**Small Group Activity / Miniquiz**

This small group (or individual) activity focuses on ideas covered in our lecture – the concept of community-managed resources and TEK. We will focus our attention to studies based on the ‘commons’ and Indigenous conservation practices.



1. Read the above abstract. What are the main take-aways from the abstract?
2. How does this relate to Elinor Ostrom’s Design Principles from Common Pool Resources?

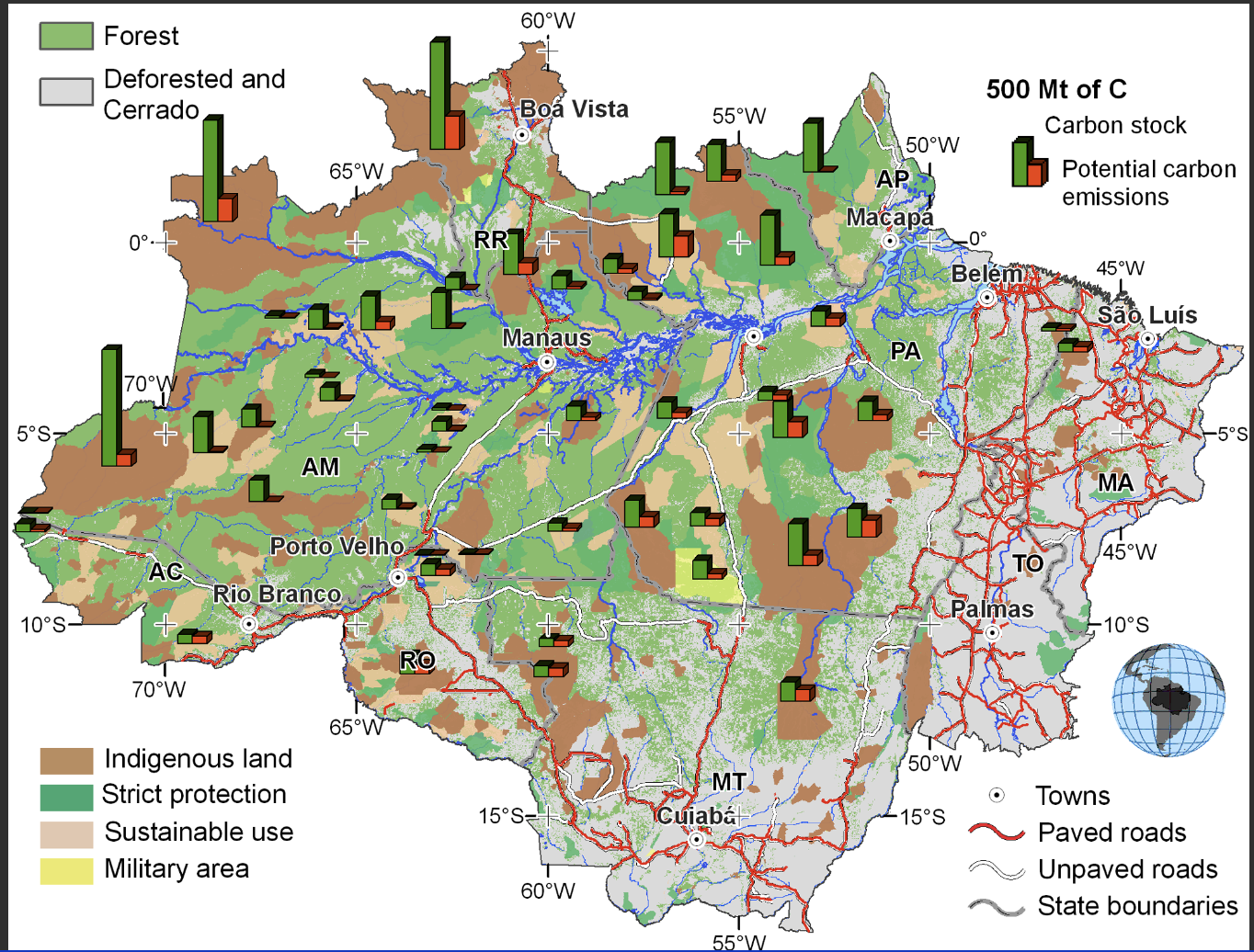


The figure to the left is from Nepstad et al. in the journal Conservation Biology. The study compared three different land classifications (Indigenous lands, National Parks, Extractive reserves, and National Forests) and looked at the annual deforestation rate outside and inside buffer zones.

1. What is the impact of indigenous lands on deforestation and ‘hot pixel density’, a proxy for fires?

According to the study, Indigenous lands occupy ⅕ of land in the Amazon and are 5x larger spatially than National Parks in the Amazon, and are often at the interface of the ‘frontier’ of deforestation.

