

LSP 112 - FY@Ecuador: Biodiversity & the Modern Extinction Crisis

Location: Arts & Letters Hall Room 208

Hours: Friday 2:30-5:45pm

Instructors:

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Introduction: Biologists have proposed the name “Anthropocene” for the current geological epoch to highlight the impact that human beings are having on the planet. With over 7.5 billion people on Earth and counting, the demand for natural resources and degradation of natural habitats is at an all-time high. This is resulting in the loss of natural ecosystems and extinction at such a large scale that the current extinction crisis is being called the “sixth extinction”, an event similar in magnitude to the five prior mass extinctions in the history of the Earth.

In this Study Abroad Focal Point seminar, we will examine the modern extinction crisis from biological, economic and ethical perspectives. Biologically, you will learn about the nature of biodiversity on our planet including how it is measured, how it is distributed, how it originates, and how it matters for the proper functioning of ecosystems. We will also discuss the factors causing the modern extinction crisis and go through examples. Then we will change gears and learn about the economic factors that are driving the widespread destruction of the world’s ecosystems and about how economists can calculate the monetary value of the services that natural ecosystems provide humans. This allows us to give dollar values to what we are losing. We will then explore the problem from an ethical perspective. What are ethics? Where do our ethical values come from? Can ethical arguments for the preservation of nature have a real impact on conservation efforts? Finally, you will develop societal and individual-based action plans to take concrete steps to help preserve nature in the future.

For the Study Abroad portion, we will spend 10 days in Ecuador, which is a small country with an extraordinary diversity of ecosystems in a small geographic area. There, we will meet with scientists that are studying and working to conserve the biological diversity of the region. To get the broadest possible sense of the Earth’s biodiversity and the threats it faces, we will explore three very different types of ecosystems in different parts of the country. First, we will go to the high elevation páramo ecosystems in the Andes Mountains where global climate change is threatening endemic species adapted to these high elevation habitats, like the Andean Condor and the spectacled bear. We will also learn about the threat to the streams that local people use for potable water, and see the cloud forest ecosystem, which is being threatened by agriculture and livestock production. Then we will take a bus to the Yasuní National Park, which is one of the most biodiverse rainforests on Earth. You will have the chance to see a tremendous diversity of plants and animals and reflect on why this area is so rich in species. Unfortunately, Yasuní also has very large oil reserves underneath it. We will learn about the

competing interests involved and the complexity of conserving nature in situations in which there are great opposing economic interests. From there, we will fly to Puerto Lopez on the Pacific coast of Ecuador. There, we will take a boat to Isla de la Plata where you will learn about the animals that depend on oceanic islands like sea birds like blue-footed boobies and frigates. You will also snorkel in the ocean around the island to see reef fishes and invertebrates. As you explore these beautiful oceanic ecosystems, you will reflect on how ocean acidification, pollution (especially plastics), and over-fishing are threatening them. At the end of the Study Abroad portion, you will have seen for yourself both a diversity of natural ecosystems and some of the many different factors that are threatening them.

Readings: This course will rely heavily on reading and discussion so be prepared to invest a substantial amount of time outside of the classroom. The primary book that we will use as background reading for the course is **The Sixth Extinction by Elizabeth Kolbert**. Weekly reading assignments are provided on the class schedule at the back of the syllabus. In addition to this book, we will read papers on the specific topics that we are covering. These will be posted as pdfs on the course website on D2L. Note that I only expect you to read one of the additional pdfs listed on the syllabus, not all of them. The pdfs will cover related topics and having different students reading different papers should make for a more dynamic discussion that covers a broader set of points.

Time Management: One of the keys to academic success is developing time management skills. Most of us are very busy. It takes significant reflection to organize your life properly, but it will pay off if you do and it will also likely promote professional success in the future. I strongly recommend that you schedule fixed times every week for reading and writing for this course. Using the calendar function in your phone or having a physical calendar to look at weekly can be very helpful.

Focal Point Seminar Learning Outcomes:

1. Students will discuss and analyze work from at least three different fields in their written work for the course.
2. Students will participate actively in advancing the collective intellectual understanding of the course topic through class discussions.
3. Students will be able to distinguish between primary and secondary sources, and to assess varying degrees of mediation and interpretation in specific source materials.
4. Students will construct arguments based on evidence and the work and interpretations of other sources.
5. Students will revise papers in response to the instructor's comments.
6. Students will produce a project with a central argument, in which all parts of the project support the central argument.

