



S F S THE SCHOOL
FOR FIELD STUDIES

Conservation Science and Practice in Peru

SFS 3800

Syllabus

4 credits

The School for Field Studies (SFS)

Center for Amazon Studies (CAS)

Tarapoto, Peru

This syllabus may develop or change over time based on local conditions, learning opportunities, and faculty expertise. Course content may vary from semester to semester.

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COURSE CONTENT SUBJECT TO CHANGE

Please note that this is a copy of a recent syllabus. A final syllabus will be provided to students on the first day of academic programming.

SFS programs are different from other travel or study abroad programs. Each iteration of a program is unique and often cannot be implemented exactly as planned for a variety of reasons. There are factors which, although monitored closely, are beyond our control. For example:

- Changes in access to or expiration or change in terms of permits to the highly regulated and sensitive environments in which we work;
- Changes in social/political conditions or tenuous weather situations/natural disasters may require changes to sites or plans, often with little notice;
- Some aspects of programs depend on the current faculty team as well as the goodwill and generosity of individuals, communities, and institutions which lend support.

Please be advised that these or other variables may require changes before or during the program. Part of the SFS experience is adapting to changing conditions and overcoming the obstacles that they may present. In other words, this is a field program, and the field can change.

Course Overview

The overarching goal of this course is to make students aware of the enormous responsibility and challenges humans have as stewards of the natural environment, and to provide them with the concepts, tools, and incentives for conservation of natural environment. Dramatic changes are occurring in almost every corner of the world, many of which are a result of anthropogenic disturbances. Human activities release many greenhouse gases that contribute to climate change. Humans are overexploiting natural resources, polluting ecosystems, introducing exotic species into ecosystems, and causing habitat destruction at such a high rate that many scientists think that we have entered the sixth mass extinction of life on Earth. The fate of millions of species is dependent on actions that we take in the next few decades.

Adopting an integrative view of the relationship between biodiversity and people, this course explores the concepts and strategies currently used to mitigate, restore, or conserve ecosystems, species, and genetic diversity. Using the Peruvian Amazon and Andean Highlands as our classroom, the course will draw largely from local examples that students will be able to observe first-hand. Furthermore, it will challenge students to integrate and apply their tropical and political ecology knowledge in conservation in order to respond creatively to real-world cases.

The focus of the course is based largely on field activities that build on three core questions that will be answered in a series of lectures, videos, and readings:

1. What is Conservation Science?
2. What are the challenges in conservation science?
3. What are the current tools and strategies used in the practice of conservation science?

The conservation challenges that students will observe in the Amazonian and Andean regions are highly varied and many are repeated across the globe. Therefore, students will be encouraged to critically examine and document a wide variety of threats and learn to apply their theoretical knowledge to resolve complex real-world issues. Moreover, students will be able to draw parallels between Peruvian conservation strategies and those used globally by international agencies. The diversity of challenges and conservation strategies students observe in Peru will provide insight into the complexity of Conservation Science and the importance of treating these challenges within their own context by considering biological, environmental, social, economic and political factors.

Learning Objectives

Students will draw on observations and evidence to assess threats, evaluate the efficacy of conservation practices and formulate resource management strategies and alternative incomes to local communities.

Students will be able to:

1. Use the concepts of conservation science and analyze socio-environmental relationships that form the bases of conservation science practices at local, regional and global scales.
2. Illustrate current challenges in conservation science and practice in different contexts.
3. Associate major threats to biological diversity and their direct and indirect drivers.
4. Compare traditional and current conservation methods as part of local and global conservation strategies.
5. Apply qualitative and quantitative methods and tools used in the practice of conservation.

Assessment

Assessment Item	Value (%)
Participation	10
Field trip debriefing and integrated discussion	5
Essay and discussion	10
Field Exercise 1	10
Field Exercise 2	20
Presentation	10
Conservation initiatives comparison	15
Final Exam	20
TOTAL	100

Participation (10%)

Everybody should be prepared for each academic session. This implies reading the materials for each session with enough detail to be able to ask relevant questions; and to participate in analytical discussions about the key issues. Active participation during classes, discussions, assignments, and hikes is expected.

Field trip debrief and discussion (5%)

Context: Interdisciplinarity is important to incorporate levels of cultural and societal context to ecological or biological findings and vice versa. By combining multiple perspectives, the interdisciplinary process creates an integrative idea of a specific study case, instead of a narrow conclusion based on a single discipline. The effects of anthropogenic climate change are driven by a complex web of ecological, social, and political dynamics, so reducing the scope of conservation study to any one of these aspects excludes the important context needed to address the issues.