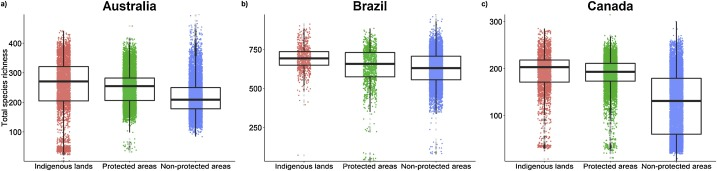
1. Using this example, explain how environmental justice, land use change, climate change, and ecosystem services intersect. You can describe these elements individually, or collectively.



The map above is from Ricketts et al. in PLOS Biology (<https://journals.plos.org/plosbiology/article?id=10.1371/journal.pbio.1000331>) and shows the Brazilian Amazon.

1. How could you use this map to argue that Indigenous autonomy acts as a buffer to climate change?

The figure below is from Schuster et al. 2018 in *Environmental Science and Policy (*[*https://www.sciencedirect.com/science/article/pii/S1462901119301042?casa\_token=PGKJlEnccuIAAAAA:nZ12oO8zoL-VBKu3HscP3QxdPJlvTw29cqECVbY6urxajJu1YzBgC628OGSXjq1mPeja-emMmlQ#bib0250*](https://www.sciencedirect.com/science/article/pii/S1462901119301042?casa_token=PGKJlEnccuIAAAAA:nZ12oO8zoL-VBKu3HscP3QxdPJlvTw29cqECVbY6urxajJu1YzBgC628OGSXjq1mPeja-emMmlQ#bib0250)*)* The study looked at three nations - Australia, Brazil, and Canada, and compared vertebrate biodiversity across land categorizations - Indigenous lands, Protected areas (federal lands) and non-protected areas.



1. What are the trends generally across all three countries in terms of species richness (see above)? What are trends within countries in terms of species richness (value) and trends? How might you explain the within-country differences?
2. How might countries and biodiversity conservation organizations work with Indigenous groups to maintain biodiversity in the 21st century?

