

The future of Portland's urban forests: decreased regeneration, seed limitation, and site limitation

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Introduction

Urban forests can function as reservoirs for biodiversity. Portland's urban forests may be slowly losing their native conifer trees, as regeneration seems to be declining (Broshot 2007, Ettinger et al. 2017). Using rural forests as a baseline, I set out to determine the extent of conifer regeneration in urban forests and potential contributing limitations.

Methods

In summer 2021, in five urban and five rural forests, I quantified the densities of

- Conifer germinants
- Conifer seed rain
- Adult conifer trees
- Nurse logs



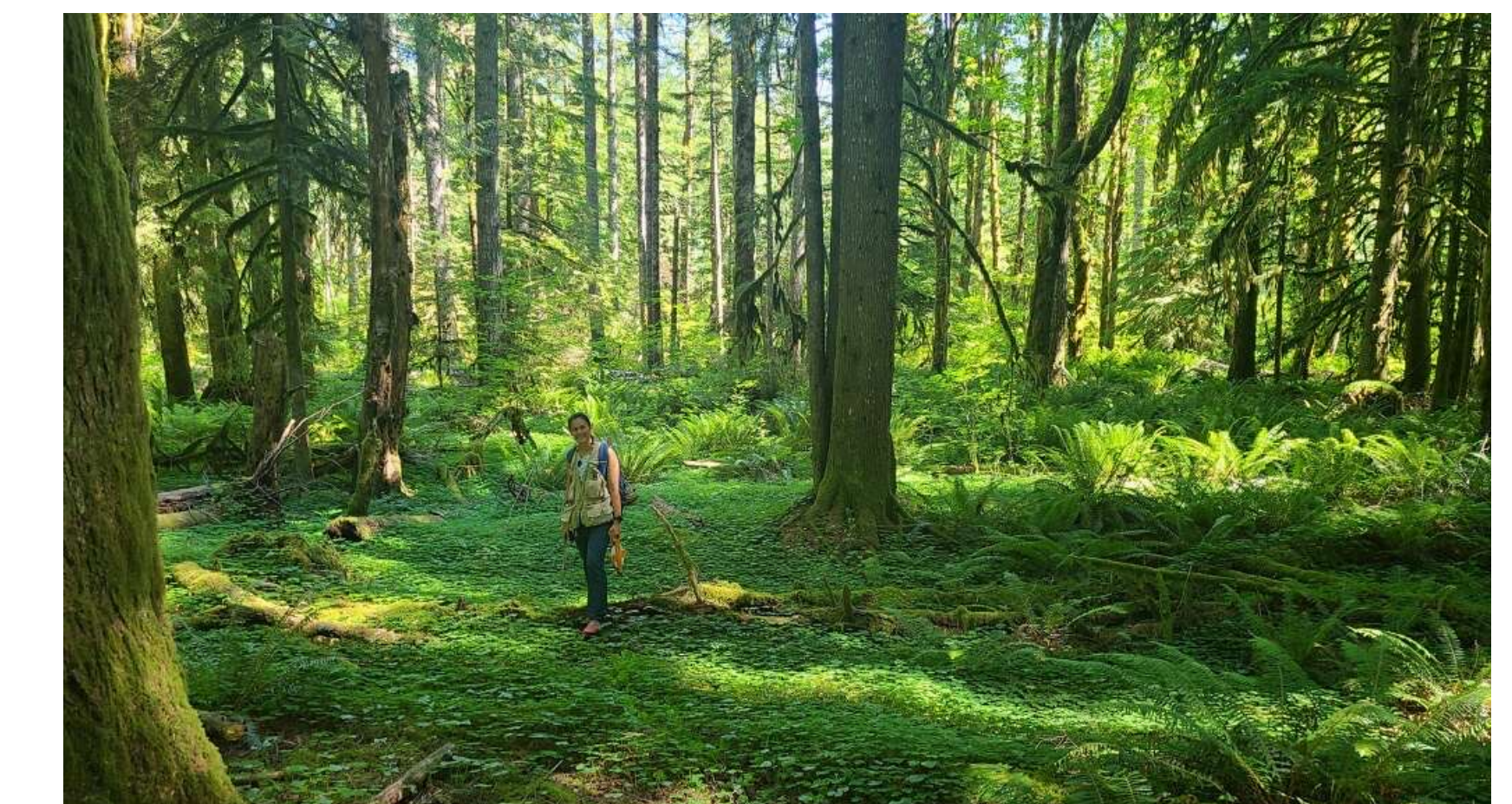
Western hemlock germinant

A seed trap

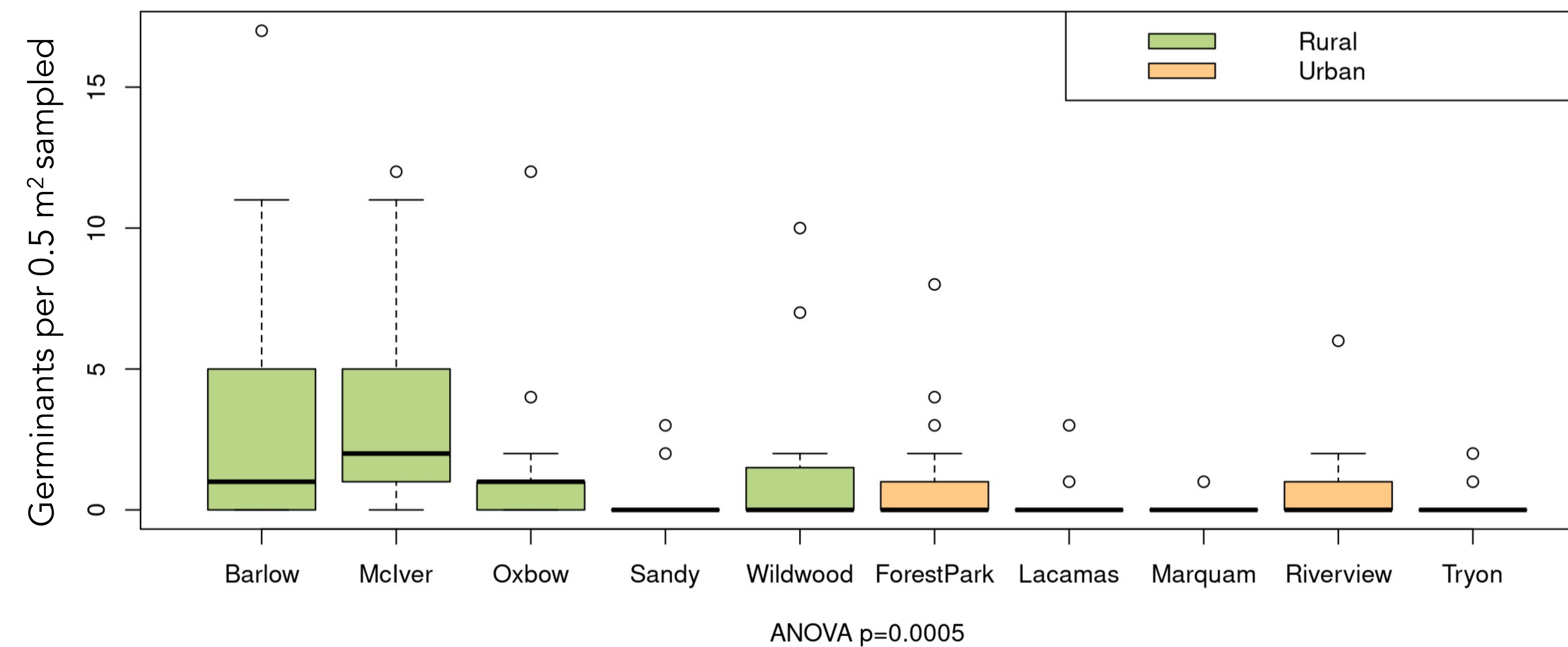


Discussion

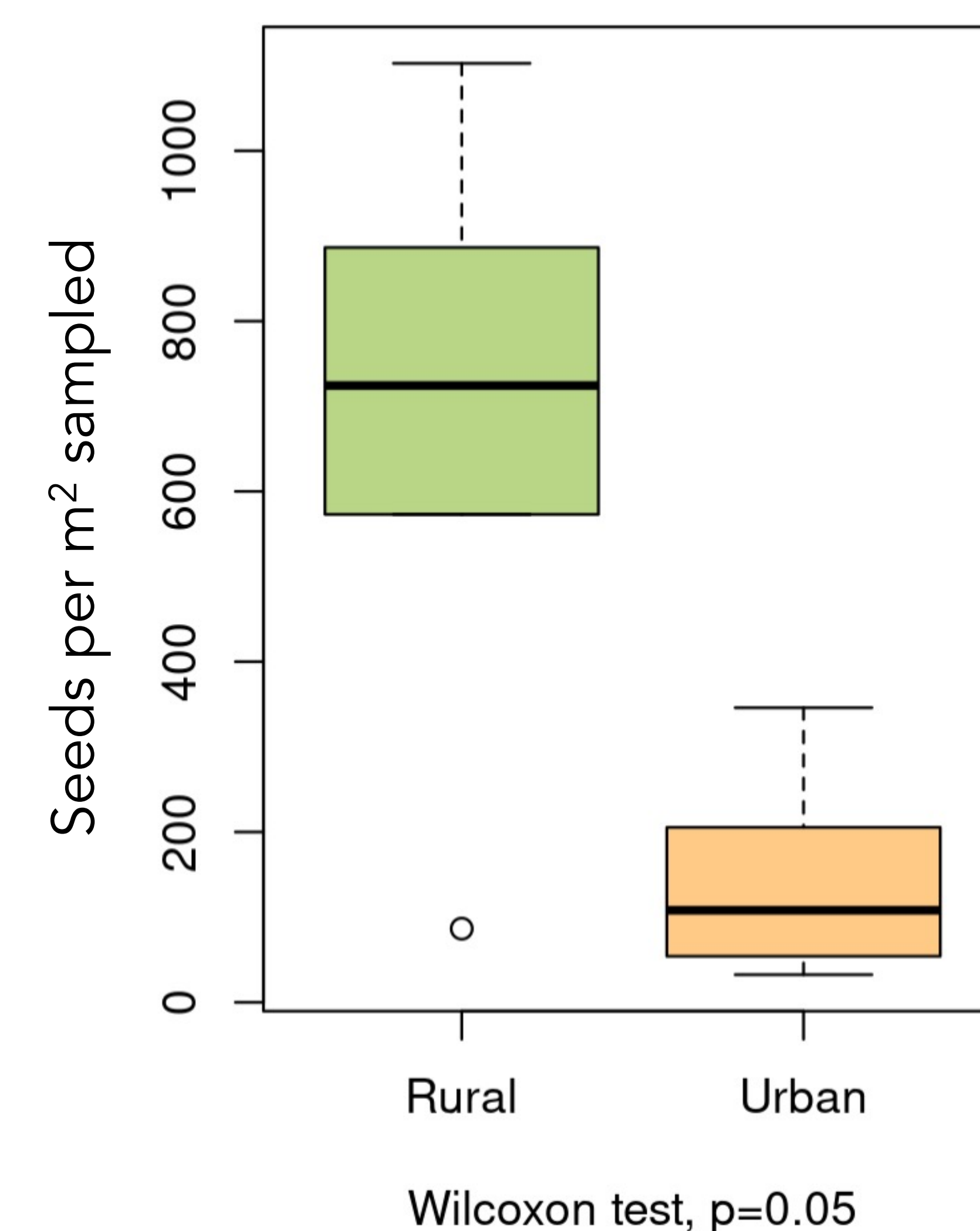
There is clearly less conifer regeneration in urban forests. This could be due to a lack of seeds, which are not explained by the difference in canopy conifer trees (5x more conifer seeds, but only 2x more conifer canopy trees in rural forests) and a lack of nurse logs; these findings confirm those of Ettinger et al (2017). However, many other differences between urban and rural forests remain to be explored.



