Spiders of the Southern Appalachians, July 23rd - August 4th, 2024
The Highlands Biological Station, Highlands, North Carolina

Instructor:
Sarah Stellwagen, Ph.D.
Assistant Professor
Dept. of Biological Sciences
UNC Charlotte
stellwagen@charlotte.edu

Instructor:
Alexander Sweger, Ph.D.
Assistant Professor
Dept. of Biology
Hartwick College
swegera@hartwick.edu

Guest Instructor:
Mercedes Burns, Ph.D.
Assistant Professor
Dept. of Biological Sciences
University of Maryland,
Baltimore County
burnsm@umbc.edu

If the course is currently full when you enroll, please get on the waitlist! There is a good chance you will get a spot!

Overview: This course will present a comprehensive introduction to spider systematics, morphology, behavior, physiology, and ecology in daily morning and/or evening lectures and discussions. Afternoons are devoted to fieldwork, with the objective of assembling a significant collection of the extraordinarily rich local spider fauna while studying spider ecology and behavior. Typically we collect 28-30 families of spiders during the course. Evenings will be available for students to work on identification and it is expected that you spend as much time as necessary working on your collections in the lab. During the course we will view spider videos and have informal discussion sessions on aspects of spider biology, systematics, evolutionary biology etc. If you have something to share, please bring it!

Lecture/discussion sessions will include at least the following topics: Introduction to Spiders (overview of families, collecting tips); External Morphology (characters used for identification), class identification session: Spider Systematics (spider phylogeny, paleontology, history of spider taxonomy); Behavior, Ecology, Biodiversity; Internal morphology and physiology (digestion, chemical production, toxins, pheromones, silk chemistry and production etc.).

This year we again welcome Dr. Mercedes Burns, who will lead Opiliones Day. This will consist of a lecture, supervised collection and identification of opilionid specimens, and discussions of current research of local and related species.

Daily Schedule Overview: Each day will consist of classroom instruction, discussion, collecting trips and identification labs. Typically class meets at 9:00 each morning for a lecture presentation and discussion, with Sunday off and collections completed by the end of the second Friday. Specimens can and should be presented for evaluation as you go. Due to the fluid nature of this course, its intensity, and often limited cell/wifi connection, you must stay on the station or in Highlands. We *cannot* accommodate those trying to travel to collecting sites or get daily updates about ongoing activities from other regional areas.

Skills and Techniques: This course will provide training in both field and laboratory techniques, including arthropod collection (beat sheet, aspiration, night collection, hand collection), dissection microscopy, archival sample preservation, dichotomous key usage, and field work safety.

Grading for credit: A carefully determined and correctly labeled collection forms the main component of your grade (60%), as well as a final written examination (20%), and active participation (20%). The participation portion of the grade reflects active engagement in the field and learning formal identification techniques. For full credit, you must learn to identify specimens using the dichotomous key. While challenging, this part is integral to the course and acquired skillset. Also, please understand that if you are taking this course for credit, it can be quite intense and you will need to be in the lab most afternoons and evenings in order to complete your collection. A semester's worth of credit in two weeks is demanding, but also a lot of fun!

Credit Transfer: At UMBC, this course transfers as three credits and fulfills a BIOL BS Column B elective or BIOL BA Elective 1 with department petition. At Charlotte, this course transfers as four credits and fulfills a BIOL 4000 - Special Topics in Biology through a substitution/waiver. For other universities, please contact your administration for details about transferring credit.

Prerequisites: general biology, ecology, or permission of instructor.

Required Materials:

- Spiders of North America: an identification manual. Second edition 2017. Edited by Darrell Ubick, Pierre Paquin, Paula E. Cushing, & Vince Roth. Available at Spiders of North America: An Identification Manual, Second Edition. This is an essential text. Please order in plenty of time as we have had issues with availability in the past. **We also STRONGLY suggest you buy a paper copy of this book**. It is difficult to use a digital key, let alone as a beginner. If you insist on purchasing a digital copy, you *must* have a tablet sized screen or larger.
- Forceps: You will need a pair of fine-tipped forceps. Excelta Tapered Ultra-Fine Tweezers, Stainless Steel, 4.25" Overall Length, (5-SA-SE) or something similar.

