Instructional Staff
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Course Description
This course is an introduction to the elements of fisheries management. It will serve fisheries and wildlife majors and graduate students as background to future courses in fish ecology and fisheries management. It is also organized to provide useful information to non-majors and graduate students who may not have the opportunity to take further courses in this field.

Course objectives
After successful completion of ENR 5342, students will be able to:
• Describe fisheries management, its objectives, and its limitations.
• Describe basic types of aquatic communities and their associated fisheries management problems.
• Understand how aquatic communities function, emphasizing fisheries in inland, temperate North America.
• Understand basic parameters of fish population dynamics in terms of rate functions and limiting factors.
• Understand the principles of fisheries management as applied to recreational and commercial fisheries.
• Understand how to interpret fisheries management data, define management problems, and suggest appropriate techniques to reach management objectives.
• Learn to use the library and other information resources efficiently and effectively to find, evaluate, and interpret literature on fisheries.

Required Text
Suggested References (NOT Required)

*Fisheries management texts*


*Field guides and systematic texts*


**Student Evaluations**

There will be 11 opportunities for students to be evaluated. Your grade will be based on a total of 900 points. All assignments can be submitted in hard copy or electronically via Carmen. All late assignments will be docked 10% per day.

Midterm examinations will be about equally divided between objective questions and answers requiring short answers, definitions, listing questions, and essays. The final examination will be comprehensive with short answer, essay and objective questions. It will differ from the midterm exams in that integration of knowledge will be stressed. You will be expected to use information
gained throughout the semester to solve hypothetical management-type problems.

<table>
<thead>
<tr>
<th>Assignment/Assessment</th>
<th>Point value</th>
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<tbody>
<tr>
<td>Annotated bibliography</td>
<td>50</td>
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<tr>
<td>Fish &amp; wildlife conference assignment</td>
<td>50</td>
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<tr>
<td>Population estimation assignment</td>
<td>50</td>
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<tr>
<td>Age &amp; growth assignment</td>
<td>50</td>
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<td>Relative weight assignment</td>
<td>50</td>
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<tr>
<td>Diet indices assignment</td>
<td>50</td>
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<tr>
<td>Fisheries assessment assignment</td>
<td>50</td>
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<tr>
<td>Midterm 1</td>
<td>100</td>
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<tr>
<td>Midterm 2</td>
<td>100</td>
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<tr>
<td>Term paper</td>
<td>200</td>
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<tr>
<td>Final exam</td>
<td>150</td>
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<td><strong>Total:</strong></td>
<td><strong>900</strong></td>
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**Grading**

Letter grades will be assigned on the four-point system following the university’s “standard scheme.”

<table>
<thead>
<tr>
<th>Grade</th>
<th>Percentage</th>
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<tbody>
<tr>
<td>A</td>
<td>93.00–100%</td>
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<tr>
<td>A-</td>
<td>90.00–92.99%</td>
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<tr>
<td>B+</td>
<td>87.00–89.99%</td>
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<tr>
<td>B</td>
<td>83.00–86.99%</td>
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<tr>
<td>B-</td>
<td>80.00–82.99%</td>
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<tr>
<td>C+</td>
<td>77.00–79.99%</td>
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<tr>
<td>C</td>
<td>73.00–76.99%</td>
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<tr>
<td>C-</td>
<td>70.00–72.99%</td>
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<tr>
<td>D+</td>
<td>67.00–69.99%</td>
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<tr>
<td>D</td>
<td>60.00–66.99%</td>
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<td>E</td>
<td>&lt; 60.00 %</td>
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**Course Outline**

**Theme & Readings**

**Week 1**

Course Introduction, Fisheries Management
Hubert & Quist (H&Q) Chs. 1, 4, 5, & 6
Kohler & Hubert (K&H) Chs. 1, 2, & 3

**Week 2–3**

Introduction to Ichthyology and Fish Ecology
H&Q Ch. 2

**Week 4–5**

Fishery Assessments
Assessing anglers and the public  H&Q Chs. 2, 3, 11, & 14
Assessing fish populations  K&H Chs. 6, 7, & 8
Week 5  Manipulations of watersheds and stream habitat mgmt.
Watershed-fisheries relations  H&Q Chs. 10
Examining and analyzing stream habitat  K&H Chs. 9 & 10
Habitat protection
Habitat restoration
Stream flow management

