Pioneer academics

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Topics in Conservation Biology

Term: Spring 2023

Program Topic Description:

Our world is fraught, and Conservation Biology tackles the unpleasant results of human exploitation of the environment. The objectives of this research seminar are to teach students about the damage to the environment and the ways that scientists and policy-makers are trying to fix it; and to teach students how to begin to think, write, and present scientifically about what they read. Key to each student's success is engagement in the seminar through preparation and participation. This translates to listening to your peers and professor; completing all assignments before class; linking/synthesizing the in-person work and the readings; and researching your paper.

By the end of the seminar, students will be able to:

1. Understand the complexity and necessity of Conservation Biology
2. Read, evaluate, and summarize (orally and written) scientific studies
3. Conduct in-depth research into a chosen topic, write, and present a paper on it

You will be evaluated through multiple activities, key to which is engagement.

Dr. Catherine Cardelús, Professor of Biology and Environmental Studies

Professor Cardelús earned her Ph.D. in Ecology and Evolutionary Biology from the University of Connecticut. At Colgate, she teaches courses on Biodiversity, Evolution and Ecology, Tropical Ecology with Extended Study to Costa Rica, Ecosystem Ecology, and Conservation Biology and Practice among other classes. The Cardelús lab focuses on human impacts on forests-locally and internationally. Her research has focused primarily on tropical forest canopies, asking essential questions: What are the patterns of biodiversity, and how will biodiversity respond to a changing environment? She has conducted research in the rainforest of Costa Rica, where she studies the impacts of global change on species richness and distribution. Most recently, she has researched and published widely on the vulnerabilities and conservation of the sacred church forests of Ethiopia. She has received numerous grants and awards, including an NSF grant to study Mechanisms of Religious Management for Forest Persistence. Professor Cardelús has also focused significant research on the Upstate New York region, examining the effects of acid rain in the Adirondacks, climate change in Upstate NY, and forest conservation. Catherine Cardelús | Colgate University

Contact Method:

All communication outside of meeting times will be conducted on the Pioneer Learning Management System (LMS). As per the student agreement, use of email to communicate with

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the professor mentor during the program is strictly prohibited. If you have problems using the Pioneer LMS, contact your Pioneer Cohort Advisor.

Pioneer LMS Link: pioneeracademics.schoology.com

Required Program Material:
All required materials will be posted or linked on the Schoology site.

Learning Goals:

1. Read and evaluate primary literature
2. Write laconically & clearly
3. Understand and communicate (orally and written) scientific explanations of environmental perturbations and their impacts
4. Apply scientific inquiry methods and logic

Grading Policy:
All assignments are due 24 hours before class so that I have time to grade and/or review the material. Please submit all assignments through schoology.

Task	**% of Grade**
Primary Literature Reading and Annotation Assignments (2.5 points x 4)	10
Participation Throughout Course	10
Scaffolded Paper Assignment (80% Total)	
Paper Proposal (3 primary sources)	3
Annotated Bibliography in Outline Form (8 primary sources)	9
Rough Draft I	12
Peer Review (your review of another student's Draft II)	8
Draft Presentation	6
Final Presentation	12
Final Paper (20 primary sources)	30
Total	100

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Assignments and Milestones:

The Outline of seminar topics and assignment details are below and on the LMS site, schoology.

Session	Format	Topic	Assignment
Session 1	Group	Introductions, course outline, what is conservation biology, Biodiversity & Ecosystem Services	Annotation of Syllabus
Session 2	Group	Discussion: Biodiversity & Ecosystem Services; Lecture: Land-Use Change.	Readings and Annotation
Session 3	Group	Discussion: Land-Use Change; Lecture: Invasive Species	Readings and Annotation
Session 4	Group	Discussion: Invasive Species; Lecture: Climate Change; how to write an Annotated Bibliography	Readings and Annotation
Session 5	Individual	Brainstorming and Paper planning;	Paper Proposal Due
Session 6	Individual	Annotated Bibliography Discussion	Annotated Bibliography Due
Session 7	Individual	Rough Draft I Discussion	Rough Draft I Due
Session 8	Individual	Discuss Presentation Format & How to Peer Review	Draft II Due; Peer Review Week
Session 9	Individual	Present Draft Presentation; Discuss Peer Review (written and received); Final Paper wrap-up	Peer Review and Draft Presentation Due
Session 10	Group	Paper Presentation to Group	
Final Paper		Due	

