

Svensk Lichenologisk Förening

Cladonia workshop

Alica Košuthová

Cladonia workshop

THALLUS dimorphic:

- **Primary thallus** (thallus horizontalis) squamulose , foliose , crustose
- **Secondary thallus** (thallus verticalis) forming: **Podetia and Pseudopodetia**

Ecorticate



Scyphi – NO

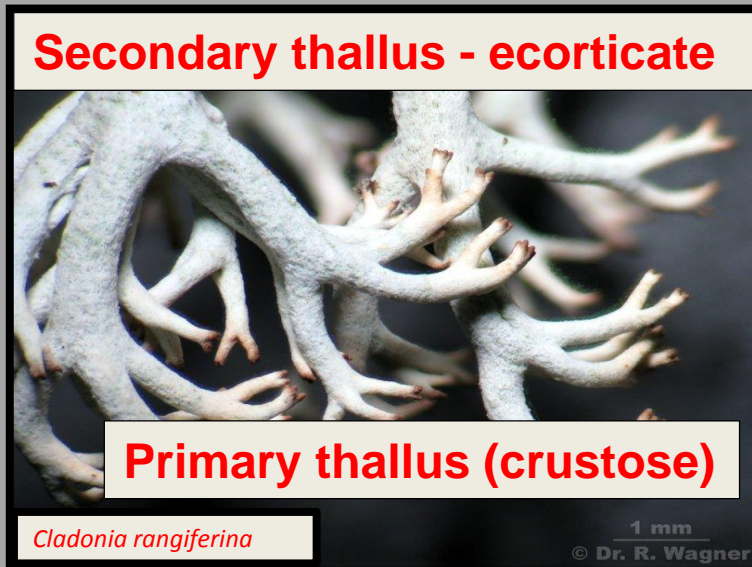
Additional structures - NO



Corticate

NO or YES

NO or YES



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SECONDARY THALLUS (PODETIA) – CORTICATE:

SMOOTH

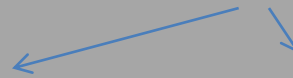
AREOLAETE

GRANULATE



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SECONDARY THALLUS (PODETIA) structures: (SOREDIA, squamules, granules)



SOREDIA - farinose



SOREDIA - granulose



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SECONDARY THALLUS (PODETIA) structures:

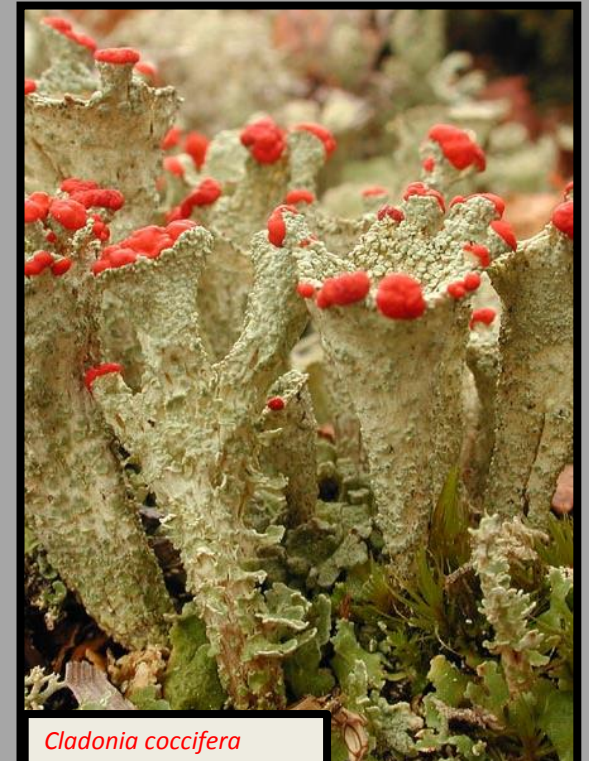
(soresia, SQUAMULES, GRANULES)



