

Exploring the primary literature.

Overview: Biodiversity conservation requires knowledge of multiple disciplines from sociology and anthropology through GIS and genomics. This course really embraces the dual themes of ecology and evolution of East African biota, and the challenges of biodiversity conservation. Here we have chosen a series of peer-reviewed articles that run this gamut. We also think that we can all improve our critical thinking ‘chops’ and this exercise will help in this domain as well. Rather than have you prepare a PowerPoint presentation, we would like you to come prepared to discuss your article orally with no visual aids. You should print off a copy of the article and bring it with you for your reference. We will have PDF copies of all articles as well so that we may refresh our knowledge of them and share with any students who may wish to read them. I would also like you to prepare and bring handouts for 26 that simply include the: **1. article citation, 2. abstract, and 3. two-three line summary of what you think are the most important findings/conclusions of the paper.** You will have time in the initial days of the course to ask us questions should any arise.

In your presentation, we would like you to mention the article title, authors, year and journal, indicate the overarching objectives of the research, provide a succinct overview of their methods and a summary of their major findings, and embed the article in the broader context of major themes in ecology, evolution and conservation. Note that some of these articles include detailed methods that may include analyses and jargon with which you are unfamiliar. We can help you with this but you should not feel compelled to detail the minutiae of the paper nor every aspect therein – focus on the big picture stuff.

At various junctures throughout the course we will set aside time for sessions where each of you will lead an exploration centred on your paper – for undergrads about 8-10 minutes for your overview and then subsequent discussion (3-4 minutes).

Assigned Papers

Origins and patterns of biodiversity:

1. Hagen, O. A. Skeels, R.E. Onstein and W. Jetz. 2021. Earth history events shaped the evolution of uneven biodiversity across tropical moist forests. PNAS 118(40) e2026347118. <https://doi.org/10.1073/pnas.2026347118> Presenter: **Vikas**
2. Dagallier, L.-P.M.J., Janssens, S.B., Dauby, G., Blach-Overgaard, A., Mackinder, B.A., Droissart, V., Svenning, J.-C., Sosef, M.S.M., Stévant, T., Harris, D.J., Sonké, B., Wieringa, J.J., Hardy, O.J. and Couvreur, T.L.P. 2020. Cradles and

- museums of generic plant diversity across tropical Africa. *New Phytol*, 225: 2196-2213. <https://doi.org/10.1111/nph.16293> Presenter: **Rosstin**
3. Barreto, E, Graham, CH, Rangel, TF. 2019. Environmental factors explain the spatial mismatches between species richness and phylogenetic diversity of terrestrial mammals. *Global Ecol Biogeogr*. 28: 1855– 1865. <https://doi.org/10.1111/geb.12999> Presenter: **Kearsten**
 4. Mairal, M., Sanmartín, I., Herrero, A. et al. 2017. Geographic barriers and Pleistocene climate change shaped patterns of genetic variation in the Eastern Afromontane biodiversity hotspot. *Sci Rep* 7, 45749. <https://doi.org/10.1038/srep45749> Presenter: **Olin**
 5. McGee, M.D., Borstein, S.R., Meier, J.I. et al. 2020. The ecological and genomic basis of explosive adaptive radiation. *Nature* 586: 75–79. <https://doi.org/10.1038/s41586-020-2652-7> Presenter: **Hannah**
 6. Dommain, M., S. Riedla, L.A. Olaka et al. 2022. Holocene bidirectional river system along the Kenya Rift and its influence on East African faunal exchange and diversity gradients. *Proc. Natl. Acad. Sci. USA* 119 (28) e2121388119 <https://doi.org/10.1073/pnas.2121388119> Presenter: **Lauren**

Tropical ecology:

7. Seifert, T., M. Teucher, W. Ulrich, F. Mwanja, F. Gona, and J.C. Habel 2022. Biodiversity and Ecosystem Functions Across an Afro-Tropical Forest Biodiversity Hotspot. *Frontiers in Ecology and Evolution* 10. DOI=10.3389/fevo.2022.816163 <https://www.frontiersin.org/articles/10.3389/fevo.2022.816163> Presenter: **Mica Mae**
8. Charles, GK, Riginos, C, Veblen, KE, Kimuyu, DM, Young, TP. 2021. Termite mound cover and abundance respond to herbivore-mediated biotic changes in a Kenyan savanna. *Ecology and Evolution* 11: 7226– 7238. <https://doi.org/10.1002/ece3.7445> Presenter: **Brianna**
9. Dzekashu, F.F., Pirk, C.W.W., Yusuf, A.A. et al. 2023. Seasonal and elevational changes of plant-pollinator interaction networks in East African mountains. *Ecology and Evolution*, 13, e10060. <https://doi.org/10.1002/ece3.10060> Presenter: **Elizabeth**

