

Introduction to Lichen Identification

Highlands Biological Station

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Instructors

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Course Description

Lichens grow all over the world, from the arctic to the tropics, where they are important in a multitude of ways including serving as shelter for small invertebrates, and food for animals from snails to caribou. In this course you will have a chance to learn about lichens in one of their centers of diversity, the southern Appalachians. We will take field trips to a variety of habitats to explore the species and ecological diversity of lichens. Lab work will cover lichen chemistry, morphology, and identification. At the end of the course you will have a new perspective on the diversity, evolution and ecology of lichens.

Course Goals

Students will:

- Learn how to identify lichens using relevant regional literature.
- Recognize basic morphological features and common genera of lichens.
- Build a foundation of knowledge about the basic biology of lichens.
- Understand how lichens contribute to healthy ecosystems.
- Learn the evolutionary relationships among groups of lichenized fungi and groups of their algal and bacterial symbionts.

Prerequisites

Students should have an understanding of basic biology, ecology and evolution. Students should also have some outdoor experience, such as field work or hiking. Prior experience with basic skills of microscopy is strongly recommended.

Reading Material

Required: Lichens and Allied Fungi of the Great Smoky Mountains National Park. 2013. James Lendemer, Richard Harris, and Erin Tripp. This book can be purchased from The New York Botanical Garden Press.

Recommended: Lichens of North America. 2001. Irwin Brodo, Sylvia Duran Sharnoff, and Stephen Sharnoff. Yale University Press.

Additional Material

Hand lens—at least 10X

Field notebook

Field clothes—hiking boots, raingear, layers (avoid cotton), water bottle, and day pack

Collecting material—hammer, wood chisel, rock chisel, and clippers

Field Trips

We will go on field trips to explore a variety of lichen communities characteristic of the southern Appalachians. Field trips will take place in natural areas up to 1.5 hours drive from HBS. Up to a total of 5 miles of hiking per day can be expected on days we go in the field. For all-day field trips you will need to pack a lunch.

Grading

20 % Participation
30 % Quizzes
25 % Final Test
25 % Collection

Participation

Students are expected to arrive on time to all class meetings. They must be actively engaged in all class activities, whether in the lab or on field trips.

Short Writing Assignments

At the end of at least three class days students will write a short (1-2) page response to a prompt relating to the material covered up to that point.

Quizzes

Most mornings there will be a short quiz over the previous day's material. These quizzes will include lab identification of morphological features and genera, and multiple choice or short answer questions. There will be a total of six quizzes, each of which is worth 5% of your grade.

Final Test

The final test will take place on Friday morning. The format of the test will follow that of the quizzes and include questions about lichen biology, ecology and evolution, as well as a lab component focused on identification of morphological features and genera.

Collection

This class will be heavily focused on lichen identification, and we will spend a substantial amount of lab time working to identify lichen collections made in the field during the course. Collections will be submitted the final Thursday evening of the class at 5 p.m. Collections will be graded on the following criteria:

1. Completeness. Collections must include at least 5 families, 15 genera, and 35 species.
2. Quality of specimens. Specimens must include all important structures for identification and be large enough to deposit in an herbarium.
3. Quality of labels. The label must be legible, neat, and include the species name and authority, collector name, collection number, and detailed locality and habitat data.

What to Expect

Class will begin at 9 a.m. each morning and will end between 5 and 6 p.m. each night. After dinner, the instructors will be available in the lab to answer questions and help with identification for anyone who would like extra time identifying specimens. There will be an hour long break for lunch each day. Days that we take a field trip may require up to 1.5 hours driving each way, but will usually be much less than

that. On days with long field trips you will need to pack a lunch. Field trips will happen rain or shine, so be prepared for all weather conditions, including cold weather. There will be reading or studying to work on each night after class. Although this class will require long days, it will be fun, exciting, and you will have a much better knowledge and understanding of the world of lichens by the end of the course.

Academic Integrity

Cheating and plagiarizing will not be tolerated. If a student is caught cheating or plagiarizing on any assignment, quiz, or test they will receive a failing grade for that assignment, quiz, or test.

Students with Disabilities

Any student who has a condition that may affect his or her academic performance is encouraged to contact the instructor and Highlands Biological Station staff (828) 526-2602 ahead of time to discuss needs.