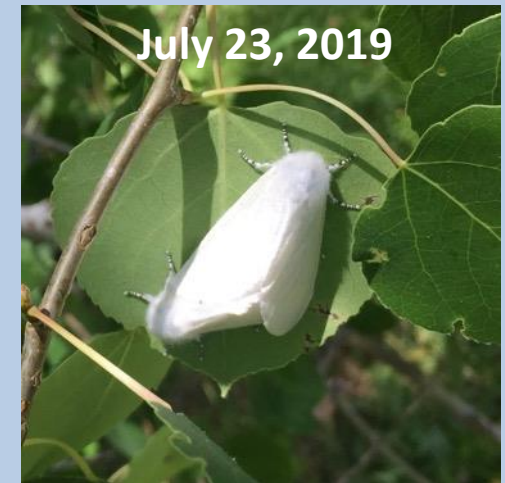


Patterns of non-native white satin moth-related aspen defoliation along Lake Tahoe's eastern rim

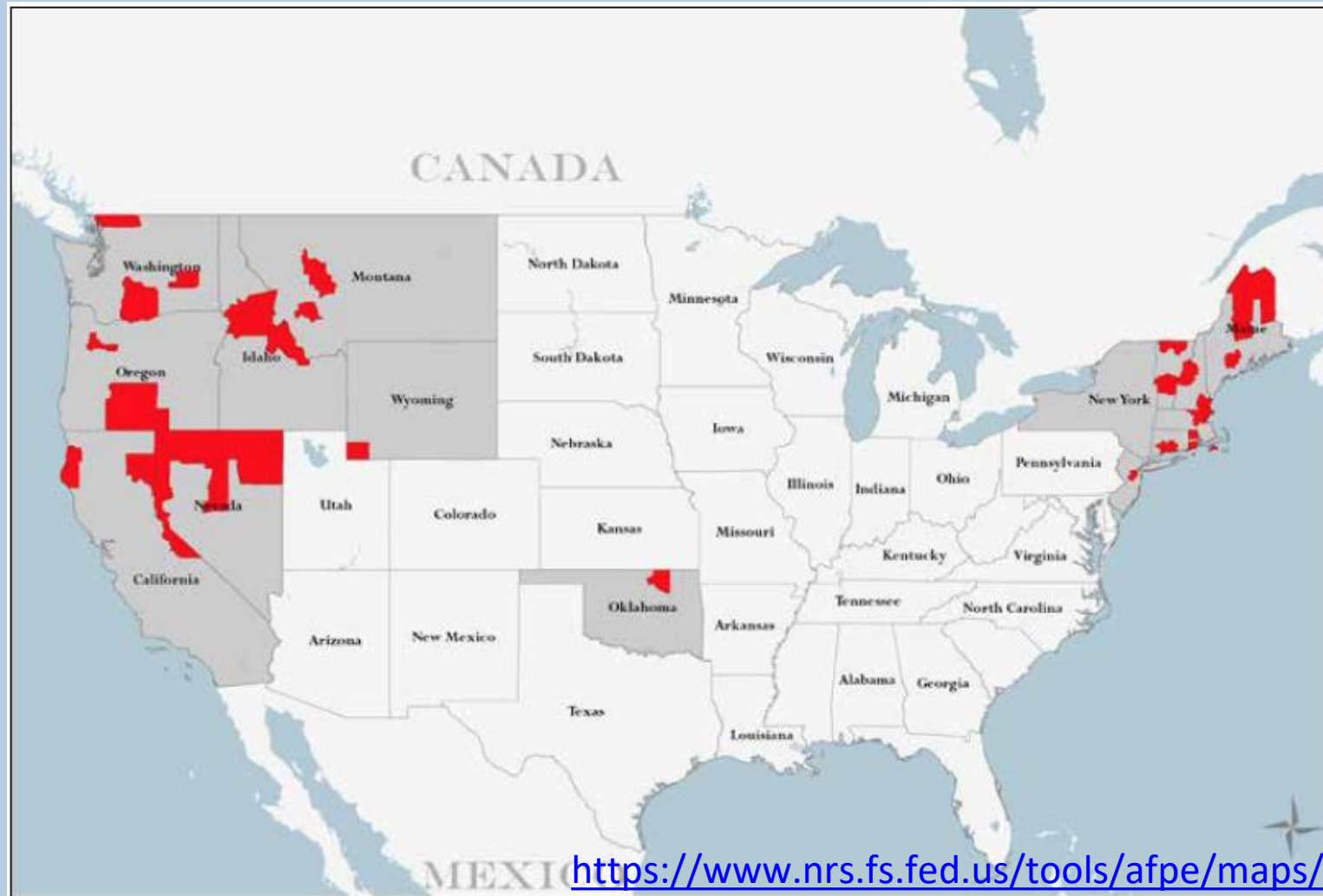


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Natural Resources and Environmental Sciences
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White Satin Moth Biology

Leucoma salicis – Tussock Moth subfamily (*Lymantriinae*)



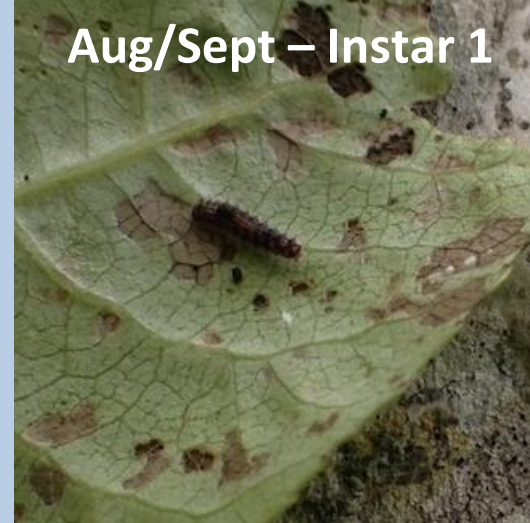
White Satin Moth Biology



July – Egg mass



August – Egg mass



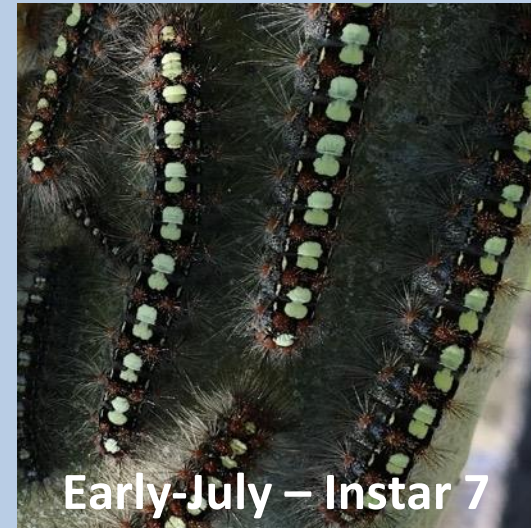
Aug/Sept – Instar 1



Winter – Instar 2



Early-June – Instar 3



Early-July – Instar 7



July - Pupate



July - Moth

Quaking Aspen



Native Insects and Diseases Surveyed

Native Defoliators

Cankers

Leaf Blight/Rust

Galls/Rough Bark

Leaf Miner



Patterns and Drivers of Defoliation

- Q 1 How does the non-native white satin moth impact aspen stands, and how does this compare with native insects and diseases?
- Q 2 How are stand structure and climatic variables associated with white satin moth and native insect and disease activity?



This map illustrates the distribution and intensity of White Satin Moth activity across the Reno-Tahoe area. The activity is categorized by the percentage of trees affected, represented by colored circles: blue for less than 25%, light blue for 26-50%, orange for 51-75%, and red for more than 75%. The map shows a clear pattern of increasing activity intensity as one moves south from Reno towards Lake Tahoe. Key geographical features include the Sierra Nevada mountains, Lake Tahoe, and major roads like US-40 and US-95. A legend in the bottom right corner provides the color key for the activity levels, a north arrow, and a scale bar in miles (0 to 10). The map is credited to National Geographic, Esri, Garmin, METI, NRCAN, GEBCO, and NOAA.

