

Life History of Fishes

Course: Water 384/584, Spring 2024, 3 credits

Description: Life histories of North American fishes as juveniles and adults. Discussion of life history traits including longevity, growth, maturation, fecundity, behavior, movements, and reproductive strategies. Life history considerations in fisheries management and conservation.

Lectures: Monday, Wednesday, and Friday, 10:00-10:50, TNR 352

Instructor: Joshua K. Raabe, PhD

Contact Information: jraabe@uwsp.edu, TNR 174, 715-346-2689 (office phone)

Office hours: Monday, 11:00 AM - 12:00 PM; also by appointment (e-mail first) or just stop by my office whenever door is open; can also ask questions after class or email!

Goal: My overall goal is for students to learn a lot of interesting things about fish, in particular how studying life histories is important in management and conservation.

Objectives: By the end of the semester, students should be able to:

1. Understand the key concepts and terminology for fish life histories and how they relate to management and conservation
2. Describe methods used to study life histories and estimate important parameters
3. Visually identify and describe the life history of 30 or more species of fish found in North America
4. Be comfortable with finding, reading, and discussing scientific articles

Communication: Students are expected to routinely check their UWSP e-mail and Canvas course site for updates and materials.

Canvas: <https://uwstp.instructure.com/courses/654024>

Reading Materials: There is no dedicated text for this course, but there will be a number of scientific, peer-reviewed articles to read. Readings will be available on Canvas, with required readings noted in class and updated on the syllabus on Canvas.

- McPhee, J. 2002. *The Founding Fish*. Farrar, Straus, and Giroux, New York. This is a text rental and we will read one chapter for a quiz.

Free online books for background information on fish families and species:

- Becker, G. C. 1983. *Fishes of Wisconsin*. University of Wisconsin Press, Madison, WI.

<http://digital.library.wisc.edu/1711.dl/EcoNatRes.FishesWI>

- Lyons, J., P. A. Cochran, and D. Fago. 2000. *Wisconsin Fishes 2000: Status and Distribution*.

<https://search.library.wisc.edu/digital/AC66J5QOSJAO5Y8M/pages/AJKISYQOAZYL78M>

- Etnier, D. A. and W. C. Starnes. 1993. *The Fishes of Tennessee*. University of Tennessee Press, Knoxville, TN. http://trace.tennessee.edu/utk_utpress/2/

Exams (300 points): Three 100-point exams will be given during the semester, with each exam covering one-third of the course material; exams two and three are not cumulative but aspects from exam one will carry throughout the semester. The exams will be administered through Canvas and will be open resources (notes, websites, etc.) but you cannot talk with or receive materials from other students or people. The exams will be open during the regularly scheduled lecture periods and the final exam period, although I will allow additional time. Exams need to be taken during these time periods otherwise a score of zero will be assigned. Illness or a family emergency may be cause for rescheduling an exam, but only if you notify me *prior* to the exam period (e-mail and voicemail have date and time stamps).

Individual Quizzes (60 points): There will be 12 quizzes on Canvas related to scientific papers. The quizzes are “open-paper” but **you must work alone**. Each quiz is worth 6 points, and I will keep your top 10 scores for a total of 60 points.

Assignments (80 points): 1. Three 20-point questions assignments will require you to probe the primary literature (peer-reviewed journals), answer in your own words, and properly cite sources. 2. One 20-point assignment will have you select a fish species (1 point), develop a fact sheet (15 points), and comment on other fact sheet (4 points).

Presentations (100 points): Groups of 3 students will give a presentation and develop a factsheet and three exam questions on a fish species selected by the group. Presentations will be worth 100 points total: 1. 40 points - draft of presentation, fact sheet, and questions, 2. 40 points - final presentation, fact sheets, and questions - based off of evaluations from peers and myself, 3. 10 points – individual performance based on my evaluations, and 4. 10 points – individual performance based off group member evaluations of participation, effort, and quality of work.

Presentation Evaluations (20 points): Each student will evaluate other group presentations and their group members to provide feedback, ensure attendance and group work, and assist with my evaluations. Evaluations of other presentations will be handed in at the end of the class period, while evaluations of group members must be submitted on Canvas by the night of your presentation. Each evaluation is worth 3 points (5 days, 15 points), and the evaluation of your group members is worth 5 points.

