

Objectives

Red tree voles (*Arborimus longicaudus*) are canopy obligate rodents endemic to the Coast Ranges of western Oregon and northern California and eat only conifer needles.¹ For many arboreal species in managed forests, complex canopy structures for nest substrate may be a limiting resource,² and there have been few studies on interspecific interactions and resource partitioning in the canopy. As a method to assess interspecific nest use, we used a small initial dataset to examine same-day nest use at red tree vole nests in stands of varying age classes as well as each species' daily nest use patterns.

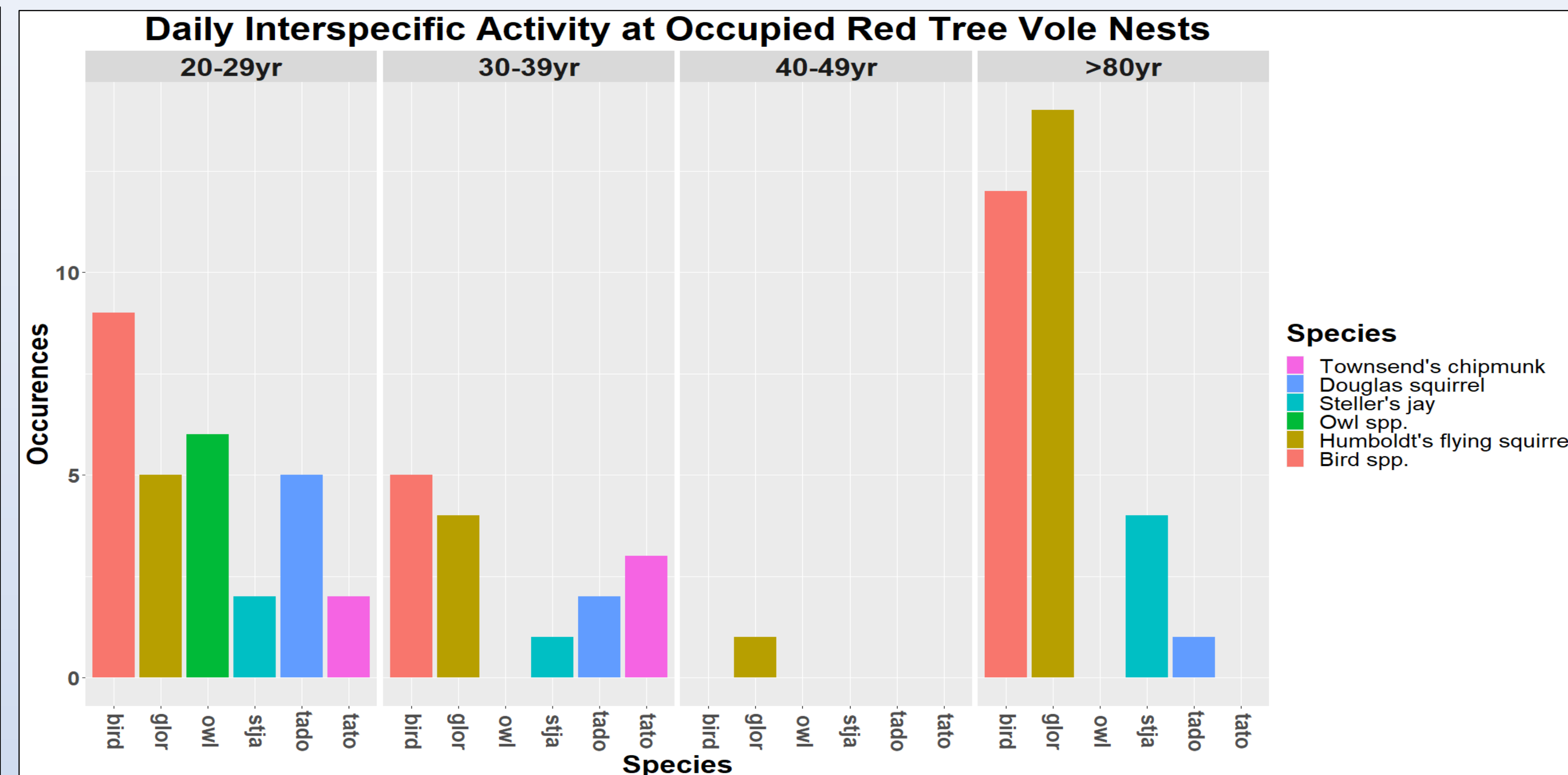


Fig. 1 Inter-specific presence on same day as red tree vole nest use by stand age

Results

Stands in the 20 year age-class showed a higher overall occurrence of same-day interpecific presence with red tree voles (Fig. 1). Of the same-day species observations in red tree vole nests, passerine birds did not disturb the nests, while owls and Stellar's jays appeared to be actively hunting in the nest. Douglas squirrels, chipmunks, and flying squirrels were seen digging and disturbing nests, occupying nests as their own, and/or traveling up the tree through the nest area. Daily use patterns show that temporal partitioning may be a strategy for avoiding competition among some species (Fig. 2).