Focal Point Seminar Writing Expectations

The Focal Point Seminar is designated a writing intensive course in the Liberal Studies Program; assignments are designed to develop writing skills. A minimum of 12-20 pages of writing is

required with at least one piece of formal writing that goes through a revision process based on feedback from the instructor.

Course Specific Learning Outcomes:

1. Students will be able to explain why biodiversity matters, how it is distributed and how it originates.
2. Students will research and explain the major causes of the modern extinction crisis.
3. Students will examine the modern extinction crisis from biological, economic, and ethical perspectives.
4. Students will reflect on their individual and societal roles in the modern extinction crisis and the potential steps that can enact meaningful change.

Grading Scale: The following grading scale will be used:

A	-----	93-100
A-	-----	90-92
B+	-----	87-89
B	-----	83-86
B-	-----	80-82
C+	-----	77-79
C	-----	73-76
C-	-----	70-72
D	-----	60-69
F	-----	≤ 59

Grading Scheme for Seminar at DePaul:

Global Hour	20%
Participation, Discussion, & Reflection	20%
Presentations	15%
Discussion Points for Readings	10%
Review Paper Section Drafts	10%
Peer Review Paper Section Drafts	5%
Final Review Paper	20%

Global Hour: The Global Hour section of the course will provide essential material for the field component of the course that will take place in Ecuador. It will be worth 20% of your final grade. See the Global Hour syllabus for details on topics and assignments.

Participation, Discussion, and Reflection: This is a seminar course so you can expect that students will be doing most of the talking. The exchange of ideas is also critical for fostering an active learning environment so I am counting on you to share your thoughts and participate often. Every week, you will be assigned a participation grade. Your weekly Participation grades will be averaged over the quarter for your final Discussion/Participation grade. You need to be

present to participate so being absent will result in a loss of points for this category. If you know you will miss class (e.g., you are a student athlete), talk to me ahead of time so that we can make arrangements. Do not be late for class! Students that are more than 10 minutes late will be considered absent. If you are sick, you should obviously not come to class. To accommodate absences related to health issues or other issues that arise, you will be allowed to drop your two lowest weekly Participation & Discussion grades.

Presentations: Researching a topic is one of the best ways to learn about it. For this course, you will work in groups to prepare three presentations on topics related to the material we are covering. Presentations should be prepared in **Powerpoint** or a comparable program and last approximately **10-12 minutes** unless otherwise indicated. Your presentations should be well organized and polished, it should be clear that you have practiced. Reading from notes or slides should be avoided. Presentations should be well researched and the last slide should list the sources used.

For the first presentation on Ecuador's Biodiversity, students will select an ecologically important species of animal or plant occurring in one of the ecosystems that we will visit in Ecuador (páramo, rainforest, or coastal/oceanic), that is representative or important in that ecosystem. The point is to teach your classmates about some of the extraordinary native animals and plants we are likely to see during the field component of the course and their conservation status. For each species, you will talk about its taxonomic position (what is its kingdom, phylum, class, order, family, genus, and species), examples of close relatives, its geographic distribution, habitat, migratory behaviors (if any), reproduction, diet, predators, parasites/diseases, ecological importance (how is its existence important for the proper functioning of its ecosystem), an important evolutionary adaptation, conservation status (is it classified as a vulnerable or endangered species by the IUCN redlist), and threats.

For the second presentation on The Drivers of Extinction, students will research a driver of the modern extinction crisis. For each driver, you should talk about what is causing it, what economic benefits it brings (in numbers wherever possible), its negative effects, the evidence for its cause and/or negative effects, how it can be mitigated, and the outlook for the future (will it likely cause more or less damage in the future). Possible topics include but are not limited to global climate change, deforestation, agriculture, over exploitation, pollution from urban and suburban sources (cities and towns), mining, oil extraction, dams, invasive species, ocean acidification, microplastics, novel pathogens, etc.

For the third presentation on Ecosystem Services, students will research a particular ecosystem service and present it to the class. The presentation should indicate how the ecosystem service works, what people benefit from it, what the estimated economic value of the service is, how widely distributed the service is, and the factors threatening its continued production.