Content Quizzes, Participation, & Surveys (40 points): To ensure students keep up with content, participate in class, and have opportunities to improve the course and my teaching, there will be short content quizzes and student feedback surveys on Canvas and participation points that will come from participation associated with certain lectures, discussions, guest speaker(s), and other activities. If a student’s participation points exceed 40, they will be counted as bonus points.

Attendance: I will not always take attendance, however, as noted above there are points for group presentation evaluations and participation where you *must* be present to receive points; please inform me *prior* to absences. Also, exam questions may come from information not directly stated on slides or from discussions in class. Therefore, I highly recommend you attempt to attend class and participate, as I have noticed that success is often attributed to consistent attendance.

Due Dates / Late Policy: Assignments and presentation components can be submitted on Canvas prior to the due date. I will state due dates on each homework assignment, Canvas, and on an updated syllabus (on Canvas). *All assignments will be deducted 10% for each day late (e.g., 2 points/day for 20 point assignment)*, so please turn assignments in a timely manner to avoid point reductions or a score of zero.

WATR 584: Graduate students will have additional assignments including a review paper on a life history topic and an individual presentation on their research, and also will be held to a higher standard for grading.

Grade Breakdown: Grades will be determined based on a student’s total points at the end of the semester – see table below. Noticeable participation and effort can be factored in for the student’s *benefit* in final course grade.

Category	Points	Grade	Points	Percentage
Exams (3)	300			
Required Readings Quizzes (top 10)	60	A	558 - 600	93 - 100%
Question Assignments (3)	60	A-	540 - 557	90 - 92.9%
Fish Species Facts Assignment (1)	20	B+	522 - 539	87 - 89.9%
Group Presentations		B	498 - 521	83 - 86.9%
Draft presentation	40	B-	480 - 497	80 - 82.9%
Final presentation	40	C+	462 - 479	77 - 79.9%
Individual performance (instructor)	10	C	438 - 461	73 - 76.9%
Individual performance (group)	10	C-	420 - 437	70 - 72.9%
Evaluations	20	D+	402 - 419	67 - 69.9%
Content Quizzes / Participation	40	D	360 - 401	60 - 66.9%
Total	600	F	≤ 359	≤ 59.9%

Academic Integrity: I expect all students to strictly adhere to the high level of conduct and academic integrity at UWSP. All forms of plagiarism, cheating, and academic dishonesty are prohibited; violations will follow UWSP procedures. I reserve the right to use plagiarism software on assignments. The minimum penalty for a violation of academic integrity is failure (score of zero) of the assignment, but penalties can be stricter. For more information, please see the UWSP “Student Academic Standards and Disciplinary Procedures” section of the *Rights and Responsibilities*, Chapter 14: https://www.uwsp.edu/acadaff/Orientation/AcademicMisconductRulesAndProcedures_booklet.pdf

Disability Policy: If you are a student with disabilities, we will work together to accommodate any disabilities according to UWSP policies and the Americans with Disabilities Act (ADA), a federal law requiring educational institutions to provide reasonable accommodations for students with disabilities. Students must register with UWSP Disability Resource Center (DRC) and provide proper documentation. For more information, please visit the DRC located in room 108 in the Collins Classroom Center (CCC) and the following link: <https://www.uwsp.edu/disability-resource-center/>

Classroom Environment: I want everyone to feel comfortable and willing to participate in this course and will work to keep a positive online environment. Please contact me if you have any issues with a classmate or me. In addition, UWSP values a safe, honest, respectful, and inviting learning environment. In order to ensure that each student has the opportunity to succeed, they developed a set of expectations for all students and instructors, known as the *Rights and Responsibilities* document. Additional information:

<http://www.uwsp.edu/dos/Documents/Right%20and%20Responsibilities.pdf>

Student Feedback: To help improve this course and my teaching, I will ask for feedback through surveys and exam questions, you can always talk to or email me, or you can provide *anonymous* feedback through an online survey (link below and also on Canvas). I will try to incorporate all constructive, well-stated suggestions and critiques. I also greatly appreciate completed UWSP course evaluations at the end of the semester.

