

# EAS 542: Conservation and (Sustainable) Development

## Fall 2021

Monday and Wednesday 10:00 to 11:30am  
Class Meeting Room: 2024 Dana Building

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**Land Acknowledgment:** We recognize the university's origins through an 1817 "land transfer" from the Anishinaabek, the Three Fires People: the Odawa, Ojibwe, and Bodewadami as well as Meskwahkiasahina (Fox), Peoria and Wyandot. The university stands, like almost all property in the United States, on lands obtained in unconscionable ways from indigenous peoples. Learning at the university would not be possible without a legacy of colonization and coercive treaties that violently removed indigenous peoples from their ancestral territories. In addition, our research on environmental science and sustainability has benefited and continues to benefit from access to land originally gained through the exploitation of its original stewards. Knowing where we live and work does not change the past, but understanding and acknowledging the history, culture, and impacts of colonial practices is an important step towards the creation of an equitable and sustainable future. Many indigenous peoples call this land home; we respect their connection to the space and commend their contributions to our research, education, and university.

## Course outline

This survey course explores the changing relations and contestations surrounding the theme of conservation and development. Conservation and development are sometimes seen as going hand in hand, and other times seen as serving different goals. The purpose of this course is to examine the nuances behind the polarization of how, if, when and under what considerations conservation and development should be jointly considered in planning for sustainable development. The course begins by exploring some of the epistemological origins of this debate. Next, we will examine some of the contemporary approaches to conservations and development. The remainder of the course will rely on exploring some of the new and contemporary ideas associated with reconciling between conservation and development.

## Important COVID-19 Policies

We understand that the COVID-19 pandemic creates unprecedented, stressful circumstances that affect your academic, professional, and personal capacities. We pledge to be intentional and adaptable in supporting your physical and psychological health needs, which will undoubtedly be affected by the pandemic during the semester; we ask the same of you for us. Please do not hesitate to reach out to us with your concerns and needs. Regardless of class format, we are committed to continuing to provide you with a meaningful learning opportunity this semester.

See [Maize and Blueprint](#) for the latest updates about the University of Michigan and COVID-19.

To best and most safely serve all course participants currently, please read this document in its entirety.

## Course and Safety Logistics

For the time being, our course will be offered in a synchronous or “live”, in-person/hybrid format, depending on circumstances. Due to the discussion-based nature of our course, all students, whether remote or in-person, are required to join our lecture and discussion at the designated class time. All students will have access to the Zoom link for each session, if in-person learners need to stay home. If you are unable to attend a session, please let the Graduate Student Instructor know as soon as possible. **YOU ARE REQUIRED TO WEAR A MASK AND SOCIAL DISTANCE (where possible) WHILE INDOORS.** [UM IS REQUIRING MASKS AND VACCINATIONS FOR ALL STUDENTS UNLESS THEY HAVE A MEDICAL EXEMPTION.](#) Weekly [Testing is available for all students on campus](#)

### Course Communications

All course communications will be sent via Canvas Notification. Please be sure to check both frequently. The Graduate Student Instructor should be the first point of contact for questions or concerns about the course, logistics, and assignments.

### In-Person Safety Logistics

For the safety of all students, faculty, and staff on campus, it is important for each of us to be mindful of safety measures that have been required for our protection. By returning to campus, you have acknowledged your responsibility for protecting the collective health of our community. *Your participation in this course on an in-person basis is conditional upon your adherence to all safety measures mandated by the State of Michigan and the University, including maintaining physical distancing of six feet from others, and properly wearing a face covering in class.* Other applicable safety measures may be described in the [Wolverine Culture of Care](#), the [University's Face Covering Policy for COVID-19](#) and SEAS [Questions & Concerns document](#). Your ability to participate in this course in-person as well as your grade may be impacted by failure to comply with campus safety measures. Individuals seeking to request an accommodation related to the face covering requirement under the Americans with Disabilities Act should contact the [Office for Institutional Equity](#). If you are unable or unwilling to adhere to these safety measures while in a face-to-face class setting, you will be required to participate on a remote basis (if available) or to disenroll from the class. We also encourage you to review the [Statement of Students Rights and Responsibilities](#) and check-in with the Office of Academic Affairs Director to navigate support and resources for you.

In-person sessions will be offered as long as it is safe in Ann Arbor. The opportunity to take this course in person depends on everyone's ability to abide by all safety regulations:

- Each room will have a defined layout to accommodate social distancing.
- Students will have assigned seats to assist with contact tracing in the event of an exposure.

- Each room will be equipped with disinfectant wipes and hand sanitizer. Students are responsible for disinfecting their table/chair when they enter the room at the start of class and using hand sanitizer.
- Each student will be provided with a [starter kit](#) with two masks, two bandanas, and a small bottle of sanitizer.
- Students are required to wear face coverings, wash after each day of use, and bring their own hand sanitizer for personal use.
- If you are feeling unwell, please stay home and access the course remotely. All students will have access to the online lecture for each offering.
- **If you are unable or unwilling to adhere to these safety measures while in a face-to-face class setting, you will be required to participate on a remote basis or to disenroll from the class.**

Follow safety precautions and practice recommended procedures to minimize the spread of COVID-19. Stay home or leave class if you:

- Have symptoms of COVID-19.
- Are sick.
- Have been in close contact with someone who tested positive for COVID-19.

#### Remote Learning Logistics

This course might be offered through Zoom Meetings if conditions change. Each remote-learner is required to download the [Zoom application](#). This is the only software required for this course. Please see the below requirements for remote learning:

- This course is synchronous. This means that all students are required to attend the lecture at the designated course time:
- Students are ***strongly encouraged to have their webcams turned on*** for the entire duration of the class session. This allows for better engagement with course materials, classmates, and the instructors. However, we understand that there may be situations in which this is not possible.
- Please keep your mic muted unless you are speaking.
- Due to the hybrid format of this course, we would like those who are remote learners to still engage verbally as much as possible. We ask that you utilize the chat function in Zoom to request an opportunity to speak and the Graduate Student Instructor will moderate the chat to give everyone the opportunity to participate to their fullest potential.

#### Preparedness to Switch to Fully Remote

If the situation evolves in such a manner that in-person/hybrid learning is not possible, we will switch to a fully remote format. In this case, session formats will consist of approximately 45 minutes of lecture from Dr. Butt followed by smaller group breakout discussion sessions for the remainder of the available time. One of these breakouts will be facilitated by Dr. Butt and the other by the Graduate Student Instructor. However, given the unprecedented nature of this situation, we anticipate that we may need to amend plans to provide the best possible learning experience for our students. We ask for your patience, understanding, and adaptability throughout the course of the semester.

#### **Copyright / Privacy Information**

Course lectures might be audio/video recorded and made available to students ***only in the event that they are unable to attend the class due to a reasonable explanation***. As part of your participation in this course, you may be recorded. If you do not wish to be recorded, please contact the Graduate Student Instructor the first week of class (or as soon as you enroll in the course, whichever is latest) to discuss alternative arrangements. Otherwise, you will be asked to consent to be recorded for the purpose of sharing the recording with your classmates.

Students are prohibited from recording/distributing any Class Activity or Material without written permission from the instructor, except as necessary as part of approved accommodations for students with disabilities. Any approved recordings may only be used for the student's own private use.

Please see the [Recording and Privacy Concerns FAQ](#) for additional information.

### **Course prerequisites**

There are no prerequisites, but I assume that students have a working knowledge of where places are located and can find out if they do not. This class is intended primarily for Masters and PhD students who are focused on research. It is theoretically heavy and draws on multiple epistemological approaches to the study of people and the environment.

### **Course format**

Classes are discussion-oriented and draw heavily on readings from the literature (both the required and in some cases, the supplemental readings). Some discussions will be led by students and will involve the preparation of a carefully thought out set of discussion questions or discussion points. Material for the handouts can be drawn from the readings (e.g., key figures) or from other sources. All students are expected to do the readings and to be ready to discuss them in class.

### **Discussion Signup**

Each week, a pair of students will prepare a list of questions for discussion and should be prepared to facilitate the discussion. This is intended to provide students with the ability to learn how to facilitate a group discussion and provide opportunities for inclusive leadership. The student should liaise with the faculty or the GSI to strategize on how best to organize the discussion. A signup sheet for the discussion is [linked here](#).

### **Academic Misconduct**

Students are advised to thoroughly examine the student advocacy and judicial affairs website to understand what is meant by academic misconduct. The website can be accessed from here ([http://www.rackham.umich.edu/policies/academic\\_and\\_professional\\_integrity/](http://www.rackham.umich.edu/policies/academic_and_professional_integrity/)).

