Spores non-septate	2
1. Spores 1-septate	11
2. Resinicolous on conifers.....	3
2. Not resinicolous on conifers.....	5
3. Ascomata typically <0.6 mm tall	4
3. Ascomata typically >0.6 mm tall; to date known from 1 locality near Lesser Slave Lake	<i>Chaenothecopsis oregana</i>

4. Ascomata deep reddish-brown in wet mount, K+ green, boreal	<i>Chaenothecopsis penningtonensis</i>	
4. Ascomata brown to gray in wet mount, K–, montane.....	<i>Chaenothecopsis abscondita</i>	
5. Ascomata lichenicolous on sorediate crustose lichens with <i>Trebouxia</i>		6
5. Ascomata usually corticolous, lignicolous, or saxicolous; if lichenicolous, then not on sorediate crusts with <i>Trebouxia</i>		7
6. Ascomata 0.3–0.45 mm tall, the capitulum K+ red in a fast-fading reaction; stalk brown in water mount; asci 25–47 × 3.5–6 µm, the spores 6–11 × 2.5–4.5 µm.....	<i>Chaenothecopsis ochroleuca</i>	
6. Ascomata 0.16–0.34 mm tall, K– to K+ green; stalk pale in water mount; asci 51–70 × 5–7.6 µm, the spores 9–20 × 4–7 µm.....	<i>Chaenothecopsis yukonensis</i>	
7. Red or reddish pigments K+ green, stalks well-developed and grayish-white, as if pruinose	<i>Chaenothecopsis viridialba</i>	
7. Green pigments K+ green-intensified or ascomata without green pigments, K–, stalks may or may not be grayish-white pruinose.....		8
8. Ascomata with rough, granular stalks that are often white-pruinose; central stalk pale, with isodiametric, pseudoparenchymatous cells	<i>Chaenothecopsis ussuriensis</i>	
8. Ascomata with smooth stalks that are epruinose; cells of central stalk rectangular and periclinally-arranged		9
9. Spores ellipsoid, hyaline to very pale brown, spore wall smooth	<i>Chaenothecopsis savonica</i>	
9. Spores fusiform, brown to dark brown, near laterally-oriented in young asci and irregularly arranged to periclinally oriented in older asci.....		10
10. Asci apices penetrated by a narrow canal, spores often a distinct areolate ornamentation	<i>Chaenothecopsis nana</i>	
10. Asci apices lacking a canal, spores often flattened and rarely ornamented or if ornamented then minutely punctiform.....	<i>Mycocalicium subtile</i>	
11.(1) Ascomata resinicolous on conifers		12
11. Ascomata corticolous, lignicolous, saxicolous, or lichenicolous, but not resinicolous		13
12. Ascomata typically <0.5 mm tall, with excipulum and stalk thinly gray-pruinose; often found on lower surface of <i>Picea</i> bark flakes.....	<i>Chaenothecopsis marcineae</i>	
12. Ascomata typically >0.5 mm tall, the stalk thin, hairlike (0.02–0.04 mm in diameter), the excipulum and sometimes the upper stalk white-pruinose.....	<i>Chaenothecopsis caelumsaltator</i>	
13. Ascomata K+ green or K+ red or red-enhanced		14
13. Ascomata K– or with other responses to K including fleeting reactions		16
14. Ascomata K+ green, capitulum lenticular to spherical, the stalk >0.04 mm in diameter; hypothecium yellowish- to reddish-brown; spores 5–7.5 µm long	<i>Chaenothecopsis viridireagens</i>	
14. Ascomata K+ red or red-enhanced		15

15. Ascomata usually with distinct yellow to orangy-red pigment granules in the excipulum and/or upper stalk that are K+ red to purplish in a fast-fading reaction ***Chaenothecopsis pusiola***
15. Ascomata without distinct yellow to orangy-red pigment granules in the excipulum and/or upper stalk, but the stalk K+ pinkish red or grayish-red..... ***Chaenothecopsis debilis***
16. Septa of spores pale, of less contrast than outer spore wall..... 17
16. Septa of spores well-pigmented, as dark as or darker than outer spore wall..... 19
17. Lignicolous and corticolous..... ***Chaenothecopsis pusilla***
17. Lichenicolous..... 18
18. Lichenicolous on *Coniocybe furfuracea* ***Chaenothecopsis epifurfuracea***
18. Lichenicolous on sorediate species of the lichen genus *Cladonia* ***Chaenothecopsis parasitaster***
19. Capitulum usually bluish-white-pruinose or glaucous the excipulum, stalk, and hypothecium K–; the hypothecium and outer stalk hyphae are N+ reddish-brown; corticolous and lignicolous, never lichenicolous ***Chaenothecopsis fennica***
19. Capitulum not bluish-white-pruinose or glaucous, always lichenicolous 20
20. Lichenicolous on *Calicium viride*; asci 42–67 × 3–6 µm ***Chaenothecopsis calicii-viridis***
20. Lichenicolous on *Chaenotheca trichialis* and, reportedly, other species of *Chaenotheca*; asci 31–38 × 2–3 µm..... ***Chaenothecopsis epithallina***
- Not known for Alberta, but given the prevalence of *Chaenotheca trichialis* it is a species to watch for.

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