

Oil Palms and Orangutans: Forest Conservation in Malaysian Borneo
An Interdisciplinary Experiential Learning Course

CRN: FES 499, OIL PALMS AND ORANGUTANS POLICY
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Credits: 6 undergrad/3 grad

Offered: June 15 – June 29, 2022

Course Instructors: Dr. Matthew Betts, Dr. Ian Munanura, and Dr. Mark Needham - Department of Forest Ecosystems and Society, College of Forestry, Oregon State University.

Course Description

Conversion of tropical forests to oil palm plantations across Southeast Asia is among the most pressing global conservation challenges today. At-risk are millions of acres of primary and secondary tropical forests and the ecosystem services they provide. At the same time, global demand for timber products continues to escalate. Forestry practices have the potential to degrade existing forested lands and lead to species decline. This course explores the complex ecological, social, economic, and political dimensions of tropical forest deforestation and degradation through an immersive experience in the Malaysian state of Sabah on the island of Borneo.

In order to understand the complexities of biodiversity conservation, the course will include elements of both ecology and social science. Students will learn the fundamentals of field biology and key concepts from political ecology and conservation science.

Catalogue Description

With the explicit goal of enhancing global learning, this field-based course immerses students in the challenges and opportunities of forest conservation in the heart of Malaysian Borneo. Students learn from hands-on field research about conserving tropical forests. The global context of forest management, exploitation, and conversion is emphasized to prepare students to critically analyze global conservation issues.

Student Learning Goals/Expected Outcomes

Upon completion of this course, you will be able to:

1. Articulate interconnections between local conditions and global ecological, social, political, and economic trends.
2. Demonstrate understanding of sustainable livelihoods concept and implications to wildlife conservation and human wellbeing.
3. Demonstrate understanding of fundamental concepts from tropical forest ecology, wildlife ecology, landscape ecology, and conservation.
4. Demonstrate understanding of your own cultural lenses in contrast to other cultural lenses. Demonstrate ability to compare and contrast U.S. and Malaysian cultural mores, values and perspectives pertaining to conservation and community well-being.

Prerequisites

To register for this course, students must:

1. Have achieved at least sophomore standing
2. Be nominated by faculty
3. Submit a complete application packet including nomination, resume and statement of interest
4. Be interviewed by course instructors

Student Learning Assessment

Each student will prepare a course portfolio documenting their learning experience and outcomes. Portfolios will include the following:

1. Personal learning objectives and self-assessment of learning.
2. Field notes (you are required to spend about an hour per day to list at least five species of wildlife you saw, along with the description of their habitat and behavior. You may use visuals or drawings to illustrate what you learn about animal species, their habitat, and behavior. Additionally, you are required to log in in your field notes how these species are adversely affected by human-induced environmental changes).
3. Conservation conversation questions (after dinner we will have a conversation/discussion about the day's lessons learned. Each student is required to prepare and ask at least one question during a conservation conversation. At the end of each conservation conversation, students are expected to synthesize responses from the group to a question they asked and write a clear and concise answer or response to their own question. The question asked during conservation conversation and the synthesized responses are expected to be integrated in the reflective journal entry assignment).
4. Reflective journal entry (before bedtime students are required to write a reflective journal entry. This assignment is intended to facilitate deep reflection and internalization of information received from our hosts, instructors, and peers. The guidelines for this assignment are attached to this syllabus).
5. Faculty assessment of student participation and contribution to field course activities (e.g., asking our hosts and instructors thoughtful questions).
6. Student discussion and presentation of readings. Students will work in groups to discuss the assigned readings and field experiences during the course. Students may structure this exercise to enable them to develop questions for our conservation conversation and the next day's field activity.

