

updated 6 April 2019

Conservation Ecology, 11:216:317

Wednesdays 9:15-12:15, 123 ENR

3 credits, SEBS/SAS Core Curriculum, 21st Century Challenges, Writing and Communication

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SYLLABUS SPRING 2019

- *readings are listed on the day that they are due*
- *all course assignments are turned in to Sakai / assignments / folder for that assignment*
- *some of the readings listed below may change closer to the class date. readings are final when they are uploaded to Sakai / resources / folder for that class date*

1, jan 23 Course intro / lecture: biodiversity

no readings

2, jan 30 Biodiversity

readings: 44 pages

due: weekly writing assignment with summary of each reading

Soulé ME. 1985. What is Conservation Biology? *BioScience* 35:727-734.

May RM. 1992. How many species inhabit the Earth? *Scientific American*, October 1992:18-24.

O'Neill JP, Lane DF, Kratter AW, Capparella AP, Joo CF. 2000. A Striking New Species of Barbet (Capitoninae: Capito) from the Eastern Andes of Peru. *The Auk* 117(3):569-577.

Hunter ML, Webb SL. 2002. Enlisting Taxonomists to Survey Poorly Known Taxa for Biodiversity Conservation: A Lichen Case Study. *Conservation Biology* 16(3):660-665.

Kareiva P, Marvier M. 2012. What is Conservation Science? *Bioscience* 62(11):962-969.

Costello MJ, May R, Stork NE. 2013. Can we name Earth's species before they go extinct? *Science* 339:413-416.

Harrison T, Gibbs J, Winfree R. 2017. Anthropogenic landscapes support fewer rare bee species. *Landscape Ecology*: 1-12.

3, feb 6 Ecosystem services

readings: 48 pages

due: weekly writing assignment with summary of each reading

Heal G. 2000. Basic economics, chapter 2: Pages 21-42 in Heal, G. *Nature and the Marketplace*. Island Press, Washington, D.C.

Balmford A, Bruner A, Cooper P, Costanza R, Farber S, Green RE, Jenkins M, et al. 2002. Economic Reasons for Conserving Wild Nature. *Science* 297 (5583):950-953.

Kleijn D, Winfree R, Bartomeus I, Carvalheiro LG, et al. 2015. Delivery of Crop Pollination Services is an Insufficient Argument for Wild Pollinator Conservation. *Nature Communications* 6:1-8.

Naidoo R, Fisher B, Manica A, Balmford A. 2016. Estimating Economic Losses to Tourism in Africa from the Illegal Killing of Elephants. *Nature Communications* 7:13379.

Molnar J. 2018. Corporations valuing nature. Pages 167-172 in Kareiva D, et al., editors, *Effective Conservation Science: Data Not Dogma*. Oxford University Press, New York.

Blomqvist L, Simpson RD. 2018. The value of ecosystem services: what is the evidence? Pages 19-26 in Kareiva D, et al., editors. *Effective Conservation Science: Data Not Dogma*. Oxford University Press, New York.

4, feb 13 Habitat loss

readings: 54 pages

due: weekly writing assignment with summary of each reading

Robinson SK, Thompson FR, Donovan TM, Whitehead DR, Faaborg J. 1995. Regional Forest Fragmentation and the Nesting Success of Migratory Birds. *Science* 267(5206):1987-1990.

Terborgh J, Lopez L, Nunez P, Rao M, Shahabuddin G, Orihuela G, Riveros M, et al. 2001. Ecological Meltdown in Predator-Free Forest Fragments. *Science* 294(5548):1923-1926.

Levey DJ, Bolker BM, Tewksbury JJ, Sargent S, Haddad NM. 2005. Effects of Landscape Corridors on Seed Dispersal by Birds. *Science* 309(5731): 146-148.

Wright SJ, Muller-Landau HC. 2006. The future of tropical forest species. *Biotropica* 38(3): 287-301.

Moore RP, Robinson WD, Lovette IJ, Robinson TR. 2008. Experimental Evidence for Extreme Dispersal Limitation in Tropical Forest Birds. *Ecology Letters* 11(9):960-968.

DeFries RS, Rudel T, Uriarte M, Hansen M. 2010. Deforestation Driven by Urban Population Growth and Agricultural Trade in the Twenty-First Century. *Nature Geoscience* 3(3):178-181.

Estes JA, Terborgh J, Brashares JS, Power ME, Berger J, Bond WJ, Carpenter SR, et al. 2011. Trophic Downgrading of Planet Earth. *Science* 333(6040):301.

