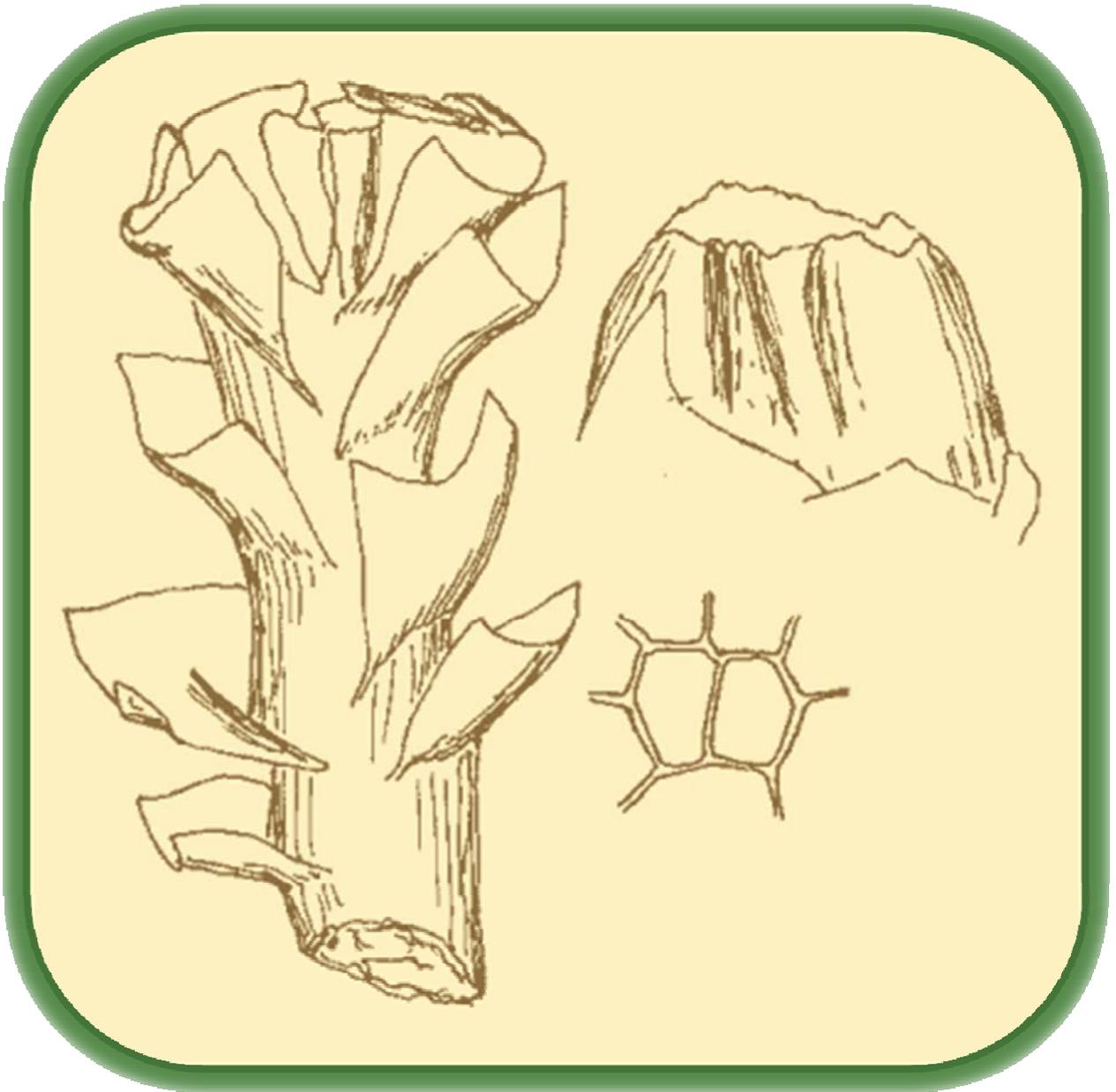


Lophozia s.lat. in Switzerland

Lars Söderström



This booklet includes all species of the genus *Lophozia* sensu Schuster that occur in Switzerland. The aim is to enhance the identification of the species, not to make a monograph or a systematic revision of the genus.