Students will: a) analyze a case study based on different perspectives (Tropical ecology, Political ecology and Conservation science), and b) plan and lead the discussion related to topics learned during fieldtrips.

Methods: Students will split into 3 groups. Each group is going to oversee leading a discussion during some fieldtrip debriefing sessions. Professors will provide general topics that students need to survey during the field trip to have enough information for organizing the discussion and provide conclusions.

Essay and discussion (10%)

Subject: What is Conservation Science?

Methods: This course is the link between the Tropical ecology and Political ecology course, therefore, observing the diversity of natural resources and services used by local people is key to understanding the interdependence that exists between them. We will use the Regional Protected Area of Cordillera Escalera as a case study. We will learn about this case and visit the area where natural and social systems are coupled via complex dynamics and conservation happens at different dimensions. Later, in a discussion session, students will present pictures from our visit and discuss what conservation science means to them. Finally, students must present an individual essay where they discuss two main things they learned about the case and how their initial understanding of conservation science has changed.

Field Exercise 1 (10%)

Subject: Developing a monitoring program for species conservation

Methods: Quantifying population changes is key to assessing if different conservation efforts are contributing to saving a target species. In this FEX, we will develop a monitoring program for the

conservation of a threatened species. The underlying questions of this FEX are (1) what type of data should be collected? (2) how do we account for the temporal and spatial variability and (3) how should we correct by detectability? By responding to these questions, students are expected to have a better understanding of the challenges of wildlife monitoring and how to deal with those. The report will look like a research proposal.

Field Exercise 2 (20%)

Subject: Planning a conservation project

Methods: Students will learn how to plan a participatory conservation project. After talking with local communities, conservationists, and local authorities, students will form teams to develop a conservation plan for a species or habitat of interest. Using the CMP Open Standards for the Practice of Conservation tool, students will work together to define the scope, vision, targets, and assess threats. In part 2 we will continue to develop a conceptual model, conservation strategies, and result chains. The instructions will be given in a workshop style. Students will present the results of each step and learn what the different stages of a conservation project entails.

Presentation (10%)

Understanding that scientific knowledge is dynamic, and that people may hold differing positions with regards to different subjects is important to developing our own position as scientists and citizens. Here, students will present and facilitate the discussion about controversial topics of Conservation Science based on classic rebuttal papers. Students are encouraged to develop “creative ways” to facilitate the class discussion. Grading will be based on clarity and accuracy of content (4 pts.), audiovisual delivery (3), and Q&A/discussion (3).

Conservation initiatives comparative (15%)

Students will take notes of main characteristics of every site we visit in their field notebook to compare and reflect on the different conservation strategies. The assignment will be divided into two parts: the first task will be looking for available information prior to each field trip. I will share a spreadsheet with all the places and items about general information then assign one student to search and fill out the information into the spreadsheet. All the students should read it and bring questions to the field to engage and gather more information to fully understand and reflect on the conservation initiative visiting. Second, each student must write a reflection for each visit focusing on something they learned, advantages and disadvantages of the type of conservation strategy.

Final Exam (20%)

The final exam will be given based on material covered in lectures, readings, and field experiences of the whole course. It will contain short essay and case analysis questions.

Grading Scheme

A	95.00 - 100.00%	B+	86.00 - 89.99%	C+	76.00 - 79.99%	D	60.00 - 69.99%
A-	90.00 - 94.99%	B	83.00 - 85.99%	C	73.00 - 75.99%	F	0.00 - 59.99%
		B-	80.00 - 82.99%	C-	70.00 - 72.99%		

General Reminders

Honor Code/Plagiarism – SFS places high expectations on their students and we hold students accountable for their behaviors. SFS students are held to the honor code below. SFS has a zero-tolerance policy towards student cheating, plagiarism, data falsification, and any other form of dishonest academic and/or research practice or behavior. Using the ideas or material of others without giving due credit is cheating and will not be tolerated. Any SFS student found to have engaged in or facilitated academic and/or research dishonesty will receive no credit (0%) for that activity.

“I approach coursework, fieldwork, and research with integrity and commit to full participation. I do my own work with honesty and give credit where it’s due. I use tools and technology responsibly and only as permitted. I speak up when something conflicts with our shared values. I respect the communities we learn from and commit to ethical, non-extractive research that keeps knowledge connected to the places and people who share it with us.”

Deadlines – Deadlines for written and oral assignments are instated to promote equity among students and to allow faculty ample time to review and return assignments before others are due. As such, deadlines are firm; extensions will only be considered under extreme circumstances. Late assignments will incur a penalty of 10% of your grade for each day you are late. After two days past the deadline, assignments will no longer be accepted. Assignments will be handed back to students after a one-week grading period. Grade corrections for any assessment item should be requested in writing at least 24 hours after assignments are returned. No corrections will be considered afterwards.