Discussion Points for Readings: We will discuss the readings assignments from our book, *The Sixth Extinction* by Elizabeth Kolbert, and from assigned pdfs during class. To facilitate the discussion, you will submit three discussion points to use in class. These should be submitted in

D2L prior to the start of class as indicated on the course schedule. For weeks in which the only reading assignment is from the Kolbert book, all three discussion points should be from the book. For weeks in which reading assignments are only from pdfs, the three discussion points should be from ONE of the pdfs that you select to read. You do not have to read all pdfs listed. Look through them and choose the one that seems most interesting or important to you. For weeks in which both a Kolbert chapter and additional pdfs are listed, two discussion points should be from the Kolbert assigned chapters and one from one of the other pdfs listed in the course schedule page. The Discussion points will be worth 10% of your final grade and you can drop the lowest grade from this category.

Review Paper Section Drafts: You will have a major review paper to complete for this course that will synthesize our current understanding of the modern extinction crisis. The final paper will be 9-13 pages not counting figures, tables, or bibliography. Although much of the material for the paper will likely come from assigned readings and our discussions, I also expect you to conduct your own research. The paper will be written in parts as shorter sections that will be collected and graded throughout the quarter. I hope that this makes it easier for you to write the paper and also provides you with feedback section by section as you are writing it. You will be given feedback on each section in the form of peer review from your classmates as well as directly from me for the first section. Each section will be graded individually and the individual grades will be averaged into a single grade for the individual paper sections. The due date for each section is listed on the course schedule on the last page of this syllabus. The section drafts will be uploaded to the respective Submission folder on D2L and you will bring a hard copy to class for peer review. Each section should include literature cited that will be expanded as additional sections are added.

The section drafts are:

1. *The Biology of Biodiversity* – Length: 2-3 pages. This section should provide a general introduction on Biodiversity. What is biodiversity? How is it measured? How is it distributed on Earth? How is it studied? What is the theory of evolution by natural selection and how does it contribute to explaining how new species originate?
2. *The Extinction Crisis* - Length: 2-3 pages. This section should relate to the concept of extinction and the modern extinction crisis driven by humans. What is extinction? What do we know about the pre-human rates and causes of extinction? What are the current drivers of extinction and how does the modern rate of extinction compare to historical estimates?
3. *The Economics of the Extinction Crisis* - Length: 1-2 pages. This section should talk about the economic drivers of extinction and the economic value of the services that healthy ecosystems provide humans.
4. *The Ethics of the Extinction Crisis* - Length: 1-2 pages. Topics: This section should discuss what ethics are, where they come from, and whether the ethical argument for conserving biodiversity is valid and can make a difference in the long-term.

Peer Review Paper Section Drafts: During class, you will provide peer review of your classmate's paper section drafts. This will provide helpful feedback to your classmates and also allow you to see how your classmates are structuring their paper sections. Your peer review will not affect your classmate's grade. Peer reviews will be graded and are worth 5% of your final grade so you should do your best to be thorough.

Final Review Paper: Each section submitted during the quarter should be improved based on the feedback you receive and assembled into a single final paper that will receive its own grade and is due prior to the Study Abroad portion. In addition to corrections and improvements of the section drafts, you will include two additional sections that will tie together the text from the other sections. You should also include a final Literature Cited section with all the works cited in the paper listed in alphabetical order.

0. Summary – Length: ~1 page. Due in Final Paper. This will not be graded as a separate section but should be included in the final paper as the first section (hence the numbering of 0). It should consist of a one page or less summary of the central thesis of your review paper on the extinction crisis. That is, tell me in one page or less what your paper is about. I recommend writing this section at the very end, even after you have written the action plan, so you can include the highlights of your action plan in the summary.

5. Action Plan - Length: 1-2 pages. Due in Final Paper. At the end of your paper, you should add an Action Plan section that is 1-2 pages in length and indicates: (A) What do you think society as a whole can REALISTICALLY do to deal with the extinction crisis and ensure the long-term persistence of nature on our planet. Please include suggestions that are realistic and have been published in the literature or can be justified as something that is actually plausible. (B) What REALISTICALLY can and WILL you do as an individual to help? You cannot single handedly stop the extinction crisis but your actions as an individual matter. So based on what you learned, what changes can you make in your life to help our planet?

6. Literature Cited – Include all sources cited in the paper.

The full paper should be uploaded to the respective Submission Folder on D2L. See the course schedule on the final page of this syllabus for the due date.