Evaluation of Student Performance

Participation (asking hosts and instructors thoughtful questions): 10% 70 pts

Participation (active participation in conservation conversations): 20% 140 pts

Active engagement in group debates (based on assigned readings): 20% 140 pts

Reflective journal entry (guidelines are attached): 50% 350 pts

Total **100%** **700 pts**

Resources

Wildlife identification resources (you are encouraged to have at least one of these)

Phillipps, Q., & Phillipps, K (2016). *Phillipps' Field Guide to the Mammals of Borneo and Their Ecology: Sabah, Sarawak, Brunei, and Kalimantan*. Princeton Field Guides, Princeton NJ.
(This guide is better for general ecology)

Phillipps, Q., & Phillipps, k (2009). *Phillipps' Field Guide to the Birds of Borneo*. Oxford: Beaufoy Publishing Limited (Useful to identify birds you see on the trip)

Key course reading resources (all in Box and must be read before the trip)

Runting, R.K., Griscom, B.W., Struebig, M.J., Satar, M., Meijaard, E., Burivalova, Z., Cheyne, S.M., Deere, N.J., Game, E.T., Putz, F.E. and Wells, J.A. (2019). Larger gains from improved management over sparing-sharing for tropical forests. *Nature Sustainability*, 2(1), pp.53-61.

Adams, W.M., Aveling, R., Brockington, D., Dickson, B., Elliott, J., Hutton, J., Roe, D., Vira, B. and Wolmer, W., 2004. Biodiversity conservation and the eradication of poverty. *science*, 306(5699), pp.1146-1149.

Additional course reading resources (all in Box-to be discussed in Borneo)

Edwards, D.P., Gilroy, J.J., Woodcock, P., Edwards, F.A., Larsen, T.H., Andrews, D.J., Derhé, M.A., Docherty, T.D., Hsu, W.W., Mitchell, S.L. and Ota, T., 2014. Land-sharing versus land-sparing logging: reconciling timber extraction with biodiversity conservation. *Global change biology*, 20(1), pp.183-191.

Moran, D., & Kanemoto, K. (2017). Identifying species threat hotspots from global supply chains. *Nature Ecology & Evolution*, 1(1), 1-5.

Hughes, A. C. (2018). Have Indo-Malaysian forests reached the end of the road?. *Biological Conservation*, 223, 129-137.

Fitzherbert, E. B., Struebig, M. J., Morel, A., Danielsen, F., Brühl, C. A., Donald, P. F., & Phalan, B. (2008). How will oil palm expansion affect biodiversity?. *Trends in ecology & evolution*, 23(10), 538-545.

Ancrenaz, M., Dabek, L., & O'Neil, S. (2007). The costs of exclusion: recognizing a role for local communities in biodiversity conservation. *PLoS biology*, 5(11), e289.

Ferraro, P. J., & Kiss, A. (2002). Direct payments to conservation biodiversity *Science*, 298(5599), 1718-1719.

McShane, T.O., Hirsch, P.D., Trung, T.C., Songorwa, A.N., Kinzig, A., Monteferri, B., Mutekanga, D., Van Thang, H., Dammert, J.L., Pulgar-Vidal, M. and Welch-Devine, M., 2011. Hard choices: making trade-offs between biodiversity conservation and human well-being. *Biological Conservation*, 144(3), pp.966-972.

Ayompe, L. M., Schaafsma, M., & Ego, B. N. (2021). Towards sustainable palm oil production: The positive and negative impacts on ecosystem services and human wellbeing. *Journal of cleaner production*, 278, 123914.

Additional learning resources (for those interested)

