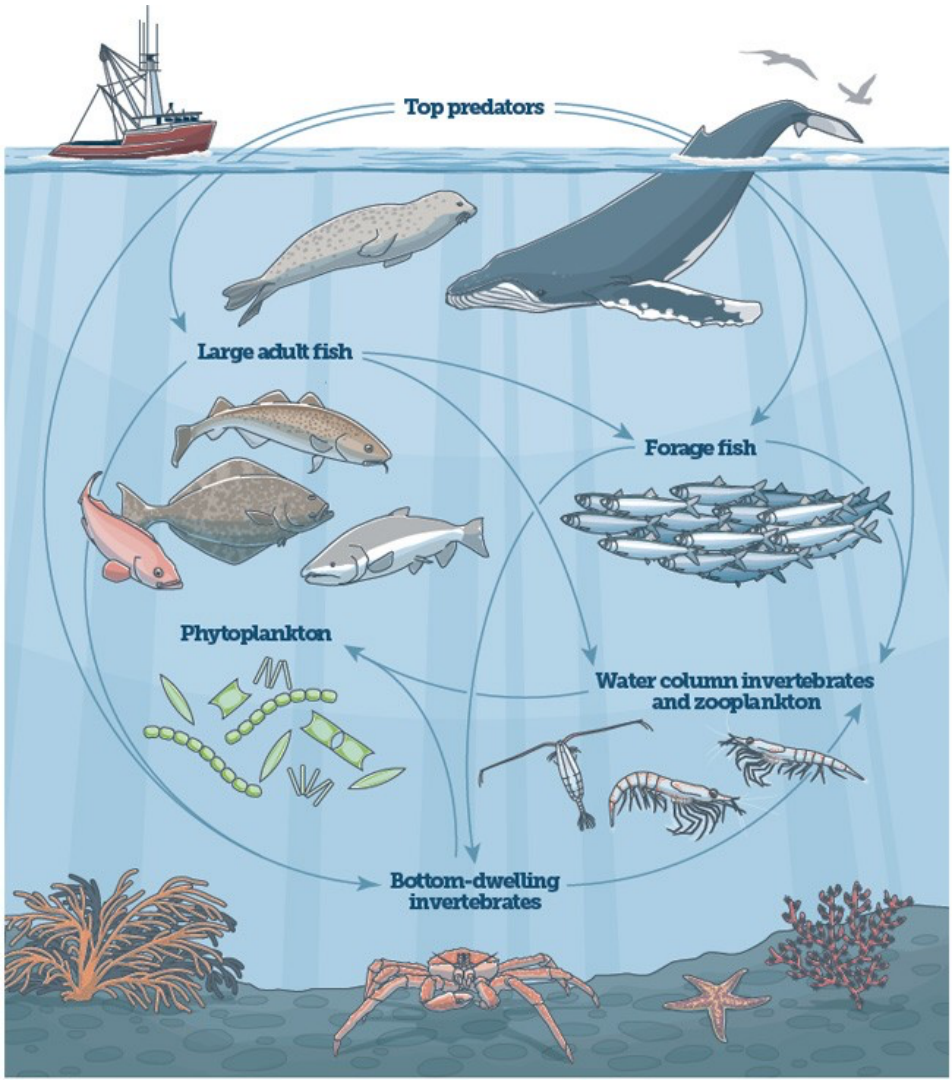
FISH 312:
Fisheries Ecology



Instructor:
Dr. Katie McElroy
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Course Outline

The details outlined below are subject to revision and refinement as the instructor continues to develop the course for Spring 2024

Lectures: MWF, 10:30am–11:20am in FISH 107

Office hours: TBD

If this time does not work for you, I am happy to meet at another time by appointment – just see me before/after class or send me an e-mail to set up a time.

Pre-requisites: BIOL 220 or FISH 270

Credits: 3 credits

Note that for 3 credits, the University of Washington expects students to devote 9 hours per week to this course (1 credit = 3 hours per week).

This 3-credit offering of the course does not satisfy a W requirement. If you have questions W credits, contact your academic advisor.

Website: Canvas. Course information, pre-class videos and readings, information on exams, and weekly quizzes will be posted to Canvas. To access materials on Canvas, you will need your UW NetID and password. A Canvas email list will be used for course notifications. Please check your UW email regularly for course announcements.

Required readings: Ecology: The Experimental Analysis of Distribution and Abundance, 6th Edition, Charles J. Krebs.

Equipment: This course involves active participation in our practical sessions where students will need to use their laptops or tablets for data analysis and visualization. For students without access to a personal laptop – it is now possible to check out UW laptops for an entire quarter. See the Student Technology Loan Program here. You can access Microsoft Office for free as a UW student to install Word and Excel.