Annotation:

We will use the annotation program Hypothes.is to annotate our class readings. To become acquainted with the program, your first assignment is to annotate a PDF of the Syllabus. Here is an article and a video about how to annotate.

For each Annotation assignment you need at least 10 Annotations, these annotations might include:

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1. Questions that you have about the content (e.g. for syllabus-the schedule, the assignments, etc.; for an article: methods question/clarification, results interpretation)
2. Highlighting an important concept.
3. Linking one paper with a previous paper.
4. Replied to other students' questions or comments.

What is a good annotation?

1. Constructive: Made in good faith to build conversation or add value to the text.
2. Considerate: No targeting others with dismissive or otherwise negative comments.
3. Substantive: More than a very short reply. "I agree," or "Why?" are not substantive. (You can post these in addition to other substantive comments, though!) Note: Highlighting by itself is not an annotation.

Syllabus Annotation: Use this as an opportunity to learn more about the course structure and ask questions about expectations.

Building the Final Paper:

The final paper is in the style of Frontiers in Ecology and the Environment Review Paper (http://www.frontiersinecology.org/instructions-to-authors/reviews/), ~3500 words (~8 pages, single-spaced, Times New Roman, 12 point font). You must choose a topic that is linked to Conservation Biology and is international in scope. You should explore how or what Conservation Biologists are doing or should do to improve the situation, and what Policy frameworks can be used. It can examine Sea Turtle nesting site depletion in the Caribbean, climate change impacts on migration of Monarch Butterflies, the impact of the invasive Eucalyptus on water in Sub Saharan Africa, and many other things.

I encourage all students to take advantage of the **Pioneer Writing Center** who will review up to four drafts of your paper. The Pioneer Writing Center guarantees feedback within 2 days of submission. Scholars can submit drafts by sending their work to writingcenter@pioneeracademics.com.

Note on Plagiarism and the use of AI for paper writing. Plagiarism, the use of others words, thoughts, etc. without attribution is not permitted. In addition, the use of an Artificial Intelligence program is strictly forbidden. All work, from the proposal to the final paper must be original student language and all drafts, etc. kept for verification.

1. Paper Proposal

Choose a topic that is exciting to you-**Think Broadly Then Narrow the Focus**

Start thinking about a topic that interests you. Talk to me, begin looking at literature on the subject— Current Contents, Web of Science, Biological Abstracts, and Zoological Record, Frontiers. Look for something within the topic that really jazzes you!

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Reading and Thinking

Use the literature databases, download some papers and think about the topic.

Literature Search and Background Reading

1. What has been done in the research area?
2. What types of experiments have been done to answer your questions
3. Which organisms or ecosystems have intensive study? Which have little?
4. Are there multiple studies on one specific question
5. Should more individuals/populations/countries be studied?
6. How are researchers thinking about policy?

Answer these questions by looking at the ecological literature. Often, a single paper related to your subject can lead you to other references if you look at the Literature Cited section. Sometimes that approach is more helpful for finding relevant literature than a general keyword search, but it usually works best once you have a good idea of your specific topic, and have found at least one highly relevant paper.

2. Annotated Bibliography

Write as an outline, ***not*** alphabetical. First start with an outline of your paper, and then fill it in with your references. Use your outline and bibliography to help organize your subject. Arrange and review the articles that you have collected and follow the tips below. Make sure that you clearly state your research question/topic, and list the possible hypotheses that answer the question, and supporting evidence.