### **Course readings**

Additional readings (required): Will be provided as needed as pdf files on CANVAS

### **Readings Responses**

A critical component of graduate education is the gain the ability to thoughtfully read and critique academic works as well as to formalize these critiques in a written form. To help you achieve this goal, you will be required to write a two to four-page response to the readings each two-week interval. You will receive a prompt for the first of the three responses, while the other four will be independently structured. You will post these responses to the CANVAS —Discussion section at pre-set due dates. During the end of each class period the instructor will provide a preview of the following assignment. It is important to develop and refine your own ideas as part of these responses Discussion section at pre-set due dates

### **Grading**

Seminar Attendance & Participation:	20%
Readings Responses (7 in total):	70%

Discussion Leadership:	10%
Total:	100%

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Final grades are based on a total percentage for the term. Grade cut-off points (in terms of percentages) are as follows: A+ (100%), A (95.00 to 99.99%), A- (90.00 to 94.99%), B+ (87.00 to 89.99%), B (83.00 to 86.99%), B- (80.00 to 82.99%), C+ (77.00 to 79.99%), C (73.00 to 86.99%), C- (70.00 to 72.99%), D+ (67.00 to 69.99%), D (63.00 to 66.99%), D- (60.00 to 62.99%), E (50.00 to 59.99%), F (40.00 to 49.99%).

#### \*Tentative Schedule

\* Note that during the course it is possible that some of the topics and readings will have their dates changed, or contents altered. I will try to provide as much advance warning of changes as possible.

### PART I: HISTORY, CONSERVATION AND DEVELOPMENT

#### Week 1: Course overview and what is conservation & development?

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Key Lesson Goals and Questions: While introducing conservation and development as an interdisciplinary field of study, we want to think critically about how conservation and development stems out of sustainability themes and influences (Lele), while also contextualizing such efforts against evidence, which tells us that conservation and development, in most cases has been ineffective (Lynch et al).

Monday, August 30: Course Overview and Introduction to Conservation and Development

Required Readings:

1. Lélé, S., & Norgaard, R. B. (1996). Sustainability and the scientist's burden. *Conservation Biology*, 10(2), 354-365.
2. Lynch, K. E., & Blumstein, D. T. (2020). Effective conservation. *Trends in Ecology & Evolution*, 35(10), 857-860.

Supplementary

1. Fisher, B., Balmford, A., Ferraro, P. J., Glew, L., Mascia, M., Naidoo, R., & Ricketts, T. H. (2014). Moving Rio forward and avoiding 10 more years with little evidence for effective conservation policy. *Conservation Biology*, 28(3), 880-882.
1. Lélé, S. and R. B. Norgaard (2005). Practicing interdisciplinarity. *Bioscience* 55(11): 967-975.
2. Brown, K. (2002). Innovations for conservation and development. *The Geographical Journal*, 168(1), 6-17.
3. Mittermeier, R. A., Mittermeier, C. G., Brooks, T. M., Pilgrim, J. D., Konstant, W. R., Da Fonseca, G. A., & Kormos, C. (2003). Wilderness and biodiversity conservation. *Proceedings of the National Academy of Sciences*, 100(18), 10309- 10313.

Wednesday, September 1: Black, Indigenous and People of Color Perspectives on Conservation & Development

Required Readings:

1. Finney, C. (2014). Introduction and Chapter 1, In *Black faces, white spaces: Reimagining the relationship of African Americans to the great outdoors*. UNC Press Books.

2. Kimmerer, R. W. (2013). Preface and Chapter 1, In Braiding sweetgrass: Indigenous wisdom, scientific knowledge and the teachings of plants. Milkweed Editions.
3. Mbara, J. and Ogada, M. (2016) Chapter 1 in The Big Conservation Lie. Auburn, WA, Lens & Pens Publishing.
4. The Racist Origins of Environmentalism - [The Environmental Movement Needs to Reckon with Its Racist History \(vice.com\)](#)

#### Supplementary

1. Whyte, K. (2020). Indigenous environmental justice: Anti-colonial action through kinship. In Environmental Justice (pp. 266-278). Routledge.
2. Alexander, S. M., Provencher, J. F., Henri, D. A., Taylor, J. J., Lloren, J. I., Nanayakkara, L., ... & Cooke, S. J. (2019). Bridging Indigenous and science-based knowledge in coastal and marine research, monitoring, and management in Canada. Environmental Evidence, 8(1), 1-24.
3. Reo, N. J., & Ogden, L. A. (2018). Anishnaabe Aki: an indigenous perspective on the global threat of invasive species. Sustainability Science, 13(5), 1443-1452.

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#### Week 2: Case Studies of Conservation and Development in Practice

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Key Lesson Goals and Questions: It's hard to conceptualize conservation and development without some real-world examples. In this week's readings, we hope to be able to put some context on how, and why conservation failures are rooted in the 'rough' and tumble of everyday life and politics. Here we want to explore some major conservation initiatives (ivory anti-poaching) as emblematic of contemporary conservation and development challenges

Monday, September 6: **LABOR DAY – NO CLASS**

Wednesday, September 8: Ivory Poaching in sub-Saharan Africa

#### Required Readings:

1. West, P., Igoe, J., & Brockington, D. (2006). Parks and peoples: the social impact of protected areas. Annu. Rev. Anthropol., 35, 251-277.
2. Gettleman, J. (2012). Elephants Dying in Epic Frenzy as Ivory Fuels Wars and Profits. The New York Times. Published September 3, 2012 on Page A1. Available Online at: <http://www.nytimes.com/2012/09/04/world/africa/africas-elephants-are-being-slaughtered-in-poaching-frenzy.html>
3. Canby, P. (2015). Elephant Watch. The New Yorker. Available Online at: <http://www.newyorker.com/magazine/2015/05/11/elephant-watch>
4. Powys Whyte, Kyle. (2018). White Allies, Let's Be Honest About Decolonization. Yes! Magazine. Published April 3, 2018. Available Online at: <https://www.yesmagazine.org/issue/decolonize/2018/04/03/white-allies-lets-be-honest-about-decolonization/>

#### Supplementary:

1. Duffy, R. (2014). Waging a war to save biodiversity: the rise of militarized conservation. *International Affairs*, 90(4), 819-834.
2. Lunstrum, E. (2014). Green Militarization: Anti-Poaching Efforts and the Spatial Contours of Kruger National Park. *Annals of the Association of American Geographers* 104(4): 816-832
3. Duffy, R. (1999). The role and limitations of state coercion: Anti-poaching policies in Zimbabwe. *Journal of Contemporary African Studies*, 17(1), 97-121.
4. Büscher, B., & Ramutsindela, M. (2016). Green violence: Rhino poaching and the war to save Southern Africa's peace parks. *African Affairs*, 115(458), 1-22.

**Response 1 Due Wednesday, September 8 by 11:59 PM on CANVAS**

### **Week 3: The History of Ideas in Conservation and Development**

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Key Lesson Goals and Questions: Where does the idea of conservation come from? Who picks up those ideas? How are they transformed? Who is responsible for nature conservation? Are conservation and development inherently at odds with each other?

Monday, September 13: European Conquest and Changing Nature-Society Relations in North America

Required Readings:

1. Worster, D. 1993. The nature we have lost. pp 3-15 in *The Wealth of Nature*. New York: Oxford Univ. Press.
2. Thoreau, H.D. 1990. The value of wildness. pgs. 36-39 In, *American Environmentalism: Readings in Conservation History*, ed. R.F. Nash, New York: McGraw-Hill.
3. Taylor, D. E. (2016). Introduction and Chapter 1, In *The rise of the American conservation movement: Power, privilege, and environmental protection*. Duke University Press.

Supplementary

1. Cronon, W. (2011). *Changes in the land: Indians, colonists, and the ecology of New England*. Macmillan.
2. Mitman, G. (2013). *Reel nature: America's romance with wildlife on film*. University of Washington press.
3. Jacoby, K. (2014). *Models of Poaching and Production*, In, *Crimes against nature: squatters, poachers, thieves, and the hidden history of American conservation*. Univ. of California Press.

Wednesday, September 15: Early Ideas of Nature and Wilderness in Africa and Asia

Required Readings:

1. Shetler, J. B. (2007). Chapter 1, In, *Imagining Serengeti: A history of landscape memory in Tanzania from earliest times to the present*. Ohio University Press.
2. Steinhart, E. I. (1989). Hunters, poachers and gamekeepers: towards a social history of hunting in colonial Kenya. *The Journal of African History*, 30(02), 247-264.

Supplementary Readings:

1. Agrawal, A., & Gibson, C. C. (1999). Enchantment and disenchantment: the role of community in natural resource conservation. *World Development*, 27(4), 629- 649.

- Ribot, J. C., Agrawal, A., & Larson, A. M. (2006). Recentralizing while decentralizing: how national governments reappropriate forest resources. *World Development*, 34(11), 1864-1886.
- Peluso, N. L. (1992). *Rich forests, poor people: resource control and resistance in Java*. Univ of California Press.
- West, P. (2006). *Conservation is our government now: the politics of ecology in Papua New Guinea*. Duke University Press.

