

Ecology and Conservation of Amazon Wildlife

Duration: 8 Days

Course Objective

This course immerses students in all aspects of Amazon wildlife, utilizing a science-based approach to understand the main issues facing the Amazon. Through hands-on field surveys of vertebrate groups, students learn how to collect data using non-intrusive methods and how this field data is used to answer critical questions regarding species ecology, sustainable use, climate impacts, the green economy, and One Health.

Students will experience firsthand the importance of local Indigenous communities and see how community-based conservation approaches are helping to save the Amazon and its wildlife. The curriculum explores the transition from past overuse to modern sustainable use, while also confronting how climate change—now the major threat to Amazon biodiversity—is causing massive animal die-offs.

Participants will gain real-world experience collecting data on diverse species, including fish, dolphins, shorebirds, bats, frogs, caimans, primates, forest birds, terrestrial mammals, and macaws. Additionally, students will visit local villages to meet Indigenous people and learn about their livelihoods, agriculture, fishing, handicrafts, and wildlife management.

Major Themes:

- Amazon Ecology and Conservation
 - Climate Change
 - Science of Sustainability
 - Indigenous Studies
 - Green Economy
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Lecture Topics

1. Introduction to the Amazon

- Geological history & Main landscapes
- River dynamics, Seasons, and weather
- Soils and agriculture
- Pre-Colombian people, First Europeans, and People today

2. Research Questions and Study Area

- Flooded and upland forests
- Protected areas and research reserves
- Local communities
- Research questions and the study site

3. Research Design and Methods

- Research design, Species, and habitats
- Specific methods for: Dolphins, Shorebirds, Frogs, Bats, Caimans, Fish, Arboreal & Terrestrial mammals, Lizards, and Macaws/parrots/parakeets.

4. Sustainable Research

- Non-intrusive methods
- Solar energy
- Risk assessment for field surveys

5. Amazon Conservation and Science

- History of Amazon conservation
- Community-based approaches
- Science, sustainability, and the Amazon transformation
- The Amazon green economy & threats from climate change
- The rural–urban divide
- The future of research and conservation in the Amazon

6. Nightly Briefings

- Nightly half-hour briefings based on field surveys
- Planning for the next day & Q&A

Field Surveys

Field surveys will be conducted throughout the entire course using the following methodologies:

- **Terrestrial Transects:** We walk slowly on ~5km round-trip rainforest trails to find primates, large birds, and mammals. Sightings are recorded by distance from the trail, habitat, and quantity.
- **Camera Traps:** We review recent videos of animals filmed at the study site (jaguars, peccaries, guans) to count forest-floor animals that are difficult to spot visually.
- **Macaws, Parrots, and Parakeets:** Surveyed from an open boat tied to the shore for 15-minute intervals. We identify species and count flock sizes before navigating 500 meters to the next observation point.
- **Fish:** Surveyed from a boat by setting a gill net for one hour along a river or lake while simultaneously fishing with a pole and hook. Fish are identified, measured, and safely released.
- **Shorebirds:** Surveyed by slowly navigating in an open boat or canoe, counting riverside birds like herons, egrets, cormorants, kingfishers, jacanas, and hawks.
- **Dolphins:** Surveyed in congregation areas (often the confluence of the Ucayali, Marañón, and Amazonas rivers). We record the species (pink or grey river dolphin), group size, and behavior.
- **Caimans:** Conducted at night in an open boat. We use spotlights to catch the reflection of caiman eyes, recording the species, size, and habitat.
- **Frogs and Toads:** Surveyed at night from an open boat in riverside floating vegetation. We stop, search, identify species, and count populations.
- **Fishing Bats (Greater Bulldog Bats):** Surveyed at night along the river using spotlights and a sonar bat box that translates the bats' sonar clicks.
- **Lizards:** Surveyed during the day by walking slowly along forest trails to record species, size, and habitat.

Field Course Plan (Example Itinerary)

Participants: 10 students and 2 teachers

Survey Types:

- *Daytime:* Fish, dolphins, shorebirds, macaws, lizards, terrestrial transects
- *Nighttime:* Bats, caimans, frogs

Day 1: Arrival & Introductions

- **Morning:** Airport pickup & rendezvous at Hotel Casa Morey.

- **7:00 AM – 8:00 AM:** Breakfast at Casa Morey.
- **8:00 AM:** Greeting and introduction. Visit the Historic Boat Museum and Indigenous Cultures Museum.
- **11:00 AM – 1:00 PM:** Bus to Omaguas. Visit Omaguas Museum (Introduction to the Amazon).
- **2:00 PM:** Boat to Research Station (packed lunch on board).
- **4:00 PM – 5:00 PM:** Arrive at research boat for lunch, introductions, inductions, and room assignments.
- **7:00 PM:** Dinner and planning briefing.

Day 2: Research Design & First Surveys

- **6:00 AM – 8:00 AM:** Wildlife observations from the top deck.
- **8:00 AM – 9:00 AM:** Breakfast.
- **10:00 AM – 1:00 PM:** Lecture: Research Design and Methods.
- **1:00 PM – 2:00 PM:** Lunch.
- **4:00 PM – 6:00 PM:** Macaw survey & Shorebirds boat survey.
- **7:00 PM – 8:00 PM:** Dinner and briefing.
- **8:00 PM – 10:00 PM:** Caiman survey.

