

FAS 6273: Trophic Ecology of Fishes (Spring 2024)

Instructor: Dr. Debra J. Murie

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Office Hours: Monday (7-8 pm) (Florida time) via Zoom (zoom address will be provided to all class participants via our Canvas course site). I am also available to schedule a Zoom meeting as needed, or email me with your questions and I will respond within 24 hrs unless I am in the field offshore (most times I will be able to respond to your emails much sooner).

Telephone: (352) 273-3601: My phone at Fisheries is equipped with Voice IP so if you leave a message then I will receive it as an email notification and I will respond within 24 hrs, but most likely earlier unless I am in the field.

E-mail: dmurie@ufl.edu

Course Description:

Trophic ecology of fishes, including: food habit analyses, food chains and webs, trophic cascades, isotopic analysis of trophic pathways, foraging behavior, prey selection, digestion and evacuation of prey, estimating consumption, feeding bioenergetics, tradeoffs among feeding, growth & reproduction, bioaccumulation, and a discussion-based introduction to ecosystem-based trophic models.

Prerequisites: Biology of Fishes (or equivalent) and STA 6166 (or equivalent)

Learning Outcomes:

On completion of this course, students should be able to:

- Discuss and explain central concepts in fish trophic ecology
- Critically evaluate the primary literature on trophic ecology of fishes
- Apply metrics and models of trophic dynamics to interpret feeding ecology of fishes

Course Communication and Technology Requirements:

Course information will be posted on Canvas (<http://elearning.ufl.edu>) and will allow you day-to-day access to lecture outlines, assignments, and your grades.

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Technology requirements for this course include:

- A computer or mobile device with high-speed internet connection.
- A webcam, headset and/or microphone, and speakers.
- Latest version of web browser. Canvas supports only the two most recent versions of any given browser. [What browser am I using?](#)

Course Format and Assessments:

This course is offered for 3 credits in the Fall semester of odd years. It consists of 13 modules with associated activities. Each module has one or more narrated PowerPoint lectures in combination with a weekly assignment that is either: 1) a written review of a journal article; 2) a group discussion of a journal article posted to an online discussion board; or 3) a homework exercise applying the methods and metrics discussed in the lectures. There are no formal exams in this course.

Module Schedule

Please note: The modules have a weekly schedule of completion so that everyone progresses through the course sequentially and everyone is able to contribute significantly to the group discussions. Module 12 on Bioenergetics is a 2-week module.

An individual module typically opens on Wednesday at 12:01 am (UF-time), runs throughout the week, and closes at 11:59 pm the following Tuesday (unless otherwise specified on our Canvas site). This allows students to work on the module over a weekend if desired (for those working full-time jobs) and still have the weekdays to complete the assignment and/or contact me for assistance if needed. Please plan your schedule accordingly as the course progresses on a weekly basis (i.e., it is not a “progress-at-your-own-pace” course because we have online discussions).

Primary Literature Reviews:

A selected journal article from the primary, peer-reviewed literature will be posted to our Canvas site, along with a review assignment based on this paper. The review assignment is based on discussing 2-3 directed questions on the methods used, interpretation of the results, biases introduced, etc., rather than a summary of the entire paper. Reviews average around 3 double-spaced pages (with a maximum of 5 pages). There will be 3 reviews worth 20 points each.

Group Discussion:

A selected journal article from the primary, peer-reviewed literature will be posted to our Canvas site and will act as a focal point for a group discussion on our online bulletin board. Each student is expected to participate fully by contributing to the ongoing discussion board a minimum of three times throughout the open comment period (i.e., not just in the last day or last few hours of the discussion board). Your grade for each group discussion will be based on the level of your

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contribution to the discussion thread, with quality preferred over quantity of postings. For example, responding to a point posted by another student or starting a new thread of questioning will facilitate the discussion, but re-stating the exact same point that another student has already posted will not add to the discussion. I will periodically be injecting points as well to move the discussion forward when needed. There will be 5 discussion threads worth 20 points each.