#### **Week 4: Progressive Era Conservation**

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Key Lesson Goals and Questions: Where do ideas of conservation come from? Are conservation ideas separate from, or intrinsically part of the larger body politik? What influence our decisions about where 'wilderness' or 'nature' should go, or what they are comprised of?

Monday, September 20: Wilderness/Land Use: North America

Required Readings:

- Leopold, A. (1998). Wilderness as a form of land use. In *The Great New Wilderness Debate*, eds. J. B. Callicott and M. P. Nelson, 75-84. Athens: University of Georgia Press.
- Cronon, W. (1995). The trouble with wilderness; or, Getting back to the wrong nature. In *Uncommon Ground: Toward Reinventing Nature*, W. Cronon (ed.). New York: W.W. Norton and Company. (Pages 69-90)

Supplementary

- Pollan, M. (1991). The idea of a garden. In *Second Nature*, pp. 209-238. New York: Dell Publishing
- Nash, R. F. (2014). *Wilderness and the American mind*. Yale University Press.

Wednesday, September 22: Wilderness/Land Use:

Required Readings:

- Jacoby, K. (2014). *Crimes against nature: Squatters, poachers, thieves, and the hidden history of American conservation*. Berkeley, Univ. of California Press. Introduction and Chapter 1
- Dowie, M. (2011). *Conservation refugees: the hundred-year conflict between global conservation and native peoples*. Cambridge, MIT press. Introduction and Chapter 1

Supplementary

- Didham, R. K. (2011). Life after logging: strategic withdrawal from the Garden of Eden or tactical error for wilderness conservation? *Biotropica* 43(4), 393-395.
- Hopcraft, D. (2000). Wildlife land use and the great experiment. In *Wildlife conservation by sustainable use* (pp. 267-275). Springer Netherlands.
- Neumann, R. P. (1998). *Imposing wilderness: struggles over livelihood and nature preservation in Africa*. Univ of California Press.
- Yeh, E. T. (2005). Green governmentality and pastoralism in western China: 'Converting pastures to grasslands'. *Nomadic peoples*, 9(1-2), 9-30.
- Brooks, S. (2005). Images of 'Wild Africa': nature tourism and the (re)creation of Hluhluwe game reserve, 1930-1945. *Journal of Historical Geography* 31 (2): 220-240.



PART II: CONTEMPORARY CONSERVATION AND DEVELOPMENT

Week 5: Gender, Conservation and Development

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Key Lesson Goals and Questions: Critical social science literatures tell us that conservation is likely unsuccessful when a social group is treated equally. What are the implications for conservation and development when gender dynamics are either included or excluded in conservation practices? Who benefits and who loses out in such discourses?

Monday, September 27: Feminist Political Ecology

Required Readings:

1. Rocheleau, D., Thomas-Slayter, B., & Wangari, E. (1996). *Feminist political ecology: Global issues and local experience*. Routledge: 3-26
2. Fortmann, L. (1996). "Gendered knowledge: Rights and space in two Zimbabwe villages." In, *Feminist political ecology: Global issues and local experiences*. Routledge: 211-223.

Supplementary

1. Rocheleau, D. E. (1995). Gender and biodiversity: A feminist political ecology perspective. *IDS bulletin*, 26(1), 9-16
2. Schmink, M. (1999). Conceptual framework for gender and community-based conservation. MERGE, *Managing Ecosystems and Resources with Gender Emphasis*, Tropical Conservation and Development Program, Center for Latin American Studies, University of Florida.

Wednesday, September 29: Gender and Biodiversity Conservation

Required Readings:

1. Agarwal, B. (2009). Gender and forest conservation: The impact of women's participation in community forest governance. *Ecological Economics*, 68(11), 2785-2799.
2. Sundberg, J. (2004). Identities in the making: conservation, gender and race in the Maya Biosphere Reserve, Guatemala. *Gender, Place & Culture*, 11(1), 43-66.

Supplementary:

1. Camou-Guerrero, A., Reyes-García, V., Martínez-Ramos, M., & Casas, A. (2008). Knowledge and use value of plant species in a Rarámuri community: a gender perspective for conservation. *Human Ecology*, 36(2), 259-272.
2. Czech, B., Devers, P. K., & Krausman, P. R. (2001). The relationship of gender to species conservation attitudes. *Wildlife Society Bulletin*, 187-194.
3. Sullivan, S., & Hodgson, D. L. (2000). Gender, ethnographic myths & community-based conservation in a former Namibian 'homeland'. In, *Rethinking pastoralism in Africa*, 142-164.
4. Wolmer, W. (2003). Transboundary conservation: the politics of ecological integrity in the Great Limpopo Transfrontier Park\*. *Journal of Southern African Studies*, 29(1), 261-278.

## Week 6: Forest Conservation and Development

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Monday, October 4: Incentives, Forests, and Mega Reserves

Key Lesson Goals and Questions: is there something about the materiality of nature in a forest, for example, that makes its treatments of conservation and development unique? What is it about forests that makes conservation challenging? What are the roles of local people in conservation of forests and how do we reconcile these against grand ideas (Peres), or things not considered (Hajjar)?

Required Readings:

1. Sandbrook, C. (2017) Weak yet strong: the uneven power relations of conservation." *Oryx* 51: 379-380.
2. Börner, J., Schulz, D., Wunder, S., & Pfaff, A. (2020). The Effectiveness of Forest Conservation Policies and Programs. *Annual Review of Resource Economics*, 12.
3. Oldekop, J. A., Sims, K. R., Karna, B. K., Whittingham, M. J., & Agrawal, A. (2019). Reductions in deforestation and poverty from decentralized forest management in Nepal. *Nature Sustainability*, 2(5), 421.

Supplementary:

1. Jones, K. W., Holland, M. B., Naughton-Treves, L., Morales, M., Suarez, L., & Keenan, K. (2017). Forest conservation incentives and deforestation in the Ecuadorian Amazon. *Environmental Conservation*, 44(1), 56-65.
- Smith, J., Colan, V., Sabogal, C., & Snook, L. (2006). Why policy reforms fail to improve logging practices: The role of governance and norms in Peru. *Forest Policy and Economics*, 8(4), 458-469.
2. Vandermeer, J. H., & Perfecto, I. (2005). *Breakfast of biodiversity: The political ecology of rain forest destruction*. Food First Books.
3. Tomich, T. P., van Noordwijk, M., Vosti, S. A., & Witcover, J. (1998). Agricultural development with rainforest conservation: methods for seeking best bet alternatives to slash-and-burn, with applications to Brazil and Indonesia. *Agricultural Economics*, 19(1), 159-174.
4. The Economist. (2010). Aug 26th. "The Miracle of the Cerrado. Brazil has revolutionised its own farms". 7 pp. Available Online at: <http://www.economist.com/node/16886442>
5. Peres, C. A. (2005). Why we need megareserves in Amazonia. *Conservation Biology*, 19(3), 728-733.

Wednesday, October 6: Community Forestry

Required Readings:

1. Soriano, M., Mohren, F., Ascarrunz, N., Dressler, W., & Peña-Claros, M. (2017). Socio-ecological costs of Amazon nut and timber production at community household forests in the Bolivian Amazon. *PloS one*, 12(2), e0170594.
2. Hajjar, R., Oldekop, J. A., Cronkleton, P., Etue, E., Newton, P., Russel, A. J., ... & Agrawal, A. (2016). The data not collected on community forestry. *Conservation Biology*, 30(6), 1357-1362.

Supplementary:

1. Naughton-Treves, L., Mena, J. L., Treves, A., Alvarez, N., & Radeloff, V. C. (2003). Wildlife Survival Beyond Park Boundaries: the Impact of Slash-and-Burn Agriculture and Hunting on Mammals in Tambopata, Peru. *Conservation Biology*, 17(4), 1106-1117.
2. Robbins, Paul, Ashwini Chhatre, and Krithi Karanth. (2015). Political ecology of commodity agroforests and tropical biodiversity. *Conservation Letters* 8(2): 77-85.
3. Kayapó People's Manifesto June 2013. Available Online at: <http://raoni.com/news.php>
4. Nepstad, D., Schwartzman, S., Bamberger, B., Santilli, M., Ray, D., Schlesinger, P.,... & Rolla, A. (2006). Inhibition of Amazon deforestation and fire by parks and indigenous lands. *Conservation Biology* 20(1), 65-73.
5. Hviding, E., & Bayliss Smith, T. (2000). Islands of rainforest: agroforestry, logging and eco-tourism in Solomon Islands. Ashgate.
6. Lindenmayer, D. B., Margules, C. R., & Botkin, D. B. (2000). Indicators of biodiversity for ecologically sustainable forest management. *Conservation Biology*, 14(4), 941-950.
7. Glenday, J. (2008). Carbon storage and emissions offset potential in an African dry forest, the Arabuko-Sokoke Forest, Kenya. *Environmental Monitoring and Assessment*, 142(1-3), 85-95.
8. Primack, R. B., Bray, D., Galletti, H. A., & Ponciano, I. (Eds.). (2013). *Timber, tourists, and temples: Conservation and development in the Maya forest of Belize Guatemala and Mexico*. Island Press.
9. Bowker, J. (2016), Effectiveness of Africa's tropical protected areas for maintaining forest cover. *Conservation Biology*. Accepted Author Manuscript. doi:10.1111/cobi.12851