Week 6  Reservoir and lake habitat management
Management to maintain habitat quality  H&Q Chs. 13
Management of fish populations  K&H Chs. 11 & 12

Week 7  Management of introduced fish
Reasons for fish introductions  H&Q Chs. 8 & 9
Introductions and ecological theory  K&H Chs. 13, 14 & 15
Stocking programs
Stocking techniques
Evaluations of fish introductions

Week 8  Endangered species management
Laws and treaties  H&Q Chs. 12
Case histories  K&H Chs. 16
Management for endangered species

Week 9  Managing with regulations
Objectives  H&Q Chs. 7
Types  K&H Chs. 17
Regulations for specific fisheries
Regulatory process

Week 10–11  Ecology and common management practices in flowing water
Coldwater streams  H&Q Chs. 18, 19, 20, & 21
Warmwater streams  K&H Chs. 18, 19, & 20
Large rivers

Week 12  Ecology and common management practices in impoundments
Small ponds  H&Q Chs. 16 & 17
Reservoirs  K&H Chs. 21 & 22

Week 13–14  Ecology and management in natural lakes
Basis of fish production  H&Q Chs. 15, 16, & 17
Approaches to lake management  K&H Chs. 22, 23, & 24
Classes of management problems
Great Lakes fisheries: changes, management and restorations
<table>
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<tr>
<th>Week</th>
<th>Monday</th>
<th>Wednesday</th>
<th>Friday</th>
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<tbody>
<tr>
<td>6: 11–15 February</td>
<td><strong>Midterm 1.</strong></td>
<td>Lecture: Reservoir and lake habitat management.</td>
<td>Lecture: Managing with introduced fishes.</td>
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<td>Break: 11–15 March</td>
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<td>14: 15–19 April</td>
<td>Movie and discussion: Larval fishes. <strong>Term paper due by beginning of class.</strong></td>
<td>Lecture: Great Lakes fisheries.</td>
<td>Graduate student research seminars.</td>
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<td>15: 22 April</td>
<td>Open review session.</td>
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<td>Finals week</td>
<td><strong>Final exam: Tuesday, 30 April 2013, 12:00–1:45 PM.</strong></td>
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Instructions for Annotated Bibliography and Term Paper

You will select a unique topic as a subject for your annotated bibliography and to later be elaborated upon in your term paper. A list of suggested topics follows within this syllabus. However, it’s possible select any topic of interest to you, whether listed here or not. If you would like to choose a topic not included on this list, seek approval from instructional staff to ensure it is not redundant to a topic already selected by somebody else. The bibliography and term paper assignments will be discussed during the first or second week of class. Please note the 10 % penalty per working day for late assignments. This will be strictly enforced, so please plan ahead!

Annotated Bibliography
What is an annotated bibliography? It is a list of citations or references, like those that you include at the end of a term paper. However, instead of just listing the author, title, etc., you also include the most important findings contained in the article or book that you are referencing.

Remember two important things. 1) Do not use abstracts for these sources; you must locate and read the actual paper or book. To ensure that you at least locate the source, it is required that you attach to your annotated bibliography a copy of the title pages of each book which includes the title, authors, publisher, publication date, and ISBN number. Also include a copy of the table of contents of the book. For your journal articles, include a copy of the first page, which will include the title, list of authors, and the abstract. 2) Paraphrase your sources; do not copy an author’s phrases or sentences. Verbatim copying without citation is plagiarizing, an act which will result in your being taken before the University Committee on Academic Misconduct and charged. I have no recourse other than official action; the process is out of my hands, so be warned! We will be randomly checking for misuse of abstracts on each of your papers.

For this assignment, you will need to locate and read at least 10 articles from at least 4 different professional journals and books. Both journal articles and books must be represented, but with the emphasis on primary research presented in professional journals. You will then provide us with a correct citation of the article and a brief, three- to five-sentence summary of each article’s content. The annotated bibliography must be typed; nothing should be hand-written.