Annotated Bibliography Requirements: Put papers into an Outline form!

A. Introduce the topic. Review early work on the subject. Within your review of this early work, you should be able to justify the research effort and introduce the central idea or hypothesis, which should be reflected in the title of your bibliography.
B. **Use subheadings!** For example: Introduction, Impacts, Policy, etc.
C. Write a summary paragraph for each cited paper (*do not quote verbatim* from the paper or from the abstract. It must be written in your own words, and it should identify the most important contributions of this paper to the intellectual development of your chosen study question.
D. Conclude with what Conservation Biology is doing or can do, and identify in your summaries the remaining questions to be addressed within the area of study. What needs to be done next? Often, there will be a review paper that summarizes this for you.
E. Additional: The final paper should have at least 20 primary literature citations.

Note: this is not a casual document, make summaries strong and clear.

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***Make sure that you do not quote papers! Be careful with note taking at this stage…this is often when accidental plagiarism becomes embedded in a paper. Each submission will use **Turnitin.**

3. Rough Draft Use the Guidelines for the Final Paper

The first rough draft should be at least 2000 words and include subsections, at least 15 citations, and future directions. I will review the rough draft with you in our in-person meeting.

4. Peer Review

I am asking you to write a peer-review of a colleague's paper. This exercise is designed to teach you about the most vital part of the scientific process: the peer review. It is a dreaded, necessary, and incredibly successful approach to evaluating papers that merit publication. Essential to it are that experts in the field are asked to evaluate the paper—at this point, you are experts! It is usually anonymous on the part of the reviewers so that they are free to give their 'true' opinion. Follow the guidelines laid out in Schoology.

5. Rough Draft II

Use the comments from the first Draft to guide the second draft. This draft will be reviewed by another student and should incorporate my comments from Draft I. We will go over the draft together thinking about the presentation, but the main feedback will be from your peers. This second draft must be ~3000 words and include all figures and tables as well as 20 citations.

6. Presentation Draft Use the Guidelines for the Final Presentation

7. Final Presentation

All talks should be done on GoogleDrive in SLIDES. Pictures, if small enough, can be dropped in from your finder menu or copied and pasted. Please share your presentation with me so that I can have all the talks ready before we begin. All talks should be 12 minutes, 9-10 minute presentations with 2 minute for questions. So think hard about WHAT you want to communicate to your colleagues. Each slide usually takes 45 second -1minute, so you should have only ~12 slides.

Follow the outline of your paper! Your paper is your guide. They usually go like this:

1. Begin by introducing your topic/organisms/ecosystem
2. Status of your organism/ecosystem
3. Threats to your organism/ecosystem
4. Strategies for conservation for your organism

Advice

1. Reduce the number of words on the page.
2. Show data!

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3. Practice, Practice, Practice!

8. Final Paper

Criteria for Reviews in Frontiers in Ecology and the Environment

In terms of this review, it is crucial that you look closely at other articles from Frontiers in Ecology and the Environment to find out the particular style of this journal. Browse an actual journal online (http://www.frontiersinecology.org/). Your final paper must match the style of Frontiers and contain the following items:

A. Maximum text length: ~3500 words (~8 pages, single-spaced, Times New Roman, 12 point font). This text length does not include the boxes and tables described below. Your paper must also cite a minimum of 20 references and no more than 30. Please use the citation format in current articles from Frontiers.
B. Abstract. This should be no more than 150 words and should succinctly summarize the main points of your article.
C. "In a nutshell". The bottom line—what is the most important point in your paper—why should an ecologist care? (see examples from Frontiers in Ecology & the Environment)
D. Figures & Tables. Include a minimum of 2 total. These can both be figures, or tables, or one of each. They must represent the most important concept of the entire paper but should be actual data. This can be data that you have compiled from several sources, or

Turnitin:

All final papers must be submitted through the "Submit your final paper here" Turnitin assignment in the Course Materials section of the LMS. The Turnitin software will compare the submitted paper against websites, books, journal articles, other student papers etc., and highlight any sections of the paper that are a match for such materials. The Turnitin tool is a part of our dedication to academic integrity. Scholars can check their own papers before submitting the final version for grading, by using the "Check your paper for plagiarism here" assignment, also located in the Course Materials section on the LMS.