**Response 3 Due Wednesday, October 6 by 11:59 PM on CANVAS**

**Week 7: Poverty, Biodiversity Conservation and Development**

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Key Lesson Goals and Questions: Adams and other suggest that the reasons that conservation and development are (largely unsuccessful) are because conservation and development exist in separate spheres and integrating them is nothing more than forcing one idea onto another. Barrett et al suggest that the way we can move forward is through systems thinking and greater integration which Naughton et al takes to Uganda to examine an empirical case of this dynamic

Monday, October 11: Poverty, Biodiversity Conservation and Development

Required Readings

1. Adams, W. M., Aveling, R., Brockington, D., Dickson, B., Elliott, J., Hutton, J., ... & Wolmer, W. (2004). Biodiversity conservation and the eradication of poverty. *Science*, 306(5699), 1146-1149.
2. Barrett, C. B., Travis, A. J., & Dasgupta, P. (2011). On biodiversity conservation and poverty traps. *Proceedings of the National Academy of Sciences*, 108(34), 13907-13912.
3. Naughton-Treves, L., Alix-Garcia, J., & Chapman, C. A. (2011). Lessons about parks and poverty from a decade of forest loss and economic growth around Kibale National Park, Uganda. *Proceedings of the National Academy of Sciences*, 108(34), 13919-13924.

Supplementary Readings

1. Adams, W. M., & Hutton, J. (2007). People, parks and poverty: political ecology and biodiversity conservation. *Conservation and society*, 5(2), 147.

2. Sanderson, S. E., & Redford, K. H. (2003). Contested relationships between biodiversity conservation and poverty alleviation. *Oryx*, 37(04), 389-390.
3. Agrawal, A., & Redford, K. (2006). Poverty, development, and biodiversity conservation: Shooting in the dark? *Wildlife Conservation Society Working Paper #26*
4. McShane, T. O., Hirsch, P. D., Trung, T. C., Songorwa, A. N., Kinzig, A., Monteferri, B., ... & Welch-Devine, M. (2011). Hard choices: making trade-offs between biodiversity conservation and human well-being. *Biological Conservation*, 144(3), 966-972.

Wednesday, October 13: Feeding the 'Poor': Does Hunting Help or Hurt?

#### Required Readings

1. Nzou, G. (2015). In Zimbabwe, We Don't Cry for Lions. *The New York Times*. Available online at: <https://www.nytimes.com/2015/08/05/opinion/in-zimbabwe-we-dont-cry-for-lions.html> Aug 5
2. Brashares, J. S., Arcese, P., Sam, M. K., Coppolillo, P. B., Sinclair, A. R., & Balmford, A. (2004). Bushmeat hunting, wildlife declines, and fish supply in West Africa. *Science*, 306(5699), 1180-1183.
3. Nadasdy, P. (2011). We don't harvest animals; we kill them": agricultural metaphors and the politics of wildlife management in the Yukon. In *Knowing nature: Conversation at the intersection of political ecology and science studies* (Goldman, M. Nadasdy, P. and M. Turner, eds). 137-141.

#### Supplementary

1. Bennett, E. L., Blencowe, E., Brandon, K., Brown, D., Burn, R. W., Cowlshaw, G., & Robinson, J. G. (2007). Hunting for consensus: reconciling bushmeat harvest, conservation, and development policy in West and Central Africa. *Conservation Biology*, 21(3), 884-887.
2. Wilkie, D. S., & Carpenter, J. F. (1999). Bushmeat hunting in the Congo Basin: an assessment of impacts and options for mitigation. *Biodiversity & Conservation*, 8(7), 927-955.
3. Nielsen, M. R. (2006). Importance, cause and effect of bushmeat hunting in the Udzungwa Mountains, Tanzania: Implications for community based wildlife management. *Biological Conservation*, 128(4): 509-516.
4. Golden, C. D. (2009). Bushmeat hunting and use in the Makira Forest, north- eastern Madagascar: a conservation and livelihoods issue. *Oryx*, 43(03), 386- 392.

### **Week 8: Community Based Conservation and Development**

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Key Lesson Goals and Questions: By 2017, it is largely acknowledged (perhaps overly so) that conservation and development is ineffective if communities aren't considered. But what does being 'considered' mean, and to whom, why and to what effect? What counts as a community and are communities the same? What elements of community do conservation practices consider or not, and what is the effect of this?

Monday, October 18: **FALL BREAK – NO CLASS**

OPTIONAL READING: Globalization and Community Conservation

#### Required Readings:

1. Berkes, F. (2007). Community-based conservation in a globalized world. *Proceedings of the National Academy of Sciences*, 104(39), 15188-15193.

2. Bavinck, M., Berkes, F., Charles, A., Dias, A. C. E., Doubleday, N., Nayak, P., & Sowman, M. (2017). The impact of coastal grabbing on community conservation—a global reconnaissance. *Maritime Studies*, 16(1), 8.

#### Supplementary

1. Barbora, Sanjay. "Riding the Rhino: Conservation, Conflicts, and Militarisation of Kaziranga National Park in Assam." *Antipode* (2017).
2. Newmark, W. D., & Hough, J. L. (2000). Conserving Wildlife in Africa: Integrated Conservation and Development Projects and Beyond. *BioScience*, 50(7), 585- 592.
3. Barrett, C. B., & Arcese, P. (1995). Are integrated conservation-development projects (ICDPs) sustainable? On the conservation of large mammals in sub-Saharan Africa. *World development*, 23(7), 1073-1084.
4. Peters, J. (1998). Transforming the integrated conservation and development project (ICDP) approach: observations from the Ranomafana National Park Project, Madagascar. *Journal of agricultural and environmental ethics*, 11(1), 17- 47.
5. Wilshusen, P. R., Brechin, S. R., Fortwangler, C. L., & West, P. C. (2002). Reinventing a square wheel: Critique of a resurgent" protection paradigm" in international biodiversity conservation. *Society & Natural Resources*, 15(1), 17- 40.
6. Johannesen, A. B. (2006). Designing integrated conservation and development projects (ICDPs): illegal hunting, wildlife conservation, and the welfare of the local people. *Environment and Development Economics*, 11(02), 247-267.
7. Adams, W. M., & Hulme, D. (2001). If community conservation is the answer in Africa, what is the question?. *Oryx*, 35(3), 193-200.
8. Balint, P. J. (2006). Improving community-based conservation near protected areas: the importance of development variables. *Environmental Management*, 38(1), 137-148.

Wednesday, October 20: Community Based Conservation (CBCs)

#### Required Readings:

1. Williams, D., Thorne, J. H., Sumba, D., Muruthi, P., & Gregory-Michelman, Natasha (2017). Evaluating outcomes of community-based conservation on Kenyan group ranches with remote sensing. *Environmental Conservation*, 1-10.
2. Sen, A., & Nagendra, H. (2020). Local community engagement, environmental placemaking and stewardship by migrants: A case study of lake conservation in Bengaluru, India. *Landscape and Urban Planning*, 204, 103933.

#### Supplementary

1. Balint, P. J., & Mashinya, J. (2006). The decline of a model community-based conservation project: Governance, capacity, and devolution in Mahenye, Zimbabwe. *Geoforum* 37(5), 805-815.
2. Ogotu, J. O., Kuloba, B., Piepho, H. P., & Kanga, E. (2017). Wildlife Population Dynamics in Human-Dominated Landscapes under Community-Based Conservation: The Example of Nakuru Wildlife Conservancy, Kenya. *PloS one*, 12(1), e0169730.
3. Massé, F., & Lunstrum, E. (2016). Accumulation by securitization: commercial poaching, neoliberal conservation, and the creation of new wildlife frontiers. *Geoforum*, 69, 227-237.

4. Büscher, B., & Dressler, W. (2012). Commodity conservation: the restructuring of community conservation in South Africa and the Philippines. *Geoforum*, 43(3): 367-376.
5. Igoe, J., & Brockington, D. (2007). Neoliberal Conservation: A Brief Introduction. *Conservation and Society* 5(4): 432-449.
6. Sunderland, T. C., Ehringhaus, C., & Campbell, B. M. (2007). Conservation and development in tropical forest landscapes: a time to face the trade-offs? *Environmental Conservation*, 34(04), 276-279
7. Naughton-Treves, L., Holland, M. B., & Brandon, K. (2005). The role of protected areas in conserving biodiversity and sustaining local livelihoods. *Annu. Rev. Environ. Resources*, 30, 219-252.
8. Campbell, L. M., & Vainio-Mattila, A. (2003). Participatory development and community-based conservation: Opportunities missed for lessons learned? *Human Ecology*, 31(3), 417-437.