Key

1. Leaves 2-lobed (single 3-lobed leaves can occur) 2
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 - Gemmae red to brown..... 14
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 - Leaf often with teeth, base 1-2-stratose, stem fleshy, perianth with 1-3-celled teeth *Lophozia incisa*
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Barbilophozia* Loeske subgen. *Barbilophozia

Large species with mostly 4-lobed leaves with appendages of elongate cells at the base or lacking. Leaves sub-longitudinally attached. Underleaves mostly hidden in the rhizoids, unilobed to bilobed, usually with cilia.

sect. *Lycopodioideae* R.M.Schust.

Ventral leaf margin with thread-like appendages of elongate cells. Leaf lobes mucronate. *Barbilophozia rubescens*



***Barbilophozia lycopodioides* (Wallr.) Loeske**

Rather large, shoots 3-5 cm long and 4 mm wide. Light green to yellowish green. **Leaves 4-lobed with curved sides and also curved lobe sides, lobes mucronate. Without gemmae.**

Epigeic, on litter, soil covered boulders, etc.



***Barbilophozia hatcheri* (A.Evans) Loeske**

Rather large, shoots 1-5 cm long and 3-4 mm wide. **Similar to *B. lycopodioides* but almost always with red gemmae and with less curved and mucronate leaves.**

On boulders and cliffs, more rarely epigeic.



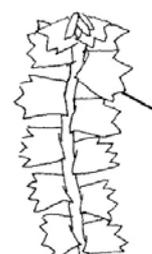
sect. *Barbilophozia*

Ventral leaf margin without thread-like appendages. Leaf lobes not mucronate.

***Barbilophozia barbata* (Schmid.) Loeske**

Large, shoots 3-8 cm long and 2-5 mm wide. **Leaves almost quadratic with straight sides, 4-lobed.** Lobes also with straight sides. Differ from all other 4-lobed species on the leaf shape.

Epigeic, on litter, soil covered cliffs, etc.

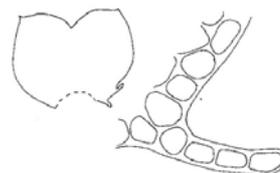


***Barbilophozia* subgen. *Orthocaulis* (H.Buch) R.M.Schust.**

Large to intermediate sized species with 2-4-lobed leaves (mostly 3-lobed). Leaves sub-transversely attached. Lobes not mucronate.

sect. *Kunzeana* (C.E.O.Jensen) R.M.Schust.

2-3-4-lobed leaves. Underleaves large and bilobed with cilia. Leaves with appendages of quadratic cells at the base



***Barbilophozia quadriloba* (Lindb.) Loeske**

Shoots erect or ascending, slender, 1.5-4 cm long and 1-1.5 mm wide. Characteristic by its **brownish black or dark olive green colour. Leaves deeply 4-lobed with recurved edges and a strongly reflexed sinus. Underleaves large and 2-lobed.** Small alpine forms (var. *glareosa* (Jørg.) Lammes) are 2-3-lobed and may resemble other *Barbilophozia* species but the colour is darker.

In moist places, wet cliffs, etc.



***Barbilophozia kunzeana* (Hübener) Müll.Frib.**

Yellowish brown. Shoots 2-5 cm long and 1-2 mm wide. **Leaves 2-lobed** (rarely 3-lobed) with **wide obtuse lobes and usually recurved margins.** Gemmae rare, mostly brownish. **Underleaves large and 2-lobed** which distinguish it from all other 2-lobed species.

In wet places like wet cliffs, fens, stream margins, etc.



***Barbilophozia floerkei* (F.Weber & D.Mohr) Loeske**

Yellowish green to dark green. Shoots prostrate or ascending to almost erect. **Leaves 3-lobed with short obtuse lobes. Underleaves large, 2-lobed almost to the base.** Gemmae rare, red brown.



