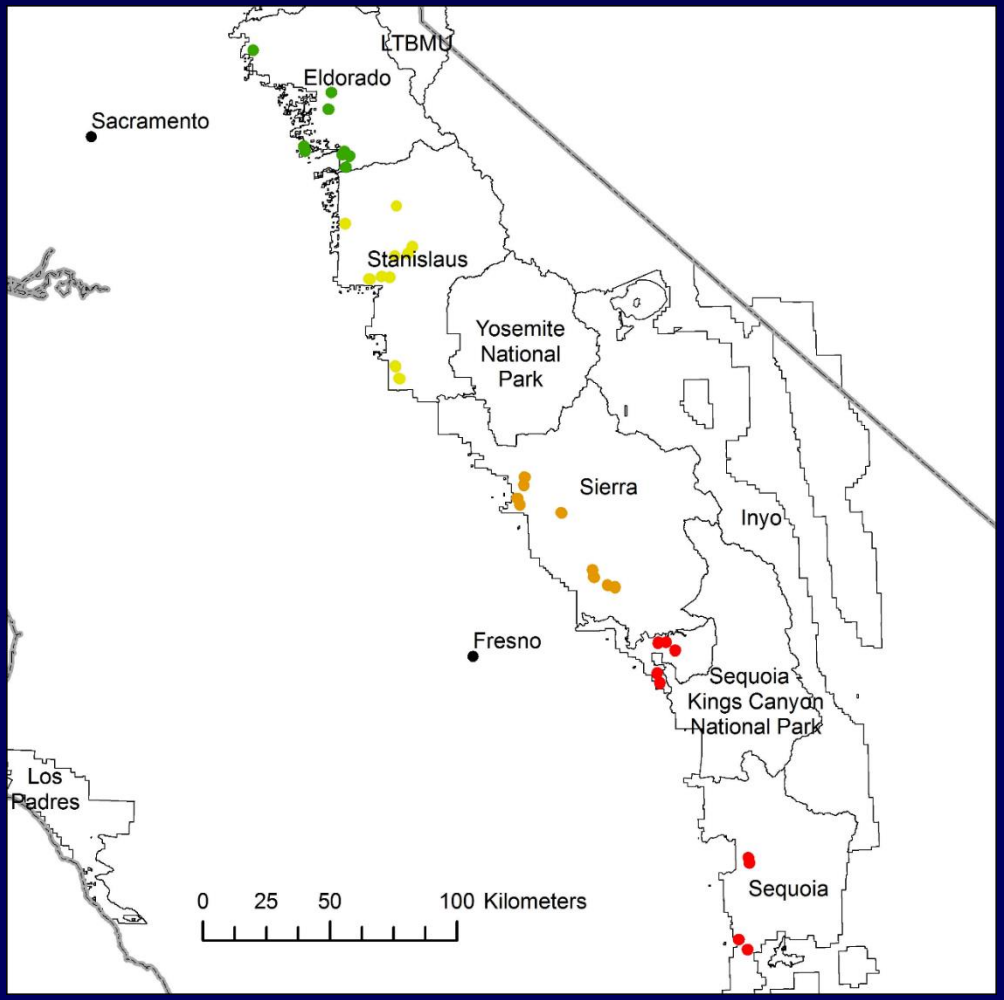

MORTENSON, FETTIG, BULAON,
& FRIENDS
2018 FIELD SEASON UPDATE

Overview

- An early look at snag fall rates
- Initial assessment of baseline *Bombus* (bumble bee) diversity in tree mortality areas.
- New dead trees – summer 2017 beetle attack/winter 2017-18 deaths

Network of 180 11.3-m fixed radius plots, stratified by elevation, in forests containing ≥35% ponderosa pine (by basal area) with ≥10% tree mortality in 2014; Sequoia, Sierra, Stanislaus and Eldorado National Forests.



Early Look at Snag Fall Rates

Ch-ch-ch-ch-changes!!!

Snag Demography

- Mean plot snag fall rate of 10.5% ± 1.2% (all species & size class mortality & falls 2014-2018):
- Examining by species and/or size class doesn't alter rate substantially, most fall between 10.5% and 13% at the most.
- For context—as 10.5% may not appear high—I compared with a similar study we have following forests heavily influenced by the mid-2000s mountain pine beetle epidemic in the Rocky Mountain states (sub-analyzing all plots in the state of Wyoming). In the first four years of/after that mortality event zero snags fell.
- Of the snags that have fallen so far in our study, 62% fell in three years of experiencing mortality, 21% fell in 2 years since death and 11% fell in 4 years since death.
- When snags fall they often knock over more snags (think bowling pins), crush/kill live trees (leading to yet more mortality), and crush regeneration.

Then WINTER 2018-19 happened!