**Response 4 Due Wednesday, October 20 by 11:59 PM on CANVAS**

**Week 9: Fisheries and Islands - Conservation and Development**

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Key Lesson Goals and Questions: Is there something unique, either geographically, socially, culturally, economically, or politically about islands that makes them particularly interesting in conservation and development successes and failures? Are islands different in how conservation and development is practiced/ Which major actors and institutions work on islands and what are the pros and cons of siting conservation and development on islands?

Monday, October 25: Island Protected Areas

Required Readings:

1. Gruby, R. L., Gray, N. J., Campbell, L. M., & Acton, L. (2016). Toward a social science research agenda for large marine protected areas. *Conservation Letters*, 9(3): 153-163.
2. Fortwangler, C. (2007). Friends with money: Private support for a national park in the US Virgin Islands. *Conservation and Society* 5(4): 504.

Supplementary:

1. Campbell, L. M., Gray, N. J., Fairbanks, L., Silver, J. J., Gruby, R. L., Dubik, B. A., & Basurto, X. (2016). Global oceans governance: New and emerging issues. *Annual Review of Environment and Resources*, 41, 517-543.
2. Silver, J. J., Gray, N. J., Campbell, L. M., Fairbanks, L. W., & Gruby, R. L. (2015). Blue economy and competing discourses in international oceans governance. *The Journal of Environment & Development*, 24(2), 135-160.
3. Dahl, A. (2017). Island conservation issues in international conventions and agreements. *Environmental Conservation*, 1-19
- Benitez-Capistros, F., Hugé, J., Dahdouh-Guebas, F., & Koedam, N. (2016). Exploring conservation discourses in the Galapagos Islands: A case study of the Galapagos giant tortoises. *Ambio*, 1-19.
4. Brown, K., Turner, R. K., Hameed, H., & Bateman, I. A. N. (1997). Environmental carrying capacity and tourism development in the Maldives and Nepal. *Environmental Conservation*, 24(04), 316-325.
5. Twining-Ward, L., & Butler, R. (2002). Implementing STD on a small island: Development and use of sustainable tourism development indicators in Samoa. *Journal of Sustainable Tourism*, 10(5), 363-387.

6. Brown, B. E., & Dunne, R. P. (1988). The environmental impact of coral mining on coral reefs in the Maldives. *Environmental Conservation*, 15(02), 159-165.
7. Ghina, F. (2003). Sustainable development in small island developing states. *Environment, Development and Sustainability*, 5(1-2), 139-165.
8. Cronin, D. T., Riaco, C., Linder, J. M., Bergl, R. A., Gonder, M. K., O'Connor, M. P., & Hearn, G. W. (2016). Impact of gun-hunting on monkey species and implications for primate conservation on Bioko Island, Equatorial Guinea. *Biological Conservation*, 197, 180-189.
9. Courchamp, F., Hoffmann, B. D., Russell, J. C., Leclerc, C., & Bellard, C. (2014). Climate change, sea-level rise, and conservation: keeping island biodiversity afloat. *Trends in Ecology & Evolution*, 29(3), 127-130.

Wednesday, October 27: Governance and Rights in and around Marine Protected Areas

Required Readings:

1. Campbell, L. M., & Gray, N. J. (2019). Area expansion versus effective and equitable management in international marine protected areas goals and targets. *Marine Policy*, 100, 192-199.
2. Boucquey, Noëlle. (2017) 'That's my livelihood, it's your fun': The conflicting moral economies of commercial and recreational fishing. *Journal of Rural Studies* 54 (2017): 138-150.

Supplementary

1. Mascia, M. B., & Claus, C. (2009). A property rights approach to understanding human displacement from protected areas: the case of marine protected areas. *Conservation Biology*, 23(1), 16-23.
2. Pelling, M., & Uitto, J. I. (2001). Small island developing states: natural disaster vulnerability and global change. *Global Environmental Change Part B: Environmental Hazards*, 3(2), 49-62.
3. Lewis, J. (1990). The vulnerability of small island states to sea level rise: the need for holistic strategies. *Disasters*, 14(3), 241-249.
4. Tershy, B. R., Donlan, C. J., Keitt, B. S., Croll, D. A., Sanchez, J. A., Wood, B., ... & Biavaschi, N. (2002). Island conservation in north-west Mexico: a conservation model integrating research, education and exotic mammal eradication. *Turning the tide: the eradication of invasive species*, 293-300
5. Whittaker, R. J., & Fernández-Palacios, J. M. (2007). *Island biogeography: ecology, evolution, and conservation*. Oxford University Press.
6. van der Velde, M., Green, S. R., Vanclouster, M., & Clothier, B. E. (2007). Sustainable development in small island developing states: Agricultural intensification, economic development, and freshwater resources management on the coral atoll of Tongatapu. *Ecological Economics*, 61(2), 456-468.

## **Week 10: Urban Environments and Conservation**

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Key Lesson Goals and Questions: Nature conservation is almost always presumed to occur in places far away from high population densities. But a growing body of knowledge is demonstrating how cities can be sites of biodiversity conservation too. From brownfields to urban gardens and green roofs, are cities becoming the new frontier in conservation?

Monday, November 1: Exploring the connections between urbanisms, conservation, and the environment

Required Readings:

1. Strain, E. M., Celia Olabarria, Mariana Mayer-Pinto, Vivian Cumbo, Rebecca L. Morris, Ana B. Bugnot, Katherine A. Dafforn et al. (2017) Eco-engineering urban infrastructure for marine and coastal biodiversity: which interventions have the greatest ecological benefit?. *Journal of Applied Ecology* 55(1), 426-441.
2. Francis, R. A., & Lorimer, J. (2011). Urban reconciliation ecology: the potential of living roofs and walls. *Journal of Environmental Management*, 92(6), 1429-1437.

#### Supplementary

1. Goddard, M. A., Dougill, A. J., & Benton, T. G. (2010). Scaling up from gardens: biodiversity conservation in urban environments. *Trends in Ecology & Evolution*, 25(2), 90-98.
2. Lorimer, J. (2008). Living roofs and brownfield wildlife: towards a fluid biogeography of UK nature conservation. *Environment and Planning A*, 40(9), 2042-2060.
3. Botzat, A., Fischer, L. K., & Kowarik, I. (2016). Unexploited opportunities in understanding liveable and biodiverse cities. A review on urban biodiversity perception and valuation. *Global Environmental Change*, 39, 220-233.
4. Harrison, C., & Davies, G. (2002). Conserving biodiversity that matters: practitioners' perspectives on brownfield development and urban nature conservation in London. *Journal of Environmental Management*, 65(1), 95-108.
5. Nasser, N. (2003). Planning for urban heritage places: reconciling conservation, tourism, and sustainable development. *Journal of planning literature*, 17(4), 467-479.
6. Beatley, T. (2014). *Habitat conservation planning: endangered species and urban growth*. University of Texas Press
7. Kahn, M. E. (2006). *Green cities: urban growth and the environment* (p. 160). Washington, DC: Brookings Institution Press.
8. Grove, K. (2009). Rethinking the nature of urban environmental politics: Security, subjectivity, and the non-human. *Geoforum*, 40(2), 207-216.
9. Evans, J. P. (2007). Wildlife corridors: an urban political ecology. *Local Environment*, 12(2), 129-152.

Wednesday, November 3: What counts as nature in and of the city?

#### Required Readings:

1. Fletcher, Robert. (2017). Connection with nature is an oxymoron: A political ecology of "nature-deficit disorder". *The Journal of Environmental Education* 48(4): 226-233.
2. Zérah, M. H., & Landy, F. (2013). Nature and urban citizenship redefined: The case of the National Park in Mumbai. *Geoforum*, 46, 25-33.

#### Supplementary

1. Davison, A. (2008). The trouble with nature: Ambivalence in the lives of urban Australian environmentalists. *Geoforum*, 39(3), 1284-1295.
2. Bryant, M. M. (2006). Urban landscape conservation and the role of ecological greenways at local and metropolitan scales. *Landscape and urban planning*, 76(1), 23-44
3. Boonman-Berson, S., Turnhout, E., & Carolan, M. (2016). Common sensing: Human-black bear cohabitation practices in Colorado. *Geoforum*, 74, 192-201.
4. Rands, M. R., Adams, W. M., Bennun, L., Butchart, S. H., Clements, A., Coomes, D.,... & Sutherland, W. J. (2010). Biodiversity conservation: challenges beyond 2010. *Science*, 329(5997), 1298-1303.