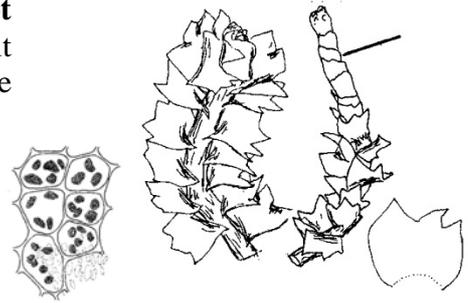
sect. *Orthocaulis*

Leaves 3-lobed. Underleaves absent or small. Leaves with appendages of quadratic cells at the base. *Barbilophozia binsteadii* ((Kaal.) Loeske is a northern species belonging in the section

***Barbilophozia attenuata* (Mart.) Loeske**

Green. Shoots mostly ascending to erect. Leaves 3-lobed. Without underleaves. **Almost always with attenuate shoot apices with gemmae. Lacking trigones** which separates it from *B. atlantica*. The latter may have somewhat attenuate gemmae shoots but they are not as distinct as in *B. attenuata*.

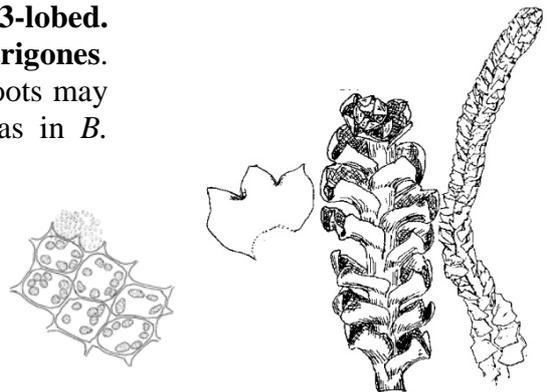
On boulders and decaying logs.



***Barbilophozia atlantica* (Kaal.) Loeske**

Dark brown. Shoots ascending to erect. **Leaves 3-lobed. Without underleaves. Cells are large with large trigones.** Often with red gemmae. Shoot apices on gemmae shoots may be attenuate but they are not as distinctly formed as in *B. attenuata*.

Shaded boulders and cliffs, moist heath land.



***Lophozia* (Dumort.) Dumort.**

A heterogeneous group of mostly bilobed species. Section delimitations are preliminary and the genus will in the future be split into several genera. Some elements may even go to *Barbilophozia*. The delimitation and structure here is basically traditional but the most obvious new data is included.

subgen. *Lophozia*

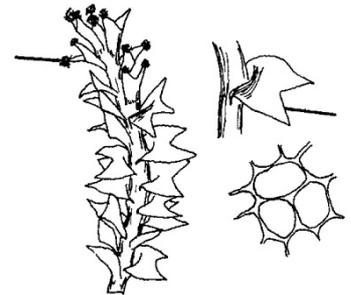
Bilobed species. Cells thin-walled with or without trigones. Oil bodies mostly few (<20) per cell.

sect. *Longidentatae* R.M.Schust.

Plants erect or suberect. Leaves almost transversely attached to stem. Perianth mouth laciniate to dentate.

***Lophozia longidens* (Lindb.) Macoun**

Green to dark green, erect. **Leaves 2-lobed, squarrose, longer than wide, with straight margins.** Almost always with **red gemmae** in the lobe apices of younger shoots. Cells with large trigones and 4-12 oil bodies per cell. Perianth mouth lobulate and dentate with 3-6-celled teeth.

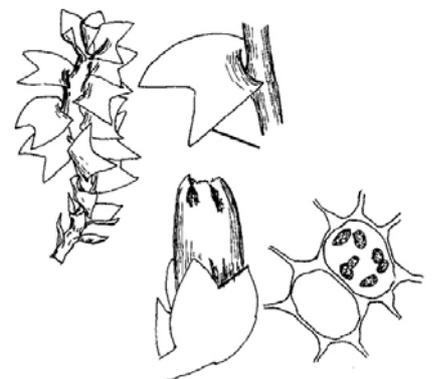


Differs from all other bilobed species with red gemmae on the leaf shape.

On decaying logs, tree bases and cliffs.

***Lophozia ascendens* (Warnst.) R.M.Schust.**

Light yellowish green. Shoots erect. **Leaves** almost transversely attached, **2-lobed, horned-like, longer than wide, with straight margins.** Almost always with **yellowish gemmae in the shoot apex.** Cells with large trigones and 6-10 compound oil bodies. Perianth mouth lobulate with 2-5-celled teeth.



