

# EEB 461: Diversity and Ecology of Tennessee Fishes

University of Tennessee, Summer 2017

MT, 9:15 AM – 11:15 PM

Hesler 603

**Instructor:** Benjamin P. Keck, PhD  
403 Strong Hall or 515 Hesler Biology Bldg.

bkeck@utk.edu  
974-8828

**Office hours:** 2:00 – 3:00 pm Monday and Tuesday, or by appointment. It's best to start with an email, and I will respond as quickly as I can. Please include "EEB 461" in the subject line.

**Course website:** You will find the EEB 461 web page on Canvas. Tutorials on using Canvas are available at <http://online.utk.edu/>. I recommend that you check Canvas frequently for new announcements and discussion threads.

**Course Learning Objectives:** By the end of the course you should be able to do the following things.

1. Identify fishes occurring in Tennessee in the field and lab
2. Describe the fish communities in the major river systems and physiographic regions of Tennessee
3. Explain general eco-evolutionary mechanisms generating and maintaining fish diversity in Tennessee
4. Describe the impacts of anthropogenic disturbances to Tennessee's fishes
5. Describe and implement field sampling, data collection, and curation of specimens
  - a. Be able to use a dichotomous key, dissecting scope, and related equipment
  - b. Take appropriate field notes and read a map
  - c. Take basic meristic and other morphological data from specimens
  - d. Use appropriate methods to preserve specimens and know the ethical considerations

## Texts:

Required Text: Etnier, D.A. and W.C. Starnes. 2001. *The Fishes of Tennessee*. University of Tennessee Press, Knoxville. ISBN: 0870497111. Available for free: [http://trace.tennessee.edu/utk\\_utpress/2/](http://trace.tennessee.edu/utk_utpress/2/)

Suggested Text: Page, L.M. and B.M. Burr. 2011. *Peterson Field Guide to Freshwater Fishes*. 2<sup>nd</sup> Edition. Houghton, Mifflin, Harcourt, Boston. ISBN: 0547242064

Tennessee Atlas & Gazetteer. DeLorme. 2014 (A few will be available during field trips)

**Grading:** I will use the standard UT grading scale without minuses. There will be no extra credit offered on an individual basis, only for the entire class. Any excuse or concern for absence or tardy work should be discussed in a timely manner.

## Grading Scale by percentage

Field Notes:	30%	90 – 100 = A
Field Quizzes:	30%	87 – 89 = B+
Collection:	30%	80 – 86 = B
<u>Final Exam:</u>	<u>10%</u>	77 – 79 = C+
<b>Total:</b>	<b>100%</b>	70 – 76 = C
		67 – 69 = D+
		60 – 66 = D
		≤ 59 = F

**Field Notes:** I'll provide a small (50 page) *Rite in the Rain* field notebook and will talk about taking field notes in the first lecture. You'll have the notebooks whenever we're in the field and turn them in when we return to campus. They will be graded on species list accuracy and pertinent information like locality info, abundance, breeding condition of fish, and more.

**Field Quizzes:** I'll ask questions about many things when in the field, including: fish identifications, ecology, feeding morphology, geology, river drainage relationships, best sampling methods, appropriate specimen preservation, and all sorts of other things.

**Collection:** Everyone will be responsible for one of our field collections, from sampling to entering the data into the David A. Etnier Ichthyological Collection. Your name will be on the label of these specimens as the identifier in perpetuity. You will be graded on species identification, specimen preservation, and appropriate information on the data sheet for cataloging the specimens in the fish collection.

**Final Exam:** The final exam will be more like an exit interview. Individually, I'll ask questions about fish we've seen and broad topics we covered.

**Course Organization:** This is a tentative schedule and will change based on weather and river conditions. We'll use some of the driving time on field trips as lecture time, where we'll discuss biodiversity, ecology, and evolution of Tennessee fishes. Depending on your schedules, we may take longer field trips and reduce the total number of days you must be in class (in the field).

**THIS SCHEDULE IS A SUGGESTION AND WILL CHANGE BASED ON AVAILABILITY FOR FULL DAY AND CAMPING FIELD TRIPS!**

Week 1: 5 – 6 June, Intro

5<sup>th</sup> Lecture only: Intro to course, basic fish anatomy, the Fish Tree of Life, and some Tennessee fishes

6<sup>th</sup> Lecture only: Evolutionary and ecological patterns in fishes, field sampling, field notes, preparing for field work, reading maps, river gauges, weather, etc.

Week 2: 12 – 13 June, Little River

12<sup>th</sup> Field: Full day leaving at 9:15 AM and returning by 5:00 PM to Little River at 411 bridge. Bring your lunch. Intro to fieldwork.

19<sup>th</sup> No Class

Week 3: 19 – 20 June, Conasauga and Hiwassee rivers

19<sup>th</sup> Field: Conasauga R. at Jacks River/Chestuee and Greasy creeks/Thunder Rock CG

20<sup>th</sup> Field: Hiwassee R. above Apalachia/Spring Cr. and Hiwassee R./Conasauga Cr./back to Knoxville

Week 4: 26 – 28 June, Mississippi River Tributaries

26<sup>th</sup> Field: Drive/lower Hatchie R./Fort Pillow SP

27<sup>th</sup> Field: lower Hatchie R./lower Forked Deer R./Reelfoot tributaries/Reelfoot Lake SP

28<sup>th</sup> Field: Reelfoot tributaries/Obion R./Back to Knoxville

Week 5: 3 – 4 July, Off for holiday

Week 6: 10 – 12 July, Mississippi River Tributaries

10<sup>th</sup> Field: Drive/Birdsong Cr/Big Sandy R./upper Obion R./Natchez Trace SP

