

FW 400 Conservation of Fish in Aquatic Ecosystems
Fall 2016

Lectures: TR 10-10:50 am 132 Wagar Building

Field trips: **Two Saturday field trips are required:**
17 September (plains fishes); 24 September (native trout and transition zone fishes)

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Text: Helfman, G. S. 2007. Fish conservation: a guide to understanding and restoring global aquatic biodiversity and fishery resources. Island Press, Covello, CA.

Course goal: Fish and other aquatic organisms are declining at an alarming rate, faster than most groups of terrestrial vertebrates and invertebrates. For example about 35-75% of fishes, freshwaters mussels, and crayfish are extinct or designated as endangered, threatened, or of special concern by management agencies. The goal of this course is to broaden students' perspectives on 1) current status of fishes and other aquatic organisms and the aquatic ecosystems that sustain them, 2) physical and biotic processes that drive aquatic ecosystems and form the habitat template for aquatic biota, 3) critical linkages between terrestrial and aquatic ecosystems that shape habitat and drive aquatic production, and 4) current case studies and strategies to conserve the processes that sustain aquatic life.

Audience and Expectations: This course is designed primarily for seniors in the Fisheries and Aquatic Sciences and Conservation Biology concentrations within the Dept. of FWCB, as well as students from other concentrations and majors with interest in fish conservation who have taken the prerequisites (FW300, BY320). Given these prerequisites and academic standing, I assume that students are able to: understand basic concepts in biology, ecology, and fish biology (as well as related concepts in math, chemistry, and physics) at the junior level, read and analyze scientific papers, write coherent scientific papers and essays, present well-organized oral presentations, and discuss concepts about fish biology and conservation in class. In addition, I assume that they are capable of hiking in uneven terrain in the field, and wading in streams, and will conduct themselves professionally while on the field trips.

Assignments, Exams, and Grading:

Exams (35%): Midterm exam (15%) – **Thursday 6 October**
Final exam (20%) – **Friday 16 December** 9:40-11:40 am
Exams will consist of written short answers and long essays. A study guide will be given for each a week in advance.

Writing Assn 1 (30%) Students will write a short paper (20% of grade) as part of a group considering a hot topic in conservation of fish in aquatic ecosystems - **Due: Thursday 20 October**. Guidelines will be given in September.
All papers for each group will be collected in a magazine (10% of grade) - **Due: Tuesday 15 November**.

Contributed paper (15%): Each student will present the topic of their paper orally in a Powerpoint presentation, as part of a contributed papers session run by their group

Writing Assn 2 (15%^A) Students will prepare a written evaluation of the field conservation efforts reviewed during one of the two field trips, based on background reading of pertinent literature, principles presented in class, and first-hand knowledge gained during the field excursion. **Due: Tuesday 11 October**

Participation (5%) Students are expected to contribute during class discussions. Contributions will be graded as substantial, adequate, minor, none, or often absent (A-F).

Lecture Schedule: The following are planned lecture topics and exams, by week, for a 15-week course.

1. Introduction: Status of aquatic ecosystems and their biota. Organize field trips and groups on “hot topics”
2. *What are we trying to conserve?:* Water quality and temperature
3. Conserving: Disturbance regimes
4. Conserving: Physical habitat; Connectivity within and among watersheds
5. Conserving: Energy sources to aquatic systems, and Biotic interactions
6. *Current threats and potential solutions:* Chemical and thermal pollution
7. Threats: Forests, forestry, and fire; *Midterm exam (Thursday 6 October)*
8. Threats: Biological invasions – population, community, and ecosystem effects
9. Threats: Livestock grazing – effects on linked stream-riparian ecosystems; *RiverWebs* documentary film
- 10a. *Case studies and alternatives for conservation:* Dryland ecosystems of the No. Amer. Great Plains
- 10b. Upper Colorado River fishes, flows, and nonnatives;
11. Conserv. of fishes in lakes; Conservation planning
12. Conservation planning - continued
13. Conservation planning; Student contributed paper session 1
14. Student contributed paper sessions 2 and 3
15. Student contributed paper sessions 4 and 5

Note: *Monday, 17 October is the last day to drop course with a “W”*

Course Policies:

- a. No makeup exams will be given. Students who miss an exam will receive an F for that exam. In case of a true emergency, *I must know before I enter the exam room.* Call and leave a message (970-491-6457).
- b. Field trips are required. Absent students will earn an F for 7.5% of their grade for each field trip missed. All students enrolled for a grade will be transported in CSU-arranged vehicles.
- c. Late papers will be docked 10% per day, equivalent to one letter grade. None will be accepted after four days. Don't be late!
- d. Plagiarism is not allowed. Writing assignments will be checked with SafeAssign or other software, and those with plagiarized statements will receive low grades (i.e., D or below). Substantial plagiarism will be grounds for failing the assignment. If you are unsure, see “Plagiarism: What it is and how to recognize and avoid it”, at <http://www.indiana.edu/~wts/pamphlets/plagiarism.shtml>
- e. Cheating on exams or other assignments is grounds for failing the assignment, or in egregious cases, failing the course. This includes copying other's work, or bringing information to exams in any form.
- f. CSU has a Honor Pledge, and I will expect you to follow it (see <http://tilt.colostate.edu/integrity/pledge/index.cfm>). It reads “*I have not given, received, or used any unauthorized assistance.*” I do hope that students will study and discuss course information together, because this leads to learning. However, I then expect you to do your own work on papers, exams, and presentations.

Note A on field trip assignment – *The field trip assignment includes full participation in both field trips as part of the grade. See “b” above under Course Policies for specifics.*