Course Description

Ecologists study the abundance and distribution of species. In FISH 312, we will learn the basic principles of ecology, with a focus on the ecological processes that produce observable patterns in diversity and abundance. We will proceed from lower levels of biological organization to higher levels: from physiology and behavior to populations, communities, and ecosystems. Although the objective of the course is to teach students fundamental ecological principles that apply across all ecosystems, we will focus on the themes most relevant to marine and aquatic ecosystems, especially fisheries.

Learning Goals

By the end of the quarter, I expect you will be able to:

1. describe the major ecosystem types that occur in terrestrial, marine, and freshwater environments and explain how organisms are physiologically and behaviorally adapted to these environments;
2. describe the biotic and abiotic factors that place limits on a species' distribution and abundance;
3. describe the structure of populations using techniques from population biology, and identify the major factors that constrain population growth;
4. outline the various categories of species interactions and explain how these interactions influence species' distribution and abundance;
5. explain the differences in biodiversity among world regions;
6. trace the flow of energy through an ecosystem and describe some of the major biogeochemical cycles of terrestrial and aquatic ecosystems;
7. knowledgeably discuss applied issues in ecology, including harvesting, dams, and conservation efforts;
8. analyze and critically evaluate graphical representations of data from the scientific literature;
9. communicate ideas about ecology, in writing and speech.

Evaluation

	Assessment	Due	Proportion of your final grade
Exams (There will be 3 but you can drop your lowest score)	Exam 1	In class	35%
	Exam 2	In class	35%
Quizzes	Online weekly quizzes	by 11:59pm every Monday	20%
Participation	In-class participation	n/a	10% – see below for a detailed grading breakdown.

Exams

We will have 3 partially cumulative exams throughout the quarter (in Weeks 4, 7, and 10). Katie will drop the lowest of your 3 exam scores as part of a flexible grading policy to deal with unexpected circumstances. If you are sati3sfied with your performance in the first 2 exams, you can choose to not take exam 3 as part of this flexible grading policy.

If you have a conflict with an exam time, please let Katie know as soon as possible so that accommodations can be arranged. For unscheduled conflicts with exam times (e.g., medical emergency), make-ups will be available only if the emergency can be verified. If you miss an exam due to illness or other emergency, make sure that you or a friend contacts the instructor, Katie, by email at mcelroyk@uw.edu within 24 hours of the exam. Documentation of illness will be required for any missed exam. To preserve the academic integrity of the course, the instructor reserves the right to alter the content and/or format of the original test in creating a make-up exam.

Quizzes

Weekly quizzes are designed (1) to help you review your understanding of the material and (2) to indicate the most important materials to study for the exams. Answers to quizzes will be posted to Canvas. You are encouraged to use the quizzes as study tools for the exams. Quizzes are due every **Monday by 11:59pm**, late work will not be accepted.

Participation

Science education research has demonstrated that students who take an active role in their learning learn more and retain that knowledge longer; therefore, it is in your best interest to prepare for and actively participate in class meetings – including small group activities and whole-class discussions. This is a relatively easy way to earn points toward your final grade. ***One thing that may help you participate in class is bringing questions you have written out ahead of time***. I will sometimes use a random name generator to call on students at random.

Your participation grade will be determined by how often you contribute in class, as well as the quality of those contributions. 10 points (of 10) = student goes beyond required reading, bringing in outside examples and knowledge beyond the scope of the course or connecting concepts across lectures, 8 points = regular participation, usually well thought-out, useful contributions; 6 points = regular participation, sometimes useful, sometimes not; 4 points = occasional participation that is generally useful; 2 points = occasional participation, but generally non-substantive, adding little new information; 0 points = rarely contributed. I can provide feedback on your participation at any point in the semester, at your request.

Regrade policy

If you believe that an exam or quiz has been graded incorrectly, or that the grade entered is incorrect, you must contact me within one week of when the assignment is returned to you. Such a request must be submitted in writing (e-mail is fine) and must be accompanied by the original, unaltered assignment.

Posting of grades

You will be able to access your grades via Canvas. All graded material will be returned promptly during scheduled class times. If you find that there is a clerical error in a posted score, please contact me as soon as you notice the error. Exam scores will be posted no more than 10 days after the exam date.

Late assignments

Late assignments will not be accepted and will receive a grade of 0%. If you anticipate having trouble meeting one of the deadlines set out in this syllabus, please discuss with me beforehand.