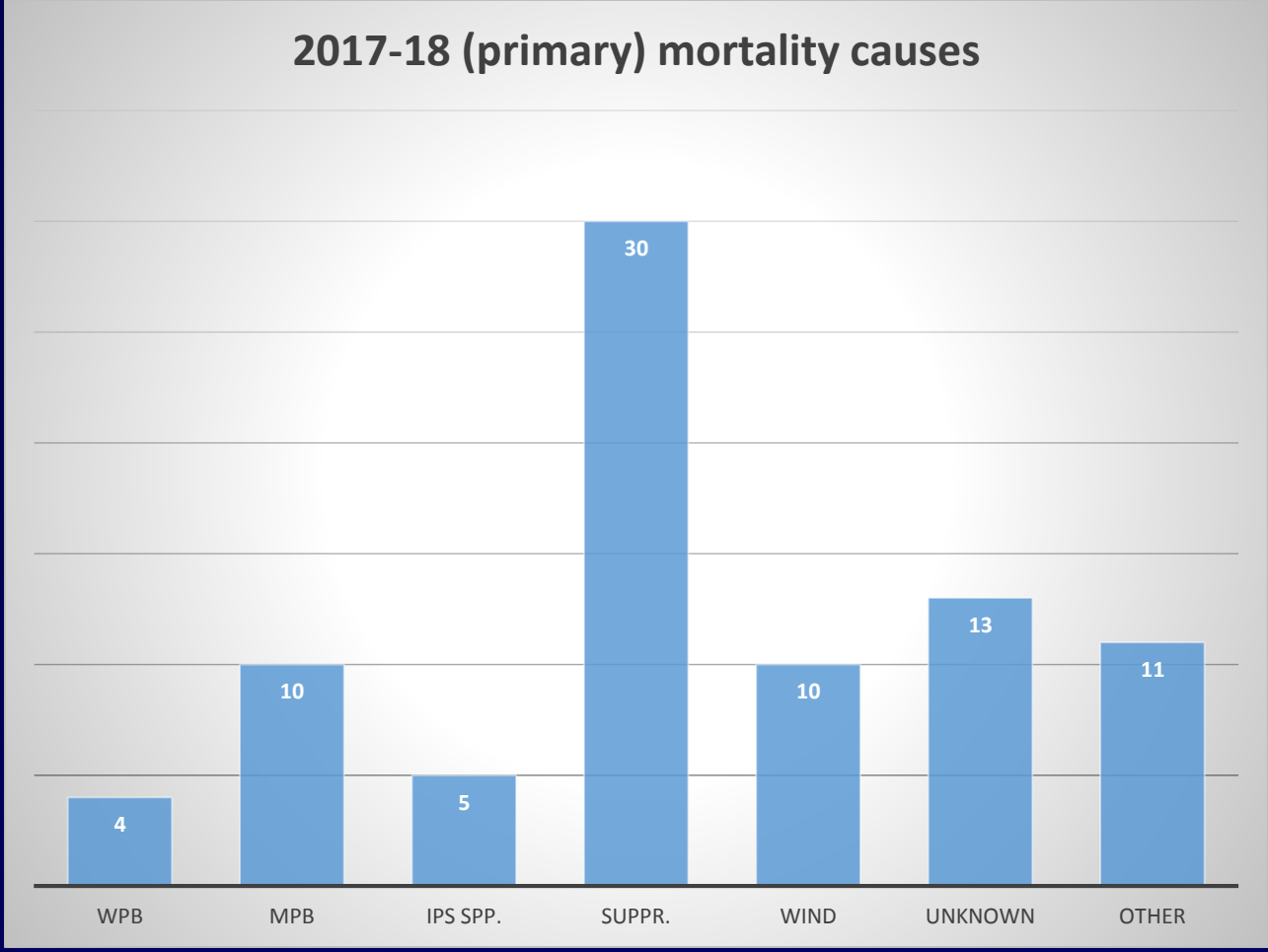
- Many more snags—possibly a lot more—expected down in field season ’19.
- How many more? TBD…

Forest Pollinators Baseline

- Examining what impact tree mortality event—and subsequent increase in light availability and snag fall disturbance—had on the forest pollinator community.
- From 2017 field season [finally getting IDed, only *Bombus* (bumble bee) species so far], before snags started falling. A major task, BEElieve it! Thanks UCD Bohart Museum!
- In an extensive sampling effort we only got about half the *Bombus* species that are known to exist in the Sierra Nevada.
- Unclear why less species diversity than expected. We hypothesize that disturbance (of falling snags/increased light availability will increase diversity and abundance.
- Still IDing other bee species and non-bee species. BEEhind schedule...

What mortality is still occurring?

(Summer 2017-Winter 2018)



species	Size class (inch)						
	2.5-7.4	7.5-12.4	12.5-17.4	17.5-22.4	22.5-27.7	>27.5	total
ABCO	0	0	0	1	0	0	**1**
CADE	14	9	1	1	0	0	**26**
PILA	1	0	1	0	1	1	**3**
PIPO	42	9	1	0	0	0	**53**

OUR WORK THROUGH 2017 CAN BE FOUND:

Fettig, C. J., Mortenson, L. A., Bulaon, B. M., & Foulk, P. B. (2019). Tree mortality following drought in the central and southern Sierra Nevada, California, US. *Forest Ecology and Management*, *432*, 164-178.


QUESTIONS
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