Grading Scheme for Study Abroad Component in Ecuador: For the Study Abroad component in Ecuador, you will be graded on your participation (50%) and journals (50%). For the journals, you should record your general observations and reflections daily. In addition, please address the following six prompts for each ecosystem (you will have three ecosystems to cover: páramo, Amazon rainforest, oceanic/coastal):

- A. Describe the ecosystem. What are the flora and fauna like? What are the ecologically most important species? Extra points for sketches.
- B. Talk about the ecology of one key species in that ecosystem.
- C. Discuss the greatest threats for this ecosystem based on what you observed on the ground.

- D. What are the economic pressures driving the threats? What is the value of that ecosystem for the people in the area?
- E. Are there ethical dilemmas between the need of the people or government to exploit natural resources in the area and the conservation of this ecosystem for future generations?
- F. Based on what you observed on the ground, what can be done to reduce the threats that the organisms in this ecosystem are facing?

Academic Integrity: Academic integrity entails absolute honesty in one’s intellectual efforts.

The DePaul Student Handbook details the facets and ramifications of academic integrity violations, but you should be especially aware of the policies on cheating and plagiarism.

Cheating is any action that violates University norms or an instructor’s guidelines for the preparation and submission of assignments. Such actions may include using or providing unauthorized assistance or materials on course assignments, or possessing unauthorized materials during an examination. **Plagiarism** involves the representation of another’s work as your own, for example: (a) submitting as one’s own any material that is copied from published or unpublished sources such as the internet, print, computer files, audio disks, video programs or musical scores without proper acknowledgement that it is someone else’s; (b) paraphrasing another’s views, opinions or insights without proper acknowledgement or copying of any source in whole or in part with only minor changes in wording or syntax even with acknowledgement; (c) submitting as one’s own work a report, examination, paper, computer file, lab report or other assignment which has been prepared by someone else. If you are unsure about what constitutes unauthorized help on an exam or assignment, or what information requires citation and/or attribution, please ask your instructor. Violations may result in the failure of the assignment, failure of the course, and/or additional disciplinary actions. For more information, visit DePaul’s Academic Integrity Website:

<https://offices.depaul.edu/academic-affairs/faculty-resources/academic-integrity/Pages/default.aspx>

Respect for Diversity and Inclusion: At DePaul, our mission calls us to explore “what must be done” in order to respect the inherent dignity and identity of each human person. We value diversity because it is part of our history, our traditions, and our future. We see diversity as an asset and a strength that adds to the richness of classroom learning. In my course, I strive to include diverse authors, perspectives and teaching pedagogies. I also encourage open dialogue and spaces for students to express their unique identities and perspectives. I am open to having difficult conversations and I will strive to create an inclusive classroom that values all perspectives. If at any time the classroom experience does not live up to this expectation, please feel free to contact me via email or during office hours.

Writing Center: I strongly recommend you make use of the Writing Center throughout your time at DePaul. The Writing Center provides free peer tutoring for DePaul students, faculty, staff, and alumni. Writing Center tutors work with writers at all stages of the writing process, from invention to revision, and they are trained to identify recurring issues in your writing as

well as address any specific questions or areas that you want to talk about. Visit www.depaul.edu/writing for more information.

Students with Disabilities: Students seeking disability-related accommodations are required to register with DePaul's Center for Students with Disabilities (CSD) enabling you to access accommodations and support services to assist your success. There are two office locations: Loop Campus - Lewis Center #1420 - (312) 362-8002; Lincoln Park Campus - Student Center #370 - (773) 325-1677. Students can also email the office at csd@depaul.edu. Students registered with the Center for Students with Disabilities can contact me privately to discuss how I may assist in facilitating the accommodations you will use in this course.

University Counseling Services: DePaul University Counseling Services (UCS) is committed to providing a range of culturally aware and sensitive clinical services to help currently enrolled DePaul students remove barriers to academic and personal success by addressing emotional, psychological, and interpersonal concerns through multiple treatment modalities. Services offered include: group counseling, individual counseling, couples counseling, crisis management, consultation, referrals, and telereach/outreach workshops. To connect with the counseling center, contact their main number at (773) 325-7779 during regular business hours (Monday-Friday, 9am-5pm) to schedule an initial consultation, which is typically scheduled within 1-2 business days of your call.