Academic integrity

Students at the University of Washington are expected to maintain the highest standards of academic conduct, professional honesty, and personal integrity. Plagiarism, cheating, and other misconduct are serious violations of the University of Washington Student Conduct Code (WAC 478-120). I expect you to know and follow the university's policies on cheating and plagiarism. Any suspected cases of academic misconduct will be handled according to University of Washington regulations. For more information, see the University of Washington Community Standards and Student Conduct website.

I don’t expect anyone in this class to engage in academic misconduct – ecology is a window into a new and exciting world, and cheating robs the cheater of the opportunity to explore and know that world. But just in case, I will state up front my policy for addressing academic misconduct: if you are caught cheating, falsifying data, plagiarizing, collaborating on assignments in a manner that is prohibited, or committing any other kind of academic

misconduct as defined in the Student Conduct Code, the case will be referred to the College of the Environment for a Student Conduct Process hearing. If the hearing identifies academic misconduct, you will receive an automatic zero on the assignment.

Incomplete (I)

From UW's Faculty Resource on Grading: "An *Incomplete* is given only when the student has been in attendance and has done satisfactory work until within two weeks of the end of the quarter and has furnished proof satisfactory to the instructor that the work cannot be completed because of illness or other circumstances beyond the student's control… To obtain credit for the course, an undergraduate student must convert an *Incomplete* into a passing grade no later than the last day of the next quarter… An Incomplete grade not made up by the end of the next quarter is converted to the grade of 0.0 by the Office of the University Registrar. An *Incomplete* grade does not count for registered hours nor in computation of grade-point averages."

Inclusivity

I teach this course with the intent to serve students from all backgrounds and perspectives, to address students' learning needs both in and out of class, and to honor the diversity that students bring to this class as a resource, strength, and benefit. I intend to design and present course materials and activities that are respectful of diversity: gender, sexual orientation, disability, age, socioeconomic status, ethnicity, race, culture, perspective, and other background characteristics. I acknowledge that it is possible that there may be both overt and covert biases in the material due to the lens with which it was written, even though the material is primarily of a scientific nature. Your suggestions about how to improve the value of diversity in this course are encouraged and appreciated.

I strive to create a learning environment for my students that supports a diversity of thoughts, perspectives, and experiences, and honors your identities. To help accomplish this:

- If you have a name or set of pronouns that differ from those that appear in your official UW records, please let me know at your convenience.
- If you feel like your performance in the class is being impacted by your experiences outside of class, please don't hesitate to come and talk with me. I want to be a resource for you. If you prefer to speak with someone outside of the course, the College of the Environment Diversity, Equity, and Inclusion office, is an excellent resource.
- I (like many people) am still in the process of learning about diverse perspectives and identities. If something said in class (by anyone) made you feel uncomfortable, please talk to me about it. (Anonymous feedback is always an option).

Classroom conduct

I am dedicated to providing a welcoming and supportive environment for all people, regardless of background, identity, physical appearance, or manner of communication. Any form of language or behavior used to exclude, intimidate, or cause discomfort will not be tolerated. This applies to all course participants (instructor, students, guests). To foster a positive and professional learning environment, I encourage the following kinds of behaviors:

- Use welcoming and inclusive language
- Be respectful of different viewpoints and experiences
- Gracefully accept constructive criticism
- Show courtesy and respect towards others

Access and accommodations for persons with disabilities

It is crucial that all students in this class have access to the full range of learning experiences. At the University of Washington, it is policy and practice to create inclusive and accessible learning environments consistent with federal and state law. Full participation in this course requires the following types of engagement:

Component	Requirement
Lecture	the ability to attend 3 hour-long lectures per week with up to 30 other students; the ability to complete up to three written and timed exams; the ability to participate in lecture through written and oral communication.

If you anticipate or experience barriers to your learning or full participation in this course based on a physical, learning, or mental health disability, please immediately contact the instructor to discuss possible accommodation(s). A more complete description of the disability policy of the College of the Environment can be found here: https://environment.uw.edu/intranet/academics/teaching/disability-accommodation/. If you have, or think you have, a temporary or permanent disability that impacts your participation in any course, please also contact Disability Resources for Students (DRS) at: 206-543-8924 V / 206-543-8925 TDD / uwdss@uw.edu e-mail / http://www.uw.edu/students/drs.

Roles and responsibilities

- *Student*: inform the instructor no later than the first week of the quarter of any accommodation(s) you will or may potentially require.
- *Instructor*: maintain strict confidentiality of any student's disability and accommodation(s); help all students meet the learning objectives of this course.

Accommodations for religious observances

Students who expect to miss class or assignments due to their religious observance will be

provided with a reasonable alternative opportunity to fulfill their academic responsibilities. Absence from class for religious reasons does not relieve students from responsibility for the course work required during the period of absence. It is the responsibility of the student to provide the instructor with advance notice of the dates of religious holidays on which they will be absent. Students who are absent will be offered an opportunity to make up the work, without penalty, within a reasonable time, as long as the student has made prior arrangements. Pre-arranged absences for religious observances will not be counted against class participation.