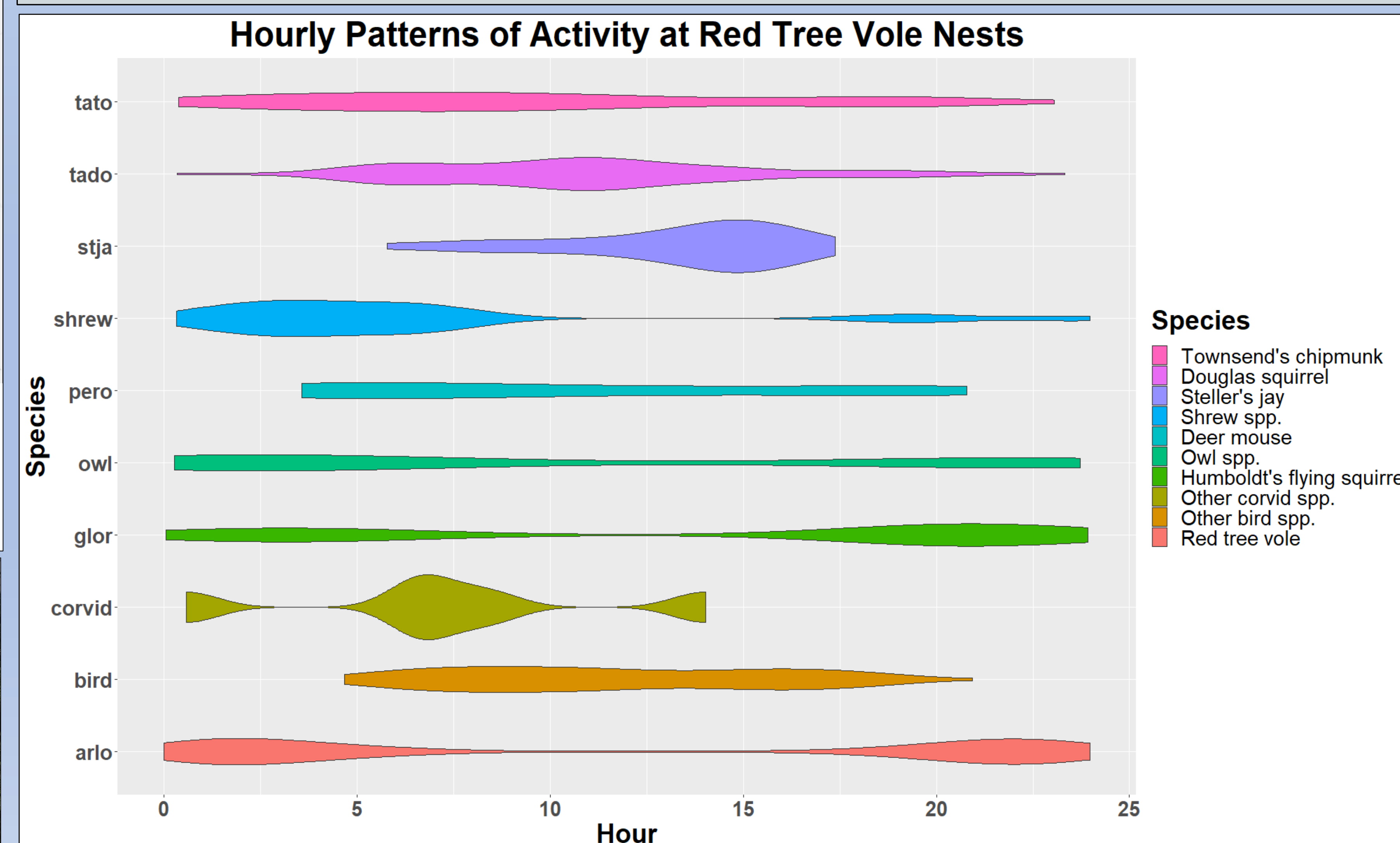


Fig. 2 Daily nest-use patterns across all stands

Discussion

Forest stands of varying age classes have a difference in complex canopy structures,³ and this variation in available nest substrate may affect interspecies competition and site usage. Since red tree voles nest almost exclusively within the live crown of Douglas' fir, they may be more vulnerable to increased spatial competition than other more generalist species. While this exploratory analysis is only from a small sample size, we can expand this dataset for further investigation. More insight can be gained by examining tree structure microhabitat data across stands to quantify nest substrate availability.

References

1. Forsman, E.D., Swingle, J.K., Davis, R.J., Biswell, B.L. and Andrews, L.S., 2016. *Gen. Tech. Rep. US Department of Agriculture, Forest Service, Pacific Northwest Research Station*. 119 p., 948.
2. Ishii, H.T., Tanabe, S.I. and Hiura, T., 2004. *Forest Science*, 50(3), pp.342-355.
3. Michel, A.K. and Winter, S., 2009. *Forest Ecology and Management*, 257(6), pp.1453-1464.

Acknowledgements



Methods

- Climbed 713 trees in 45 stands throughout the Oregon Coast Range, from 2019-2021
- Stratified by stand age (21-30, 31-40, 41-50, 51-60, 60-80, 80+)
- Set cameras on 52 red tree vole nests with recent sign
- Randomly selected 2 cameras from each age-class (no nests found in 50 or 60 yr age classes)
- Tagged 2113 camera-days of photos by species
- Examined interpecific same-day nest use

