

**Jackson Demonstration State Forest (JDSF) Management Plan Update
Public Workshop: Restoration Economy
Agenda**

Thursday, December 12, 2024

Location: Ukiah Senior Center, 497 Leslie St., Ukiah

Time: 6-8 PM

UKIAH ZOOM Link:

<https://us02web.zoom.us/j/83201880021?pwd=q2LPSvW0MITS4bkTxgBBIeY5gpT2no.1>

Friday, December 13, 2024

Location: Fort Bragg Veterans Memorial Bldg., 360 Harrison Ave, Fort Bragg

Time: 5-7 PM

FORT BRAGG ZOOM Link:

<https://us02web.zoom.us/j/83439976569?pwd=fduDLQ3dnKRUvaO3z54WO7pFBzfwMq.1>

Objectives:

- Understand how meeting the management plan goals at JDSF (research, restoration, management, and Tribal co-management) require a qualified workforce and reliable funding
- Understand how funding provides Economic and Ecological Benefits at JDSF
- Provide input on funding the management goals at JDSF over the next 10 years

I. Welcome, Land Acknowledgement and Community Agreements

II. Overview of Meeting Objectives and Agenda

III. Restoration Economy and Workforce Development

IV. How Management, Restoration and Research are Funded at JDSF

V. Understanding Economic Benefits of Management at JDSF

VI. Directing Reinvestments Back into the Forest

Break

VII. Clarifying Questions from the Public

VIII. Public Input on Restoration Economy at JDSF

IX. Closing and Next Steps

Jackson Demonstration State Forest Budget Information

Forest Resources Improvement Fund

The Demonstration State Forest Program is funded through the Forest Resources Improvement Fund (FRIF). Revenue in the FRIF are generated from recreation and sustainable forest management and are dedicated wholly to the management of State Forests. CAL FIRE cannot use these funds for other purposes and there is no separate General Fund appropriation in the State Budget for management of State Forests. The FRIF is established by Public Resources Code [Section 4799.13](#) and described in the Manual of State Funds as [Fund 0928](#).

Revenue primarily comes from timber sales offered as part of the sustainable forest management program at JDSF with very little revenue coming in from the recreation program. Fees charged for recreation may not exceed the CAL FIRE's cost of providing the recreation (Public Resources Code [Section 4652](#)) so cannot be used to generate revenue for other forest management activities. Over the last decade annual revenue from sustainable forest management has averaged approximately \$5.5 million while recreation revenue has averaged approximately \$30,000.

The state budget allows for approximately \$10 million per year to be spent out of the FRIF which is greater than our current revenues. Through a combination of staff vacancies and deferring some maintenance and investments in the forest, our actual expenditures average between \$7.5 million and \$8 million annually which is in line with our sustainable revenues when JDSF is conducting management. The table below shows how these funds are spent across the Program.

State Forest Allocation FY 2024

Location	Personnel	Operations	Program Total
Jackson	\$ 3,439,318.00	\$ 1,533,000.00	\$ 4,972,318.00
Boggs Mountain	\$ 602,207.00	\$ 90,000.00	\$ 692,207.00
Soquel	\$ 523,815.00	\$ 65,000.00	\$ 588,815.00
Latour	\$ 602,616.00	\$ 80,000.00	\$ 682,616.00
North Fork Mokelumne		\$ 30,000.00	\$ 30,000.00
Mountain Home	\$ 578,505.00	\$ 90,000.00	\$ 668,505.00
Program	\$ 883,638.00	\$ 1,258,901.00	\$ 2,142,539.00
Emmigrant Gap	\$ -	\$ 30,000.00	\$ 30,000.00
	\$ 6,630,099.00	\$ 3,176,901.00	\$ 9,807,000.00
		Grand Total	\$ 9,807,000.00

Expenditures

The 22 personnel dedicated to the management of JDSF represent the largest annual expenditure, of approximately \$3 million. JDSF employs one (1) Forest Manger, three (3) forest supervisors, six (6) foresters, five (5) forestry assistants, two (2) senior environmental scientists, one (1) prevention officer, two (2) equipment operators, one (1) program analyst, and one (1) account clerk.

Operating expenses average about \$1.5 million per year. Approximately 25% for administration, 25% for the Roads Program, 10% for the Recreation Program, 15% for the Sustainable Forest Management Program, and 25% for the Research and Demonstration Program. These are ongoing annual expenses necessary for the management of JDSF. Large and one-time expenses may be funded from the FRIF reserve account held in Sacramento.

In addition to direct expenditures, JDSF incorporates activities into the revenue generating timber sales that can be conducted by the skilled contractors performing that work. These may include activities such as road maintenance, improvement, and decommissioning; additional slash reduction; recreation improvements; tree planting; and support for research and demonstration projects. By incorporating these activities, CAL FIRE accepts reduced revenue in the timber sale.

JDSF staff time and contributions of forest products, such as logs for stream restoration, are regularly used as matching funds for grants and research projects sponsored by 3rd parties.

Taxes

Demonstration State Forests are unique amongst state lands in the payment of property taxes to the counties in which they occur. First, CAL FIRE pays an annual property tax assessment to Mendocino County equivalent to that paid by private owners of lands zoned as Timberland Production Zone (TPZ). This assessment of approximately \$125,000, sometimes referred to as in-lieu property tax, is paid annually regardless if any timber is harvested on JDSF. Second, CAL FIRE assigns responsibility to timber purchasers to pay the yield tax, sometimes referred to as the ad valorem tax, on the value of any timber removed. This tax is currently set at 2.9% of the timber values set by the California Department of Tax and Fee Administration ([Tax Guide to Timber Yield Tax](#)). This tax fluctuates based on harvest volumes and values, but has averaged about \$175,000 over the last decade, approximately 80% of which goes to Mendocino County.