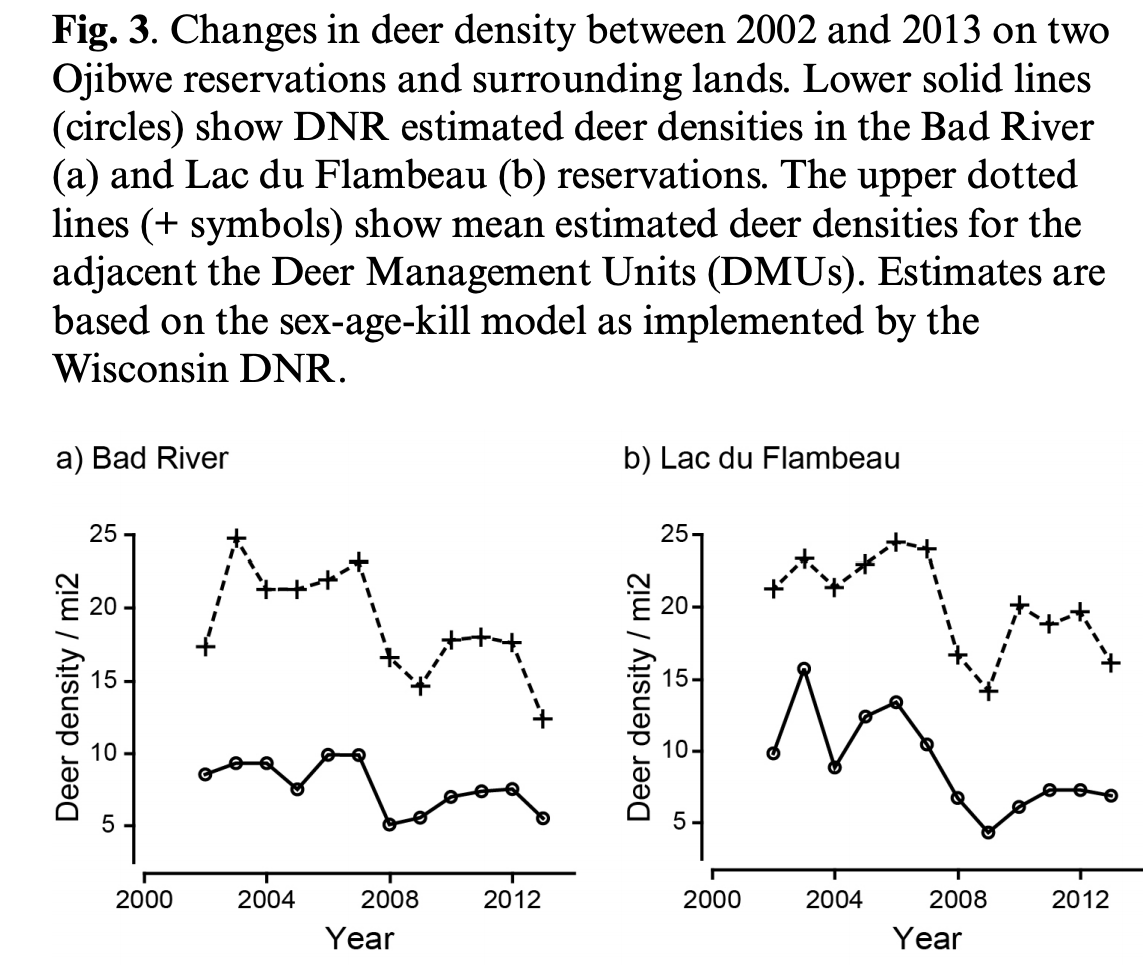
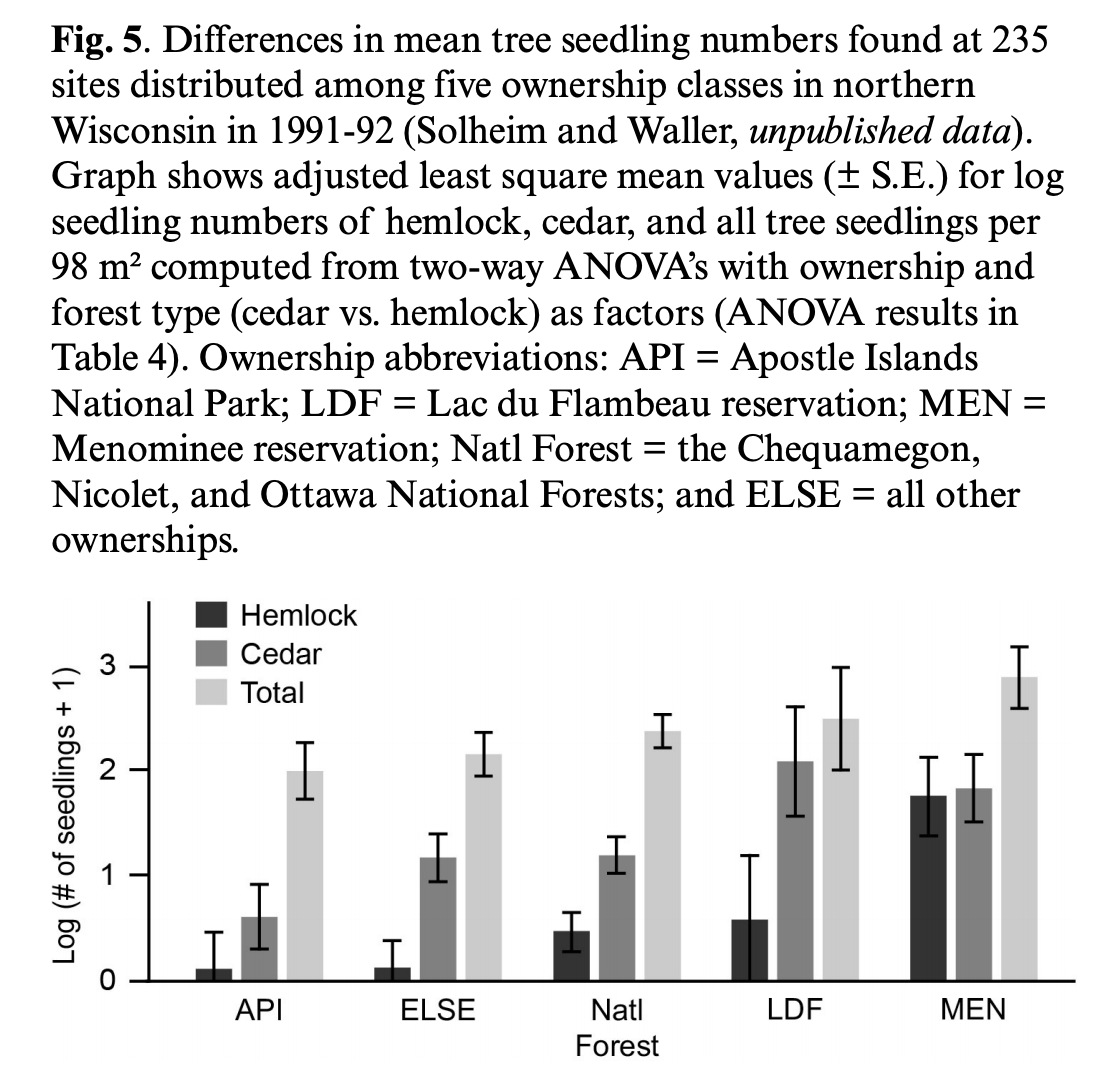
A study by Waller and Reo (2018) in the journal Ecology & Society focuses on tree biodiversity and age classes in Wisconsin in forests of Native American reservations and state managed land. They found forests to be different in a number of ways, and attribute the differences to management practices. 