Differs from all other species with yellowish gemmae on the erect shoots and the leaf shape.

On decaying wood.

sect. *Lophozia*

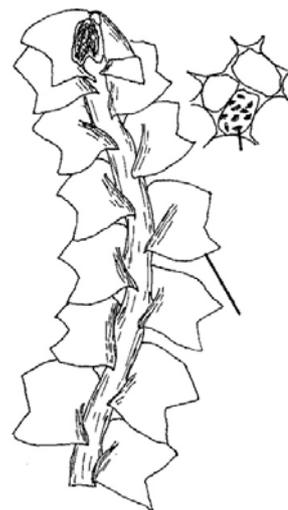
Here is included elements related to (or resembling) *Lophozia ventricosa*. They are characterized by bilobed leaves, lacking underleaves and producing yellowish, angular gemmae. Recent floras (e.g. Damsholt 2002) distribute them in several sections.

Lophozia ventricosa (Dicks.) Dumont.

Green to yellowish green. Shoot procumbent to ascendant. Leaves **2-lobed, wider than long with curved margins**. Almost always with yellowish gemmae. Cells with **moderately large trigones and 10-16 homogenous oil bodies**. Perianth lobulate with 1-2-celled teeth.

Differs from *L. silvicola* in the leaf form (wider than long vs. longer than wide) and oil bodies (homogenous vs. biconcentric). Differs from *L. longiflora* on the leaf form (wider than long vs. longer than wide) and the trigones (moderately large vs. bulging). Differs from *L. wenzelii* in having flatter leaves.

On moist boulders, cliffs and bare soil, often at the margin of roads or paths.



Var. ventricosa

The “normal” thing.

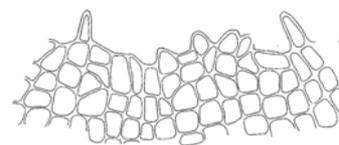
Var. uliginosa Breidl.

Plants large (2.5-4 mm wide), some leaves 3-lobed with gibbous sinus. Often more carmine than var. *ventricosa*.

Damsholt (2002) describe the variety as “1) having conduplicate, somewhat canaliculate and often 3-lobed leaves, 2) often having deep reddish perianths, bleached at the mouth, 3) often having reddish leaves, 4) having 3-5-lobed female bracts, 5) rarely developing gemmae and 6) having larger spores”. It is thus a larger version of *L. longiflora* without the ciliate perianth mouth.

The nomenclature is complex. This taxon was earlier named *L. longiflora* but ?Schljakov? showed that this name belonged to another taxon. Thus, the name *L. longiflora* (or *L. ventricosa* var. *longiflora*) means this taxon in all literature between 1900

and c. 1980 (in some cases even later) while it means what was earlier named *L. porphyroleuca* or *L. guttulata* in modern nomenclature. The name should be rejected due to its confusing use but unfortunately this is not done.



Var. confertifolia (Schiffn.) Husn.

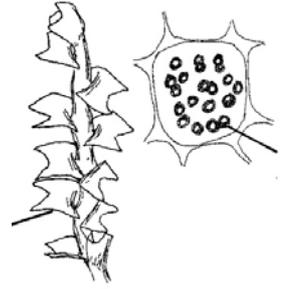
A problematic taxon often included in *L. wenzelii*. However, *L. wenzelii*, *L. ventricosa* and the present taxon seems to be closely related.

Leaves dense, somewhat cupped, almost always with yellowish gemmae.

***Lophozia silvicola* H.Buch**

Green to yellowish green. Shoots procumbent to ascendant. **Leaves 2-lobed, longer than wide and obliquely attached.** Almost always with yellowish gemmae. Cells with moderately large to bulging trigones and 15-20 **biconcentric oil bodies** per cell. Perianth mouth with 1-2-celled teeth.

