

## LABORATORY 11: Diversity within a genus: exploring *Cladonia*.

### Introduction to *Cladonia*

*Cladonia* is a genus with over 800 species, and is one of the largest genera of lichen. These lichens are unique in appearance, with a distinctive cup or trumpet-shaped structure called a podetium that supports the reproductive organs. The podetium gives these lichens their common name of pixie cups or matchstick lichens. *Cladonia* species are found in various environments worldwide, and are found on every continent.

*Cladonia* species have two main types of morphology, and these are called the primary and secondary thallus. Primary thalli may be crustose and temporary or persistent squamulose structures. Secondary thalli are erect structures that grow from the primary thallus which we call podetia. Some species may have only a primary thallus, others may have both, while some species only the podetia are visible.

### Chemical Spot Tests

You can do the K and C tests if needed under the dissecting scope on the front bench. **P tests have been performed and the tissue exposed to P is in a small petri dish on the main bench. You do not have to redo the P test.** I have included info from the previous lab about spot tests below:

The chemical solutions are denoted by three letters, **K, C, & P**. **K** is a 20% solution of Potassium Hydroxide – this is a strong base, so make sure you are careful. **C** is just household bleach. **P** is a ~1% solution of para-phenylenediamine in ethanol.

### Solubility of lichen compounds

To test the solubility of lichen compounds, place a sample of your lichen in a small amount of water, do the same, but place it in a small tube of acetone. Using a capillary tube place several drops onto a slide and place them on the slide warmer without a coverslip. Make sure to label your slides. Observe the slides under a microscope to check for crystals. Add a small amount of K and C to your slides and see if there is a color change and if you see crystals. You can also check the spot test on a small amount of filter paper. There is limited material of Norstictic acid, so just use the acetone extraction provided.

Lichen compound	Extraction method	Crystals on a slide?	K +/-	C +/-
Salazinic Acid	Acetone			
	H <sub>2</sub> O			
Gyrophoric Acid	Acetone			
	H <sub>2</sub> O			
Norstictic Acid	Acetone			

### UV lichens

Be sure to look in the UV box to observe the lichens that react to UV light!

**Cladonia #1.** Your identification: \_\_\_\_\_

Main key used: \_\_\_\_\_

Suite of key entries: \_\_\_\_\_

Main features/ notes: \_\_\_\_\_

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**Cladonia #2.** Your identification: \_\_\_\_\_

Main key used: \_\_\_\_\_

Suite of key entries: \_\_\_\_\_

Main features/ notes: \_\_\_\_\_

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**Cladonia #3.** Your identification: \_\_\_\_\_

Main key used: \_\_\_\_\_

Suite of key entries: \_\_\_\_\_

Main features/ notes: \_\_\_\_\_

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**Cladonia #4.** Your identification: \_\_\_\_\_

Main key used: \_\_\_\_\_

Suite of key entries: \_\_\_\_\_

Main features/ notes: \_\_\_\_\_

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**Cladonia #5.** Your identification: \_\_\_\_\_

Main key used: \_\_\_\_\_

Suite of key entries: \_\_\_\_\_

Main features/ notes: \_\_\_\_\_

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**Cladonia #6.** Your identification: \_\_\_\_\_

Main key used: \_\_\_\_\_

Suite of key entries: \_\_\_\_\_

Main features/ notes: \_\_\_\_\_

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**Cladonia #7.** Your identification: \_\_\_\_\_

Main key used: \_\_\_\_\_

Suite of key entries: \_\_\_\_\_

Main features/ notes: \_\_\_\_\_

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**Cladonia #8.** Your identification: \_\_\_\_\_

Main key used: \_\_\_\_\_

Suite of key entries: \_\_\_\_\_

Main features/ notes: \_\_\_\_\_

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**Cladonia #9.** Your identification: \_\_\_\_\_

Main key used: \_\_\_\_\_

Suite of key entries: \_\_\_\_\_

Main features/ notes: \_\_\_\_\_

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**Cladonia #10.** Your identification: \_\_\_\_\_

Main key used: \_\_\_\_\_

Suite of key entries: \_\_\_\_\_

Main features/ notes: \_\_\_\_\_

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**Cladonia #11.** Your identification: \_\_\_\_\_

Main key used: \_\_\_\_\_

Suite of key entries: \_\_\_\_\_

Main features/ notes: \_\_\_\_\_

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**Cladonia #12.** Your identification: \_\_\_\_\_

Main key used: \_\_\_\_\_

Suite of key entries: \_\_\_\_\_

Main features/ notes: \_\_\_\_\_

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