

FW 400 Conservation of Fish in Aquatic Ecosystems
Spring 2008

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

Field trips: Two Saturday field trips are required: April 19 (Arikaree) and May 3 (native trout)

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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 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, 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%) – Wednesday 12 March
Final exam (20%) – Monday 12 May, 7-9 am
Exams will consist of written short answers and long essays, and sets of problems requiring solution and interpretation. A study guide will be given for each.

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. All papers for each group will be collected in a magazine (10% of grade). Guidelines will be given early in the semester. **Due: Monday March 31**

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%) 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, use of principles presented in class, and first-hand knowledge gained during the field excursion. **Due: Wed May 7**

Participation (5%)

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

Lecture Schedule: The following are planned lecture topics and exams, by week, for a 15-week course. Given that this is the first year taught, some modifications are to be expected.

1. Introduction: Status of aquatic ecosystems and their biota
2. *What are we trying to conserve?* Water quality, Physical habitat
3. Conserving: Disturbance Regimes, Biotic interactions, Energy sources to aquatic systems
4. Conserving: Linkages within watersheds, and with riparian/coastal ecosystems
5. *Current threats and potential solutions:* Loss of water quantity and quality (diversion, pumping, pollution)
6. Degradation of physical habitat: channelization, mining, forestry, agriculture
7. Alteration to disturbance regimes (water level, flooding, temp.) and consequences
8. Biotic invasions, *Midterm exam (Wed 12 March)*
9. Biotic invasions: introduction, spread, effects of nonnative species; biotic homogenization; Overexploitation (commercial fisheries and aquarium trade)
10. *Case studies and alternatives for conservation:* Inland West native trout conservation
11. Case study: Conserv. of fishes in artificial habitats – mountain reservoirs in the West
12. Case study: Dryland ecosystems – North Amer. Great Plains and deserts
13. Student contributed paper sessions
14. Student contributed paper sessions
15. Conclusion: Conservation planning: Alternatives in conservation of fishes and aquatic ecosystems

Note: *Monday, March 24th is the last day to drop course with a “W”*

Course Policies:

- a. No makeup exams will be given. 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. All students will be transported in CSU vans.
- 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 with plagiarized statements will receive low grades, and 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”, by Indiana University 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.