Pioneer Research Seminars:

All Pioneer Scholars are required to participate in Pioneer's three Research Seminars, a program that helps scholars develop essential knowledge, research, and writing skills they need to successfully complete an excellent independent research paper. Each Research Seminar offers a live session and corresponding asynchronous resources, including a handbook for each seminar and additional worksheets. Scholars are required to attend all live sessions and read all asynchronous materials. Scholars will be contacted to register for each live session and have access to the asynchronous materials on the Pioneer LMS as they continue through the program. It is *your* responsibility to carefully study all available resources. Attendance will be reported in the Professor-Student Group on the Pioneer LMS.

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The content covered through the Research Seminars (both live and asynchronous) is as follows (but is not totally limited to):

Tech Training: *(asynchronous, must be completed before the first session)*

- ❑ How to use Pioneer technology including Zoom, Schoology, etc.
- ❑ Where to find important materials such as the syllabus

Research Seminar: Orientation *(live session will be held before scholars' first session with their professor)*

- ❑ Program expectations (how to contact their Pioneer Cohort Advisor and Professor, when to expect a response, and how to solve common problems)
- ❑ How to participate in a college-level academic seminar, including proper interaction during sessions with their professor

Research Seminar: The Research Process *(live session will be held after the group sessions begin and before individual sessions begin, asynchronous content will be available earlier)*

- ❑ Choosing a research topic
- ❑ Brainstorming, evaluating, identifying, and revising essential components of the research process. This includes crafting a research question, understanding research methodology, and creating a strong research thesis
- ❑ Using scholarly sources, such as the Oberlin library, evaluating sources, and best practices for organizing sources, notes, and information. This session includes specific methods and resources for STEM/Humanities and Social Sciences, as well as for individual research disciplines
- ❑ Reviewing the Pioneer Research Journal for examples
- ❑ Preparing a research proposal

Research Seminar: The Writing Process *(live sessions will be held shortly before or after individual sessions begin; asynchronous content will be available earlier)*

- ❑ How to work with professors 1:1
- ❑ Large scale planning, outlining, and structuring a research paper, including examples across a variety of research disciplines
- ❑ Writing and editing an abstract, including examples across a variety of research disciplines
- ❑ Citations and bibliography
- ❑ How to avoid plagiarism and the importance of academic integrity
- ❑ The revision process, including how to use the Pioneer Writing Center, self review, and peer review

Technical Support:

For any technical issues relating to program software, the Pioneer LMS or the Oberlin College library system that are not urgent, scholars should contact their Pioneer Cohort Advisor. For all

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issues that require immediate attention call the Pioneer Support Line at +1 (267) 461-8849. A Pioneer staff member will respond to help resolve any problem quickly.

Rescheduling Sessions:

Each Pioneer Scholar has the privilege of requesting to reschedule one individual session with a valid reason. No other reschedule will be allowed except in case of an emergency, such as a sudden illness or family emergency. Each reschedule request will be evaluated on a case-by-case basis.

Any rescheduling request must be submitted to Pioneer at least 48 hours in advance of the relevant session, using the Rescheduling Request Form. The form is available in Course Materials on the LMS (Schoology).

Scholars are responsible for being aware of their schedule, any applicable time zone conversion, and ensuring that they have a strong enough internet connection ahead of the session time.

If a scholar should miss a session without having submitted and received approval of a rescheduling request form, that session is forfeited. Rescheduling of the missed session will be addressed on a case-by-case basis.