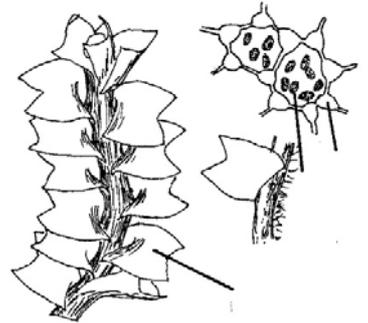
On decaying wood and on boulders, less often on soil.



***Lophozia longiflora* (Nees) Schiffn.**

Green to purple. The leaf base and stem is almost always carmine red. **Leaves 2-lobed, longer than wide and almost transversely attached to the stem. Cells with large, bulging, in leaf lobes often confluent trigones and 3-10 homogenous oil bodies** per cell. Gemmae infrequent, yellowish. **Perianth often reddish except for the whitish mouth, mouth lobulate with 3-4-celled cilia.**

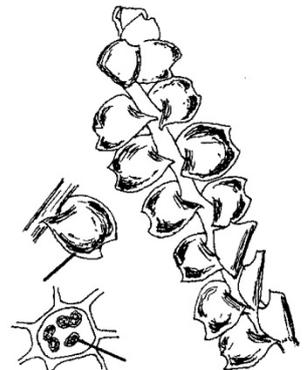
On decaying logs. Reports from peat should be confirmed.



***Lophozia wenzelii* (Nees) Steph.**

Green, leaf bases often reddish brown. **Leaves shallowly 2-lobed with rounded sinus, wide and cupped so that they are impossible to flatten without breaking them.** Gemmae yellowish. Cells thin-walled with trigones and 4-9 oil bodies. Perianth mouth lobulate with 1-celled teeth.

On wet to moist ground.



Var. *litoralis* (Arnell) Bakalin

What is this? Bakalin gives it for Switzerland.

sect. *Sudeticae* Schljakov

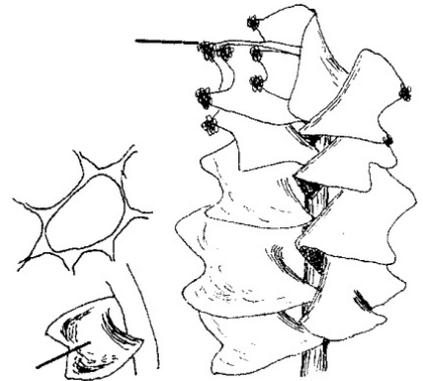
Lophozia sudetica seems to be closely related to *Barbilophozia* while *L. wenzelii* that is often included here is related to *L. ventricosa*.

Lophozia sudetica (Huebener) Grolle

Dark green to reddish brown. **Leaves** obliquely attached, broad, concave and widest below the middle, **shallowly bilobed** with rounded sinus. Cells small with large trigones and 6-8 oil bodies. **Almost always with reddish gemmae**. Perianth mouth with 1-2-celled teeth.

Leaf shape may resemble *L. wenzelii* but gemmae are red. Differs from other red gemmae species by the wide leaf and cells with distinct trigones.

On soil and rocks.



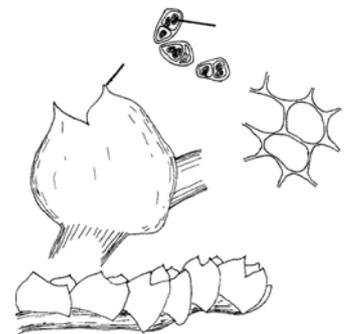
sect. *Excisae* (C.E.O.Jensen) H. Buch

The elements here do not fit anywhere. *L. perssonii* is something of its own, perhaps deserving recognition as a genus.

Lophozia perssonii H. Buch & S.W. Arnell

Small. Green. Leaf lobes often ends in an apex of 1-2 cells. Cells with thin walls, large trigones and 3-5 oil bodies. Characterized by its abundant **reddish yellow to red brown gemmae with 2 large** (and often some smaller) **persistent oil bodies**. Perianth with 2-5-celled teeth

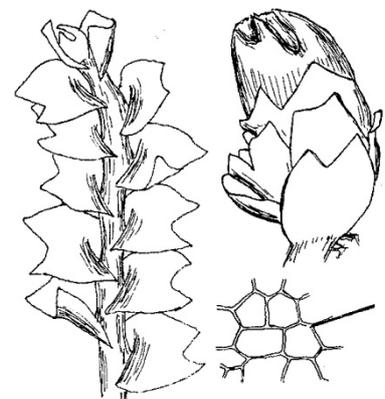
On bare, calcareous soil and soil covered cliffs.



