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12 OCT 2021

14h00 – 15h00

Zoom :

<https://umontpellier->

<fr.zoom.us/j/92726215605?pwd=ThUYnVrRjdWUTRndFZhOWdXbFIBQT09>

The rare species problem: the challenge of complete forest demographic inference

presented by

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ABSTRACT

Most species in most forests are rare, with few stems for a given species, and therefore few observations that we can use to infer their dynamics. But rare species are an integral part of the community, and can strongly contribute to forest structure and function. Rare emergent tree species can for instance contain a large fraction of the carbon in a forest, and yet we know little about the drivers of their growth and death rates because there are so few of them.

There have traditionally been two approaches to this rare species problem: 1) remove any species from an analysis that are fewer in number than some arbitrary threshold; or 2) aggregate rare species into groups assuming they behave like more common species—for example, in cases where there is a need to infer something about the entire forest (such as biomass dynamics for a vegetation model or mortality for remote sensing applications). The second approach is essentially the one I believe is the answer, however the path towards that answer is not trivial. Over the next year, I will work with Claire Fortunel and members of the AMAP lab to rebuild the demography of temperate and tropical forests from information derived from individual trees. That is, we will group rare species about which we know little according to rules derived from species we know a lot about. Machine learning, Bayesian statistics, traits, phylogeny, and common sense will all be required for this adventure. The result should be a dynamics, updateable pipeline that will produce comprehensive insights into the total demography of global forest inventories.

In this talk I will introduce the problem, demonstrate its importance, and raise some of the challenges. I will also summarize some potential paths forward. Finally, however, I hope to engender a conversation with the Montpellier community about this problem and solutions (perhaps even some brainstorming together).

KEY WORDS

Forest ecology, demography, communities, ecosystems, commonness and rarity, machine learning

Invited and animated by:

Claire Fortunel

Type:

Exploratory discussion

Oral language:

English

Language of PPT:

English

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