

NELF Lunch Chat Notes

December 15, 2020

Presentation by Skye Pearman-Gillman, PhD

### Takeaways

1. Skye's research makes use of both the NELF land use maps (available in [NELF Explorer](#)) and forest composition maps for each scenario. Her research highlights the importance of both socioeconomic factors and resource/land management in shaping species distribution changes.
2. Most of the 10 forest-obligate species studied are projected to decline in all NELF scenarios, with low natural resource planning & innovation and global socio-economic connectedness having the greatest influence on distribution changes. ([Refresh your memory on the NELF scenario matrix.](#))
3. Skye's distribution models for the 10 focal species can be applied at smaller scales using different or more local land use scenarios.
4. Scenarios are a useful tool for analyzing how wildlife distributions may change in the future, and future research directions include studying connectivity and stability under the NELF or other scenarios.

### Summary of Presentation: *Drivers and Consequences of Landscape Change for New England Wildlife*

1. Research utilized expert-elicited species distribution models and NELF scenario maps to:
  - a. Map current and future distributions for 10 focal species
  - b. Evaluate how alternative futures impact distribution change
  - c. Identify which drivers of change have greatest influence
2. Focus on 10 commonly managed/hunted forest-obligate species including black bear and moose.
3. Due to the forest-obligate nature of the focal species, forest management – a crucial aspect of the NELF scenarios that is not visible in the NELF land use maps – was the most important landscape characteristic in determining potential future species distributions.
4. Low natural resource planning & innovation and global socio-economic connectedness had the greatest effect on distribution changes. Overall, natural resource planning & innovation had the greatest cumulative effect on the focal species.

### Publications related to this presentation include:

Pearman-Gillman, S.B., Duveneck, M.J., Murdoch, J.D., and Donovan, T.M. (2020). Drivers and consequences of alternative landscape futures on wildlife distributions in New England, United States. *Front. Ecol. Evol.* 8, 164. doi:10.3389/fevo.2020.00164

Pearman-Gillman, S.B., Katz, J.E., Mickey, R.M., Murdoch, J.D., and Donovan, T.M. (2020). Predicting wildlife distribution patterns in New England USA with expert elicitation techniques. *Glob. Ecol. Conserv.* 21. doi:10.1016/j.gecco.2019.e00853

Pearman-Gillman, S.B., Duveneck, M.J., Murdoch, J.D., and Donovan, T.M. (2020). Wildlife resistance and protection in a changing New England landscape. *PLoS One* 15, e0239535. doi:10.1371/journal.pone.0239525

## Q&A / Discussion Summary

- Were there any results that suggest changes in ecological relationships?
  - Models did not incorporate interspecies relationships due to a focus on landscape characteristics. Exploring the interspecies relationships along with landscape characteristics is a potential area for future research.
- Surprised to see that moose responded better to low natural resource planning & innovation. Any ideas as to why that is?
  - One of the characteristics of NELF scenarios that we cannot see in the land use maps is timber harvesting. Timber harvesting is greater in the scenarios with lower natural resource planning & innovation, which creates the young forest that moose rely on, allowing them to do better than we might expect in those scenarios.
- Are any of these species indicators of landscape changes?
  - These species were selected due to their importance for both ecological and socioeconomic/policy reasons, not necessarily because any of them are good indicator species. However, if choosing one, would say moose because they need larger areas and cooler temperatures.
- Can you say more about the result suggesting moose declines across the region? Population projections show increasing populations in Maine.
  - Decline in moose populations region-wide, but increase in Maine. [Note from NELF Team: we have found that the subregional differences across New England is one of the more interesting but also challenging aspects of the NELF scenarios!]
- Are you able to do anything with riparian corridors?
  - NELF projections did not include riparian corridors – they don't change over time.
  - New project looking at connectivity, but not specific to riparian corridors.
- What were the most impactful scenario characteristics?
  - For these species, due to them being forest-obligated, it's the forest management. Each species is different and for other species that could change.
- Was there a temporal lag at all in their models?
  - Distribution model does not incorporate time. Snapshot focused.
- Where do you see scenarios fitting into your future work?
  - Looking at connectivity
  - Looking at stability
  - Distribution models could be applied to more local scenarios within New England