Lophozia excisa (Dicks.) Dumort.

Small. Green, often reddish in shoot apex. Leaves as wide as long, rounded, bilobed with wide, rounded sinus. Cells with **thin cell walls and with very small trigones** and 9-20 oil bodies. **Gemmae red**. Perianth somewhat lobed with small teeth.

On sandy soil or soil covered cliffs. Tolerate more calcareous ground than most *Lophozia* species and of the species with red gemmae only *L. perssonii* occur on base rich substrates.



***Lophozia* subgen. *Schistochilopsis* Kitag.**

Sometimes, probably correctly so, recognized as a genus of its own, especially in the Russian literature. However, some elements here seems to be best excluded.

Cells thin-walled, rarely with trigones. Oil bodies many, 20-50 per cell.

sect. *Incisae* (C.E.O.Jensen) H.Buch

Gemmae angular. Stem stout and fleshy. Leaves often dentate, sometimes 2-3-lobed.

***Lophozia grandiretis* (Kaal.) Schiffn.**

Mesium to small. **Stem fleshy, purple** at least on ventral side. Leaves wide, bilobed. **Cells large, thin-walled with small trigones** and 35-50 oil bodies. **Gemmae abundant, pale green**, stellate. Perianth mouth subentire

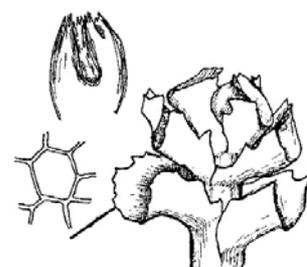
Among other species on base rich peat, in rich fens and on base rich rocks.



***Lophozia incisa* (Schrad.) Dum.**

Small to medium sized. Dark green. **Stem fleshy. Leaves mostly 2-lobes, sometimes 3-5-lobed, often densely dentate.** Cells thin-walled without trigones and with 17-35 oil bodies. Almost always with light green gemmae. Perianth mouth with 1-3-celled teeth.

On decaying wood, moist peat, moist cliffs, etc.

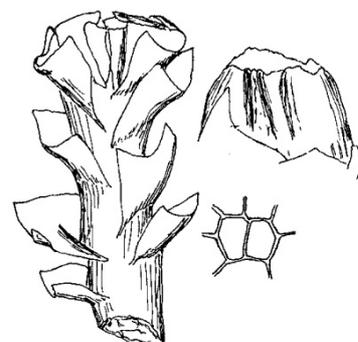


***Lophozia opacifolia* Culm.**

Small to medium sized. Dark green. **Similar to *L. incisa* but less dentate leaves and with leaves 2-3-layered at base.** Cells with 25-45 oil bodies. Perianth mouth subentire.

Often regarded as a subspecies of *L. incisa* (subsp. *opacifolia* (Culm.) R.M.Schust. & Damsh.).

On sandy or peaty soil in the mountains. On more base rich soil than *L. incisa*.



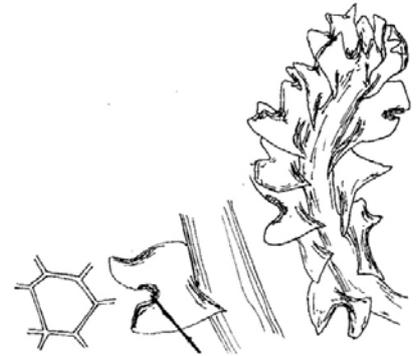
sect. *Heterogemma* Jørg.

Gemmae 1-celled, spherical to ovoid, smooth. Stem often wide and “fleshy”.

Lophozia laxa (Lindb.) Grolle

Small to medium sized. **Light green with more or less purple stems and sometimes leaves.** Leaves wide, bilobed with decurrent margins and sinus. Cells thin-walled without trigones and 30-60 oil bodies. Perianth mouth with 1-2-celled teeth.