(Some) Threats:

10. Newbold, T., Oppenheimer, P., Etard, A. et al. 2020. Tropical and Mediterranean biodiversity is disproportionately sensitive to land-use and climate change. *Nature Ecology Evolution* 4: 1630–1638. <https://doi.org/10.1038/s41559-020-01303-0> Presenter: **Alise**

11. Douglas N. Kamaru et al. 2024. Disruption of an ant-plant mutualism shapes interactions between lions and their primary prey. *Science* 383,433-438(2024). <https://www.science.org/doi/10.1126/science.adg1464> Presenter: **Megan**
12. Mwasi, S. & Dheer, A. 2022. Habitat degradation, vegetation damage, and wildlife-livestock interactions in Amboseli ecosystem wildlife sanctuaries, Kenya. *African Journal of Ecology*. 60: 1201–1209. <https://doi.org/10.1111/aje.13048> Presenter: **Isobel**
13. Lily G. C. Genevier, Tahira Jamil, Dionysios E. Raitsos, George Krokos, Ibrahim Hoteit. 2019. Marine heatwaves reveal coral reef zones susceptible to bleaching in the Red Sea. *Global Change Biology* 25: 2338-2351. <https://doi.org/10.1111/gcb.14652> Presenter: **Victoria**
14. van Velden, J.L., Wilson, K., Lindsey, P.A. et al. 2020. Bushmeat hunting and consumption is a pervasive issue in African savannahs: insights from four protected areas in Malawi. *Biodiversity Conservation* 29: 1443–1464. <https://doi.org/10.1007/s10531-020-01944-4> Presenter: **Celina**
15. Omweno, O.J., R.M. Omondi, F. Ondemo & A. Omondi. 2024. The impacts of introduced fish and aquatic macrophytes on the ecology and fishery potential of Lake Victoria, Kenya. *Environmental Sciences*. IntechOpen. <http://dx.doi.org/10.5772/intechopen.112388> Presenter: **Sarah**
16. Kabanze, J. M., Kimanzi, J., Malonza, P. K., & Rutina, L. P. (2023). Anthropogenic effects of habitat modification on anuran species diversity in a swamp forest area, Kenya. *African Journal of Ecology*, 62, e13245. <https://doi.org/10.1111/aje.13245> Presenter: **Adam**

(Some) Solutions:

17. Garnett, S.T., Burgess, N.D., Fa, J.E. et al. 2018. A spatial overview of the global importance of Indigenous lands for conservation. *Nature Sustainability* 1: 369-374. <https://doi.org/10.1038/s41893-018-0100-6> Presenter: **Isabella**
18. Habel JC, Teucher M, Rödder D, Bleicher MT, Dieckow C, Wiese A, Fischer C. Kenyan endemic bird species at home in novel ecosystem. *Ecol Evol*. 2016 Mar 14. 6: 2494-505. <https://doi.org/10.1002/ece3.2038> Presenter: **Katie**
19. Kegamba, J.J., Sangha, K.K., Wurm, P.A. et al. Conservation benefit-sharing mechanisms and their effectiveness in the Greater Serengeti Ecosystem: local communities' perspectives. *Biodivers Conserv* 32, 1901–1930 (2023). <https://doi.org/10.1007/s10531-023-02583-1> Presenter: **Renee**
20. Saanya, A., Mulungu, L., Sabuni, C., Massawe, A., & Makundi, R. 2023. Effects of prescribed burning on rodents in an East African woodland ecosystem. *African Journal of Ecology* 61: 583–594. <https://doi.org/10.1111/aje.13143> Presenter: **Mikaela**

21. Riggio J, Foreman K, Freedman E, Gottlieb B, Hendler D, et al. 2022. Predicting wildlife corridors for multiple species in an East African ungulate community. PLOS ONE 17(4): e0265136. <https://doi.org/10.1371/journal.pone.0265136>
Presenter: **Cassidy**
22. Poorter, L. et al (+80 authors). 2022. Multidimensional tropical forest recovery. Science 374: 1370-1376. <https://www.science.org/doi/10.1126/science.abh3629>
Presenter: **Bethlehem**