MICRO-SQUAMULES

MACRO-SQUAMULES

GRANULES



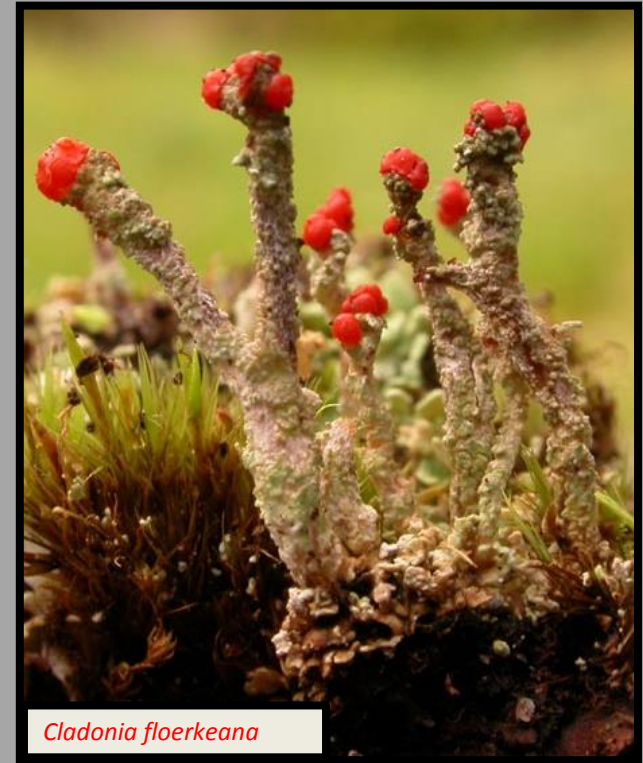
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SECONDARY THALLUS (PODETIA) structures: (SCYPHI, soledia or squamules)



SCYPHI – cups present (scyphose)

SCYPHI – cups absent (ascyphose)



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ASCOMATA

- Apothecia →
- Picnidia



Cladonia botrytes



Cladonia chlorophaea



Cladonia crispata



Cladonia pleurota



Cladonia coccifera

How to follow the key?

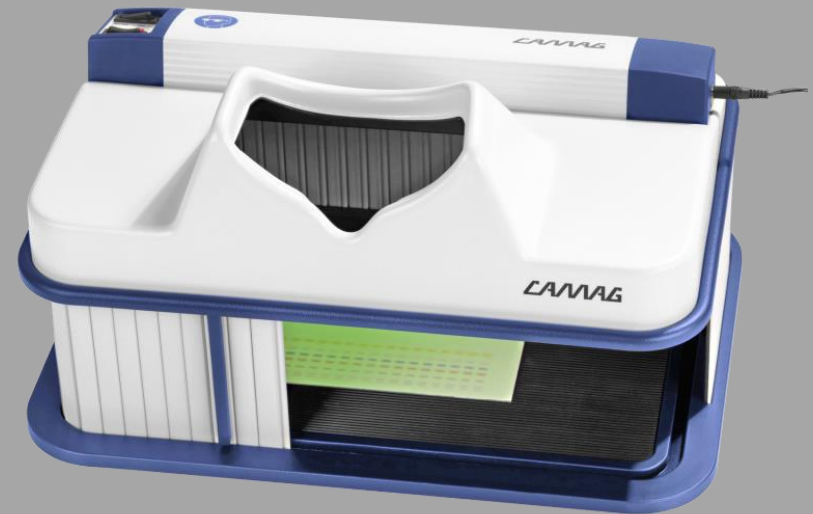
CHEMICALS and UV lamp

- PD - Paraphenylenediamine
- K – KOH Potassium hydroxide, of
- C - Hypochlorite
- I - Iodine

UV cabinet for TLC



spot-tests to
identify
lichen taxa



Coffee???

How to follow the key?

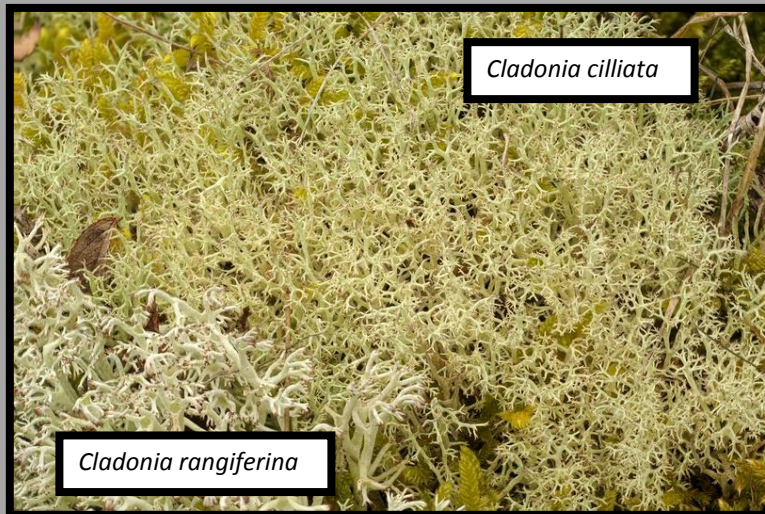
1. Podetia **present**. Primary thallus present or absent.

- Podetia **absent** or very rare. Squamules dominant (only species which are usually in sterile state)



How to follow the key?

1. Podetia **present**. Primary thallus present or absent: 2
 - Podetia absent or very rare. Squamules dominant (only species which are usually in sterile state)
2. Podetia **ecorticate**, surface minutely fibrose. Always richly branched. No soredia, scyphi or squamules
 - Podetia **corticate** (surface appearing smooth, hard), at least in part, or throughout sorediate



How to follow the key?

