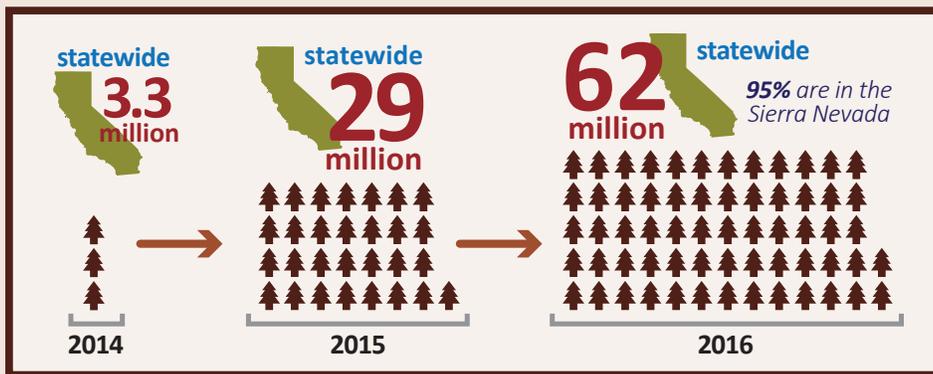


SIERRA TREE MORTALITY

NEVADA *Long-term implications for carbon sequestration and climate change*



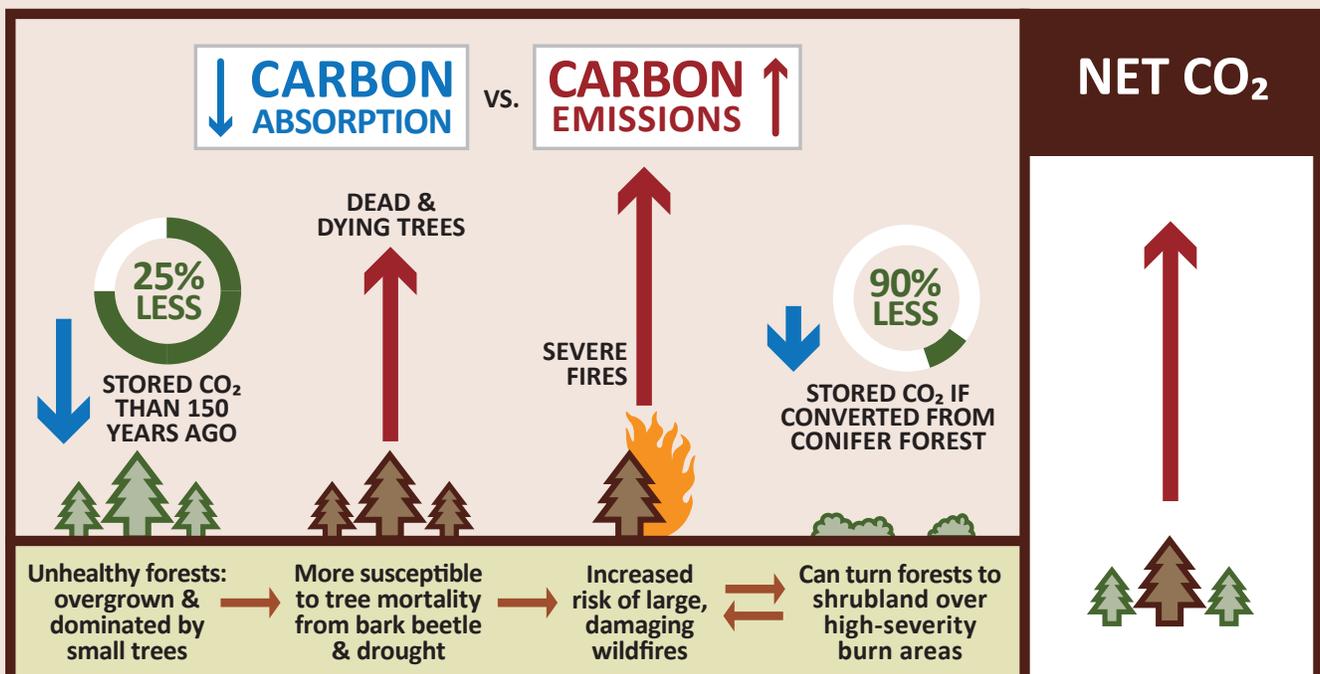
Location in Madera County before and after tree mortality began spreading. Photos: Margarita Gordus, CA Department of Fish and Wildlife



Since 2010, 102 million trees have been killed in California by bark beetles and drought. Most of these trees died in 2015–2016 and are concentrated in the Sierra Nevada Region.

Sierra Nevada forests are too dense, which makes them **highly vulnerable** to tree mortality from bark beetles and drought. These dead trees can become carbon emission sources, but most importantly, they stop removing carbon from the atmosphere.

UNHEALTHY SIERRA FORESTS: A CLIMATE CONCERN



Reduced carbon absorption and storage plus high emissions means many forests are **contributing to climate change** rather than offsetting it.

WATERSHED IMPROVEMENT PROGRAM



Sierra forests are unhealthy and vulnerable. The Sierra Nevada Watershed Improvement Program (WIP) is a broad effort organized by the Sierra Nevada Conservancy and U.S. Forest Service to significantly increase restoration in the Sierra Nevada and promote healthy forests and watersheds that are resilient to drought, insects, wildfire, and climate change.

FOREST RESTORATION, A LONG-TERM CLIMATE SOLUTION

PRESCRIBED BURNING & THINNING REDUCES TREE MORTALITY



Thinning and burning

Decreases competition & improves natural defense against bark beetle

TREATMENTS

Prescribed burning Mechanical & hand thinning Managed wildland fire

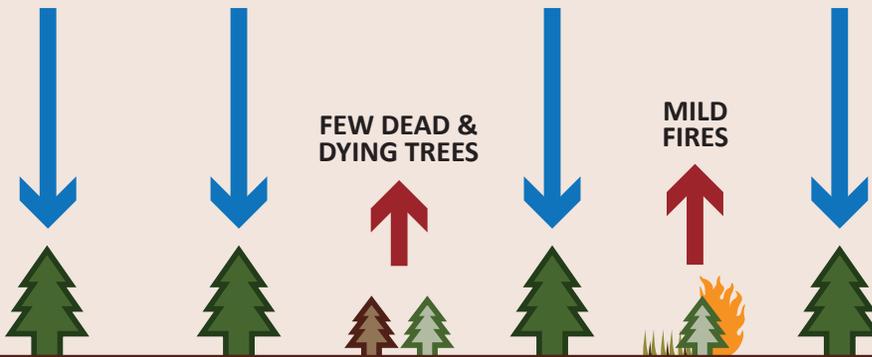
ACTIONS NEEDED

- ↑ **Funding** for restoration and infrastructure
- ↑ **Biomass utilization** infrastructure in order to process forest waste, a restoration byproduct
- Incorporate restoration into **climate policy**

↓ **CARBON ABSORPTION**

vs.

CARBON EMISSIONS ↑



Healthy forests:
more sparse,
larger trees

Resilient against tree
mortality from bark beetle,
drought, climate change

Low risk of
large, damaging
wildfires

NET CO₂



*Forest restoration shifts stored carbon from many small trees to fewer larger, older trees, resulting in more stored carbon overall. These forests are more resilient to drought, wildfire, and insects, which further stabilizes carbon storage. This means treated forests will do what they have historically done: absorb and store carbon, which helps **offset climate change**.*

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