Forests sequester carbon but are threatened by severe wildfire

- Forests store millions of metric tons of carbon. In California alone, 1,600 million metric tons are stored in National Forests and 2.7 million metric tons are sequestered annually.\(^1\)

- Every year, increasingly severe wildfires release millions of tons of carbon into the atmosphere. Minimizing severe wildfire risk is a critical component of climate change mitigation.

- Selective logging and fire suppression in Western dry forests over the past 150 years have facilitated a transition from historically pine-dominated, fire-resistant ecosystems to more dense, fir-dominated forests that have a greater susceptibility to wildfire.\(^2\) While these fir-dominated forests are more carbon-dense in the short term, their vulnerability to severe wildfires makes their carbon storage capacity short-lived.\(^3\)
Healthy forest ecosystems achieved through forest management have carbon storage stability benefits

- Forest restoration promotes a return to a more natural forest composition & reduced fuel load, reduced wildfire size and severity.

- The amount of carbon in a forest increases over time through forest restoration, particularly in larger, more fire-resistant trees.

- By moderating fire size and severity while decreasing overall risk, restoration reduces tree mortality during wildfires, thus preserving more of the forest, increasing long-term forest carbon, and partially diverting a vegetation change from forest to shrublands, which hold less carbon.

- A restored forest holds additional carbon in nearby untreated areas through fuel limitation, referred to as the "treatment shadow effect."

- A thinned forest may grow at an enhanced rate compared to an untreated forest due to reduced competition for water, nutrients, and light. This can lead to financial returns for timber-managed forests and other ecosystem service benefits.

- Thinned forests in the Sierra Nevada are projected to have up to 42% lower emissions and store up to 0.6 additional tonnes of carbon per acre by 2100.

The carbon storage benefits of forest management vary by region and forest. Reach out to learn about the benefits of a specific forest at connect@blueforest.org