<https://www.surveymonkey.com/r/SFHYNFZ>

Safety Procedures: *Medical emergency:* call 911 or use the hallway red emergency phone, offer assistance if trained and willing, guide emergency responders to victim. *Tornado warning:* move to the second floor hallways and remain until told otherwise. *Fire alarm:* calmly evacuate building, meet in courtyard near library stairs, notify me or emergency command personnel of any missing individuals. *Active shooter:* Run/Escape, Hide, Fight. If trapped hide, lock doors, turn off lights, spread out and remain quiet. Follow instructions of emergency responders. More information: www.uwsp.edu/rmgt

Health situations: The health and safety of our students, faculty and staff are top priorities. Please monitor your health, including your mental health. If you are truly not feeling well and/or may be contagious, please do not come to class, instead inform me, rest up and if needed reach out to the appropriate medical personnel.

As with any type of absence, students are expected to communicate their need to be absent and complete the course requirements as outlined in the syllabus.

Lecture & Assignment Schedule

This is a **REVISED** schedule updated with group presentations. Please note: *scientific paper quizzes are due by 11:59 PM the night BEFORE that lecture, but noted on the lecture date below. Weekly content quizzes are not listed, but will typically be due on Thursday nights. **Watch Canvas due dates.**

Date	Topic	Presenter	Quiz / Assignment / Exam
22-Jan	Introduction	Raabe	
24-Jan	Key Concepts, Sc. Papers (Videos)	Raabe	
26-Jan	Reproduction	Raabe	1. Perrone and Zaret 1979*
29-Jan	Early Life	Raabe	
31-Jan	Growth	Raabe	2. Olson et al. 1998*
2-Feb	Presentations	Raabe/Group	Group work
5-Feb	Survival/Mortality	Raabe	Homework 1
7-Feb	Geographical Variation	Raabe	3. Heibo et al. 2005*
9-Feb	Categorizing Life Histories	Raabe	
12-Feb	Invasive Carps	Schaick	
14-Feb	Exploitation	Raabe	4. Conover & Munch 2002*
16-Feb	Southern Fisheries	Dembkowksi	
19-Feb	Water Quality	Raabe	
21-Feb	Lampreys & Review	Raabe	
23-Feb	Exam 1		
26-Feb	Sturgeon & Paddlefish	Raabe	
28-Feb	Bowfin & Gars	Raabe	5. Koch et al. 2009*
1-Mar	Finish & Presentations	Raabe	Group work
4-Mar	Black Basses	Raabe	
6-Mar	Bluegill	Raabe	6. Gross & Charnov 1980*
8-Mar	Walleye	Raabe	Draft Presentation Materials
11-Mar	Lake Whitefish	VanDeHey	Homework 2
13-Mar	Brook Trout	Raabe	7. Witzel & Macrimmon 1983*
15-Mar	Spotted Seatrout (Video)	Raabe	
18-22 Mar	NO LECTURES THIS WEEK - SPRING BREAK!!!		
25-Mar	Genetics in Fisheries	Homola	
27-Mar	Salmon	Raabe	
29-Mar	American Shad	Raabe	8. Founding Fish Ch. 5*
1-Apr	Catfishes	Raabe	
3-Apr	Chubs & Review	Raabe	9. Peoples et al. 2013*
5-Apr	Exam 2		
8-Apr	Gizzard Shad	Raabe	10. Stein et al. 1995*
10-Apr	B. Buffalo, F. Catfish, Stonecat	Groups	
12-Apr	Muskellunge	Wolter	Select Species for Factsheet
15-Apr	B. Crappie, P. Bass, R. Bass	Groups	
17-Apr	A. Gar, P. Sturgeon, R. Darter	Groups	
19-Apr	CNR Research Symposium	No Class	
22-Apr	Burbot	Raabe	11. Fischer 2000*
24-Apr	L. Trout, R. Smelt, S. Salmon	Groups	Homework 3
26-Apr	Icelandic Fishes	Frater	
29-Apr	Temperate Basses	Raabe	12. Feiner et al. 2013*
1-May	C. Danio, Swordfish, Wobbecong	Groups	
3-May	Billfishes & Tunas	Raabe	Post Species Factsheet
6-May	Sharks	Raabe	
8-May	Eels	Raabe	Comment On Other Factsheets
10-May	Common Carp & Review	Raabe	
16-May	Exam 3, Thursday, 2:45-4:45		Exam 3