5. Dietz, S., & Adger, W. N. (2003). Economic growth, biodiversity loss and conservation effort. *Journal of Environmental Management*, 68(1), 23-35.
6. Klooster, D., & Masera, O. (2000). Community forest management in Mexico: carbon mitigation and biodiversity conservation through rural development. *Global Environmental Change*, 10(4), 259-272.
7. Tallis, H., Kareiva, P., Marvier, M., & Chang, A. (2008). An ecosystem services framework to support both practical conservation and economic development. *Proceedings of the National Academy of Sciences*, 105(28), 9457-9464.
8. Wilkie, D., Shaw, E., Rotberg, F., Morelli, G., & Auzel, P. (2000). Roads, development, and conservation in the Congo Basin. *Conservation Biology*, 14(6), 1614-1622.

**Response 5 Due Wednesday, November 3 by 11:59 PM on CANVAS**

### PART III: NEW DIRECTIONS IN CONSERVATION AND DEVELOPMENT

#### Week 11: Incentive Based Conservation (revisited)

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Key Lesson Goals and Questions: Going back to our early readings from Jackson et al with the snow leopard cases, we find that incentives are important for effective conservation. Whether that is through payments for ecosystem services in forests (like REDD+) or when paying for tolerance (as is the case with Naughton-Treves's cases with wolves). What is gained and what is lost in incentive-based conservation? Who benefits and who loses out from these strategies and to what effect?

Monday, November 8: Compensation Schemes

#### Required Readings

1. Etchart, N., Freire, J. L., Holland, M. B., Jones, K. W., & Naughton-Treves, L. (2020). What happens when the money runs out? Forest outcomes and equity concerns following Ecuador's suspension of conservation payments. *World Development*, 136, 105124.
2. Hazzah, L., Dolrenry, S., Naughton, L., Edwards, C. T., Mwebi, O., Kearney, F., & Frank, L. (2014). Efficacy of two lion conservation programs in Maasailand, Kenya. *Conservation Biology*, 28(3), 851-860.
3. (OPTIONAL) Ravenelle, J. and P. J. Nyhus (2017). "Global patterns and trends in human-wildlife conflict compensation." *Conservation Biology* 31(6): 1247-1256.

#### Supplementary

1. Naughton-Treves, L., Grossberg, R., & Treves, A. (2003). Paying for tolerance: rural citizens' attitudes toward wolf depredation and compensation. *Conservation Biology*, 17(6): 1500-1511.
2. Bulte, E. H., & Rondeau, D. (2005). Research and management viewpoint: why compensating wildlife damages may be bad for conservation. *Journal of Wildlife Management*, 69(1): 14-19.
3. Pascual, U. & Perrings, C. (2007). Developing incentives & economic mechanisms for in situ biodiversity conservation in agricultural landscapes. *Agriculture, Ecosystems & Environment* 121(3):256-268.
4. Nyhus, P. J., Osofsky, S. A., Ferraro, P., Madden, F., & Fischer, H. (2005). Bearing the costs of human-wildlife conflict: the challenges of compensation schemes. *Conservation Biology*, 9, 107.
5. Ferraro, P. J., & Kiss, A. (2002). Direct payments to conserve biodiversity. *Science*, 298(5599), 1718.
6. Harvey, R. G., Briggs-Gonzalez, V., & Mazzotti, F. J. (2016). Conservation payments in a social context: determinants of tolerance and behavioural intentions towards wild cats in northern Belize. *Oryx*, 1-12.

Wednesday, November 10: REDD+ and Payments for Ecosystem Services

#### Required Readings:

1. Beymer-Farris, B. A., & Bassett, T. J. (2012). The REDD menace: Resurgent protectionism in Tanzania's mangrove forests. *Global Environmental Change*, 22(2), 332-341.
2. Burgess, N. D., Mwakalila, S., Munishi, P., Pfeifer, M., Willcock, S., Shirima, D., ... & Marchant, R. (2013). REDD herrings or REDD menace: response to Beymer-Farris and Bassett. *Global Environmental Change*, 23(5), 1349-1354.
3. Skutsch, M., & Turnhout, E. (2020). REDD+: If communities are the solution, what is the problem?. *World Development*, 130, 104942.

#### Supplementary

1. Asiyambi, A., & Lund, J. F. (2020). Policy persistence: REDD+ between stabilization and contestation. *Journal of Political Ecology*, 27(1).
2. Beymer-Farris, B. A., & Bassett, T. J. (2013). Environmental narratives and politics in Tanzania's Rufiji Delta: A reply to Burgess et al. *Global environmental change*, 23(5), 1355-1358.
3. Fletcher, R., Dressler, W., Büscher, B., & Anderson, Z. R. (2016). Questioning REDD+ and the future of market-based conservation. *Conservation Biology* 30(3): 673-675.
4. Jens Friis Lund, Eliezeri Sungusia, Mathew Bukhi Mabele, Andreas Scheba (2017) "Promising change, delivering continuity: REDD+ as conservation fad." *World Development* 89: 124-139
5. Trædal, L. T., Vedeld, P. O., & Pétursson, J. G. (2016). Analyzing the transformations of forest PES in Vietnam: Implications for REDD+. *Forest Policy and Economics*, 62, 109-117.
6. Milne, S., Milne, M., Nurfatriani, F., & Tacconi, L. (2016). How is global climate policy interpreted on the ground? Insights from the analysis of local discourses about forest management and REDD+ in Indonesia. *Ecology and Society*, 21(2).
7. Ellison, K. and G. C. Daily 2003. Making conservation profitable. *Conservation in Practice* 4(2):13-19.
8. Putz, F. E., & Redford, K. H. (2009). Dangers of carbon-based conservation. *Global Environmental Change*, 19(4), 400-401.
9. Blom, B., Sunderland, T., & Murdiyarso, D. (2010). Getting REDD to work locally: lessons learned from integrated conservation and development projects. *Environmental Science & Policy*, 13(2), 164-172.
10. Phelps, J., E.L. Webb and A. Agrawal (2010). Does REDD+ threaten to recentralize forest governance? *Science* 328: 312-313.

#### Week 12: Coping with Climatic Changes

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Key Lesson Goals and Questions: Climate change affects many conservation and development decisions and strategies, depending on what contexts you're paying attention to. Yet the effects of climate are differential, variable and unpredictable across space and time, and across different communities. How best do we plan for climate change in conservation and development challenges? What is the role of community actions and participation in such strategies? How do we best prepare for conservation and development while considering climatic changes?

Monday, November 15: Coping with Climate Change

#### Required Readings:

1. Conway, D., Nicholls, R. J., Brown, S., Tebboth, M. G., Adger, W. N., Ahmad, B., ... & Said, M. (2019). The need for bottom-up assessments of climate risks and adaptation in climate-sensitive regions. *Nature Climate Change*, 9(7), 503-511.

- Oakes, L., Ardoin, N., & Lambin, E. (2016). "I know, therefore I adapt?" Complexities of individual adaptation to climate-induced forest dieback in Alaska. *Ecology and Society*, 21(2).

#### Supplementary

- Pearson, R. G., & Dawson, T. P. (2005). Long-distance plant dispersal and habitat fragmentation: identifying conservation targets for spatial landscape planning under climate change. *Biological Conservation*, 123(3), 389-401.
- Opdam, P. & Wascher, D. (2004). Climate change meets habitat fragmentation: linking landscape and biogeographical scale levels in research and conservation. *Biological Conservation*, 117(3), 285-297
- Malhi, Y., Roberts, J. T., Betts, R. A., Killeen, T. J., Li, W., & Nobre, C. A. (2008). Climate change, deforestation, and the fate of the Amazon. *Science*, 319(5860), 169-172.
- Tompkins, E. L., & Adger, W. (2004). Does adaptive management of natural resources enhance resilience to climate change? *Ecology and Society*, 9(2), 10.
- Oliver, T. H., Smithers, R. J., Beale, C. M., & Watts, K. (2016). Are existing biodiversity conservation strategies appropriate in a changing climate? *Biological Conservation*, 193, 17-26.
- Hughes, T. P., Bellwood, D. R., Folke, C., Steneck, R. S., & Wilson, J. (2005). New paradigms for supporting the resilience of marine ecosystems. *Trends in Ecology & Evolution*, 20(7), 380-386.
- Dawson, T. P., Jackson, S. T., House, J. I., Prentice, I. C., & Mace, G. M. (2011). Beyond predictions: biodiversity conservation in a changing climate. *Science*, 332(6025), 53-58.
- Berkes, F., & Jolly, D. (2002). Adapting to climate change: social-ecological resilience in a Canadian western Arctic community. *Conservation ecology*, 5(2), 18.
- Janif, S., Nunn, P., Geraghty, P., Aalbersberg, W., Thomas, F., & Camailakeba, M. (2016). Value of traditional oral narratives in building climate-change resilience: insights from rural communities in Fiji. *Ecology and Society*, 21(2).
- Jones, K. R., Watson, J. E., Possingham, H. P., & Klein, C. J. (2016). Incorporating climate change into spatial conservation prioritisation: A review. *Biological Conservation*, 194, 121-130.
- Folke, C. (2006). Resilience: The emergence of a perspective for social- ecological systems analyses. *Global Environmental Change*, 16(3), 253-267.
- Sgro, C. M., Lowe, A. J., & Hoffmann, A. A. (2011). Building evolutionary resilience for conserving biodiversity under climate change. *Evolutionary Applications*, 4(2), 326-337
- Chornesky, E. A. (2016). Building Bridges between Climate-Change Science and Conservation Practice. *BioScience*, Online First

Wednesday, November 17: Future Oriented Conservation

#### Required Readings:

- Adger, W. N., et al. (2018). "Advances in risk assessment for climate change adaptation policy." *Philosophical Transactions of the Royal Society A: Mathematical, Physical and Engineering Sciences* 376(2121): 20180106.
- van Kerkhoff, L., Munera, C., Dudley, N., Guevara, O., Wyborn, C., Figueroa, C., Dunlop, M., Hoyos, M.A., Castiblanco, J. and Becerra, L., 2019. Towards future-oriented conservation: Managing protected areas in an era of climate change. *Ambio*, 48(7): 699-713.