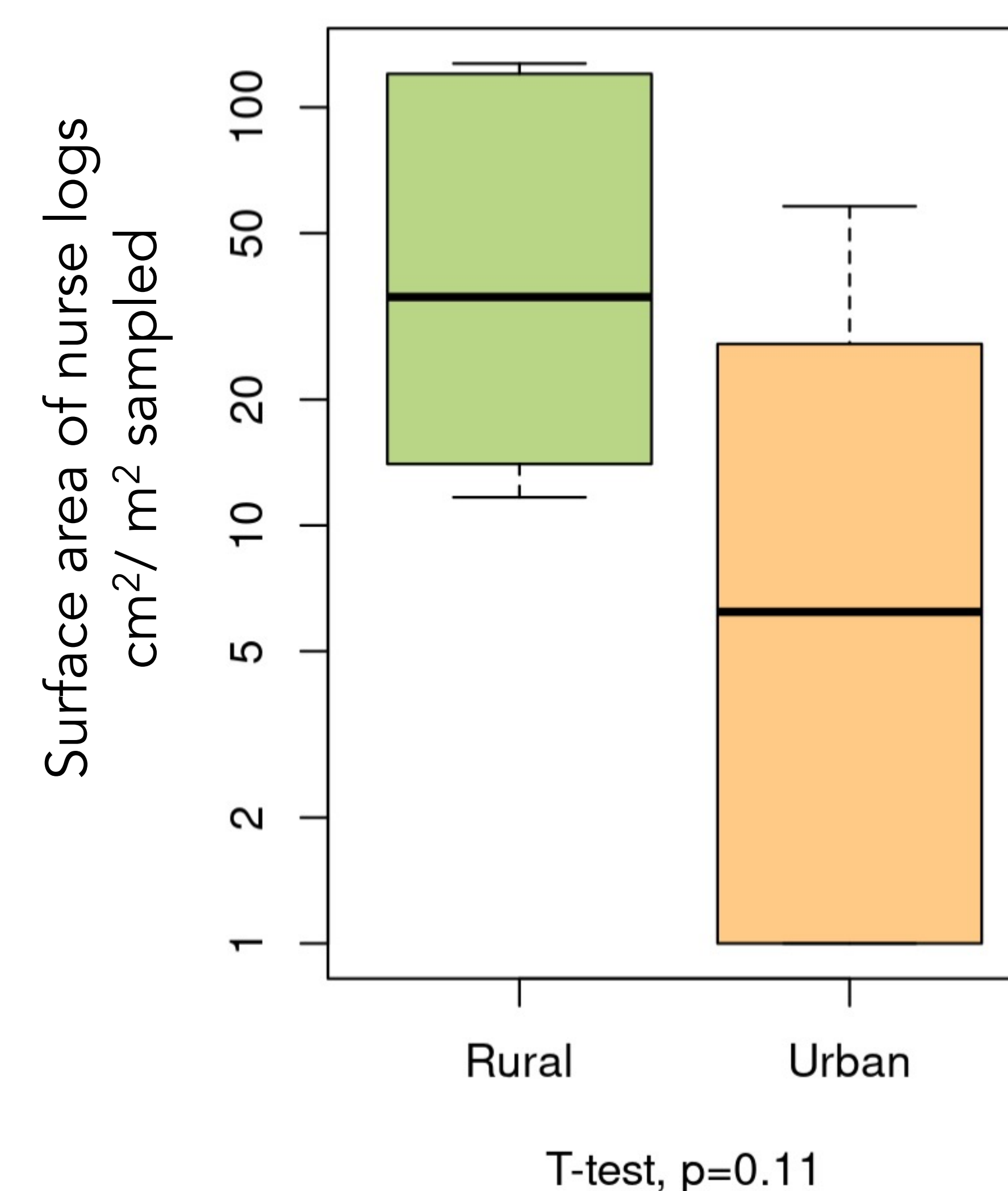
There are 4x as many conifer germinants in rural forests than in urban forests



There are fewer conifer seeds in urban forests than rural forests



There is generally less nurse log surface area in urban forests than rural forests



Literature cited

- Broshot, N. E. 2011. Mortality and recruitment in an urban forest (Forest Park in Portland, Oregon) between 1993 and 2003. *Urban Ecosystems*, 14(4), 553-567.
- Ettinger, A. K., B. R. Lee, & S. Montgomery. 2017. Seed limitation and lack of downed wood, not invasive species, threaten conifer regeneration in an urban forest. *Urban Ecosystems*, 20(4), 877-887.

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Further information

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