Homework Exercises:

Several modules will have lab exercises associated with them that require calculations and interpretation of data. Students will work through the exercises independently and upload their responses online as a written document. There will be 5 homework exercises worth 20 points each.

Course Grading:

<u>Activity</u>	<u>Points</u>	<u>% Final Grade</u>
Primary Literature Reviews	3 @ 20 pts	33.33
Discussion Threads	5 @ 20 pts	33.33
Homework exercises	5 @ 20 pts	33.34
Total	260 pts	100

Late Assignments: Review and homework assignments that are posted to our Canvas site later than the due date and time will be decreased by 10% per day (any portion of 24 hr after the due date/time, and thereafter). **Please note:** The group discussion bulletin board will close on the due date and time, and therefore no additions can be made after it closes. If you have a legitimate reason (e.g., jury duty, etc.) for having a late assignment then please contact me before it is due (if possible) so that we can work out an alternative timeline.

This course follows UF grading policies for assigning grade points (<https://catalog.ufl.edu/UGRD/academic-regulations/grades-grading-policies/>).

Grade	%
A	93-100
A-	90-92.9
B+	86-89.9
B	82-85.9
B-	78-81.9
C+	74-77.9
C	67-73.9
C-	63-66.9
D+	59-62.9
D	55-58.9
D-	51-54.9
E	<51

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Recommended Text:

There is no required texts for this course. Reviews and discussion boards will be based on papers from the primary literature posted to specific modules.

Course Evaluation:

Students are expected to provide professional and respectful feedback on the quality of instruction in this course by completing course evaluations online via GatorEvals. Guidance on how to give feedback in a professional and respectful manner is available at <https://gatorevals.aa.ufl.edu/students/>. Students will be notified when the evaluation period opens and can complete evaluations through the email they receive from GatorEvals, in their Canvas course menu under GatorEvals, or via <https://ufl.bluera.com/ufl/>. Summaries of course evaluation results are available to students at <https://gatorevals.aa.ufl.edu/public-results/>.

Academic Honesty:

As a student at the University of Florida, you have committed yourself to uphold the Honor Code, which includes the following pledge: *"We, the members of the University of Florida community, pledge to hold ourselves and our peers to the highest standards of honesty and integrity."*

You are expected to exhibit behavior consistent with this commitment to the UF academic community, and on all work submitted for credit at the University of Florida, the following pledge is either required or implied: *"On my honor, I have neither given nor received unauthorized aid in doing this assignment."*

It is assumed that you will complete all work independently in this course (e.g., reviews, homework exercises) unless the instructor provides explicit permission for you to collaborate on course tasks (e.g., discussion board). Furthermore, as part of your obligation to uphold the Honor Code, you should report any condition that facilitates academic misconduct to appropriate personnel. It is your individual responsibility to know and comply with all university policies and procedures regarding academic integrity and the Student Honor Code. Violations of the Honor Code at the University of Florida will not be tolerated and will be reported to the Dean of Students Office for consideration of disciplinary action. For more information regarding the Student Honor Code, please see: <http://www.dso.ufl.edu/sccr/process/student-conduct-honor-code>.

Inclusive Learning Environment:

This course embraces the University of Florida's Non-Discrimination Policy, which reads,

The University shall actively promote equal opportunity policies and practices conforming to laws against discrimination. The University is committed to non-discrimination with respect to race, creed, color, religion, age, disability, sex, sexual

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orientation, gender identity and expression, marital status, national origin, political opinions or affiliations, genetic information and veteran status as protected under the Vietnam Era Veterans' Readjustment Assistance Act.

If you have questions or concerns about your rights and responsibilities for inclusive learning environment, please see the instructor or refer to the Office of Multicultural & Diversity Affairs website: <http://multicultural.ufl.edu>.