- Betts, M. G., B. T. Phalan, C. Wolf, S. C. Baker, C. Messier, K. J. Puettmann, R. Green, S. H. Harris, D. P. Edwards, D. B. Lindenmayer, and A. Balmford. 2021. Producing wood at least cost to biodiversity: integrating Triad and sharing–sparing approaches to inform forest landscape management. *Biological Reviews*:brv.12703.
- Betts, M. G., C. Wolf, M. Pfeifer, C. Banks-Leite, V. Arroyo-Rodríguez, D. B. Ribeiro, J. Barlow, F. Eigenbrod, D. Faria, R. J. Fletcher, A. S. Hadley, J. E. Hawes, R. D. Holt, B. Klingbeil, U. Kormann, L. Lens, T. Levi, G. F. Medina-Rangel, S. L. Melles, D. Mezger, J. C. Morante-Filho, C. D. L. Orme, C. A. Peres, B. T. Phalan, A. Pidgeon, H. Possingham, W. J. Ripple, E. M. Slade, E. Somarriba, J. A. Tobias, J. M. Tylianakis, J. N. Urbina-Cardona, J. J. Valente, J. I. Watling, K. Wells, O. R. Wearn, E. Wood, R. Young, and R. M. Ewers. 2019. Extinction filters mediate the global effects of habitat fragmentation on animals. *Science* 366:1236–1239.
- Betts, M. G., C. Wolf, W. J. Ripple, B. Phalan, K. A. Millers, A. Duarte, S. H. M. Butchart, and T. Levi. 2017. Global forest loss disproportionately erodes biodiversity in intact landscapes. *Nature* 547:441–444.
- Garbutt, N., & J. C. Prudente. 2006. Wild Borneo: The wildlife and scenery of Sabah, Sarawak, Brunei, and Kalimantan. MIT Press, 176 pp. ISBN: 9780262072748. (PSU Library: QH193.B65 G37 2006)
- King, V. T. 1993. The Peoples of Borneo. Cambridge, Massachusetts: Wiley–Blackwell, 352 pp. ISBN: 9780631172215 (PSU Library: DS646.3 .K5 1993)
- Kricher, John. 2011. Tropical Ecology. Princeton University Press, 704 pp. ISBN: 9780691115139. eBook ISBN: 9781400838950.
- van Wyhe, J. 2014. The Annotated Malay Archipelago by Alfred Russel Wallace (1869). NUS Press, 836 pp. ISBN: 9789971698201.
- Wadley, R. L. 2005. Histories of the Borneo environment: economic, political and social dimensions of change and continuity. Leiden, The Netherlands: KITLV Press, 315 pp. ISBN: 9789067182546 (PSU Library: QH77.B67 W33 2005)
- Wolf, C., T. Levi, W. J. Ripple, D. A. Zárrate-Charry, and M. G. Betts. 2021. A forest loss report card for the world’s protected areas. *Nature Ecology & Evolution* 2021 5:4 5:520–529.

Guidelines for reflective learning journal entry

Purpose: The reflective journal is designed to help you think deeply about your daily learning experience during the field course. It is intended to help you bring together theory and practice and get a better understanding of the course material. Specifically, it will help you to; see your strength and weakness as a learner, understand the methods of learning, which suit your own learning style, notice how you can improve your learning in the future.

Instructions: Reflect on your process of learning by recording any observations, experience, thoughts, and insights about the daily interactions with hosts and instructions that are significant to you as a person. The following prompt questions are suggested to stimulate your reflective thinking.

- What are the names of five wildlife species you encountered during the day? What is the one marker that distinguishes it from other species? What is the one thing you know about the habitat and behavior of each species. Sketch at least one of the species identified (nothing elaborate, Matt is a terrible artist so the bar is low).
- What are the most important questions you heard from peers during the day whose responses were most insightful to you?
- What one question did you ask in the conservation conversation that helped you get a better understanding of issues discussed during the day? What did you learn from responses to this question?
- What are the most important things you heard from our hosts, instructors, and peers and also learned from the readings discussed today? Reflect and note down these important things, and if you were confused, try to pinpoint the moment when you were confused, and try to see if you can figure out why, and how to address from gained experiences on the course. You may also use this opportunity to form questions you may ask hosts, instructors, and peers the next day to get more clarity.
- What is the concept you feel more confident about? Write as much about it as you can.
- What is the concept or information you don't feel confident about? Write as much about it as you can (what you know and don't; use information to formulate conservation conversation questions or questions you will ask hour hosts the next day). See if you can get it clearer after discussions.
- What personal connections can you find between the daily learned experiences (from field discussions, readings for the day, conservation conversations etc.), and your past experiences and feelings?
- How do you intend to use the knowledge gained to influence positive change in the conservation of tropical forests?

Expectation: You are required to make one reflective journal entry per day. You are advised to continue adding to your journal entry regularly, during the field course. You should aim to broaden your journal entries with information from daily interactions, readings, and personal experiences during the course. These journal entries will be typed at the end of the course and submitted by July 15th 2022 for grading (please submit to ian.munanura@oregonstate.edu and copy matt.betts@oregonstate.edu and mark.needham@oregonstate.edu).

Assessment: Your reflective learning journal will contribute to 50% of your final grade.