Schedule for Focal Point Seminar at DePaul

Week	Topic	Reading Assignments	Assignment Due
Jan 7	Introduction – Biodiversity Global Hour: Welcome	Kolbert 1-3; Purvis & Hector (2000); Myers et al. (2000)	
Jan 14	Kolbert Reading Discussion The Origin of Species Global Hour: Diversity in an International Context	Kolbert 4-46; Watch The Making of a Theory Biointeractive Video	Reading Disc. Pts.
Jan 21	Kolbert Reading Discussion <u>Skills Workshop: Bibliographical tools and Effective Presentations</u> Global Hour: Perceptions of the United States Abroad	Kolbert 47-91	Reading Disc. Pts.
Jan 28	Kolbert Reading Discussion <u>Ecuador Biodiversity Presentations</u>	Kolbert 92-124	Reading Disc. Pts.
Feb 4	<u>The Drivers of Extinction Presentations</u>	Brook et al. (2008); Carrizo et al. (2017); Jackson et al. (2001); Lipps et al., (2006); Aguirre et al. (2021)	Reading Disc. Pts.; Biology draft paper section
Feb 11	Kolbert Reading Discussion The Sixth Extinction Global Hour: Group Dynamics and Responsibilities	Kolbert 125-172	Reading Disc. Pts.;
Feb 18	<u>Ecosystem Services Presentations</u>	Costanza et al. (1997); Mace et al. (2012); Reis et al. (2009)	Reading Disc. Pts.; Extinction draft paper section
Feb 25	Kolbert Reading Discussion The Economics of the Extinction Crisis Global Hour: Travel Strategies and Skills; Health and Safety Abroad	Kolbert 173-216	Reading Disc. Pts.
Mar 4	Kolbert Reading Discussion Ethics and the Conservation of Species	Dickman et al. (2015); Miller et al. (2011); Minter & Collins (2005); Oksanen (1997); Van Houtan (2006)	Reading Disc. Pts.; Economics draft paper section
Mar 11	Kolbert Reading Discussion Societal and individual-based action plans for the conservation of nature Global Hour: Education & Career Planning	Kolbert 217-235 & 259-269	Reading Disc. Pts.; Ethics draft paper section
Mar 15	Upload to Submission folder by 11:59pm		Final Paper Due

---**Kolbert** refers to the course book. Other citations are PDFs posted on course D2L site.

Schedule for Ecuador Study Abroad Portion

Day	Location	Tentative Activities	Course Topics
Thur Mar 17	Fly to Quito, Ecuador	Travel Day	---
Fri Mar 18	Orientation - Alambi	Learn about high altitude ecosystems, condor, spectacled bear, etc. Reflect on effects of global warming on Andean ecosystems.	Biodiversity, Habitat loss
Sat Mar 19	Antisana Reserve – High elevation Andes Mountains	Hike, observe condors/Andean wildlife. Hike and explore cloud forest	Global warming, endangered species, extinction
Sun Mar 20	Bus to Yasuní National Park – Amazonian rain forest	Travel Day	---
Mon Mar 21	Yasuní National Park – Amazonian rain forest	Hike, explore rainforest ecosystem. Learn about dependence of native communities on forest.	Biodiversity, ecosystem services, oil exploitation
Tue Mar 22	Yasuní National Park – Amazonian rain forest	Hike in the primary rainforest, visit the parrot salt lick site. Reflect on biodiversity and ecosystem function	Biodiversity, ecosystem services, oil exploitation
Wed Mar 23	Yasuní National Park – Amazonian rain forest	Boat ride on river, kayak, fish, learn about the aquatic fauna in the area Visit local village. More on how natives use and depend on forest.	Biodiversity, ecosystem services, oil exploitation
Thur Mar 24	Bus to Coca, fly to Manta, bus to Pto. Lopez to explore coastal/ocean ecosystems	Travel Day	---
Fri Mar 25	Boat to Isla de La Plata – Oceanic island ecosystem	Boat to Isla de la Plata. Hike on island. Observe sea bird colonies. Snorkel. Observe reef fish and invertebrates.	Ecotourism, Ocean acidification, pollution (plastics), overfishing
Sat Mar 26	Machalilla National Park – Coastal ecosystem (morning), Bus to Guayaquil, late flight to Chicago	Morning: Free time on the beach/town. Afternoon: travel on bus to Guayaquil. Evening: Fly back to Chicago	Ecotourism, Ocean acidification, pollution (plastics), overfishing
Sun Mar 27	Arrive in Chicago		