2. Podetia **ecorticate**, surface minutely fibrose. Always richly branched. No soredia, scyphi or squamules

- Podetia **corticate** (surface appearing smooth, hard), at least in part, or throughout sorediate: 11

11. Podetia yellowish green, **esorediae**, esquamulose, almost continuously and fairly smoothly corticate (or corticoid) throughout, richly to moderate **branched**

- Podetia usually grey to brown, more rarely yellowish, **often sorediate or squamulose, unbranched to richly branched**, surface smoothly corticate or not. P+ red or P-

How to follow the key?

11. Podetia yellowish green, esorediae, esquamulose, almost continuously and fairly smoothly corticate (or corticoid) throughout, richly to moderate branched: 12

- Podetia usually grey to brown, more rarely yellowish, often sorediate or squamulose, **unbranched** to richly branched, surface smoothly corticate or not. P+ red or P-

12. Podetia erect, yellowish green, usually much browned at apex, tips very thin, forked, subulate, curved, often bearing scatted **scyphi**, **main axes distinct** – *Cladonia amaurocraea*

- Podetia erect to ascendent, greyish to greenish yellow, little browned at apex, tips thick, acute, spiny, **never scyphose**, **main axes usually indistinct**



Cladonia amaurocraea

How to follow the key?

12. Podetia erect, yellowish green, usually much browned at apex, tips very thin, forked, subulate, curved, often bearing scatted scyphi, main axes distinct

- Podetia erect to ascendent, greyish to greenish yellow, little browned at apex, tips thick, acute, spiny, **never scyphose, main axes usually indistinct**: 13

13. Tips of podetia producing abundant, bluish crystals needles in herbarium.

Podetium **surface matt, withish with very thin cortex** – *Cladonia zopfii*

- No crystals appearing at tips of podetia.
Podetium surface slightly **glossy, rarely whitish, cortex distinct**



Cladonia zopfii

How to follow the key?

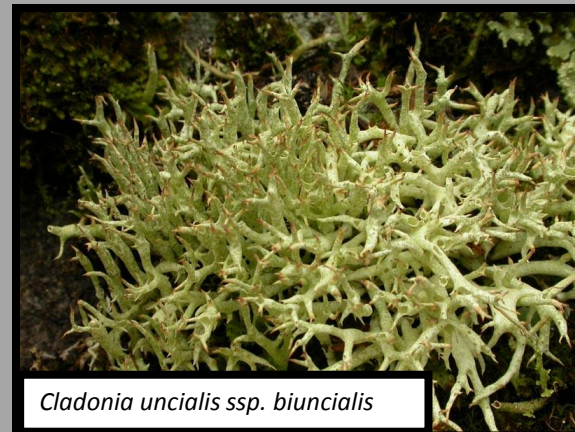
13. Tips of podetia producing abundant, bluish crystals needles in herbarium.

Podetium **surface matt**, whitish with **very thin cortex**

- No crystals appearing at tips of podetia. Podetium surface **slightly glossy**, rarely whitish, **cortex distinct**: 14

14. Branching predominantly polytomous, axils largely open. Somewhat robust. Medula usually UV- *C. uncialis* ssp. *uncialis*

- Branching predominantly dichotomous, axils mainly closed. Very slender to turgid. Medula usually UV+ white (squamatic acid) – *C. uncialis* ssp. *biuncialis*



How to follow the key?

11. Podetia yellowish green, **esorediae, esquamulose**, almost continuously and fairly smoothly corticate (or corticoid) throughout, **richly to moderate branched**

- Podetia usually grey to brown, more rarely yellowish, **often sorediate or squamulose**, unbranched to richly branched, surface smoothly corticate or not. P+ red or P- : 15

15. **Apothecia** (hymenial discs) and slime in picnidia **red** (occasionally visible in osciolum). **Necrotic bases often turning orange**. P – or rarely P+yellow, never red

- **Apothecia brown** to ochraceous, slime in picnidia usually hyaline (never red). **Necrotic bases grey, brown or melanotic**. P+ red (commonly), P+ yellow or P-



Coffee?

How to follow the key?

11. Podetia yellowish green, **esorediae, esquamulose**, almost continuously and fairly smoothly corticate (or corticoid) throughout, **richly to moderate branched**

- Podetia usually grey to brown, more rarely yellowish, **often sorediate or squamulose**, unbranched to richly branched, surface smoothly corticate or not. P+ red or P- : 15

15. **Apothecia** (hymenial discs) and slime in picnidia **red** (occasionally visible in osciolum). **Necrotic bases often turning orange**. P – or rarely P+yellow, never red.