Other Materials to bring:

- Small, COMFORTABLE daypack
- Fanny packs are the best option for quick and easy access to field materials and collecting vials. While not required, this is a strongly recommended item!
- Gear – good boots/shoes for hiking, rain jacket, and water bottle(s).
- Good quality hand lens 10-15x – this is a vital piece of equipment, and if possible, invest in a quality lens (Coddington or Hastings). Some lower quality lenses will be available in the lab.
- Headlamp – a must for night collecting and far superior to a flashlight.
- Flashlight
- Field notebook. A "Rite in the Rain Notebook" would be a good choice.

Other books you may be interested in (at least one copy of each text will be available in the lab):

- Bradley, R. A. & Buchanan, S. 2012. Common Spiders of North America. University of California Press (*great pictorial field guide and much more)
- Foelix, R. F. 2010. Biology of Spiders (third edition). Harvard University Press. (*useful for spider biology, not identification).
- Pinto-da-Rocha, R., Machado G., and Giribet G., Eds. Harvestmen: the biology of Opiliones. Cambridge (MA): Harvard University Press.
- Gaddy, L. L. 2009. Spiders of the Carolinas (American Naturalist). Kollath-Stensaas Pub. (*useful picture book).
- Kaston, B. J. 1978. How to know the Spiders, third edition. The Picture Key Nature Series. Wm. Brown Company Publishers (*useful for keying).
- Kaston, B. J. 1981. Spiders of Connecticut. Bulletin Connecticut Geological and Natural History Survey (*useful and more in depth but taxonomy out of date).
- Rose, S., 2022 Spiders of North America, Princeton University Press, Princeton Field Guide Series. A brand new and accessible field guide to more than 500 spp of the most commonly found spiders in North America.
- Weber L. 2013. Spiders of the North Woods, Second Edition (Naturalist Series) (*excellent picture guide and pertinent to most of the eastern US).
- Wise, D. H. 1993 Spiders in Ecological Webs. Cambridge University Press.

Useful websites:

- BugGuide
- World Spider Catalog
- The American Arachnological Society

Please feel free to email with questions. We look forward to working with you this summer at magical Highlands!

SCHEDULE: Activities may shift around depending on weather. Late afternoons and evenings are spent in the lab.

Monday:
Arrive on station and get settled.

Tuesday:
Morning: Introductions, course objectives, schedule, evaluation procedures. Lecture: What is a spider?
Field Trip: Around the station. Discuss field collection techniques in addition to beginning field identification skills.
Afternoon: Lecture: External Morphology; Get set up in the lab, begin learning formal identification skills using dichotomous keys.

Wednesday:
Morning Lecture: Systematics 1
Field Trip: Bull Pen / Granite City

Thursday:
Morning Lecture: Behavior, Ecology, Biodiversity
Field Trip: Whitesides

Friday:
All Day Field Trip: Panthertown.

Saturday
Morning Lecture: Systematics 2; observe epigynum/palp structures, cribellum/calamistrum, and silk spigots under scope.
Afternoon: Personal time - The laboratory will be open to enable course participants to collect and identify specimens.

Sunday:
All day personal time. The laboratory will be open to enable course participants to collect and identify specimens.

Monday: Opiliones Day!
Morning Lecture: Opiliones form and comparison to spiders.
Field Trip: Opiliones collection - Standing Indian or Rufus Morgan.
Afternoon/Evening: Laboratory - Opiliones ID, behavior, and current research.

Tuesday:
All Day Field Trip: Clemson Campus/Stumphouse Tunnel/Wildcat Creek

Wednesday:
Morning Lecture: Internal Morphology and Physiology
Lab day, study day, group trip for ice cream.
Evening Field Trip: Sunset Rock, 7PM

Thursday:
All day lab day with a quick trip to Dry Falls in the afternoon.

Friday:
Morning: Laboratory, final written exam time: **10AM.**
Students may leave afterwards if desired (please check with instructors for clean-up tasks before leaving).

Saturday:
Pack up and clean the lab; leave by 12PM. Students are able to stay on the station until Sunday at noon the following day.