



Nature's Benefits

San Bernardino National Forest

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 San Bernardino 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 341,000 acre-feet of water per year come from the San Bernardino National Forest¹

- Or over 111 billion gallons per year

That equates to:

- Over 160,000 Olympic-size swimming pools
- Enough drinking water for California's population for more than 9 years², or
- Enough water for over 840,000 households for a year³

How much is 111 billion gallons worth?

- Estimated wholesale market value: over \$32 million⁴
- To Los Angeles households: over \$3.6 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-sup-ply-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 ³ Assuming 362 gallons/day - <http://www.irwd.com/images/pdf/save-water/cacaSingleFamilyWaterUseEfficiencyStudyJune2011.pdf>

⁴Using CA water market prices, appropriated by sector - https://www.fs.fed.us/rm/value/docs/arginFSorervisctemic_value_strePRAegciifioncSoutforests.pdfhwes t5 100 gallons/day + monthly water bill of ~\$100.14 - <http://www.circleofblue.org>





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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 San Bernardino National Forest stores about 17 Million Metric Tons (MMT) of forest Carbon⁶
- Shrublands on the San Bernardino National Forest, like chaparral, store about an additional 2.1 MMT of carbon⁷
- Also the Forest sequesters on average -0.11 MMTC annually.

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,⁸ a critical component of the rural economy of the state.



The San Bernardino National Forest supports:

- About \$152 million annually in labor income for wage earners and local businesses⁹

- Including food and lodging services, arts, entertainment and recreation, real estate, rental and leasing, and retail trade services.
- About 2,980 jobs annually¹⁰

Recreation: The San Bernardino 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 1.9 million people visit the San Bernardino National Forest to recreate annually, which represents an economic value of over \$157 million to those visitors¹¹
- Visitors to the San Bernardino National Forest spend about \$145 million during their trips¹²
- Visitors to the San Bernardino National Forest contribute more than \$79.9 million towards wages and income of local businesses¹³

The San Bernardino 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.¹⁴

SOURCES

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

⁷R5 Analysis-Molinari Method

^{8, 9, 10}Job and Income Contributions for 2014-At A Glance-Region, <https://www.fs.fed.us/emc/economics/contributions/at-a-glance.shtml> ¹¹NVUM, R5 Calculations based on GTR-957 – Rosenburger et al., 2017 - <https://www.fs.usda.gov/treesearch/pubs/54602>

¹²R5 Calculations based on GTR-961 – White, 2017- https://www.fs.fed.us/pnw/pubs/pnw_gtr961.pdf

¹³<https://www.fs.fed.us/emc/economics/contributions/at-a-glance.shtml>

¹⁴Enterprise Data Warehouse



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- 266 lakes and ponds
- 778 miles of rivers and streams
- 620 miles of trails
- 159,931 acres of wilderness
- 30 miles of Wild and Scenic Rivers
- 24 developed campgrounds
- 15 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 568,000 people visit the San Bernardino National Forest annually to hike and walk as their main activity, which represents an economic value of over \$48 million to those visitors.¹⁵
- Over 511,000 people visit the San Bernardino National Forest annually to engage in snow sports as their main activity, which represents an economic value of over \$42 million to those visitors.¹⁶
- Over 153,000 visit the San Bernardino National Forest annually to bicycle as their main activity, which represent an economic value over \$13 million to those visitors.¹⁷

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 San Bernardino National Forest hosts a multitude of key habitats for animals and plants.



- 27 Threatened and Endangered Species can be found on the San Bernardino National Forest that include: Santa Ana sucker, Shay Creek stickleback, Arroyo toad, mountain yellow-legged frog, California condor, peninsular big horn sheep, slender-horned spine flower, Least Bell's vireo, Shay Creek stickleback, Parrish's daisy.¹⁸

Energy: The San Bernardino National Forest energy infrastructure provides power generation for public benefit and includes:



- Installed hydro plant capacity of approximately 1,831 megawatts, which could meet the power needs of more than 1.3 million households¹⁹
- Estimated annual solar electricity output is 913,456 kilowatt hours, enabling greater use of federal taxpayer funds to go towards forest restoration²⁰

SOURCES

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

¹⁸Master R5 TE Species List 20191016; <https://ecos.fws.gov/ipac/>

¹⁹June 2016 R5 Inventory of FERC Licensed Hydropower projects

²⁰2015 Forest Service Energy & Sustainability Reporting; Southern California ESPC ENABLE Project Final Proposal; Federal Aggregated Solar Procurement Project