11<sup>th</sup> Field: upper Forked Deer R. drainage/Chickasaw SP

12<sup>th</sup> Field: upper Hatchie R. tributaries/Back to Knoxville

Week 7: 17 – 19 July, Western Highland Rim and Nashville Basin

17<sup>th</sup> Field: Drive/Harpeth R./Piney R./Tennessee R. tributaries/Mousetail Landing SP

18<sup>th</sup> Field: Tennessee R. tributaries/Buffalo R./Shoal Cr./David Crockett SP

19<sup>th</sup> Field: lower Elk R./Back to Knoxville

Week 8: 24 – 26 July, Nashville Basin and Eastern Highland Rim

24<sup>th</sup> Field: Drive/middle Cumberland River tributaries/Barren R./Standing Stone SP

25<sup>th</sup> Field: Roaring R./Obey R./headwaters of Big South Fork/Bandy Creek CG

26<sup>th</sup> Field: headwaters of Big South Fork/ Jellico Creek/Back to Knoxville

29<sup>th</sup>, Saturday: Fish Fest – Conservation Fisheries Inc. Fundraiser at River John’s Outfitters on Little River

Week 9: 31 July – 1 August, Discussion and Sample Identification

31<sup>st</sup> Discussion: What observations supported patterns discussed before and during trips? How do observations of environmental variables and frequency of sampling fit with conservation status?

1<sup>st</sup> Sample Identification: Get your sample and start identifying the fishes!

Week 10: 7 – 8 August, Sample Identification and Final Exam

7<sup>th</sup> Sample Identification: Continued

8<sup>th</sup> Sample Identification and Final Exam: Finish identifications and take final exit questions

**Field materials that you should have:** Pencil, clothes that can get wet and dirty, shoes or boots to wear in the water and kick rocks, waders optional (we probably won’t be electroshocking, so waders aren’t required), a change of clothes if you don’t want to stay wet on the ride back, dive mask and snorkel, sunscreen, sunglasses, any other field guides.

**Camping materials when camping:** I’ll pay for campsites and plan breakfasts and dinners. Usually we stop for lunch, so you’ll need some cash. You’ll need a tent, sleeping bag, etc. We won’t have a lot of room for big or many items, so pack lightly. Make sure to check out the weather and have appropriate clothing.

**Academic integrity:**

Academic dishonesty of any sort will not be tolerated. Plagiarism includes the copying of phrases, portions of sentences or the main ideas from ANYONE on ANY work submitted for a grade (exams, assignments, quizzes, etc). Academic dishonesty also includes assisting other students on quizzes or exams.

You are expected to abide by The University of Tennessee honor statement in Biology and in all of your university activities as pledged in the honor code:

*“An essential feature of the University of Tennessee, Knoxville, is a commitment to maintaining an atmosphere of intellectual integrity and academic honesty. As a student of the University, I pledge that I will neither knowingly give nor receive any inappropriate assistance in academic work, thus affirming my own personal commitment to honor and integrity.”*

Depending on the offence, penalties for academic dishonesty range from a minimum of a zero for the assignment, to an F for the course, to the filing of formal academic dishonesty charges seeking dismissal from The University of Tennessee. These choices are at the discretion of the instructor, and can occur in either the lecture or the lab portion of the class. You should be familiar with the requisites of academic honesty and what constitutes academic dishonesty as outlined in the UT Undergraduate Catalog (<http://catalog.utk.edu/>).

Other information

**Disability Services:** If you need course adaptations or accommodations because of a documented disability, please contact me privately to discuss your needs. If you have questions or concerns about disabilities or emergency information to share, please contact Disability Services: 2227 Dunford Hall; 974-6807; Email: ods@utk.edu; Website: <http://ods.utk.edu/>).

**Tutoring:** Biological Sciences does not offer tutoring services. Contact the Student Success Center and the Academic Support Unit of The Office of Minority Student Affairs for information about tutoring opportunities.

- **Student Success Center:** The comprehensive source for information, services, and resources to assist your success at UT: <http://studentsuccess.utk.edu>
  - 812 Volunteer Boulevard, Greve Hall, room 324, 865 974-6641, Email: [studentsuccess@utk.edu](mailto:studentsuccess@utk.edu)

**Technical Assistance:**

Blackboard, clickers, or general information technology assistance:

- Help Desk: 865 974 9900 (M – F, 8:00 – 5:00)
- OIT Walk-In Help Desk: Commons, 2<sup>nd</sup> floor Hodges Library

**Counseling Center:** <http://counselingcenter.utk.edu/>

1800 Volunteer Boulevard, 865 974-2196, Email: [counselingcenter@utk.edu](mailto:counselingcenter@utk.edu)

**OTHER RESOURCES FOR STUDENTS:**

- One Stop: <http://onestop.utk.edu> (start here for any question you have)
- Undergraduate Catalogs: <http://catalog.utk.edu> (Listing of academic programs, courses, and policies)
- Hilltopics: <http://dos.utk.edu/hilltopics> (Campus and academic policies, procedures and standards of conduct)
- Course Timetable: [https://bannersb.utk.edu/kbanpr/bwckschd.p\\_disp\\_dyn\\_sched](https://bannersb.utk.edu/kbanpr/bwckschd.p_disp_dyn_sched) (Schedule of classes)
- Academic Planning: <http://www.utk.edu/advising> (Advising, course requirements, and major guides)
- Library: <http://www.lib.utk.edu> (Access to library resources, databases, course reserves, and services)
- Career Services: <http://career.utk.edu> (Career counseling and resources; HIRE-A-VOL job search system)