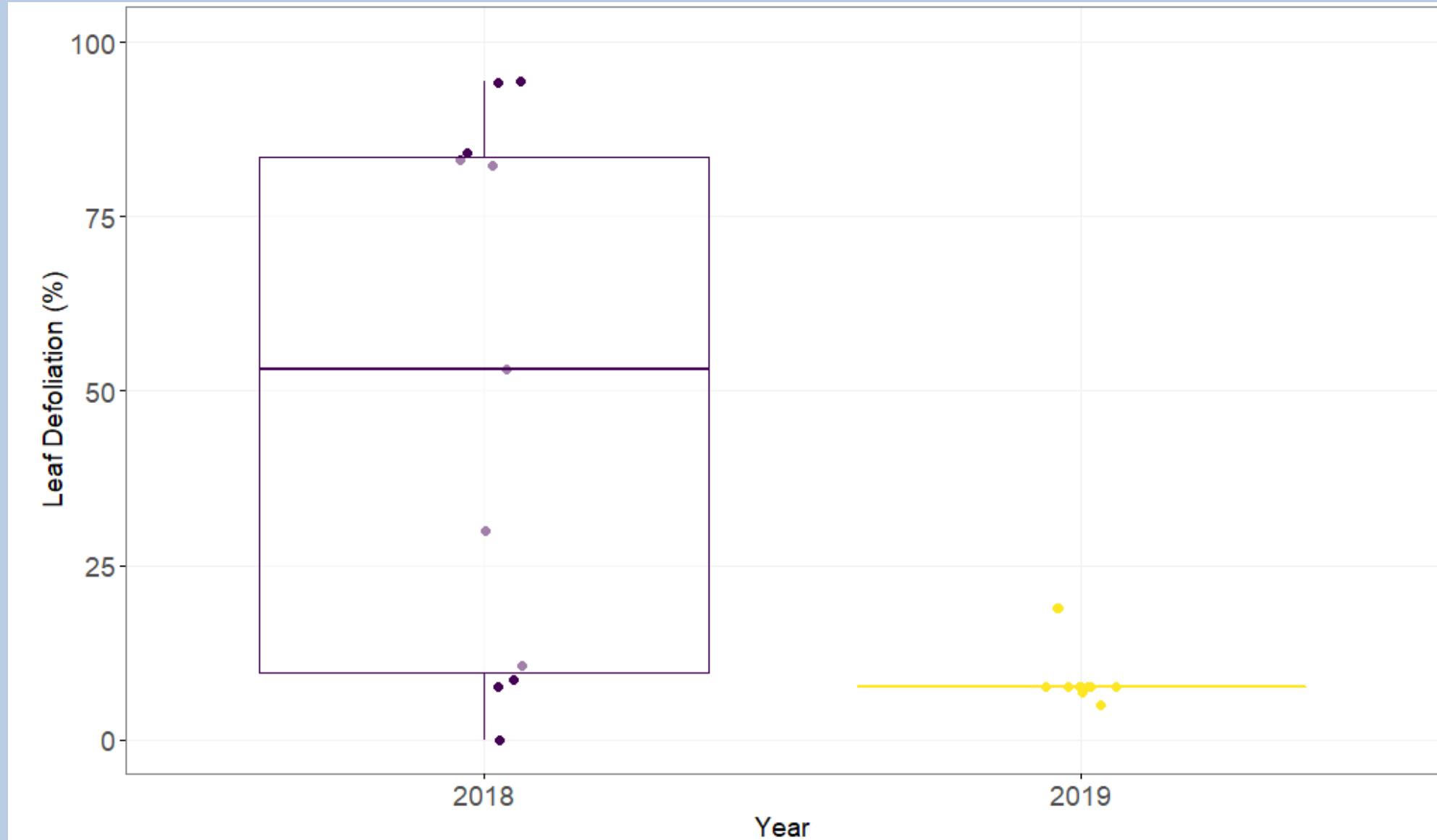
White Satin Moth Activity
Percent of Trees