Day 3: Forest & River Excursions

- **6:00 AM – 8:00 AM:** Breakfast.
- **7:00 AM – 12:00 PM:** Terrestrial transect.
- **8:00 AM – 1:00 PM:** Dolphin survey.
- **12:00 PM – 2:00 PM:** Lunch.
- **3:00 PM – 6:00 PM:** Fish survey.
- **4:00 PM – 6:00 PM:** Shorebirds canoe survey.
- **7:00 PM – 8:00 PM:** Dinner and briefing.
- **8:00 PM – 10:00 PM:** Bat survey.

Day 4: Continued Monitoring

- **6:00 AM – 8:00 AM:** Breakfast.
- **7:00 AM – 12:00 PM:** Terrestrial transect.

- **8:00 AM – 1:00 PM:** Dolphin survey.
- **12:00 PM – 2:00 PM:** Lunch.
- **4:00 PM – 6:00 PM:** Macaw survey & Shorebird boat survey.
- **7:00 PM – 8:00 PM:** Dinner and briefing.
- **8:00 PM – 10:00 PM:** Bat survey.

Day 5: Village Visit & Herpetology

- **6:00 AM – 8:00 AM:** Breakfast.
- **7:00 AM – 10:00 AM:** Macaw survey.
- **8:00 AM – 1:00 PM:** Lizard survey.
- **1:00 PM – 2:00 PM:** Lunch.
- **3:00 PM – 6:00 PM:** Visit the village of Villa Belen.
- **7:00 PM – 8:00 PM:** Dinner and briefing.
- **8:00 PM – 10:00 PM:** Frog survey.

Day 6: Camera Traps & Canoes

- **6:00 AM – 8:00 AM:** Breakfast.
- **7:00 AM – 10:00 AM:** Macaw survey.
- **8:00 AM – 1:00 PM:** Lizard survey.
- **1:00 PM – 2:00 PM:** Lunch.
- **2:00 PM – 4:00 PM:** Camera trap viewing and lecture.
- **4:00 PM – 6:00 PM:** Fish survey & Shorebirds canoe survey.
- **7:00 PM – 8:00 PM:** Dinner and briefing.
- **8:00 PM – 10:00 PM:** Caiman survey.

Day 7: Conservation & Community

- **6:00 AM – 8:00 AM:** Shorebirds canoe survey & Macaw survey.
- **8:00 AM:** Breakfast.
- **10:00 AM – 12:00 PM:** Lecture: Amazon Conservation.
- **1:00 PM – 2:00 PM:** Lunch.
- **2:30 PM – 6:00 PM:** Visit Jaldar or Castilla village.

- **7:00 PM – 8:00 PM:** Dinner and briefing.

Day 8: Final Surveys & Departure

- **6:00 AM – 8:00 AM:** Breakfast.
- **7:00 AM – 10:00 AM:** Macaw survey.
- **7:00 AM – 11:00 AM:** Dolphin survey.
- **1:00 PM – 2:00 PM:** Lunch.
- **3:00 PM:** Depart Research Station.
- **6:00 PM:** Arrive at Iquitos airport / Casa Morey Hotel.

Reading List

Antunes, A.P., Constantino, P.A.L., Fa, J.E., Munari, D.P., Morcatty, T.Q., Jacob, M.C.M., Nelson, B.W., .. Bodmer, R.E., Mayor, P., et al. (2025). Healthy forests safeguard traditional wild meat food systems in Amazonia. *Nature*, 648(8094), 625–633. DOI: 10.1038/s41586-025-09743-z.

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Mayor, P.; Bodmer, R.; Moya, K.; Solis, S.; Kirkland, M.; Perez-Peña, P.; Fang, T.; Orta-Martínez, M. (2024) Trends in Urban Wild Meat Trade of Chelonians (Turtles and Tortoises) in the Peruvian Amazon. *Animal*, 14, 3205. <https://doi.org/10.3390/ani1422320>

Bodmer, Richard, Pablo Puertas, Tula Fang, Miguel Antúnez, Sandro Soplín, Jonathan Caro, Pedro Pérez, Hani El Bizri, Marco Arenas, José Carlos Nieto, Maire Kirkland and Pedro Mayor (2023). Management of Subsistence Hunting of Mammals in Amazonia: A Case Study in Loreto, Peru. In: Spironello, W.R., Barnett, A.A., Lynch, J.W., Bobrowiec, P.E.D., Boyle, S.A. (eds) *Amazonian Mammals*. Springer, Cham. https://doi.org/10.1007/978-3-031-43071-8_10

Mayor P., El Bizri H. R., Morcatty T., Moya K., Bendayán N., Solis S., Vasconcelos Neto C., Kirkland M., Arevalo O., Fang, T., Pérez-Peña P., & R. Bodmer 2021. Wild meat trade over the last 45 years in the Peruvian Amazon. *Conservation Biology*: 1–13. <https://doi.org/10.1111/cobi.1380>

Bodmer, R., P. Mayor, M. Antunez, T. Fang, K. Chota, T. Ahuanari Yuyarima, S. Flores, B. Cosgrove, N. López, O. Pizuri & P. Puertas (2020). Wild Meat Species, Climate Change, and Indigenous Amazonians. *Journal of Ethnobiology*, 40: 220-235.

Bodmer, R., P. Mayor, M. Antunez, K. Chota, T. Fang, P. Puertas, M. Pittet, M. Kirkland, M. Walkey, C. Rios, P. Perez-Peña, P. Henderson, W. Bodmer, A. Bicerra, J. Zegarra and E. Docherty (2018). Major shifts in Amazon wildlife populations from recent intensification of floods and drought. *Conservation Biology*. 32(2):333-344.