Content Statement – Every student comes to SFS with unique life experiences, which contribute to the way various information is processed. Some of the content in this course may be intellectually or emotionally challenging but has been intentionally selected to achieve certain learning goals and/or showcase the complexity of many modern issues. If you anticipate a challenge engaging with a certain topic or find that you are struggling with certain discussions, we encourage you to talk about it with faculty, friends, family, the HWM, or access available mental health resources.

Participation – Since we offer a program that is likely more intensive than you might be used to at your home institution, missing even one lecture can have a proportionally greater effect on your final grade simply because there is little room to make up for lost time. Participation in all components of the course is mandatory, it is important that you are prompt for all activities, bring the necessary equipment for field exercises and class activities, and simply get involved.

AI Usage for Assignments – SFS acknowledges the growing role of artificial intelligence (AI) tools in education and professional settings. While AI can be a valuable resource for learning and productivity, its use must align with the learning goals and integrity of each assignment. For this reason, students are encouraged to discuss the acceptable uses of AI for each assignment with the instructor. If you wish to use AI for any part of an assignment, consult with the instructor beforehand to ensure that its use adheres to the academic expectations of the course. Let’s work together to navigate this evolving landscape responsibly!

Course Content

Type: D: Discussion, FL: Field Lecture, GL: Guest Lecture, L: Lecture, O: Orientation, WS: Workshop

No	Topics Covered	Hours	Type	Required Readings
01	Course Overview Overview and introduction to the course.	1.0	O	
02	What is Conservation Science? Understand what conservation science is with global and local examples, and how it has evolved.	1.0	L	Soulé (1985). Kareiva and Marvier (2012).
03	Current Trends in Conservation Science Introduction to the current trends in Conservation Science and examples. Discussion of different points of view and current controversies.	1.0	L	Soulé (2013). Kareiva (2014). Doak, et al. (2014). Mace (2014).
04	Conservation in Practice: Visit to Cordillera Escalera Explore a Regional Protected Area and analyze what entails to develop this conservation strategy.	1.0	FL	
05	Challenges in Conservation Analyze the authorities' perspective on different challenges and conflicts of traditional conservation.	1.0	GL	
06	Traditional Knowledge: Visit to El Naranjal Students will explore how traditional knowledge and intercultural education help nature conservation.	1.0	FL; GL	León and Marcial (2023).
07	Essay and Discussion Discussion about our visit to Cordillera Escalera and El Naranjal. Students will present their photos and insights.	1.0	D	Petriello and Wallen (2015).
08	Introduction to Monitoring Techniques: Rio Amazonas Research Station During a multi-day field excursion, students will learn monitoring techniques for aquatic and terrestrial animals.	2.0	GL	
09	Climate Change Studies: Rio Amazonas Research Station Explore how long-term monitoring contributes to Climate Change studies on the Amazon.	1.0	GL	
10	Amazon Conservation: Rio Amazonas Research Station What works and what does not at the Tamshiyacu-Tahuayo Conservation Area?	1.0	GL	
11	Ex-situ Conservation: Visit to CREA Students will discover the labor and difficulties of ex-situ conservation at CREA rescue center.	2.0	FL; GL	

No	Topics Covered	Hours	Type	Required Readings
12	Ecosystem Services Analyze the importance of ecosystem benefits to people and how they shape current aspects of conservation science.	1.0	L	Lele, et al. (2013). <i>Optional:</i> <i>Pearson (2016).</i>
13	Occupancy (FEX 1) Students will design a monitoring plan for a threatened species. We will practice using occupancy modeling.	2.0	WS	Bailey and Adams (2005). <i>Optional:</i> <i>Iknayan, et al. (2013).</i>
14	Distance Sampling Students will practice using distance sampling as another monitoring technique.	2.0	WS	Desbiez, et al. (2010).
15	Threats to Biodiversity: Overexploitation Present the main drivers of overexploitation in the Amazon. Discuss the effects and possible solutions of illegal gold mining in Peru.	1.0	L; D	Caballero, et al. (2018). Pacsi, et al. (2025).
16	Habitat Loss and Fragmentation Present the impacts of habitat loss and fragmentation to the Amazon. Discuss the main drivers and solutions.	1.0	L; D	Hansen, et al. (2020). WRI (2025).
17	Corruption and the Economy of Conservation Present the impacts of corruption on biodiversity conservation. Discuss the main drivers and solutions.	1.0	L; D	da Veiga Mendes (2009). Laurance (2004).
18	Climate Change in the Amazon Present the evidence and impacts of changes on climate in the Amazon. Discuss the Amazon tipping point.	1.0	L; D	Brando, et al. (2025). Marengo, et al. (2018).
19	Green Economy Examine new ways of promoting conservation by adding value to biodiversity and traditional knowledge.	1.0	L	Medina, et al. (2022).
20	Research in Conservation Science How can science aid the practice of conservation in the current scenario?	1.0	L	Williams, et al. (2020).
21	Eco-tourism: Visit to Santa Elena Students will investigate what motivates a community to engage in creating a Conservation Area and in ecotourism.	2.0	FL	
22	Eco-business: Visit to Bosque de la Nuwas Discover how a group of women is protecting a forest patch, obtaining benefits and revaluing their heritage.	2.0	FL	Lazarou (2022).