Services for Students with Disabilities:

The Disability Resource Center (0001 Reid Hall, 352-392-8565, <http://www.disability.ufl.edu>) coordinates the needed accommodations of students with disabilities. This includes registering disabilities, recommending academic accommodations within the classroom, accessing special adaptive computer equipment, providing interpretation services and mediating faculty-student disability related issues. Students requesting classroom accommodation must first register with the Dean of Students Office. The Dean of Students Office will provide documentation to the student who must then provide this documentation to the instructor when requesting accommodation.

It is important for a student to share their accommodation letter with their instructor and discuss their access needs as early as possible in the semester. Accommodations are not retroactive and you must therefore submit the documentation letter prior to submitting assignments or scheduling exams. Students should therefore contact the office as soon as possible in the term for which they are seeking accommodations.

Student Life, Wellness, and Counseling Help

Students experiencing crises or personal problems that interfere with their general well-being are encouraged to utilize the university's counseling resources. The Counseling & Wellness Center provides confidential counseling services at no cost for currently enrolled students. Resources are available on-campus for students having personal problems or lacking clear career and academic goals which interfere with their academic performance. These resources include:

Health and Wellness

- *U Matter, We Care*: If you or someone you know is in distress, please contact umatter@ufl.edu, 352-392-1575, or <http://www.umatter.ufl.edu> to refer or report a concern and a team member will reach out to the student in distress.
- Counseling and Wellness resources: visit <http://www.counseling.ufl.edu/cwc/> or call 352-392-1575 for information on crisis services as well as non-crisis services.

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- Student Health Care Center: Call 352-392-1161 for 24/7 information to help you find the care you need.
- University Police Department: Call 352-392-1111 (or 9-1-1 for emergencies).
- UF Health Shands Emergency Room/Trauma Center: For immediate medical care call 352-733-0111 or go to the emergency room at 1515 SE Archer Road, Gainesville, FL.

Academic Resources

- Career Connections Center: Reitz Union, Suite 1300, 352-392-1601. Career assistance and counseling services <http://career.ufl.edu/>
- Other resources are available at <http://www.distance.ufl.edu/getting-help> for online students

Campus Helping Resources:

For issues with technical difficulties for e-learning in Canvas, please post your question to the Technical Help Discussion in your course, or contact the UF Help Desk at:

- E-learning technical support: helpdesk@ufl.edu | (352) 392-4357 - select option 2 | <http://elearning.ufl.edu>
- Library Help Desk support <http://cms.uflib.ufl.edu/ask>
- SFFGS Academic Hub <https://ufl.instructure.com/courses/303721>

Software Use:

All faculty, staff and students of the University are required and expected to obey the laws and legal agreements governing software use. Failure to do so can lead to monetary damages and/or criminal penalties for the individual violator. Because such violations are also against University policies and rules, disciplinary action will be taken as appropriate.

Intellectual and Viewpoint Diversity Act (House Bill 233) and recording of class lectures:

Students are allowed to record video or audio of class lectures. However, the purposes for which these recordings may be used are strictly controlled. The only allowable purposes are (1) for personal educational use, (2) in connection with a complaint to the university, or (3) as evidence in, or in preparation for, a criminal or civil proceeding. All other purposes are prohibited. Specifically, students may not publish recorded lectures without the written consent of the instructor.

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A “class lecture” is an educational presentation intended to inform or teach enrolled students about a particular subject, including any instructor-led discussions that form part of the presentation, and delivered by any instructor hired or appointed by the University, or by a guest instructor, as part of a University of Florida course. A class lecture does not include lab sessions, student presentations, clinical presentations such as patient history, academic exercises involving solely student participation, assessments (quizzes, tests, exams), field trips, private conversations between students in the class or between a student and the faculty or lecturer during a class session.