The texts and articles you choose are to deal with the topic of your term paper. To begin your search, you may need to start a bit broader than your topic. Many of the topics provided are too broad to write an effective paper. Change the scope as necessary to write a good ten-page paper. Begin your search in books to learn something about your topic. Move to indexes and reference lists to find articles in professional journals related to your topic. Use scholarly web-based databases to your advantage, but mostly to locate scholarly texts and peer-reviewed articles. When you have found an article title that is of interest to you, locate and read the article, making sure to take good notes on the article content to help you write the annotation. Don't forget to make a complete record of the citation for later use. There is nothing more frustrating than having excellent information in your notes and no idea where that info originated!

For correct citation style, use the Transactions of the American Fisheries Society journal's guide for authors. Relevant portions of that document will be provided for your convenience. The complete document can be found in the January 2011 issue (140: 201–206) as well as at http://www.fisheries.org/afs/docs/pub_tafs.pdf.
The following is an example of an annotation for the article:


Markham et al. (1991) used radio tags in white crappie Pomoxis annularis to determine movement patterns and habitat preferences of these fish during the summer. White crappie movement increased at dusk, peaked at night, declined at dawn, and then remained low during the day. Areas most often chosen by this species were about 5 meters deep; had relatively steep slopes; and structure in the form of rocks, stumps, or fallen trees. White crappie showed high fidelity to home areas, returning to them each morning after feeding during the evening and nighttime hours. Fishing can be improved for this species by marking favorable locations for anglers as well as adding structure to improve otherwise good locations.

Term Paper
The term paper will be written on the same topic used for your annotated bibliography and must also be typed. Although many of the papers used in your annotated bibliography will be used in your paper, some may be left out and additional references should be added. Your paper and introductory headers should be formatted as prescribed by the American Fisheries Society’s guide to authors and be about 10 pages long excluding figures, tables, and references. Hard-copy submissions should be fastened at the upper left corner with a single staple. Do not place between hard or plastic covers. Remember to number your pages, double space, and justify only the left margin. We will keep all papers, so keep a copy for yourself if you want one.

If figures or tables are included, make sure they are cited properly. If you have modified them for your purposes (often a good idea), then indicate they are “based on” or “modified from” and then follow with the correct citation. Each table or figure should have a clear title or legend that stands on its own to explain the information it includes.

Papers will be graded on succinctness, clarity of thought, integration or synthesis of ideas (i.e., several authors’ ideas used together to draw new conclusions), and correct language mechanics. Use dictionaries, proofreading, and word-processing software to your advantage. All papers should discuss 1) (a) population rate function(s) or some statistical analysis related to the organism(s)/topic of interest, 2) specifically address how the topic relates to or impacts resource management or policy/regulation, and 3) at least 2/3 (ideally, even more) of your sources should be primary research presented in peer-reviewed professional journals.

Avoid any chance or appearance of plagiarism! Make sure you credit the correct source for any ideas or facts not your own. Avoid direct quotes; place the ideas in your own words and then use proper citation techniques. The consequences of plagiarism are very serious. I don't even have the option of dealing with it on my own; I must turn you and the suspect materials in to the University Committee on Academic Misconduct. It is your responsibility to give me no reason to suspect your work.
Approved Bibliography and Term-Paper Topics