#### Supplementary:

- Adger, W. N. (2000). Social and ecological resilience: are they related? *Progress in Human Geography*, 24(3), 347-364.
- Berkes, F., & Ross, H. (2016). Panarchy and community resilience: Sustainability science and policy implications. *Environmental Science & Policy*, 61, 185-193.

3. Dale, A., Vella, K., Potts, R., Voyce, B., Stevenson, B., Cottrell, A., ... & Pert, P. (2016). Applying Social Resilience Concepts and Indicators to Support Climate Adaptation in Tropical North Queensland, Australia. *Climate Adaptation Governance in Cities and Regions: Theoretical Fundamentals and Practical Evidence*, 21-44.
4. Cote, M., & Nightingale, A. J. (2012). Resilience thinking meets social theory situating social change in socio-ecological systems (SES) research. *Progress in Human Geography*, 36(4), 475-489.
5. Chia, E. L., Tiani, A. M., Sonwa, D. J., Perez-Teran, A. S., & Tchatchou, B. (2016). Securing well-being with the advent of climate hazards: Case of forest-dependent communities in a landscape in the Congo Basin. *International Journal of Climate Change Strategies and Management*, 8(2), 175-193.
6. Lukasiewicz, A., Pittock, J., & Finlayson, M. (2016). Institutional challenges of adopting ecosystem-based adaptation to climate change. *Regional Environmental Change*, 16(2), 487-499.
7. Kumar, P., Geneletti, D., & Nagendra, H. (2016). Spatial assessment of climate change vulnerability at city scale: A study in Bangalore, India. *Land Use Policy*, 58, 514-532.
8. Brink, E., Aalders, T., Ádám, D., Feller, R., Henselek, Y., Hoffmann, A., ... & Rau, A. L. (2016). Cascades of green: a review of ecosystem-based adaptation in urban areas. *Global Environmental Change*, 36, 111-123.
9. Tompkins, E. L., & Adger, W. (2004). Does adaptive management of natural resources enhance resilience to climate change? *Ecology and society*, 9(2), 10.
10. Berkes, F., & Jolly, D. (2002). Adapting to climate change: social-ecological resilience in a Canadian western Arctic community. *Conservation ecology*, 5(2), 18.
11. Adger, W. N., Arnell, N. W., & Tompkins, E. L. (2005). Successful adaptation to climate change across scales. *Global environmental change*, 15(2), 77-86.

### Response 6 Wednesday November 17 by 11:59 PM on CANVAS

#### Week 13: Artificial Intelligence, Algorithms and Blockchain in Conservation

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Key Lessons and Goals: Increasingly, the use of technology, artificial intelligence and advances in blockchain are finding their way into conservation practices and rhetoric. However, what does the reliance of these technologies mean for the efficacy of conservation and sustainable development. What does technology replace or supplement and what are the pros and cons of these technologies. How do work with technology to ensure that human agency is also incorporated?

Monday, November 22: Artificial Intelligence, Algorithms and Blockchain in Conservation

#### Required Readings:

1. Scoville, C., Chapman, M., Amironesei, R., & Boettiger, C. (2021). Algorithmic conservation in a changing climate. *Current Opinion in Environmental Sustainability*, 51, 30-35.
2. Howson, P. (2020). Building trust and equity in marine conservation and fisheries supply chain management with blockchain. *Marine Policy*, 115, 103873.

#### Supplementary Readings

1. Iacona, G., Ramachandra, A., McGowan, J., Davies, A., Joppa, L., Koh, L. P., ... & Chadès, I. (2019). Identifying technology solutions to bring conservation into the innovation era. *Frontiers in Ecology and the Environment*, 17(10), 591-598.
2. Joppa, Lucas N. (2017) The case for technology investments in the environment 325-328.

3. Howson, P., Oakes, S., Baynham-Herd, Z., & Swords, J. (2019). Cryptocarbon: the promises and pitfalls of forest protection on a blockchain. *Geoforum*, 100, 1-9.
4. Oberhauser, D. (2019). Blockchain for Environmental Governance: Can Smart Contracts Reinforce Payments for Ecosystem Services in Namibia?. *Frontiers in Blockchain*, 2, 21.
5. Kwok, R. (2019). AI empowers conservation biology. *Nature*, 567(7746), 133-135.
6. Lamba, A., Cassey, P., Segaran, R. R., & Koh, L. P. (2019). Deep learning for environmental conservation. *Current Biology*, 29(19), R977-R982.

Wednesday, November 24: **THANKSGIVING BREAK, NO CLASS**

#### **Week 14: Anti-Poaching, Conservation and Development**

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Key Lessons and Goals: There is general acceptance by conservation biologists and others that the rates of wildlife losses have not yet been resolved and for some wildlife species, these rates of losses may be increasing. One dominant solution to this has been the rise of anti-poaching mechanisms. This may take the form of greater enforcement, often through militarization, or it can take the form of new technologies to deter poaching and poachers. Yet there remain grave errors in how we understand the poaching crisis and the human rights abuses that may arise from it.

Monday, November 29: Poaching, Anti-Poaching and Militarization

##### Required Readings

1. Büscher, B. (2016). 'Rhino poaching is out of control!' Violence, race and the politics of hysteria in online conservation. *Environment and Planning A*, 48(5), 979-998.
2. Mulero-Pázmány, M., Stolper, R., Van Essen, L. D., Negro, J. J., & Sassen, T. (2014). Remotely piloted aircraft systems as a rhinoceros anti-poaching tool in Africa. *PLoS one*, 9(1), e83873.
3. Nuwer, R. (2019). Scientists Created Fake Rhino Horn. But Should We Use It? *The New York Times*. 11/25/2019. Available Online at: <https://www.nytimes.com/2019/11/25/science/synthetic-rhino-horn.html>

##### Supplementary Readings

1. Büscher, B., & Ramutsindela, M. (2015). Green violence: Rhino poaching and the war to save Southern Africa's peace parks. *African Affairs*, 115(458), 1-22.
2. Lunstrum, E. (2017). Feed them to the lions: Conservation violence goes online. *Geoforum*, 79, 134-143.
3. Duffy, R., St John, F. A., Büscher, B., & Brockington, D. A. N. (2015). The militarization of anti-poaching: undermining long term goals? *Environmental Conservation*, 42(4), 345-348.
4. Duffy, R., St John, F. A., Büscher, B., & Brockington, D. (2016). Toward a new understanding of the links between poverty and illegal wildlife hunting. *Conservation Biology*, 30(1), 14-22.
5. Büscher, B. (2016). Nature 2.0: Exploring and theorizing the links between new media and nature conservation. *new media & society*, 18(5), 726-743.
6. Duffy, R., Massé, F., Smidt, E., Marijnen, E., Büscher, B., Verweijen, J., Ramutsindela, M., Simlai, T., Joanny, L. and Lunstrum, E., 2019. Why we must question the militarisation of conservation. *Biological conservation*, 232, pp.66-73.

Wednesday, December 1: Case Based Teaching – Solutions to the Problem

##### Required Readings

1. De Jong, M. and Butt, B. (2019) Guns or GPS Units?: How should African protected areas combat the ivory poaching crisis? Available online at: <https://www.learnkala.com/cases/guns-or-gps> (Sign on with UMich Email)

#### Supplementary Readings

1. Massé, F., & Lunstrum, E. (2016). Accumulation by securitization: Commercial poaching, neoliberal conservation, and the creation of new wildlife frontiers. *Geoforum*, 69, 227-237.
2. Massé, F., Gardiner, A., Lubilo, R., & Themba, M. N. (2017). Inclusive anti-poaching? Exploring the potential and challenges of community-based anti-poaching. *South African Crime Quarterly*, 60, 19-27.
3. Duffy, R., Massé, F., Smidt, E., Marijnen, E., Büscher, B., Verweijen, J., ... & Lunstrum, E. (2019). Why we must question the militarisation of conservation. *Biological conservation*, 232, 66-73.
4. Massé, F. (2019). Anti-poaching's politics of (in) visibility: Representing nature and conservation amidst a poaching crisis. *Geoforum*, 98, 1-14.

