

Background:

Southern pine beetle (SPB) (*Dendroctonus frontalis* Zimmermann) is killing healthy pitch pine in the northeast (NY, MA). [1]

Warmer winters unlock the possibility of SPB establishment. [2], [3]

Previous work uses stand basal area to determine SPB susceptibility: generally, more pines = more risk. [4], [5]

The nearest SPB outbreak is 200 miles south of Acadia. [6]

We found individual beetles in York County, ME in 2021. [7]

Methods:

We chose random sampling points based on the pitch pine stands identified by the Vegetation Mapping Inventory Project for Acadia National Park (1997-2003). [8]

We used a fisheye lens and level attachment to capture a photo of the canopy at plot center, and then processed this data in R using the package 'hemispheR'. [9]

Results

Last winter would have killed < 50% of SPB in Acadia, and < 10% on Fire Island and Cape Cod. [2]

We measured high pitch pine basal area in 66% of plots (seen in yellow and orange). We define this metric ($> 15 \text{ m}^2/\text{ha}$) based on the hazard rating model created by Jamison et al. 2022 for northeastern pitch pine sites specifically. [4] We also illustrate SPB susceptible stands as defined by older work in southern pine plantations (seen in orange, $> 27.5 \text{ m}^2/\text{ha}$, Mason et al. 1985). [5]

What can we do?

We can apply the R.A.D. framework to respond to SPB risk. [10]

Periodic fire and removal of some trees can increase the health and vigor of the remaining trees. [4]

References

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