No	Topics Covered	Hours	Type	Required Readings
23	Carbon Credits and Protected Areas: Visit to Conservation International-BPAM Analyze how the new market of carbon credits is impacting conservation and the management of protected areas.	2.0	GL	Montoya-Zumaeta, et al. (2021).
24	FEX 2: Conservation Standards – Part 1 Working in three groups, we aim to develop a conservation project for a species or ecosystem using the CS framework. We will gather information in Chirikyacu.	4.0	WS	Conservation Measures Partnership (2020).
25	Coupling of Natural and Social Systems: Visit to Chirikyacu By observing and interacting with a native community, students will identify how natural and social systems are intertwined in community-based conservation.	1.0	FL	Berkes (2004).
26	Andean Bear Conservation: Visit to Wayqecha Visit to the Ukuku Center where we will explore the efforts to conserve the Andean Bear. Discuss it with Nat Geo Explorer, Ruthmery Pillco.	1.0	GL	Rojas-VeraPinto, et al. (2022).
27	Tracking Climate Change in the Andes: Wayqecha Cloud Forest Research Station How can we track species response to Climate Change?	1.0	FL	Lutz, et al. (2013).
28	Agrobiodiversity Conservation: Visit to Potato Park Learn how five Andean communities preserve over 1300 varieties of potatoes using their traditional knowledge. Students discuss how human perception of nature shapes our actions.	2.0	FL; GL	Tito, et al. (2018).
29	Restoration: Visit to Mantamay Analyze the nuances of embarking in a restoration project to plant three million Polylepis saplings.	1.0	FL; GL	
30	Payment for Ecosystem Services: Visit to Piuray Lake Evaluate how Payment for Ecosystem Services Scheme work in Peru.	1.0	FL; GL	Sincere (2022).
31	Introduction to Conservation Tools: Natural Protected Areas in Peru Protected areas in Peru and the role of the Peruvian Ministry of the Environment.	1.0	L	Rodríguez and Young (2000).
32	Species Conservation Designing conservation strategies for threatened species.	1.0	GL	Shanee and Shanee (2014).
33	International Approach to Conservation Analyze how international organizations influence conservation in Peru and worldwide.	1.0	L	Rodríguez, et al. (2007).

No	Topics Covered	Hours	Type	Required Readings
34	Conservation Initiatives Comparative Students will share and discuss their insights after analyzing different conservation initiatives.	1.0	D	
24	FEX 2: Conservation Standards – Part 2 Students will continue developing a conservation project for a species or ecosystem using the OS framework.	4.0	WS	
35	Course Review We will review the main concepts of conservation science using dynamics and examples seen during the course.	1.0	D	
	Total	50		
	UMN Instructional Hours*	60		

*[UMN defines](#) an instructional hour as a 50-minute block. SFS syllabi are written in full 60-minute hours for programming purposes. Therefore 50 full hours = 60 UMN instructional hours (for four credit courses) and 25 full hours = 30 UMN instructional hours (for two credit courses).

Reading List

1. Bailey, L. and Adams, M. (2005). Occupancy models to study wildlife. USGS Fact Sheet 2005-3096.
2. Berkes, F. (2004). Rethinking community-based conservation. *Conservation biology*, 18(3), 621-630.
3. Brando, et al. (2025). Tipping Points of Amazonian Forests: Beyond Myths and Toward Solutions. *Annual Review of Environment and Resources*, 50, 97–131.
4. Caballero, et al. (2018). Deforestation and Forest Degradation Due to Gold Mining in the Peruvian Amazon. *Remote Sensing*, 10(12), 1903.
5. Conservation Measures Partnership (2020).
6. da Veiga Mendes (2009). How does corruption drive illegal deforestation in Amazon Forest? *Brazilian Journal of Business Economics*, 9(2), 55–65.
7. Desbiez, et al. (2010). Mammalian Densities in a Neotropical Wetland Subject to Extreme Climatic Events. *Biotropica*, 42, 372.
8. Doak, et al. (2014). What is the future of conservation? In *Protecting the Wild* (pp. 27-35). Island Press.
9. Fahrig, L. (2013). Rethinking patch size and isolation effects: the habitat amount hypothesis. *Journal of Biogeography*, 40(9), 1649-1663.
10. Fahrig, L. (2017). Ecological responses to habitat fragmentation per se. *Annual Review of Ecology, Evolution, and Systematics*, 48, 1-23.