#### Week 15: Rewilding & Conservation

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Key Lessons and Goals: Many scholars and practitioners have thought of rewilding as the best ways forward as we enter the Anthropocene. What does rewilding mean and to whom? Who benefits and who loses out in ideas about rewilding? Can rewilding be the best way forward in the Anthropocene?

Monday, December 6: The rewilding Movement as a Solution to Conservation and Development Ills

#### Required Readings:

1. Carey, J. (2016). Core Concept: Rewilding. *Proceedings of the National Academy of Sciences*, 113 (4), 806-808.
2. Svenning, J. C., Pedersen, P. B., Donlan, C. J., Ejrnæs, R., Faurby, S., Galetti, M., ... & Vera, F. W. (2016). Science for a wilder Anthropocene: Synthesis and future directions for trophic rewilding research. *Proceedings of the National Academy of Sciences*, 113(4): 898-906.
3. Rubenstein, D. R., & Rubenstein, D. I. (2015). From Pleistocene to trophic rewilding: A wolf in sheep's clothing. *Proceedings of the National Academy of Sciences* 113(1): E1
4. Svenning, J. C., Pedersen, P. B., Donlan, C. J., Ejrnæs, R., Faurby, S., Galetti, M., ... & Vera, F. W. (2016). Reply to Rubenstein and Rubenstein: Time to move on from ideological debates on rewilding. *Proceedings of the National Academy of Sciences*, 113(1), E2-E3.
5. Nogués-Bravo, D., Simberloff, D., Rahbek, C., & Sanders, N. J. (2016). Rewilding is the new Pandora's box in conservation. *Current Biology*, 26(3), R87-R91.

#### Supplementary Readings:

1. Jørgensen, D. (2015). Rethinking rewilding. *Geoforum*, 65, 482-488.
2. Cloyd, A. A. (2016). Reimagining rewilding: A response to Jørgensen, Prior, and Ward. *Geoforum*, 76, 59-62.
3. Monbiot, G. (2014). *Feral: Rewilding the land, the sea, and human life*. University of Chicago Press.
4. Foreman, D. (2004). Rewilding North America. pp. 128-143 In Foreman, D. *Rewilding North America: A Vision for Conservation in the 21st century*. Washington, D.C.: Island Press.
5. Navarro, L. M., & Pereira, H. M. (2015). Rewilding abandoned landscapes in Europe. In *Rewilding European Landscapes* (pp. 3-23). Springer International Publishing.
6. Bauer, N., Wallner, A., & Hunziker, M. (2009). The change of European landscapes: Human-nature relationships, public attitudes towards rewilding, and the implications for landscape management in Switzerland. *Journal of environmental management*, 90(9), 2910-2920.

7. Root-Bernstein, M., Galetti, M., & Ladle, R. J. (2017). Rewilding South America: Ten key questions. *Perspectives in Ecology and Conservation* (15)4: 271-281
8. Zamboni, T., Di Martino, S., & Jiménez-Pérez, I. (2017). A review of a multispecies reintroduction to restore a large ecosystem: The Iberá Rewilding Program (Argentina). *Perspectives in Ecology and Conservation* (15)4:248-256
9. Hodgetts, T. (2017). Wildlife conservation, multiple biopolitics and animal subjectification: Three mammals' tales. *Geoforum*, 79, 17-25.
10. Root-Bernstein, M., Galetti, M., & Ladle, R. J. (2017). Rewilding South America: Ten key questions. *Perspectives in Ecology and Conservation*.
11. Choi, M. A. (2017). The whale multiple: Spatial formations of whale tourism in Jangsaengpo, South Korea. *Environment and Planning A*, 49(11), 2536-2557.
12. McGregor, A., & Houston, D. (2017). Cattle in the Anthropocene: four propositions. *Transactions of the Institute of British Geographers*.

**Response 7 Due Wednesday, December 8 by 11:59 PM on CANVAS**

**(Optional): Sustainability Debates and Ways Forward**

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Key Lessons and Goals: Revisiting our earlier classes (Lele and Norgaard) and in relation to the Sustainable Development Goals, and after the numerous lessons of the class, what are the ways that we can better understand integrating conservation and development? Are questions of sustainability the 'right' ones? Or do we need to completely do away with the concept?

Wednesday, December x: Inclusive Conservation, Social Movements and Conservation

Required Readings:

1. Escobar, A. (1998). Whose knowledge, whose nature? Biodiversity, conservation, and the political ecology of social movements. *Journal of Political Ecology*, 5(1), (READ PAGES 53-63 ONLY)
2. Matulis, B., & Moyer, J. (2016). Beyond inclusive conservation: the value of pluralism, the need for agonism, and the case for social instrumentalism. *Conservation Letters* 1-9.
3. Lucas, J., Gora, E., & Alonso, A. (2017). A view of the global conservation job market and how to succeed in it. *Conservation Biology* 31(6): 1223–1231

Supplementary Readings:

1. Lélé, S., & Norgaard, R. B. (1996). Sustainability and the scientist's burden. *Conservation Biology*, 10(2), 354-365
2. 1-page handout with Kuznet curves from World Resources Institute 1996-7. Washington. D.C.
3. World Commission on Environment and Development. 2010. Towards sustainable development. pp 207-217 In: Conca K and Dabelko GD (eds) *Green Planet Blues*, Westview Press, Boulder, CO.
4. Lele, S. M. (1991). Sustainable development: a critical review. *World development*, 19(6), 607-621.
5. Davis, M. 2006, *Slum Ecology*. Inequity intensifies Earth's natural forces 6 pp. in *Orion*. March/April.
6. Nieto-Romero, M., Milcu, A., Leventon, J., Mikulcak, F., & Fischer, J. (2016). The role of scenarios in fostering collective action for sustainable development: Lessons from central Romania. *Land Use Policy*, 50, 156-168.
7. Hák, T., Janoušková, S., & Moldan, B. (2016). Sustainable Development Goals: A need for relevant indicators. *Ecological Indicators*, 60, 565-573.

8. Brandt, J. S., Nolte, C., & Agrawal, A. (2016). Deforestation and timber production in Congo after implementation of sustainable forest management policy. *Land Use Policy*, 52, 15-22.

Monday, December xx: Social Movements, Human Rights and Inclusive Conservation

Required Readings:

1. Brockington, D., Igoe, J., & Schmidt-Soltau, K. (2006). Conservation, human rights, and poverty reduction. *Conservation Biology*, 20(1), 250-252.

Supplementary Readings:

1. Lélé, S., & Norgaard, R. B. (1996). Sustainability and the scientist's burden. *Conservation Biology*, 10(2), 354-365
2. Rands, M. R., Adams, W. M., Bennun, L., Butchart, S. H., Clements, A., Coomes, D., & Sutherland, W. J. (2010). Biodiversity conservation: challenges beyond 2010. *Science*, 329(5997), 1298-1303.
3. Bennett, N. J., Roth, R., Klain, S. C., Chan, K., Clark, D. A., Cullman, G., ... & Thomas, R. E. (2016). Mainstreaming the social sciences in conservation. *Conservation Biology*.

Possible Alternative Topics from Development to Sustainability and Beyond

Required Readings:

1. Rands, M. R., Adams, W. M., Bennun, L., Butchart, S. H., Clements, A., Coomes, D., & Sutherland, W. J. (2010). Biodiversity conservation: challenges beyond 2010. *Science*, 329(5997), 1298-1303.
2. Escobar, A. (1998). Whose knowledge, whose nature? Biodiversity, conservation, and the political ecology of social movements. *Journal of Political Ecology*, 5(1), 53-82.
3. Dressler, W., de Koning, J., Montefrio, M., & Firn, J. (2016). Land sharing not sparing in the "green economy": The role of livelihood bricolage in conservation and development in the Philippines. *Geoforum*, 76, 75-89.

Supplementary Readings:

1. Persha, L., Agrawal, A., & Chhatre, A. (2011). Social and ecological synergy: local rulemaking, forest livelihoods, and biodiversity conservation. *Science*, 331(6024), 1606-1608
2. Green, R. E., Balmford, A., Crane, P. R., Mace, G. M., Reynolds, J. D., & Turner, R. K. (2005). A framework for improved monitoring of biodiversity: responses to the World Summit on Sustainable Development. *Conservation Biology*, 19(1), 56-65.