



JYVÄSKYLÄN YLIOPISTO
UNIVERSITY OF JYVÄSKYLÄ

PhD position: Using agent-based models to develop spatial theory for community ecology

University of Jyväskylä, Finland

Main supervisor: Otso Ovaskainen

Application deadline: January 14, 2022

Are you interested in both mathematics and ecology? If yes, you may become the PhD student who will develop the much-needed spatial theory for community ecology. To do so, you will apply recently developed mathematical and simulation methods (see Cornell et al. 2019) to build agent-based models, where the agents represent interacting organisms. These interactions can relate e.g., to resource competition, predator-prey dynamics, or host-parasite dynamics, including ecological and evolutionary perspectives. Current spatial theories in community ecology are mainly based on the so called Metacommunity Theory. This theory assumes that local communities inhabit discrete habitat patches. In some systems, such as networks of islands or ponds, the discrete delineation of habitat patches is a very natural one. But if you walk e.g., in the boreal forest, you will realize that it is very difficult to say where one patch ends and another one starts. For such very common continuous habitats, theories of community ecology are still largely lacking. In this PhD project, you will fill this important gap by developing new theories! To reach this, you will be supported by a multidisciplinary research group with expertise in theoretical, mathematical, statistical and empirical community ecology.

Reference

Cornell, S. J., Suprunenko, Y. F., Finkelshtein, D., Somervuo, P. and Ovaskainen, O. 2019. A unified framework for analysis of individual-based models in ecology and beyond. *Nature Communications* 10, 4716.

For further details, please contact: Academy Professor Otso Ovaskainen (otso.t.ovaskainen@jyu.fi)

See job announcement for more details (this is project #5):

https://www.jyu.fi/science/en/bioenv/research/doctoral-programme/phd-posts/2022/open-doctoral-student-positions?_ga=2.195127340.168143020.1638219743-113830343.1638219743