Fahrig L. 2018. Forty years of bias in habitat fragmentation research. Pages 32-38 in Kareiva D, et al., editors. *Effective Conservation Science: Data Not Dogma*. Oxford University Press, New York.

5, feb 20 Overharvesting

readings: 51 pages

due: weekly writing assignment with summary of each reading

due: **student-led discussion of papers; turn in 'LeadingDiscussion' instead of the usual summary for the paper you are leading**

due: **1-PAGE TOPIC FOR RESEARCH PAPER - upload to Sakai before**

class

Redford KH. 1992. The empty forest. *Bioscience* 42(6):412-422.

Snook LK. 1996. Catastrophic disturbance, logging and the ecology of mahogany (*Swietenia macrophylla* King): grounds for listing a major tropical timber species in CITES. *Botanical Journal of the Linnean Society* 122:35-46.

Jackson JBC, et al. 2001. Historical overfishing and the recent collapse of coastal ecosystems. *Science* 293:629-638.

Wright TF, et al. 2001. Nest poaching in neotropical parrots. *Conservation Biology* 15:710-720.

Bush ER, et al. 2014. Global trade in exotic pets 2006-2012. *Conservation Biology* 28:663-676.

6, feb 27 Invasive species

readings: 55 pages

due: weekly writing assignment with summary of each reading

due: **student-led discussion of papers; turn in 'LeadingDiscussion' instead of the usual summary for the paper you are leading**

Lowe S, et al. 2000. Biological invasion. *Aliens* 12:3-11.

Preston R. 2007. A death in the forest. *The New Yorker*, December 10:1-13.

The 3 short readings below are grouped into one pdf file, "2011-2013 Nature"

Davis M, et al. 2011. Don't judge species on their origins. *Nature* 474:153-154.

Simberloff, Alyokhin, Lockwood, Wickham. 2011. Correspondence. *Nature* 475:36-37.

Nicholls H. 2013. The 18-km² rat trap. *Nature* 497:306-308.

Lockwood J, et al. 2013. Trends in numbers of invaders. Pages 50-73 in *Invasion Ecology*. Wiley, New York.

Vellend M. 2017. The biodiversity conservation paradox. *American Scientist* 105:94-101.

7 , mar 6 Climate change

readings: 41 pages

due: weekly writing assignment with summary of each reading

Turner WR, Bradley BA, Estes LD, Hole DG, Oppenheimer M, Wilcove DS. 2010. Climate Change: Helping Nature Survive the Human Response. Conservation Letters 3(5):304-312.

Carlson KM et. al. 2016. Greenhouse gas emissions intensity of global croplands. Nature Climate Change 7: 63-68

Lawler JJ, Michalak J. 2018. Planning for climate change without climate projections? Pages 135-140 in Kareiva D, et al., editors. Effective Conservation Science: Data Not Dogma. Oxford University Press, New York.

Carattini S et al. 2019. How to win public support for a global carbon tax. Nature 565: 289-291

Fargione J et al. 2019. Natural Climate Solutions for the United States. Science Advances 4: 1-14

8, mar 13 In-class writing workshop

readings: 52 pages

due: 10 bullet point summary of the most important things you learned from the Pechenik readings

due: **BRING COMPLETE ROUGH DRAFT OF YOUR MIDTERM PAPER to class in editable (electronic) format**

Pechenik J. 2010. A Short Guide to Writing about Biology, Pearson. ch6, Revising

Pechenik J. 2010. A Short Guide to Writing about Biology, Pearson. ch8, Writing a review paper

mar 20 NO CLASS SPRING BREAK

9, mar 27 human population growth, food, and energy

readings: 64 pages

due: weekly writing assignment with summary of each reading

Guest instructor: Dylan Simpson, Ph.D candidate

due: **MIDTERM PAPER - upload to Sakai before class**

Mackay, D. 2009. Without the Hot Air. pages 2-4, 22-28, 88-94, 103-112. UIT, Cambridge.

Crist, E, Mora, C, Engelman R. 2017. The interaction of human population, food production, and biodiversity protection. Science 356: 260-264.