- < 25%
- 26 - 50%
- 51 - 75%
- >75%

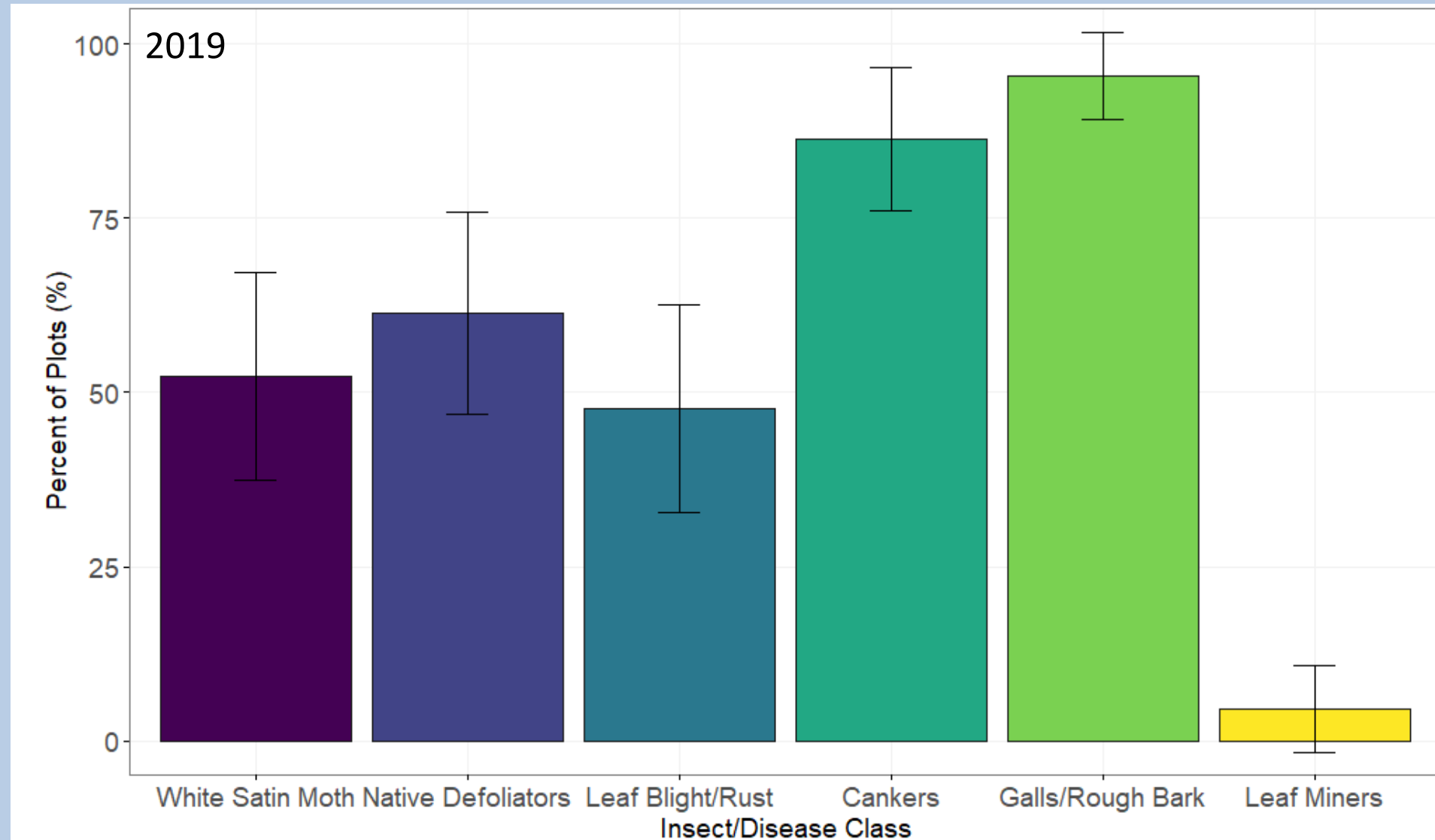
0 2.5 5 7.5 10 Miles

National Geographic, Esri, Garmin, METI, NRCAN, GEBCO, NOAA

2018 vs. 2019: Defoliation

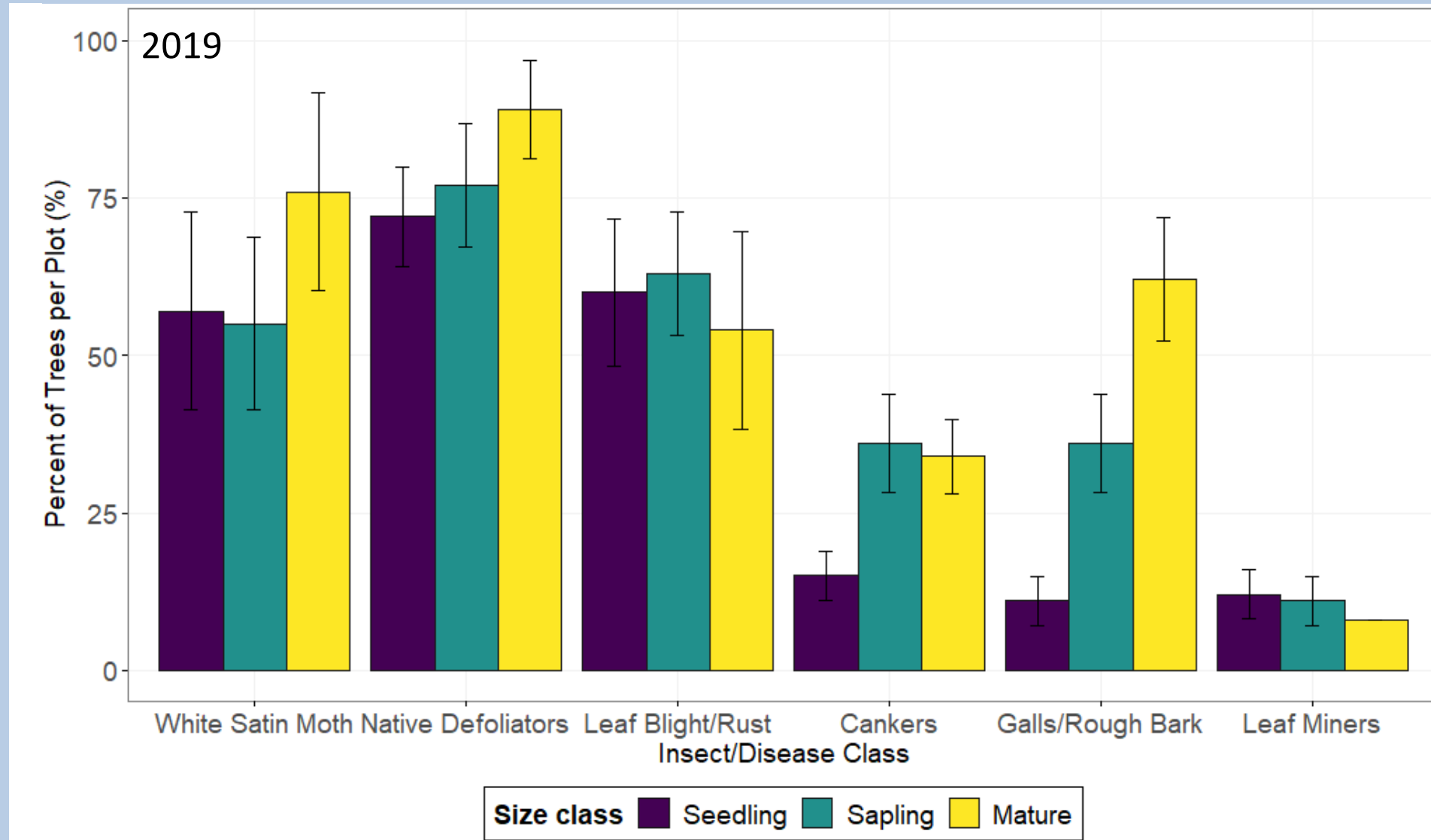


Landscape-Scale Forest Health Activity



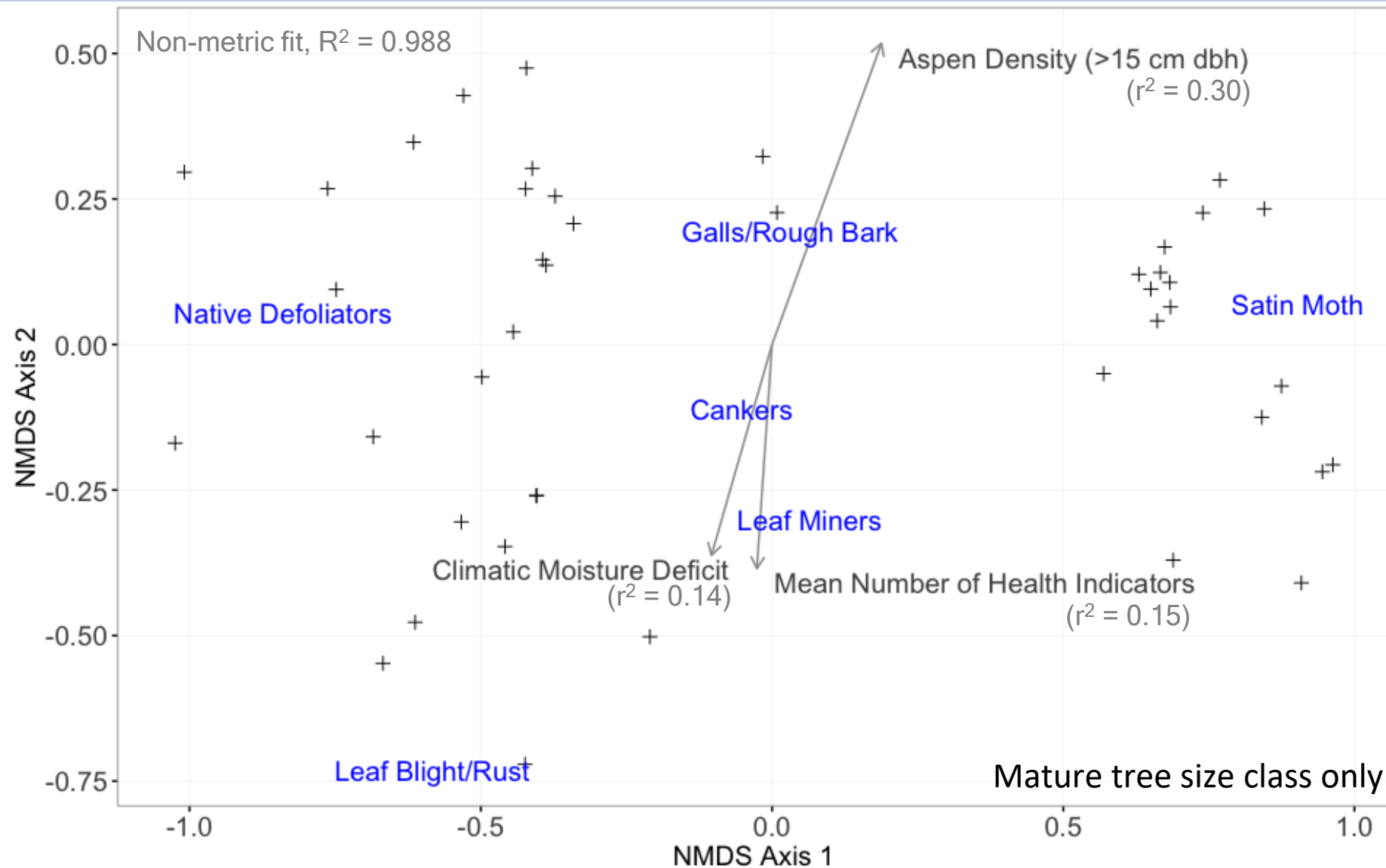