- **Apothecia brown** to ochraceous, slime in picnidia usually hyaline (never red). **Necrotic bases grey, brown or melanotic**. P+ red (commonly), P+ yellow or P-



How to follow the key?

15. **Apothecia** (hymenial discs) and slime in picnidia **red** (occasionally visible in osculum). **Necrotic bases often turning orange**. P – or rarely P+yellow, never red: 16

- **Apothecia brown** to ochraceous, slime in picnidia usually hyaline (never red). **Necrotic bases grey, brown or melanotic**. P+ red (commonly), P+ yellow or P- : 33

33. **Apothecia pale ochraceous brown**. Thallus always **yellowish-green** (usnic acid): 34

- **Apothecia dark brown** to blackish brown. Thallus rarely yellowish: 37

34. **Podetia esorediate**, short, with numerous apothecia – *C. botrytes*

- **Podetia sorediate**, taller, rarely with apothecia: 35



How to follow the key?

34. **Podetia esorediate**, short, with numerous apothecia – *C. botrytes*

- **Podetia soreciate**, taller, rarely with apothecia: 35

35. Podetia with regular broad scyphi –
C. carneola

- Podetia **usually without scyphi**, more
rarely with narrow scyphi: 36

36. Podetia till 1 cm, yellowish, not bluish
at the base – *C. balilliformis*

- Podetia over 3 cm, Yellowish, bluish at
the base – *C. cyanipes*



How to follow the key?

33. **Apothecia pale ochraceous brown.** Thallus always **yellowish-green**
(usnic acid): 34

- **Apothecia dark brown** to blackish brown. Thallus rarely yellowish: 37

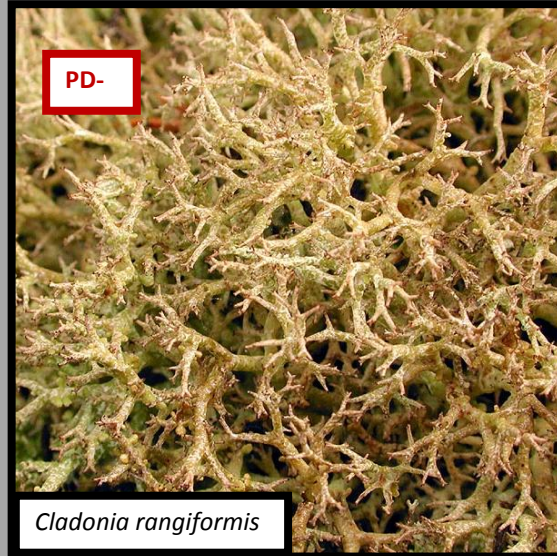
37. Podetia yes : 38

38. Podetia **ascyphose. Esorediate or granulose sorediate**

- Podetia **scyphose** , often **farinose sorediate**



How to follow the key?



Cladonia furcata



Cladonia furcata



Cladonia furcata



Cladonia furcata



Cladonia furcata



How to follow the key?

PD+red



Cladonia subulata

PD+yellow



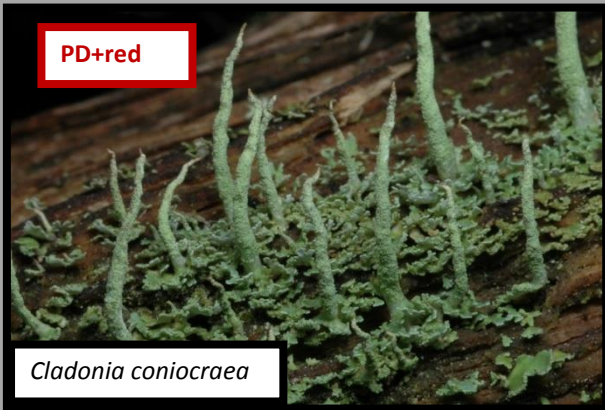
Cladonia acuminata

PD+red



Cladonia cornuta

PD+red



Cladonia coniocraea







Cladonia trasii



Cladonia ecmocyna



Cladonia crispata ssp. crispata



C. crispata ssp. cetrariiformis



Cladonia maxima



Cladonia phyllophora



Cladonia ramulosa





Thank you for your attention

http://www.nhm2.uio.no/botanisk/lav/Photo_Gallery/COPYRGHT.HTM



- Cladonia arbuscula



- *Cladonia ciliata*



- Cladonia mitis



- *Cladonia portentosa*



- Cladonia rangiferina



- Cladonia stygia



- *Cladonia stellaris*



- *Cladonia stellaris*



- *Cladonia merochlorophea*



- Cladonia pocillum



- *Cladonia subfurcata*



- *Cladonia turgida*



- *Cladonia verticillata*