



Candelaria concolor

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Rhizines

Foliose lichens have developed many types of rhizines that attach the thallus to the substrate; formed of many strands of fungal hyphae rhizines arise from the lower surface or margins of the thallus. Commonly observed types of simple and branched rhizine include:

- Simple** rhizines as in *Candelaria concolor* and many species of *Parmotrema*.
- Dichotomous** rhizines: the main axis branches equally in pairs as in *Hypotrachyna* sp.
- Squarrose** rhizines: branches form at right angles to the main axis as in *Heterodermia obscurata*.
- Fasciculate** rhizines: bundles of hyphae that are corded together and become frayed at the tips as in *Peltigera horizontalis*.
- Rhizines **branched** and **bushy** from the base as in *Peltigera canina*.
- Dimorphic** rhizines: where short rhizines are mixed with longer, thicker attachment rhizines on the same thallus, as in *Parmotrema subcaperatum*.



Peltigera horizontalis

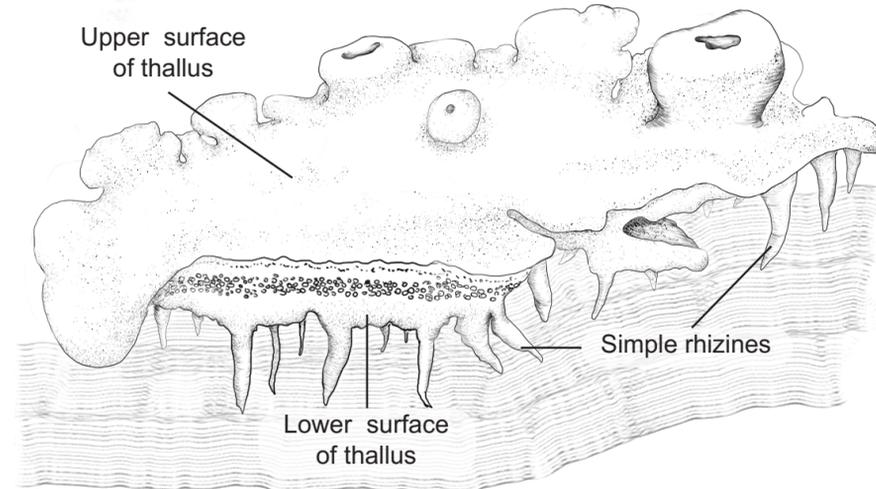
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Hypotrachyna sp.

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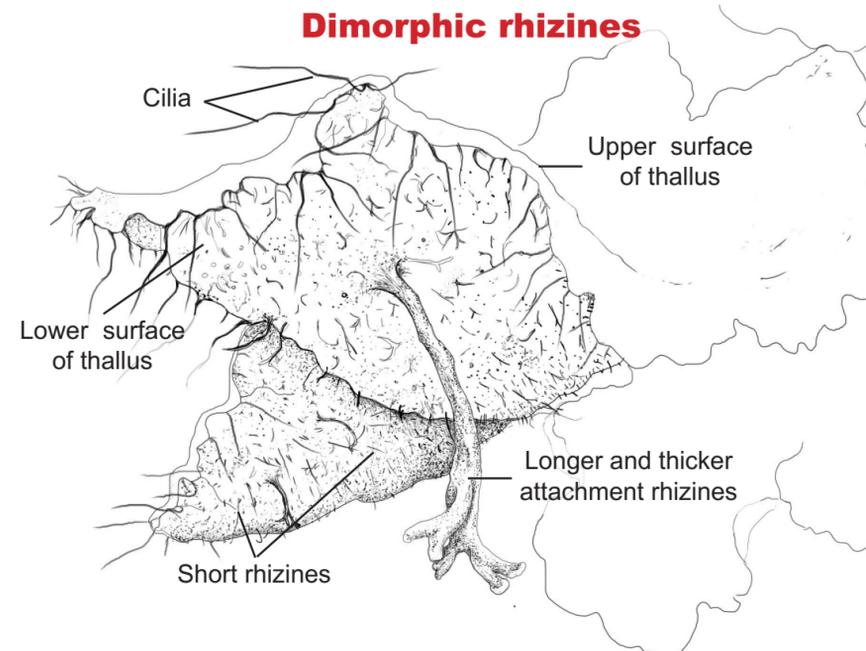
Simple rhizines



Peltigera canina

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Dimorphic rhizines



Heterodermia obscurata

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Parmotrema subcaperatum

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