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Title:

How will insect communities respond to a novel chemical cue introduced by a range-expanding beetle?

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Overview of referenced information:

Southern pine beetle (SPB) is an outbreak species of economic (Pye et al. 2011) and ecological importance (Tchakerian and Coulson 2011).

I presented a map of the SPB range which was published in (Payne 1980). I created a map of the northernmost SPB collections and the range of pitch pine in R (R Core Team 2023), using the packages ggplot2 (Wickham et al. 2023), sf (Pebesma et al. 2024), and ggspatial (Dunnington et al. 2023), with datasets from (U.S. Geological Survey 1999) and (National Weather Service 2024).

SPB use pheromone communication to stage mass-attacks (Sullivan 2011).

Insect associates are found in trees attacked by SPB (Moser et al. 1971; Dixon and Payne 1979).

SPB insect associates:

- are known and supposed natural enemies
- have been well documented in SPB's native range (Overgaard 1968; Moser et al. 1971; Dixon and Payne 1979; Billings 1985)
- may impact SPB population growth (Linit and Stephen 1983; Turchin et al. 1991; Turchin et al. 1999; Reeve and Turchin 2002; Friedenberg et al. 2008)
- (some) respond to SPB pheromones (Vité and Williamson 1970; Dixon and Payne 1980; Payne et al. 1984)

We deployed baited & unbaited Lindgren funnel traps (Lindgren 1983).

NMDS ordination (McCune and Grace 2002) shows the similarity between trap catch at different sites over the study duration. The NMDS is plotted in R (R Core Team 2023), using the packages ggplot2 (Wickham et al. 2023), vegan (Oksanen et al. 2019), and ggvegan (Simpson and Oksanen 2023).

At the trap level, PERMANOVA (Anderson 2001) shows how variance is partitioned.

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