



Nature's Benefits from Your National Forests

The mission of the USDA Forest Service is to sustain the health, diversity, and productivity of the Nation's forests and grasslands to meet the needs of present and future generations.

The Agency's 154 national forests and 20 grasslands engage in quality land management that offers multi-use opportunities to meet the diverse needs of people. Forest ecosystems are human, plant, and animal life-support systems that provide a suite of goods and services vital to human health and

livelihood—essentially Nature's Benefits, also called Ecosystem Services. Benefits from healthy forest ecosystems include: water supply, filtration and regulation (flood control); habitat for native wildlife and plants; carbon sequestration; jobs, commerce, and value to local economies; recreational opportunities and open space for communities; increased physical and psychological wellness; cultural heritage; wood and other non-timber forest products; energy; clean air; and pollination.

Do You Know Which Nature's Benefits Come from the Six Rivers National Forest?

Water: In drought-prone California, the quantity, quality, and timely provision of our water is dependent on the health of our national forests. The forests supply, filter, and regulate water from upper watersheds and meadows, providing clean water throughout the year to communities, homes, and wildland habitats. Water also helps support jobs and industries that are water-dependent.

- About 4.5 million acre-feet of water per year come from the Six Rivers National Forest¹
 - Or about 1.4 trillion gallons per year



That equates to:

- Over 2.2 million Olympic-size swimming pools
- Enough drinking water for California's population for more than 126 years², or
- Enough water for over 11.2 million households for a year³

How much is 1.4 trillion gallons worth?

- Estimated wholesale market value: over \$428 million⁴
- Cost to Los Angeles households: over \$48.7 billion⁵

SOURCES

¹Brown et al., 2016- Mean annual renewable water supply of the Contiguous United States. <https://www.fs.fed.us/rmrs/documents-and-media/really-mean-annual-renewable-water-supply-contiguous-united-states>

²Per the National Health and Nutrition Examination Surveys, the average American consumes ~299 gallons/year of water, through both drink and food ³Assuming 362 gallons/day - <http://www.irwd.com/images/pdf/save-water/CaSingleFamilyWaterUseEfficiencyStudyJune2011.pdf>

⁴Using CA water market prices, appropriated by sector - https://www.fs.fed.us/rm/value/docs/marginal_economic_value_streamflow_forests.pdf 5100 gallons/day + monthly water bill of ~\$100.14 - <http://www.circleofblue.org/waterpricing/>



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Carbon: The National Forests of California play an important role in parts of the climate cycle; acting as carbon storage and sequestration units. Forests retain carbon from being emitted to, and absorb carbon dioxide (CO₂) from, the atmosphere, which helps reduce the impacts of a warming climate to human, plant and animal habitats.



- The Six Rivers National Forest stores about 155.80 Million Metric Tons (MMT) of Carbon in its forest⁶
- Sequesters on average .37 MMTC annually; this equates to enough to drive around the earth 133,371 times.

Local Economies: The economy of California is fifth largest in the world, and California's National Forests contribute almost \$2.6 billion annually in wages and income to small businesses,⁷ a critical component of the rural economy of the state.



The Six Rivers National Forest supports:

- About \$64 million annually in labor income for wage earners and local businesses⁸
 - Including food and lodging services, arts, entertainment and recreation, real estate, rental and leasing, and retail trade services.
- About 1,200 jobs annually⁹

Recreation: The Six Rivers National Forest provides a place for people to find open space, experience wildlife, recreate, relax, and otherwise remove themselves from the stressors of everyday life and urban sprawl.



Many methods exist to calculate the benefits from recreation and the value of those benefits to visitors and local economies. The following provide some estimations of those values:

- Over 165,000 people visit the Six Rivers National Forest to recreate annually, which represents an economic value of over \$13 million to those visitors¹⁰
- Visitors to the Six Rivers National Forest spend about \$7.8 million during their trips¹¹
- Visitors to the Six Rivers National Forest contribute more than \$2.4 million towards wages and income of local businesses¹²

The Six Rivers National Forest landscape includes diverse recreation opportunities such as water recreation (fishing, swimming, and rafting) as well as camping, picnicking, and green space for activities that support human wellness and cultural traditions.¹³

- 279 lakes and ponds
- 4,429 miles of rivers and streams
- 552 miles of trails
- 129,280 acres of wilderness

SOURCES

⁶<https://bofdata.fire.ca.gov/projects-and-programs/ab-1504/>

^{7, 8, 9}Job and Income Contributions for 2014-At A Glance-Region, <https://www.fs.fed.us/emc/economics/contributions/at-a-glance.shtml>