11. Fahrig, L., Arroyo-Rodríguez, V., Bennett, J. R., Boucher-Lalonde, V., Cazetta, E., Currie, D. J., ... & Koper, N. (2019). Is habitat fragmentation bad for biodiversity?. *Biological conservation*, 230, 179-186.
12. Ferraro, P. (2005). Corruption and conservation: the need for empirical analyses. A response to Smith & Walpole. *Oryx*, 39(3), 257-259.
13. Hansen, et al. (2020). The fate of tropical forest fragments. *Science Advances*, 6(11), eaax8574.
14. Iknayan, et al. (2013). Detecting diversity: emerging methods to estimate species diversity. *Trends in Ecology & Evolution*, 29(2), 97-106.
15. Kareiva, P. (2014). New conservation: setting the record straight and finding common ground. *Conservation Biology*, 28(3), 634-636.
16. Kareiva, P., & Marvier, M. (2012). What is conservation science?. *BioScience*, 62(11), 962-969.
17. Laurance, W. F. (2004). The perils of payoff: corruption as a threat to global biodiversity. *Trends in Ecology & Evolution*, 19(8), 399-401.
18. Lazarou (2022). Nuwas Forest—Biodiversity and Indigenous Knowledge Conservation. Takiwasi.
19. Lele, et al. (2013). Ecosystem Services: Origins, Contributions, Pitfalls, and Alternatives. *Conservation and Society*, 11(4), 343.
20. León and Marcial (2023). An Active Future. In *Walkers in Amazonia: The Calendar Project* (pp. 9-13). Lima, Peru.
21. Lutz, et al. (2013). Four Decades of Andean Timberline Migration and Implications for Biodiversity Loss with Climate Change. *PLoS ONE*, 8(9), e74496.
22. Mace, G. M. (2014). Whose conservation?. *Science*, 345(6204), 1558-1560.
23. Marengo, et al. (2018). Changes in Climate and Land Use Over the Amazon Region. *Frontiers in Earth Science*, 6, 228.
24. Medina, et al. (2022). Searching for Novel Sustainability Initiatives in Amazonia. *Sustainability*, 14(16).
25. Montoya-Zumaeta, et al. (2021). Incentive-based conservation in Peru. *Land Use Policy*, 108, 105514.
26. Pacsi, et al. (2025). Current situation of gold mining in the Peruvian Amazon. MAAP No. 233.
27. Pearson (2016). Reasons to Conserve Nature. *Trends in Ecology & Evolution*, 31(5), 366–371.
28. Petriello, M. A., & Wallen, K. E. (2015). Integrative reflections on the new conservation science debate. *Biodiversity and Conservation*, 24(6), 1549-1551.
29. Rodríguez, et al. (2007). Globalization of Conservation: A View from the South. *Science*, 317(5839), 755–756.
30. Rodríguez, L. O., & Young, K. R. (2000). Biological diversity of Peru: determining priority areas for conservation. *AMBIO: A Journal of the Human Environment*, 29(6), 329-338.
31. Rojas-VeraPinto, et al. (2022). Living high and at risk: Predicting Andean bear occurrence and conflicts with humans. *Global Ecology and Conservation*, 36, e02112.

32. Shanee and Shanee (2014). Yellow-Tailed Woolly Monkey: Conservation Status, Anthropogenic Threats, and Conservation Initiatives. In *The Woolly Monkey*. Springer.
 33. Sincere (2022). Paying for watershed services to cities in Peru.
 34. Soulé (2013).
 35. Soulé, M. E. (1985). What is conservation biology?. *BioScience*, 35(11), 727-734.
 36. Tito, R., Vasconcelos, H. L., & Feeley, K. J. (2018). Global climate change increases risk of crop yield losses and food insecurity in the tropical Andes. *Global change biology*, 24(2), e592-e602.
 37. Williams, et al. (2020). The past and future role of conservation science in saving biodiversity. *Conservation Letters*, 13(4), e12720.
 38. WRI (2025). Fires Drove Record-breaking Tropical Forest Loss in 2024. *Global Forest Review*.
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