Load of Rubbish. 2018. The Economist: 29 Sept. 2018. Available from www.economist.com/specialreport

Newirk, V. 2018. Trump's EPA concludes environmental racism is real. The Atlantic: Feb 28, 2018. Available from <https://www.theatlantic.com/politics/archive/2018/02/the-trump-administration-finds-that-environmental-racism-is-real/554315/>

Fisher JRB. 2018. Global agricultural expansion – The sky isn't falling (yet). Pages 73-79 in Kareiva D, et al., editors. Effective Conservation Science: Data Not Dogma. Oxford University Press, New York.

10, apr 3 Extinction

readings: 24 pages

due: weekly writing assignment with summary of each reading

due: **1-PAGE PROGRESS REPORT ON RESEARCH PAPER - upload to Sakai before class**

Sax, D and S Gaines. 2003. Species diversity: from global decreases to local increases. Trends in Ecology and Evolution 18: 561-566

Dunn, R. 2005. Modern insect extinctions, the neglected majority. Conservation Biology 19: 1030-1036

Newbold, T. et al. 2015. Global effects of land use on local terrestrial biodiversity. Nature 520: 45-50

Urban, M. 2015. Accelerating extinction risk from climate change. Science 438: 571-573

Vellend, M. 2017. The biodiversity conservation paradox. American Scientist 105: 94-101

11, apr 10 Conservation practice

readings: 29 pages

due: weekly writing assignment with summary of each reading

Guest instructor: Colleen Smith, Ph.D candidate

Hoekstra JM, Boucher TM, Ricketts TH, Roberts C. 2005. Confronting a biome crisis: global disparities of habitat loss and protection. *Ecology Letters* 8:23-29.

Scott, J. et al. 2005. Recovery of imperilled apseices under the Endangered Species Act: the need for a new approach. *Frontiers in Ecology and Evolution* 3: 383-389

Watson JEM, Dudley N, Segan DB and Hockings M. 2014. The performance and potential of protected areas. *Nature* 515:67-73.

Hilborn, R. 2016. Marine biodiversity needs more than protection. *Nature* 535: 224-226

Kahn, J. 2018. Should some species be allowed to die out? *The New York Times Magazine*, March 13 2018.

Magris, R and R Pressey. 2019. Marine protected areas: just for show? *Science* 630: 723-724 (correspondence)

12, apr 17 Restoration & conservation in human-dominated habitats

readings: 39 pages

due: weekly writing assignment with summary of each reading

Edwards DP, Larsen TH, Teegan DS, Docherty FA, Ansell WW, Hsu MA, Derhé, Hamer KC, Wilcove DC. 2010. Degraded Lands Worth Protecting: The Biological Importance of Southeast Asia's Repeatedly Logged Forests *Proc Biol Sci. B*. Published online 2010: 1-9 doi:10.1098/rspb. 2010.1062

Phalan B, Onial M, Balmford A, Green RE. 2011. Reconciling Food Production and Biodiversity Conservation: Land Sharing and Land Sparing Compared. *Science* 333:(6047):1289-1291

Deryabina, T et al. 2015. Long-term census data reveal abundant wildlife populations at Chernobyl. *Current Biology* 25: R811-R826

Kremen, C. 2016. Reframing the land sharing / land sparing debate for biodiversity conservation. *The Year in Ecology and Conservation Ecology* 1355: 52-76

13, apr 24 Human culture & ideas

readings: 53 pages

due: weekly writing assignment with summary of each reading

Hardin G. 1968. The Tragedy of the Commons. *Science* 162(3859): 1243-1250.

Janzen DH. 2000. Costa Rica's Area De Conservation Guanacaste: A Long March to Survival through Non-Damaging Biodevelopment. *Biodiversity* 1(2):7-20.

Kareiva, P. 2008. Ominous trends in nature recreation. *Proceedings of the National Academy of Sciences* 105: 2757-2758

Louv R. 2008. Last child in the woods: saving our children from nature-deficit disorder. Algonquin Books, Chapel Hill, NC [20 page excerpt]

Masuda YJ, Scharks T. 2018. Science communication is receiving a lot of attention, but there's room for improvement. Pages 115-120 in Kareiva D, et al., editors. *Effective Conservation Science: Data Not Dogma*. Oxford University Press, New York.

Skelly DK. 2018. From Silent Spring to the Frog of War: the forgotten role of natural history in conservation science. Pages 85-89 in Kareiva D, et al., editors. *Effective Conservation Science: Data Not Dogma*. Oxford University Press, New York.

14, May 1 Final research paper due but NO CLASS

due: FINAL RESEARCH PAPER upload to Sakai by 9:15 am Weds, May 1