Fig. 3 shows differences in deer density between reservations (Bad River and Lac du Flambeau) and adjacent state-managed land.

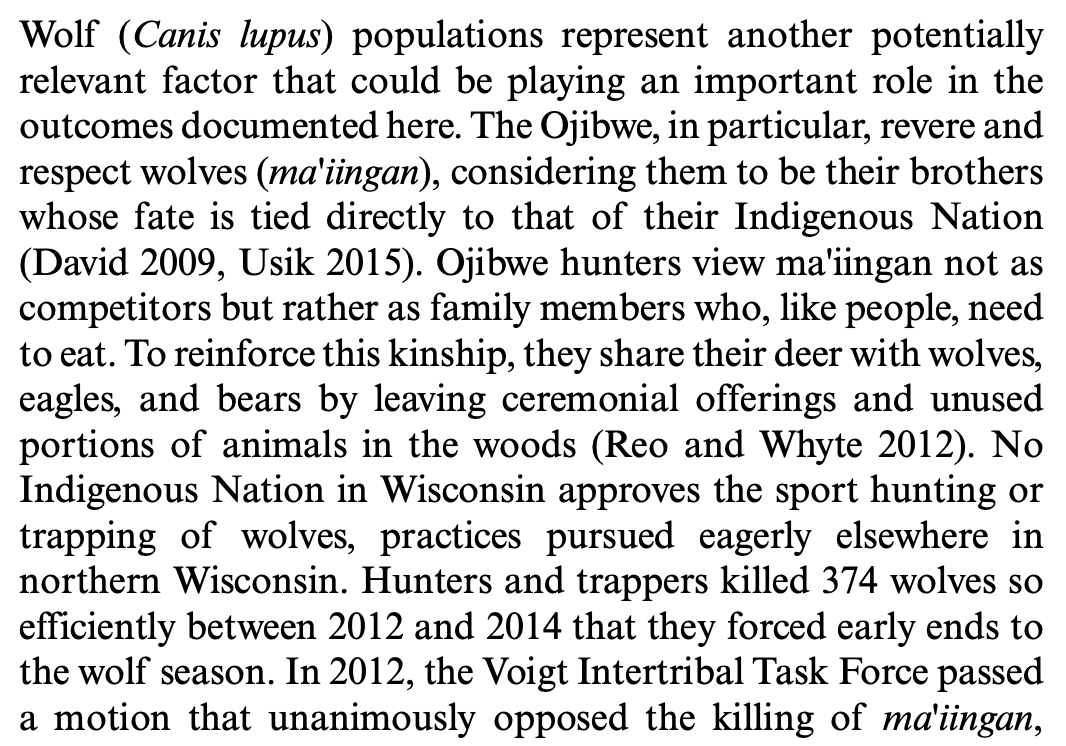
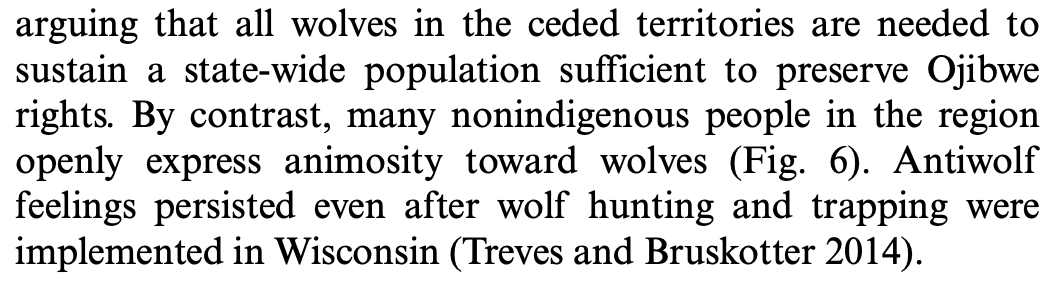
Fig. 5 shows differences between tribal and non-tribal lands (read figure description to help parse).

8) How might differences in Fig. 3 be linked to differences in Fig. 5?

9) Does tribal land management promote higher values of Cedar and Hemlock?

10) The paper discusses the roles of wolves in Wisconsin (see next page for paragraph from paper). Describe how valuing wolves, an apex predator, can lead to whole ecosystem changes.

***Section from discussion:***



FINALLY:

11) Prof. Robin Wall Kimmerer discusses in her book Braiding Sweetgrass, which I highly recommend for a summer read, that upon teaching undergraduates at SUNY-ESF, she asked them to describe a positive interaction between humans and the environment, and many students could not name a single interaction! Think about the primary literature examples above, examples from your own life, and from other sources from this class or others: ***Identify some positive examples of human interaction with nature? How are humans sustainably existing in the world?***