¹⁰NVUM (FY2018), R5 Calculations based on GTR-957 – Rosenburger et al., 2017 - <https://www.fs.usda.gov/treearch/pubs/54602>

¹¹R5 Calculations based on GTR-961 – White, 2017- https://www.fs.fed.us/pnw/pubs/pnw_gtr961.pdf

¹²<https://www.fs.fed.us/emc/economics/contributions/at-a-glance.shtml>

¹³Enterprise Data Warehouse, Natural Resource Manager (NRM), Six Rivers National Forest Land Resource Management Plan (FLRMP)



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- 366 miles of Wild and Scenic Rivers
- 18 developed campgrounds
- 6 developed picnic areas

People visit their National Forests to engage in specific activities that provide value to them from their experiences as shown below:

- Over 46,000 people visit the Six Rivers National Forest annually to view wildlife and natural features as their main activity, which represents an economic value of over \$3 million to those visitors.¹⁴
- Over 17,600 people visit the Six Rivers National Forest annually to hike and walk as their main activity, which represents an economic value of over \$1.5 million to those visitors.¹⁵
- Over 11,000 people visit the Six Rivers National Forest annually to camp and backpack as their main activity, which represent an economic value over \$900,000 to those visitors.¹⁶

Habitat: Forest Habitats and Biodiversity are key to ecological function; a forest's daily function in turn allows all of Nature's Benefits, from water to recreation, to continue to be provided for humans to enjoy.



The Six Rivers National Forest hosts a multitude of key habitats for animals and plants.

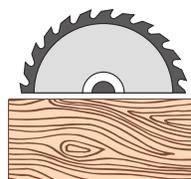
- 12 Threatened and Endangered Species can be found on the Six Rivers National Forest that include: northern spotted owl, marbled murrelet, Northern California steelhead, California coastal chinook, Southern Oregon/Northern California coho salmon, McDonald's rockcress, fisher, Whitebark pine.¹⁷

Energy: The Six Rivers National Forest energy infrastructure provides power generation for public benefit and includes



- Installed hydro plant capacity of approximately 7 megawatts, which could meet the power needs of more than 5,300 households¹⁸

Timber & Wood Products: Wood harvested from California's National Forests support forest health, jobs, and provide products for everyday use.



On average for Fiscal Years 2017, 2018 & 2019, the Six Rivers National Forest:

- Sold about 9,899 thousand board feet (MBF) of Timber,¹⁹ and
- Cut approximately 9,764 MBF of Timber, annually²⁰

This cut timber has an estimated value of over \$4 million²¹ and:

- Produced about 6,563 MBF of lumber, and is

SOURCES

¹⁴, ¹⁵, ¹⁶R5 Calculations based on GTR-957 – Rosenburger et al., 2017 - <https://www.fs.usda.gov/treearch/pubs/54602> ¹⁷Master

R5 TE Species List 20191016; <https://ecos.fws.gov/ipac/>

¹⁸June 2016 R5 Inventory of FERC Licensed Hydropower projects

¹⁹PTSAR Reports: <https://www.fs.fed.us/forestmanagement/products/ptsar/index.shtml>

²⁰Cut/Sold reports: <https://www.fs.fed.us/forestmanagement/products/cut-sold/index.shtml>

²¹R5 analysis based on cut-sold report and Mclver et al., 2015 - https://www.fs.fed.us/pnw/pubs/pnw_gtr908.pdf



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- Worth about \$2.5 million
- Produced over 11,847 bone dry tons of wood for biomass energy, or
 - Enough to power over 1,692 homes for the year, and is
 - Worth over \$1.3 million
- Produced over 1,163 tons of landscaping material, and is
 - Worth over \$11,627
- In addition, the Six Rivers National Forest:
 - Sold over 5,400 cords of firewood, worth over \$32,000
 - Sold 2,200 Christmas trees, worth over \$22,000

DID YOU KNOW?

- The Smith River on the Gasquet Ranger District, known as the Smith River National Recreation Area (NRA), from its source to the Pacific Ocean, is the longest undammed, free flowing river in California.
 - This Congressionally designated Wild and Scenic River is naturally crystal clear and supports anadromous fish species such as the chinook (king) salmon, coho (silver) salmon and steelhead trout that spawn in the Smith.
 - The river supplies water to people, and for recreation opportunities such as fishing, camping, boating and white water rafting. It also supports the local businesses and economy in the towns of Smith River, Crescent City, Gasquet, and Hiouchi.
 - In addition to flowing through the Six Rivers National Forest, the Smith River National Recreation Area has about 21 river access sites, a portion of which also flows through Redwood National & State Parks and the Ruby Van Deventer County Park
 - In addition, the Tolowa people have village sites along the river.