

## Exploring the diversity of lichens in disturbed habitats

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I received my PhD from Memorial University of Newfoundland in 1997 and completed two post doctoral fellowships at Duke University and the Smithsonian Institution before accepting my current position at the University of Manitoba in 2000. Since that time I was promoted to Associate Professor in 2006, to Professor in 2012, and I have held several administrative positions. My research program trains undergraduate and graduate students in several related areas of lichen biology and with my students and my collaborators I have published over 50 papers in refereed journals and been part of almost 100 conference presentations. I have been fortunate to hold continuous research funding and attract many wonderful students. Every year I teach university level courses and sometimes lichen workshops for the general public over the last 15 years. Some of my articles that have been published



in newsletters and magazines provide the general public with an awareness of lichens and their roles in nature. My research passion is to understand the adaptations of lichens to their diversity of habitats, more specifically the large and ubiquitous genus *Cladonia*, through phylogenetic and population genetic studies. My passion also includes chemical ecology and algal selection by lichen fungi in field ecology and more recent resynthesis experiments in culture. My research program is broad with a central theme of adaptive potential in lichens, which requires accurate

knowledge of the species present in the environment. Therefore floristic and taxonomic research forms the foundation of my research program. Currently, I am a Professor in the Department of Biological Sciences at the University of Manitoba and I hope to continue to pursue my passions in lichenology and inspire my students and the general public.

### Workshop summary:

- Lichens have a remarkable ability to grow in a wide diversity of habitats and on natural and artificial substrata because of the absence of roots and cuticle. When habitats become exposed in nature they become available for colonization. Lichens comprise some of the first species to grow in disturbed habitats including exposed soil, rock, or debarked or fallen trees leaving gaps in the forest, and many other habitats.
- Disturbed habitats present challenges because the recent exposure may result in cyclic renewal events such as frequent shifting sand dunes requiring soil crusts for stabilization, nutrients may be locked up within the substratum, accumulated toxins may prevent colonization, or they may begin to develop a succession of

vegetation to capture dispersing propagules. However, exposed habitats may provide a beneficial environment in which certain species may have access to nutrients and space and can avoid toxins or competition with other species. A diversity of lichens adapted to these conditions may have crustose, foliose, or fruticose growth forms and special features that facilitate their adaptation.

- The **goal** of this workshop is to increase the awareness of lichens that grow in these environments by:
  - 1)** exploring the diversity of these lichens and their features with a short presentation and time to examine the wide range of specimens provided,
  - 2)** an introduction to identification of some of the more common species in these habitats and time to practice identification with microscopic facilities and identification keys provided, and
  - 3)** reflecting on the general ecology of lichens and the application to a system of your interest.
- The workshop will be organized into alternating sessions of three short powerpoint presentations on each of these topics with hands-on microscopic activities and discussions to augment the presentations. Specimens of lichens will be provided for the hands-on activities; however, you are also encouraged to bring some of your own samples for identification. The workshop will conclude with discussions of the ecological systems from participants and potential applications of lichens.