

## **Spiders of the Southern Appalachians, August 1<sup>st</sup> - 12<sup>th</sup>, 2022**

The Highlands Biological Station, Highlands, North Carolina

Instructor:

**Kefyn M. Catley, Ph.D.**

Professor Emeritus  
Department of Biology  
Western Carolina University  
kcatley@email.wcu.edu

Instructor:

**Sarah D. Stellwagen, Ph.D.**

Postdoctoral Fellow  
Dept. of Biological Sciences  
UNC Charlotte  
stellwagen@uncc.edu

Guest Instructor:

**Mercedes Burns, Ph.D.**

Assistant Professor  
Dept. of Biological Sciences  
University of Maryland,  
Baltimore County  
burnsm@umbc.edu

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 also 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: Each day will consist of classroom instruction, discussion, collecting trips and identification labs. Typically class meets at 8:30 each morning for a lecture presentation and discussion, with Sunday off and the final collection evaluation on the second Saturday, ending by noon.

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, macrophotography, 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%), in addition to 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 formally identify specimens using a dichotomous key.

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 UNCC, 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.

Materials to bring:

- Small daypack
- Collecting gear – good boots/shoes, rain jacket, and water bottle
- 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.
- Headlight – a must for night collecting and far superior to a flashlight; if possible, invest in a high-power light – [example](#) - this one is a bit heavy, but is rechargeable, which can be good and bad - can't replace batteries if they die in the field, but ideal for general use.
- Flashlight
- Field notebook. "[Rite in the Rain Notebook](#)" would be a good choice.
- Dissecting tools will be provided. However, if you already have [very fine pointed forceps](#) (#5 or finer) and a camel hair or similar very fine artist paint brush (0000) please bring them along. Shared equipment can show a bit more wear and tear than personal.
- Optional: [Aspirator](#) – these are great for collecting small, fragile things, but not a good item to share.

Required Textbooks:

- 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. We have had issues with availability in the past.
- Levi, H. W. 1990. Spiders and their Kin. Golden Guide, Golden Press, New York.

Other Textbooks (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).
- 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](#)
- [Spider Tree of Life](#)
- [The American Arachnological Society](#)

Please feel free to email us with questions. We look forward to working with you this summer at magical Highlands! **-KC & SS**

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

**Monday:**

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.

**Tuesday:**

Morning Lecture: Systematics 1

Field Trip: Bull Pen / Granite City

**Wednesday:**

Morning Lecture: Systematics 2

Field Trip: Whitesides

**Thursday:**

All Day Field Trip: Panthertown.

**Friday:**

Lab day: observe epigynum/palp structures, cribellum/calamistrum, and silk spigots under scope.

Afternoon: Quick trip to Dry Falls.

**Saturday:**

Morning: Laboratory - Identification for collections.

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.

Afternoon/Evening: Laboratory - Opiliones ID, behavior, and current research.

**Tuesday:**

All Day Field Trip: Clemson Campus/Stumphouse Tunnel/Wild Cat Creek

**Wednesday:**

Morning Lecture: Internal Morphology and Physiology

Afternoon: Final field trip TBD.

**Thursday:**

Morning Lecture: Behavior, Ecology, Biodiversity

All day lab day.

**Friday:**

Morning: Laboratory.

Afternoon: Final examination and collection submission - students may leave afterwards if desired.

**Saturday:**

Pack up and go by 12PM.