Forest Fires: Answers to 12 Common Questions

1. **Is wildfire bad for forests?** No. Some forests need fire to be healthy, but it has to be the type of fire that the forest evolved with.

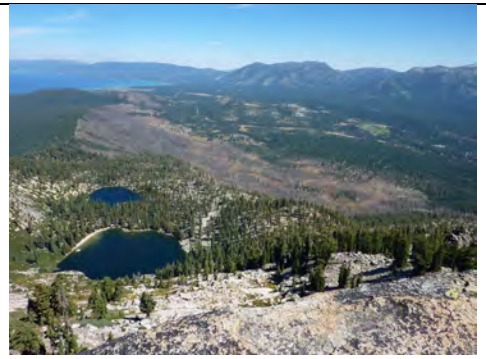
Low-intensity fire burning on the forest floor

2. **What are the types of forest fires?** Broadly there are two types: low-intensity fire that generally burns near the ground, and high-intensity or crown fire that burns through the treetops.

High-intensity crown fire

Forest frequently burned by low-intensity, surface fire

3. **How does each of these fire types affect the forest?** The low-intensity fire burns up the surface tree needles and leaves, shrubs, down wood and many of the small trees, opening up most of the understory. Crown fire spreads rapidly across the forest canopy and usually kills most of the large, overstory trees, while removing the cover provided by the tree foliage.



High-intensity fire that burned across the canopy, Angora Fire, near Lake Tahoe (in the background)

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<td> 
High-elevation lodgepole pine forest with abundant, healthy regeneration after the 1988 Yellowstone Fire</td>
<td>4. Then is it only crown fire that harms the forest? Extensive crown fire may be fine in a forest that's adapted to it, like many high-elevation (ex. lodgepole pine) and wetter climate forests. Lower and mid-elevation forests (ex. mixed conifer), however, are adapted to frequent, surface fire, so crown fires in these forests that leave large (>50 ac) patches of dead trees can be particularly harmful.</td>
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Large patch of dead trees in a mixed conifer forest not adapted to this fire type. Note live seed trees on the distant ridgeline</td>
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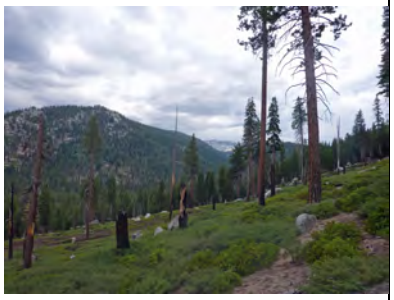
<td> 
Even a few live trees after a wildfire can provide seed to speed forest recovery</td>
<td>5. How do large, dead tree patches affect these lower-mid elevation forests? There may be no reseeding of trees and shurbs can take over the area for many years. Wildlife that depends on tree cover, such as spotted owls, may no longer have a secure place to nest or rest.</td>
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With the Chips Fire (N. Cal.), a tree that was used for nesting by a California spotted owl</td>
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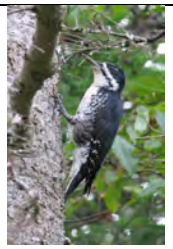
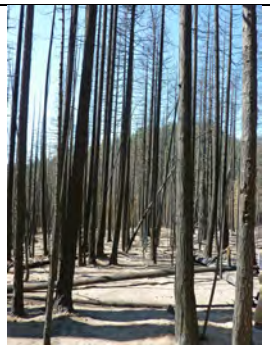
 Black-backed woodpeckers that uses dead trees to forage for beetles, 4-8 years after a high-severity fire	6. **Aren't these large patches of dead trees good for other wildlife?** Yes, for example some woodpeckers and small mammals prefer this habitat. However, some species that are now rare or threatened are associated with large live trees and forests with a dense canopy cover.	 Lack of canopy cover after a high-severity fire
 Replanted tree seedling	7. **Should seedlings be planted in burned patches when they are distant from live, seed-producing trees?** If there is money for it, planting can help prevent shrub take over and also establish more pines, which are fire resistant. Tree seedlings should be planted using a variable ('group and gap') spacing because regularly spaced plantations don't restore natural forest conditions and easily burn up when fire reoccurs.	 Plantation of flammable, regularly spaced pine trees