Bars denote 95% confidence intervals

Stand-Scale Forest Health Activity

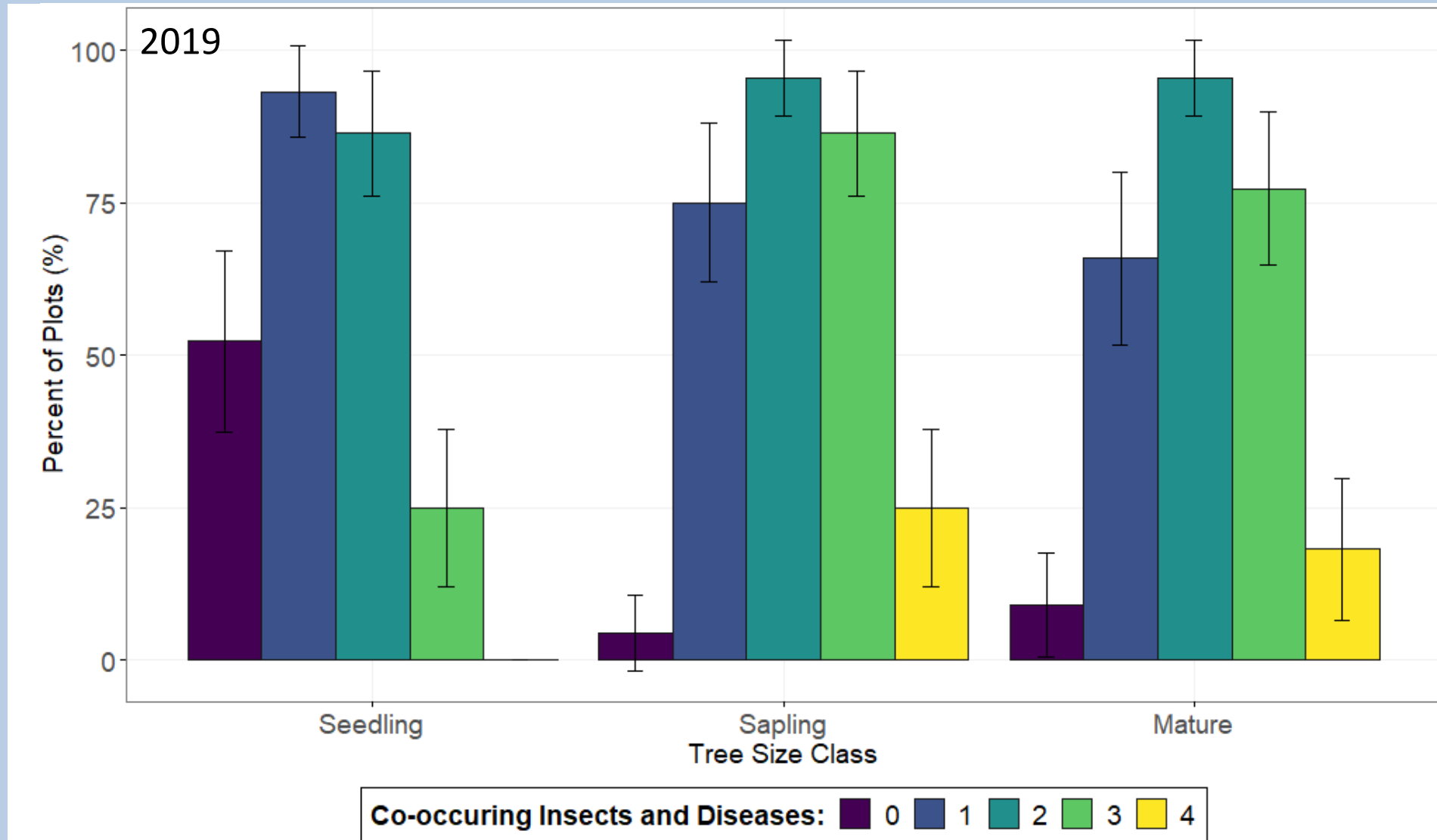


Bars denote 95% confidence intervals

Drivers of Insects and Diseases

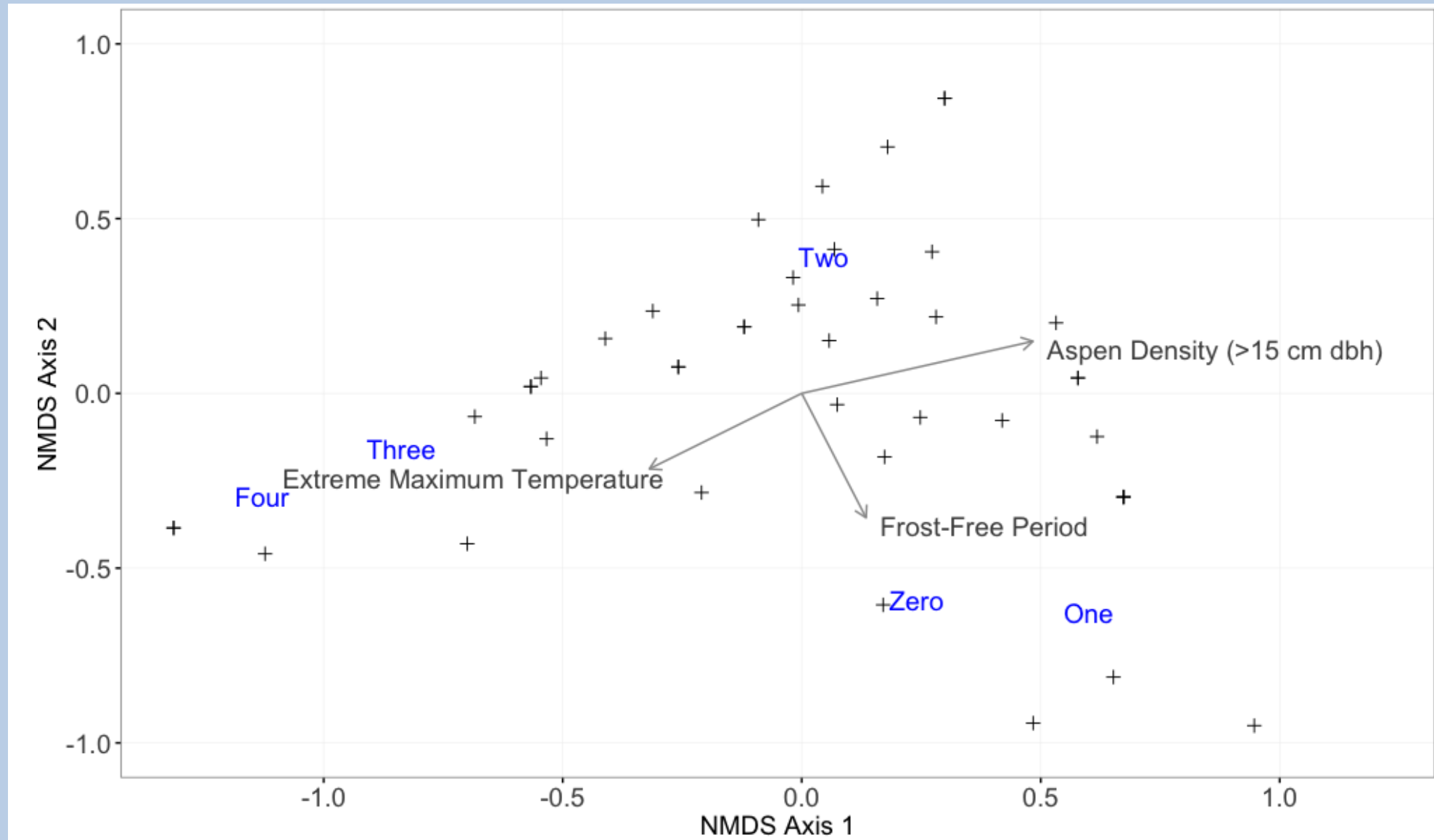


Forest Insect and Disease Loads



Bars denote 95% confidence intervals

Drivers of Insect and Disease Loads



Conclusions

- White Satin Moth activity is focused in the Lake Tahoe Nevada State Park and Mount Rose Summit Areas.
 - White satin moth defoliation was lower in 2019 than 2018 in Lake Tahoe Nevada State Park.
 - White satin moth was positively associated with large tree density and negatively associated with climatic moisture deficit. Similar to native defoliators.
 - The number of co-occurring insects and diseases was positively associated with extreme temperatures and negatively associated with large tree density.
-

Upcoming work

- Patterns and drivers of white satin moth activity and defoliation severity.
- Compounding effects of white satin moth and native insect/diseases.
- Stand-level responses to herbivory from white satin moth.
- Variation in plant defense compounds at tree to landscape scales.
 - Association with patterns of white satin moth activity and herbivory.
- Continued plot monitoring in 2020.



Acknowledgements

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Questions?