Publication without permission of the instructor is prohibited. To “publish” means to share, transmit, circulate, distribute, or provide access to a recording, regardless of format or medium, to another person (or persons), including but not limited to another student within the same class section. Additionally, a recording, or transcript of a recording, is considered published if it is posted on or uploaded to, in whole or in part, any media platform, including but not limited to social media, book, magazine, newspaper, leaflet, or third party note/tutoring services. A student who publishes a recording without written consent may be subject to a civil cause of action instituted by a person injured by the publication and/or discipline under UF Regulation 4.040 Student Honor Code and Student Conduct Code.

Policies regarding student in-class recordings are detailed here <http://aa.ufl.edu/policies/in-class-recording/>.

Student Complaint Process:

The School of Forest, Fisheries & Geomatics Sciences cares about your course experience and we will make every effort to address course concerns. Your first point of contact should be the Academic Coordinator or the Undergraduate Coordinator for the program offering the course. You may also submit a complaint directly to UF administration (<https://sccr.dso.ufl.edu/policies/student-honor-code-student-conduct-code/>)

Schedule of Modules with due dates.

Module #	Module Opens:	Module Topic	Lecture Topics within Module	Review Assignment	Discussion Assignment	Homework Exercise	Review Assignment Due	Discussion Board Due	Homework Exercise Due
1	8 Jan Monday	Introduction to Course	Introduction to course: topics, assignments, grading, outcomes	No	Yes	No		16 Jan by 11:59 pm EST (Tuesday)	
2	17 Jan Wed	Food Habit Analysis: Quantifying Composition	Identifying prey; quantitative methods of analysis; biases	No	No	Yes			23 Jan by 11:59 pm EST (Tuesday)
3	24 Jan Wed	Metrics of Food Habit Analysis	Niche breadth, overlap, similarity analysis	No	No	Yes			30 Jan by 11:59 pm EST (Tuesday)
4	31 Jan Wed	Food Chains and Food Webs I	Chains versus webs, trophic levels, trophic pyramids	No	Yes	No		6 Feb by 11:59 pm EST (Tuesday)	
5	7 Feb Wed	Trophic Cascades	Bottom-up versus Top-down control; trophic cascades	Yes	No	No	13 Feb by 11:59 pm EST (Tuesday)		
6	14 Feb Wed	Integrating Field Feeding Ecology	Integrating concepts in field feeding ecology studies	No	Yes	No		20 Feb by 11:59 pm EST (Tuesday)	
7	21 Feb Wed	Isotopic Analysis of Feeding Ecology	Isotope analysis of prey and trophic levels; isotopic niches; isotope mixing models	No	No	Yes			27 Feb by 11:59 pm EST (Tuesday)
8	28 Feb Wed	Foraging Behavior	Optimal foraging; foraging arenas; prey selectivity; predator-prey size relationships	Yes	No	No	5 Mar by 11:59 pm EST (Tuesday)		
9	6 March Wed	Digestion and Evacuation of Prey	Factors of differential digestion of prey; digestion indices; evacuation models	No	No	Yes			19 Mar by 11:59 pm EDT (Tuesday)
9-16 March SPRING BREAK (No classes)									
10	20 March Wed	Estimating Food Consumption in the Field	Chronology of feeding; consumption models	No	No	Yes			26 Mar by 11:59 pm EDT (Tuesday)
11	27 March Wed	Bioaccumulation through the food chain	Bioaccumulating substances; bioaccumulation and biomagnification factors	No	Yes	No		2 Apr by 11:59 pm EDT (Tuesday)	
12	3 April & 10 April Wed	Bioenergetics	Field versus lab consumption rates; bioenergetic schemes and models; Growth and reproductive tradeoffs based on consumption and energy storage	Yes	No	No	16 Apr by 11:59 pm EDT (Tuesday)		
13	17 April Wed	Ecosystem Models Based on Trophic Analyses; Integrated Review/Discussion	Ecosystem-based Fisheries Management; OSMOSE; Ecopath with EcoSim; Atlantis	No	Yes	No		23 Apr by 11:59 pm EDT (Tuesday)	

Any late assignment(s) must be turned in on or before 1 May 2024 by 1700 h EDT to receive any credit.