Cavities created in a large, dead snag that can be used by some birds and small mammals

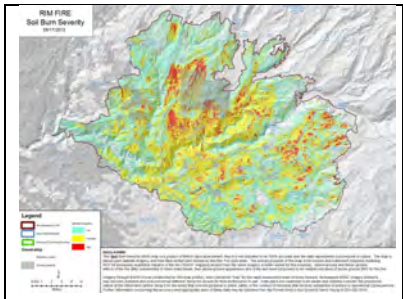
8. **Dead trees from these fires seem to be going to waste. Is there any harm in removing them?** Many of the important ecological roles that trees provide continue to occur after they die. Removing the small and intermediate size trees that might have been cut in the pre-fire forest to help restore it can reduce fuel loads, but removing the largest trees may impact wildlife habitat and affect how the forest recovers.

Salvage logging of dead trees on the Angora Fire that left the largest 'snags'

Lion Fire allowed to burn and restore forest conditions in the backcountry of Sequoia National Park

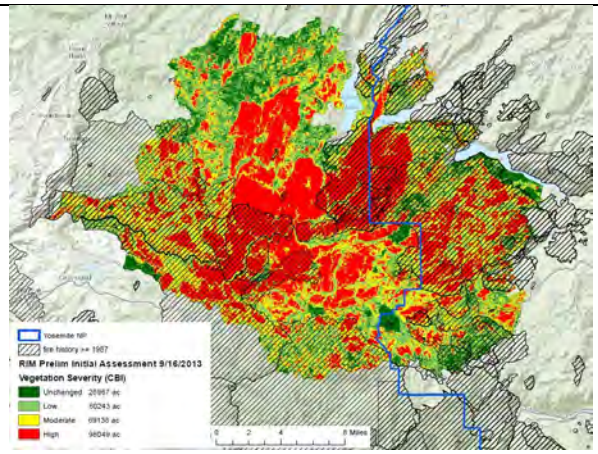
9. **If fire is so important to these forests, why can't it just be left to burn in areas away from homes?** Fire has been kept out of many low-mid elevation forests for so long that they now have lots of surface fuel and ladder trees (smaller trees that fire 'climbs' into the overstory tree crowns). Under hot, dry or windy conditions, fire in these forests would 'crown out', but if let burn in more moderate weather the resulting low-intensity fire can help restore the forest.

Fuel loading from decades without a fire



Rim Fire: Map of **Soil** Burn Severity with 7% high severity

10. What is burn severity, and why are burn severities for the same fire sometimes reported differently? Even before the wildfire is completely out, fire effects on soil structure and erosion potential are made by a Burn Area Emergency Response (BAER) team. Initial and extended analysis of fire effects on forest vegetation are made by comparing before and after imagery from the LANDSAT satellite.

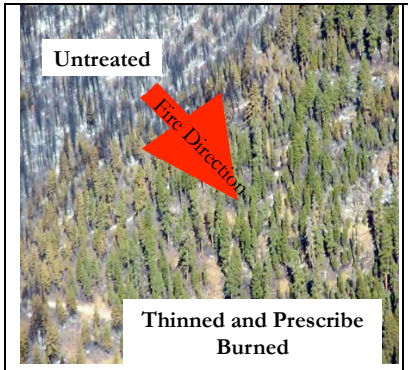


Rim Fire: Map of **Vegetation** Burn Severity with >40% high severity

Surface ash containing nutrients that will become part of the soil

11. How do wildfires affect soils? Fire rarely sterilizes soil and ash left from burned vegetation has nutrients that are incorporated into the soil. High severity fire**,** however, can made soils repel water (become hydrophobic), and become prone to heavy erosion if roots die that holds the soil in place.

Erosion gullies starting to form after a high-severity fire



In the N. California Cone wildfire, the fire dropped to the ground and burned along the surface once it crossed into the fuels treatment area.

12. Are fuel treatments (thinning and prescribed fire) effective in reducing wildfire severity? Under all but extreme weather conditions they can be very effective if they focus on reducing ladder and surface fuels. 'Ladders' are reduced by removing small trees so that tree crowns are separated from surface flames, while removing surface fuels reduces radiant and convective heat such that the fire no longer has enough energy to stay in the tree crowns.

Untreated forest burned by the Moonlight wildfire in northern California