

Ensuring Nature's Benefits Now, and into the Future, following the Copper, Ranch, and Sayre Fires on the Angeles National Forest

Water as Nature's Benefit: The watersheds of the Angeles National Forest are the source of nearly one-third of the Los Angeles population's drinking water, in addition to providing for all of the plant and animal life that live within the boundaries of the Forest. The Forest's eighteen dams and debris basins support a massive flood control system to protect and provide for the millions of people that live downstream. **And these are only a few of Nature's Benefits the Forest provides.**

The Angeles National Forest serves as:

- The natural picturesque backdrop for one of the country's largest and most diverse urban centers, providing access to approximately 700,000 acres of open space in the greater Los Angeles metropolitan area for outdoor recreation that includes, hiking, walking, nature viewing, camping, swimming and more.
- The Forest host for between 3 and 4 million annual visitors, giving them the opportunity to explore a variety of landscapes including chaparral, oak thickets, high desert, pine woods, steep and rugged mountains, and numerous lakes, streams, and rivers.
- One of the world's vital biodiversity hot spots. The Forest contains many natural and cultural resources unique to Southern California as well as a variety of wildlife, including the California condor, spotted owl, bighorn sheep, and numerous other threatened and endangered species.
- A green space neighbor to multiple communities, to include the 4th largest city in Los Angeles, Santa Clarita.

Wildfire: In California, more than half of the state's largest 20 wildfires have occurred within the last 10 years. While the ecosystems of Southern California have adapted to fire, the stressors associated with recent increases in frequency and intensity of fires have resulted in habitat loss; significant changes to ecosystems; changes in hydrology and the operating functions of water on the Forests; and provided opportunities for invasive plant and animal species to take hold and spread. Neighboring urban communities share the risks of wildfire, and forest managers are challenged to provide for the safety and health of those visiting and living next to the forest.

Nature's Benefits at Risk:

- **Power:** The Copper Fire affected vital infrastructure in the Los Angeles area, including power transmission lines operated by the Los Angeles Department of Water and Power and Southern California Edison, a portion of the Los Angeles aqueduct, and lands that drain to Bouquet Reservoir, a source of drinking water for the city. The Sayre Fire impacted miles of roads, trails, fuel breaks, and utility corridors, and burned through five hazardous waste sites, increasing the risk for soil and water contamination.
- **Cultural Heritage Sites:** Many cultural and historical heritage sites were also affected, including the site of the St. Francis Dam failure, a proposed national memorial site.
- **Recreation:** The impacts following the Sayre Fire include: increased sediment from soil and rock slides and erosion, more non-native grasses and noxious weeds, and amplified risk of off-trail use by OHVs and other users. Erosion and sediment following a fire negatively impacts some fish species by obstructing their distribution and range, reducing available habitat, isolating populations and

thereby reducing diversity, and increasing the risks from predators, competition, and water quality and quantity impacts.

- **Food:** In addition to harming recreational fishing, pollutant loads and habitat changes after a wildfire put stress on human consumption of fish as well.
- **Water:** Wildfire has impacts to local water function and can alter soil absorption rates; the process of transferring moisture from the earth into the atmosphere, also called evapotranspiration; and can lead to changes in the quantity and timing of in-stream flows. These changes may affect fish lifecycles that are flow- and habitat-dependent, and have implications for the supply and management of drinking water for human populations that is drawn from local surface and groundwater sources. Banks of rivers and streams support stream-side vegetation that protects waterways from pollutants, contributes shade and habitat structure for both fish and other land animal species, reduces fluctuations in water temperature, stabilizes stream channel form and function, and can help slow or halt advancing wildfire.
- **Carbon:** Forests retain or store carbon while absorbing carbon dioxide (CO₂) from the atmosphere, reducing the impacts of climate change on human, plant, and animal habitats. The Angeles National Forest stores about 8.5 Million Metric Tons (MMT) of carbon in its forests and shrublands, which is equivalent to the annual CO₂ emissions of about one million homes. With wildfire, comes rapid and longer-term emission of CO₂, and burned areas that impede the Forest's ability to sequester carbon in the future.

Goal of the Fire Restoration Program: In partnership with the National Fish and Wildlife Foundation, the Angeles National Forest established a new program focused on the fire footprint areas of the Copper, Ranch, and Sayre fires. The collaborative effort is designed to promote progress toward the Forest Service's strategic goals to:

- 1.) Restore, sustain, and enhance the nation's forests and grasslands by fostering resilient, adaptive ecosystems that will assist to reduce impacts from climate change; through strategic land management, reducing wildfire risk, and conserving open space.
- 2.) Deliver and sustain the benefits of the National Forests to the American public by providing abundant clean water, strengthening communities, and connecting people to the outdoors (U.S. Department of Agriculture 2015).

The Angeles National Forest is applying a number of strategies and targeted actions to address the impacts to the watersheds and ecosystems affected by these fires, while providing sustainable and lasting Nature's Benefits to people, plants, and animals; promoting ecological resilience to future wildfire events; and informing efficient post-fire restoration through innovation.

National Fish and Wildlife (NFWF) Grantees: Fisheries Resource Volunteer Corps (FRVC), American Conservation Experience (ACE), Los Angeles Conservation Corps (LACC), and Long Beach Conservation Corps (CCLB), Cal Poly-Pomona, Environment for the Americas, NASA-Jet Propulsion Laboratory, USGS, UC Santa Barbara, UC Davis, SWCA Environmental Consultants, Resource Institute, Rancho Santa Ana Botanic Garden, TreePeople, Amigos de los Rios, National Forest Foundation, Blue Tomorrow LLC, and TerrainWorks.

Nature's Benefits and Future Generations:

In the case of surrounding communities like Green Valley and Santa Clarita where populations total more than 180,000, flood control and water flow have immediate impacts on households. Assurances that water regulation and flow will continue through post-fire restoration projects like those supported by the Fire Restoration Program on the Angeles National Forest can provide for economic stability, health and safety, and build trust within communities and between government agencies. Effective communication of the Nature's Benefits the public receives from these efforts, can increase community interest and awareness, fostering partnerships and the sharing of resources. Only through such cooperation and shared ownership can we ensure future generations have the opportunity to enjoy Nature's Benefits as well.