Safety

Call SafeCampus at 206-685-7233 anytime – no matter where you work or study – to anonymously discuss safety and well-being concerns for yourself or others. SafeCampus's team of caring professionals will provide individualized support, while discussing short- and long-term solutions and connecting you with additional resources when requested.

FISH 312: Fisheries Ecology

Schedule of Lectures

You are expected to have read these materials *before* each lecture. This schedule is subject to change and will be updated on each day's module on Canvas.

Week	Date	Lecture topic	Required reading	Assignments due
1	25 Mar M	**Course introduction**		
1	27 Mar W	**Lecture 1:** What is ecology?	☐ Krebs Chapter 1	
1	29 Mar F	**Lecture 2:** Nothing in ecology makes sense except in light of evolution	☐ Krebs Chapter 2	
2	1 Apr M	**Lecture 3:** Behavioral ecology	☐ Krebs Chapter 3	☐ Complete week 1 quiz by 11:59pm tonight
2	3 Apr W	**Lecture 4:** Biogeography	☐ Krebs Chapter 4 + pp. 62–70	
2	5 Apr F	**Lecture 5:** Biotic factors that limit species' distributions	☐ the rest of Krebs Chapter 5	
3	8 Apr M	**Lecture 6:** Abiotic factors that limit species' distributions (GUEST)	☐ Krebs Chapter 6	☐ Complete week 2 quiz by 11:59pm tonight
3	10 Apr W	**Lecture 7:** Species' geographic range size and abundance	☐ Krebs Chapter 7	
3	12 Apr F	**Lecture 8:** Population parameters and demographic techniques	☐ Krebs Chapter 8	
4	15 Apr M	**Lecture 9:** Population growth	☐ Krebs Chapter 9	☐ Complete week 3 quiz by 11:59pm tonight
4	17 Apr W	**EXAM 1 –** in our usual room during our usual lecture period		
4	19 Apr F	**Lecture 10:** How does competition affect species abundance (part 1)?	☐ Krebs Chapter 10	
5	22 Apr M	**Lecture 11:** How does competition affect species abundance (part 2)?	☐ review Krebs Chapter 10	☐ Complete week 4 quiz by 11:59pm tonight

5	24 Apr W	**Lecture 12:** How does predation affect species abundance?	☐ Krebs Chapter 11	
5	26 Apr F	**Lecture 13:** How does parasitism affect species abundance?	☐ Krebs Chapter 13	
6	29 Apr M	**Lecture 14:** Regulation of population size	☐ Krebs Chapter 14	☐ Complete week 5 quiz by 11:59pm tonight
6	1 May W	**Lecture 15:** Applied problems I – harvesting populations	☐ Krebs Chapter 15	
6	3 May F	**Lecture 16:** Community structure in time – succession	☐ Krebs Chapter 18	
7	6 May M	**Exam review:** catch up day and a chance to ask questions	☐ bring your questions	☐ Complete week 6 quiz by 11:59pm tonight
7	8 May W	**EXAM 2 –** in our usual room during our usual lecture period		
7	10 May F	**Lecture 17:** Community structure in space – biodiversity (GUEST)	☐ Krebs Chapter 19	
8	13 May M	**Lecture 18:** Community dynamics I – predation and competition in equilibrial communities	☐ Krebs Chapter 20	☐ Complete week 7 quiz by 11:59pm tonight
8	15 May W	**Lecture 19:** Community dynamics II – disturbance and nonequilibrial communities	☐ Krebs Chapter 21	
8	17 May F	**Lecture 20:** Ecosystem metabolism I – primary production	☐ Krebs Chapter 22	
9	20 May M	**Lecture 21:** Ecosystem metabolism II – secondary production	☐ Krebs Chapter 23	☐ Complete week 8 quiz by 11:59pm tonight
9	22 May W	**Lecture 22:** Ecosystem metabolism III – nutrient cycles	☐ Krebs Chapter 24	
9	24 May F	**Lecture 23:** Ecosystem health – human impacts	☐ Krebs Chapters 25 & 26	
10	27 May M	**MEMORIAL DAY – HOLIDAY (no practical session)**		☐ Complete week 9 quiz by 11:59pm tonight
10	29 May W	**Course wrap-up and review:** a chance to ask questions	☐ bring your questions	
10	31 May F	**EXAM 3 –** in our usual room during our usual lecture period		☐Complete week 10 quiz by 11:59pm tonight