Life History of Fishes

Course: Water 384/584, Spring 2019, 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: Tuesday, Thursday, and Friday, 8:00-8:50, TNR 320

Instructor: Joshua K. Raabe, PhD

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

Office hours: Wednesday, 9:00-11:00; by appointment (e-mail first); or if door is open

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/131700

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 more 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.

- 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: Three 100-point in-class exams will be given during the semester, each of which must be taken at the scheduled time or a score of zero will be assigned. Each exam will cover one-third of the course material; the final exam is not comprehensive. The exams will be during regularly scheduled 50-minute lecture periods and the final exam period. 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: 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 5 points, and I will keep your top 10 scores for a total of 50 points.

Assignments: 1. Three 25-point assignments of short answer questions will require you to think for yourself, probe the primary literature (peer-reviewed journals), and properly cite your sources. 2. One 20-point assignment will have you select a fish species (1 point), write a short summary of facts on that species (15 points), and briefly describe in-class (4 points).

Presentations: Groups of 3-4 students (or one graduate student) will give a presentation and develop a fact sheet and three exam questions on a fish species or group of species. Presentations will be worth 120 points total: 1. 40 points - draft of presentation, fact sheet, and questions - due one week before the presentation, 2. 50 points - overall presentation - based off of evaluations from peers and myself, 3. 10 points – individual performance based on my evaluations, and 4. 20 points – individual performance based off group member evaluations of participation, effort, and quality of work.

Presentation Evaluations: To ensure attendance and to assist with my evaluation of group presentations, each student will evaluate the other group presentations and their group members. To receive the full 20 points, each student must submit their evaluation of their group members within a week of the presentation (2.5 points) and submit evaluations for seven other presentations on the day of the presentation (2.5 points each); you will receive 2.5 bonus points if you evaluate all presentations.

Participation: To ensure attendance and participation in class, there will be 15 participation points that will come from attendance and/or participation of certain lectures, group discussions, guest speaker(s), and other activities. If a student's participation points exceed 15, they will be counted as bonus points.

Attendance: I will not take daily attendance. *However*, as noted above there are points for group presentation evaluations and participation where you *must* be present in class. Also, exam questions may come from information not directly stated in PowerPoints or from discussions in class. Therefore, I highly recommend you attend class and have noticed in previous semesters that success is largely 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 five points for each full day late***, so please turn assignments in a timely manner to avoid point reductions or a score of zero.

Grade Breakdown: Grades will be determined based on a student's total points at the end of the semester. The table below shows point totals broken down by category and associated grades with +/- determinations. Noticeable participation and effort can be factored in for the student's *benefit* in final course grade.

Category	Points
Exams (3)	300
Required Readings Quizzes (top 10)	50
Question Assignments (3)	75
Fish Species Facts Assignment (1)	20
Group Presentations	
Draft presentation, fact sheet, questions	40
Overall presentation	50
Individual performance (instructor)	10
Individual performance (group)	20
Peer evaluations (7 other groups)	17.5
Peer evaluation (your group)	2.5
Participation	15
Total	**600**

Grade	Points	Percentage
A	558 - 600	93 - 100%
A-	540 - 557	90 - 92.9%
B+	522 - 539	87 - 89.9%
B	498 - 521	83 - 86.9%
B-	480 - 497	80 - 82.9%
C+	462 - 479	77 - 79.9%
C	438 - 461	73 - 76.9%
C-	420 - 437	70 - 72.9%
D+	402 - 419	67 - 69.9%
D	360 - 401	60 - 66.9%
F	$\leq$ 359	$\leq$ 59.9%

WATR 584: Graduate students will be held to a higher standard for grading and will give an individual presentation on their research.

Classroom Environment: I want everyone to feel comfortable and willing to participate in this course and will work to keep a positive classroom 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 throughout the semester, I will ask for feedback during class periods, 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

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, please contact me at the beginning of the semester. 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 and Assistive Technology Center and provide proper documentation. For more information, please visit the links below and the Disability and Assistive Technology Center, located on the 6th floor of the Learning Resource Center (the Library).

http://www4.uwsp.edu/special/disability/

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. Additional details and information: www.uwsp.edu/rmgt

Lecture & Assignment Schedule

This is a **tentative** schedule that includes the selected species for group presentations. If I make any other changes I will inform the class and update the schedule on D2L.

Date	Topic	Presenter	Quiz / Assignment / Exam
22-Jan	Introduction & Scientific Papers	Raabe	
24-Jan	Key Concepts	Raabe	
25-Jan	Reproduction	Raabe	1. Perrone and Zaret 1979
29-Jan	Presentations	Raabe/Group	Group work
31-Jan	Early Life	Raabe	
1-Feb	Growth	Raabe	2. Olson et al. 1998
5-Feb	Survival/Mortality	Raabe	Homework 1
7-Feb	Geographical Variation	Raabe	3. Heibo et al. 2005
8-Feb	Categorizing Life Hist	Raabe	Upload presentation scientific paper
12-Feb	Exploitation	Raabe	4. Conover & Munch 2002
14-Feb	Water Quality	Raabe	
15-Feb	Review, Presentations	Raabe/Group	Group work
19-Feb	Crappies	Wolter	
21-Feb	***No lecture - WI AFS***	NA	
22-Feb	***Exam 1***	NA	
26-Feb	Spotted Seatrout	Raabe	
28-Feb	Bowfin & Gar	Raabe	5. Koch et al. 2009
1-Mar	Lake Sturgeon & Paddlefish	Group	
5-Mar	Bluegill	Raabe	6. Gross & Charnov 1980
7-Mar	Large & Smallmouth Bass	Group	
8-Mar	Muskellunge & Pike	Group	
12-Mar	Brown & Rainbow Trout	Group	
14-Mar	Lake Whitefish	VanDeHey	Homework 2
15-Mar	TBD		
19-22 Mar	**NO LECTURES OF LAB THIS WEEK - SPRING BREAK!!!**		
26-Mar	Lake Trout & Cisco	Group	
28-Mar	Chinook & Coho Salmon	Group	
29-Mar	Brook Trout	Raabe	7. Witzel & Macrimmon 1983
2-Apr	Chubs & Darters	Raabe	8. Peoples et al. 2013
4-Apr	Carp, Review	Raabe	
5-Apr	***Exam 2***		
9-Apr	Walleye & Yellow Perch	Group	
11-Apr	Flathead & Blue Catfish	Group	
12-Apr	Catfishes	Raabe	
16-Apr	Freshwater & Red Drum	Group	
18-Apr	Burbot	Raabe	9. Fischer 2000
19-Apr	Graduate Student Research	Grad Students	
23-Apr	American Shad	Raabe	10. Founding Fish Ch. 5
25-Apr	Eels & Lamprey	Raabe	Homework 3
26-Apr	Temperate Bass	Raabe	11. Feiner et al. 2013
30-Apr	Striped Bass	Raabe	
2-May	Gizzard Shad	Raabe	12. Stein et al. 1995, Fish Facts
3-May	Fish Facts Friday	Class	
7-May	Billfish & Tuna	Raabe	
9-May	Sharks	Raabe	
10-May	***Finish & Review***	Raabe	Student evaluations
16-May	***Exam 3, Thursday, 2:45-4:45***		Exam 3