- Power-generating plants and their impact on fisheries.
- Great Lakes commercial fisheries.
- The history of common carp in North America and its impacts on aquatic ecosystems.
- The impact of new invasive species on native fisheries.
- Alewife ecology and the associated management implications on the Great Lakes.
- Sea lamprey ecology and the associated management implications.
- Striped bass ecology and the associated management implications.
- Shark ecology and management.
- Cage-culture of fish.
- Fishing rights of Native Americans.
- Ecology and management of tuna.
- Aquaculture in developing countries.
- Mortality associated with fishing tournaments and management implications.
- Sample-gear bias and implications for planning monitoring/research programs.
- Managing quarry/upground reservoir fisheries.
- Current problems and new ideas in fisheries management.
- Lake eutrophication and potential impacts on fisheries and/or fish ecology.
- Fisheries management, planning, and policy.
- Fisheries economics: recreational or commercial fishing and impact on regional economies.
- Paddlefish ecology and associated management implications.
- The effect of in-stream impoundments or dam removal on fisheries.
- Salmon ecology and associated management implications.
- Fish use of structure.
- The effects of fish on benthic invertebrate or plankton populations.
- Fish movements: the implications of migration for managed fisheries.
- The effects of fish on wetlands.
- The effects of stocking on wild trout stocks in streams.
- Use of size limits in fisheries management.
- Biodiversity and fisheries management.
- Largemouth or smallmouth bass ecology and associated management implications.
- Asian carps and the Great Lakes: potential ecological impacts.
- The use of fishes as indicators of aquatic ecosystem biotic integrity.
- Environmental contaminants, bioaccumulation to fish tissue, and fish-consumption advisories.
Class Policies

As I am sure you expect me to be well prepared and come to class for every session, I expect the same from you. Exam material will cover both lecture and text material. Because the penalty for late papers is not exorbitant, I will not extend deadlines. Makeup exams will be offered only under extreme circumstances and will consist of oral or essay questions. If you must leave class early, please let me know. It is disconcerting for students to leave class except in an emergency.

My teaching philosophy is very similar to my life philosophy. You are adults and are entitled to both the freedoms and responsibilities that come with this role. I give respect and trust to everyone until I am given reason to do otherwise. I give respect and trust to everyone until I am given reason to do otherwise. In return, I, as well as my Teaching Assistant, expect to be given the same respect. We are here to present a certain body of knowledge and to help you construct skills that will assist you in learning throughout your academic and professional careers. Your job is to integrate this material into your own background. If something doesn't make sense or seems contradictory, please come see one of us. We will do our best to find a way to present the material in a manner that helps you master the information. What we learn from that process will improve the course in the future. Working together as a community in a supportive environment is to our mutual advantage.

Academic integrity
Academic integrity is essential to maintaining an environment that fosters excellence in teaching, research, and other educational and scholarly activities. Thus, The Ohio State University and the Committee on Academic Misconduct (COAM) expect that all students have read and understand the University’s Code of Student Conduct, and that all students will complete all academic and scholarly assignments with fairness and honesty. Students must recognize that failure to follow the rules and guidelines established in the University’s Code of Student Conduct and this syllabus may constitute “Academic Misconduct.”

The Ohio State University’s Code of Student Conduct (Section 3335-23-04) defines academic misconduct as “Any activity that tends to compromise the academic integrity of the University, or subvert the educational process.” Examples of academic misconduct include (but are not limited to) plagiarism, collusion (unauthorized collaboration), copying the work of another student, and possession of unauthorized materials during an examination. Ignorance of the University’s Code of Student Conduct is never considered an “excuse” for academic misconduct, so I recommend that you review the Code of Student Conduct and, specifically, the sections dealing with academic misconduct.

If I suspect that a student has committed academic misconduct in this course, I am obligated by University Rules to report my suspicions to the Committee on Academic Misconduct. If COAM determines that you have violated the University’s Code of Student Conduct (i.e., committed academic misconduct), the sanctions for the misconduct could include a failing grade in this course and suspension or dismissal from the University.

If you have any questions about the above policy or what constitutes academic misconduct in this course, please contact me.

Other sources of information on academic misconduct (integrity) to which you can refer include:
• The Committee on Academic Misconduct web pages (oaa.osu.edu/coam/home.html)
• Ten Suggestions for Preserving Academic Integrity (oaa.osu.edu/coam/ten-suggestions.html)
• Eight Cardinal Rules of Academic Integrity (www.northwestern.edu/uacc/8cards.html)

Disability statement
Any student who feels s/he may need an accommodation based on the impact of a disability should contact me privately to discuss your specific needs. Please contact the Office for Disability Services at 614-292-3307 in room 150 Pomerene Hall to coordinate reasonable accommodations for students with documented disabilities.