On peat or *Sphagnum* cushions in poor fens.



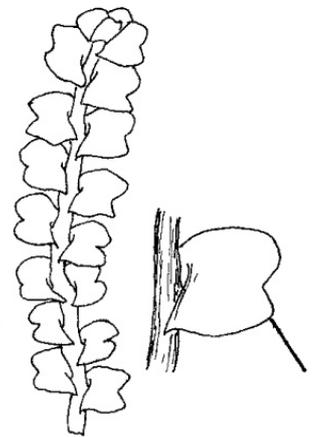
sect. *Obtusae* R.M.Schust.

Probably best placed in its own genus, *Obtusifolium*.

Lophozia obtusa (Lindb.) A.Evans

Medium sized. Green to yellow green, stem often reddish on the ventral side. Leaves almost longitudinally attached, **bilobed with rounded lobes and decurrent sinus.** Cells thin-walled with 15-50 oil bodies. Gemmae greenish, rare. Perianth long-exserted, mouth with 1-3-celled teeth.

Epigeic. Single shoots or small patches among other bryophytes.

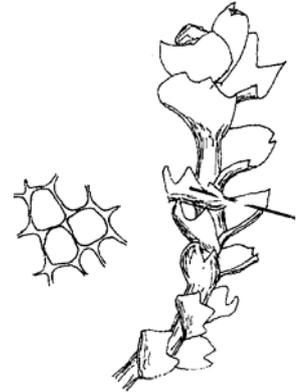


subgen. *Protolophozia* R.M.Schust.

Lophozia elongata Steph

Small to medium sized. Deep green. **Leaves polymorphic, bilobed with a marginal tooth that often can be like a 3rd lobe.** Cells thin-walled with small trigones and 12-30 oil bodies. **Underleaves distinct, lanceolate.** Without gemmae. Paroicious. Perianth mouth lobulate with 1-2-celled gemmae.

In bogs and fens.



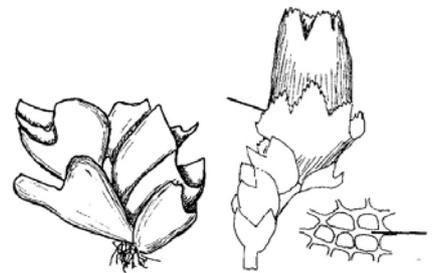
Lophozia subgen. *Isopaches* (H. Buch) R.M.Schust.

Probably worth recognizing at genus level. Cells thick-walled without trigones.

Lophozia bicrenata (Hoffm.) Dumort.

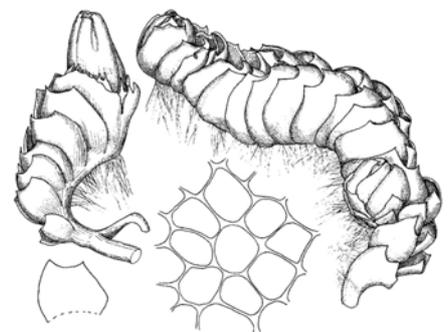
Small, fleshy, green to reddish brown. **Cells thick-walled with 6-12 oil bodies. Always with reddish gemmae.** Paroicious, often with perianths. **Female bracts dentate.** Perianth mouth with 3-4-celled teeth.

On sandy or clayey soils, ditches, soil covered boulders, cliffs, etc.



Lophozia decolorans (Limpr.) Steph.

Small, whitish or yellow-green. **Leaves shallowly bilobed with lunate sinus, strongly imbricate so the shoots looks julaceous. Leaf margin decolorate.** Cells with thick walls without trigones and 6-8 oil bodies. Gemmae angular, redbrown.



***Leiocolea* Müll.Frib.**

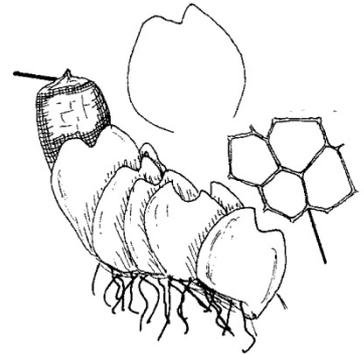
Perianth smooth below, abruptly contracted above with a short beak. Underleaves mostly present. Gemmae lacking in all but one species.

Not related to Lophoziaceae. Closer related to Jungermanniaceae but perhaps best placed in Mesoptychiaceae.

***Leiocolea badensis* (Gottsche) Jørg.**

Small. Yellowish green to light green. **Leaves shallowly bilobed, lobes obtuse and sinus mostly acute. Underleaves lacking.** Cells large with thin walls and **no or minute trigones.** Oil bodies 2-5 per cell.

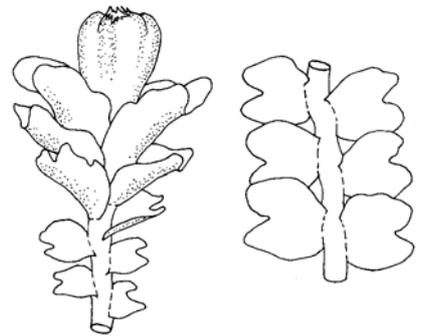
Among other bryophytes on shaded calcareous cliffs.



***Leiocolea turbinata* (Raddi) H.Buch.**

Small. **Leaves shallowly narrowly inserted, not decurrent,** bilobed, Lobes obtuse. Cells with thin walls without trigones and 3-9 oil bodies. Underleaves absent.

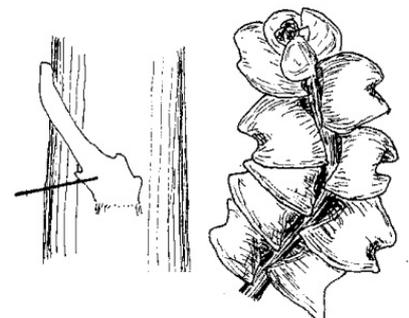
Pioneer species on calcareous soil.



***Leiocolea gillmannii* (Aust.) A.Evans**

Medium sized to small. Leaves rounded to somewhat longer than wide, not decurrent ventrally. Underleaves small but distinct. Paroicious and often with perianth with a long beak.

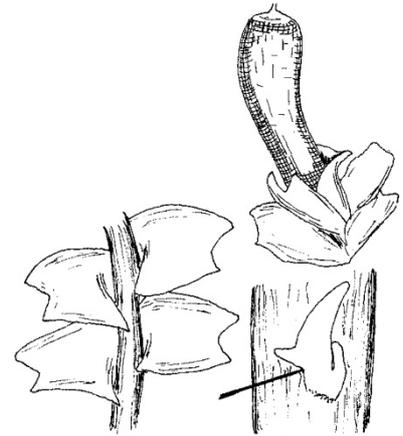
Sterile difficult to separate from other *Leiocolea* species but cells are intermediate between *L. bantriensis* and *L. collaris*.



***Leiocolea bantriensis* (Hook.) Jørg.**

Small to medium sized. Leaves shallowly (-1/5) bilobed with lunate sinus, lobes rounded to acute. Trigones small. 2-8 oil bodies per cell. Without underleaves. Perianth unbeaked. Without gemmae.

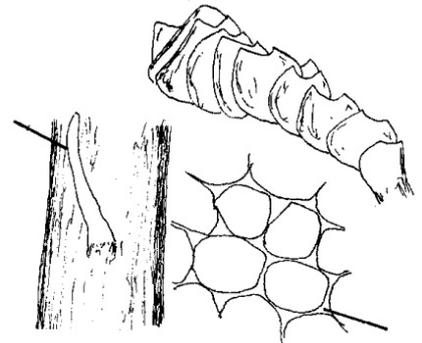
In rich fens, springs and shores.



***Leiocolea collaris* (Nees) Schljakov**

Small. Leaves shallowly bilobed (-1/4) with angular sinus. Lobes acute to acuminate. Cells small (25-30 μm in the middle) with small trigones. Gemmae lacking.

On dryer, shaded, basic cliffs and calcareous soil.



***Leiocolea heterocolpos* (Hartm.) H.Buch**

Small. Often with attenuate gemmae shoots with brown gemmae. Cells thin-walled with distinct to large trigones. With small underleaves.