Contracts

CAL FIRE supports local businesses and maintaining a local skilled forest sector workforce through direct contracts in addition to regularly offering revenue generating contracts which supply timber products to the local forest product businesses. These contracts may either be funded directly by JDSF, the FRIF reserve account held in Sacramento, or in rare cases by other state funds. The following table shows recent and planned contracts that support JDSF. All contracts are advertised and awarded pursuant to the State's contracting rules with oversight by the Department of General Services.

Contract	Amount	Purpose
CA Geologic Survey	\$ 500,000	Professional geological support on Demonstration State Forests.
UC Cooperative Extension	\$ 445,000	Public Outreach and Education to support community engagement at JDSF.
Mendocino Resource Conservation District	\$ 250,000	Provide professional services such as environmental permitting, resource surveys, botanical studies, and wildlife surveys.
Cal Poly San Luis Obispo	\$ 125,000	Cal Poly User Experience Program to perform a recreational user survey.
Forest Labor Crews	\$ 380,000	Forest Labor including reforestation, invasive weed removal, fuel reduction, and trail maintenance, and research support.
Wildlife Surveys	\$ 250,000	California Northern Spotted Owl and Marbled Murrelet Monitoring
Cultural Services Contracts	\$ 500,000	Support from local Tribes to manage JDSF, steward natural resources, and monitor and protect cultural resources.
Fort Bragg Septic	\$ 450,000	Pumping and sanitary services for bathroom facilities at campsites and day use areas.
Carbon Flux Towers	\$ 2,850,000	UC Davis and Lawrence Berkeley Labs to install and operate two carbon flux towers on JDSF to directly measure gas exchange between redwoods and the environment.
USFS Pacific Southwest Research Station	\$ 3,800,000	Maintain monitoring equipment and infrastructure; collect, analyze data and maintain long-term datasets for Caspar Creek Experiment.
Fire Fuels Mitigation	\$ 200,000	Masticate three sites to support research project.
Fire Fuels Mitigation	\$ 175,000	Masticate 56 acres to support research project.
Fire Fuels Mitigation	\$ 290,000	Treat fuels across 146 acres by chainsaw to lop and scatter material to less than 18 inches above the ground.
Acoustic Monitoring	\$ 45,000	Purchase acoustic monitoring devices to monitor wildlife pre- and post-treatment for the Fire Fuels Mitigation Research.
Adaptive Management Experiment	\$ 1,185,000	Test the concepts of Resistance, Resilience, and Transition for redwood forest persistence in the face of climate change.
Cal Poly Humboldt	\$ 300,000	Climb, core, and analyze growth of selected redwoods at Jackson, Soquel, and Las Posadas State Forests to compare their performance across the range.
Redwood Tree Improvement Coop	\$ 27,750	Support cooperative redwood tree improvement program with landowners across the range to improve operational reforestation of coast redwood forests.
Mendocino Woodlands Road Improvement	\$ 745,500	Upgrade Road 720 to allow school bus access to allow CAL FIRE to decommission Road 700 for fish habitat improvement. Funded in part by California Climate Investments.
Red Tail Road Upgrades	\$ 245,000	Upgrade road system in Red Tail THP unable to be completed by timber sale contractor due to public trespassing.
Shaded Fuel Break	\$ 100,000	Perform roadside brushing and mowing to create or maintain shaded fuel breaks.
Total Investments:	\$ 12,863,250	



Rejuvenating Waterways - Creating Salmon and Trout Habitats in JDSF

JDSF contains important habitat for threatened and endangered fish within the Noyo River and Big River watersheds. Several non-profits and agencies are working with CAL FIRE to implement restoration projects aimed at improving habitat for salmon and steelhead this summer.

Trout Unlimited, a national fish conservation organization with a local office in Fort Bragg, will be partnering with Blencowe Watershed management to add 265 pieces of large wood to the North Fork South Fork (NFSF) Noyo River near Camp One in JDSF. The California Conservation Corps (CCC), in partnership with the Mendocino Land Trust, will be adding 110 pieces of large wood to Brandon Gulch, a tributary to the North Fork South Fork Noyo River. Large wood within creeks and rivers is critical for salmon and steelhead because it governs the ecological processes that create good habitat. Large wood scours deep pools, provides slow-velocity areas for fish to rest in, retains and sorts the gravels needed for spawning, and provides places for small fish to hide from predators.



Many of the creeks and rivers that support salmon and steelhead are deficient in large wood due to timber operations conducted before the provisions of the Z'berg-Nejedly Forest Practice Act of 1973. Large-scale industrial timber harvest of the late 19th and last century resulted in an overabundance of woody material and slash being deposited in streams. As a response, the California Department of Fish and Game actively cleared wood from streams from the 1960s to the 1980s with the intention of re-establishing fish passage around large wood jams that formed from the deposited logging waste. This approach was based on the best science available at the time but failed to recognize the positive habitat value of large wood in streams. In forests that experienced multiple harvests over the last 150 years, many of the stream-side trees are not mature enough to recruit to the streams through natural processes, and as a result, stream channels lack the large wood required for good salmon habitat.

“Improving the quality of freshwater habitat is essential to the recovery of endangered Coho Salmon and Steelhead Trout, and we are really excited to get started on this project,” said Elise Ferrarese, North Coast Coho Project Manager with Trout Unlimited. “We will be adding large wood in the densities recommended in the federal recovery plans for these species, which are high enough densities to achieve real change in the stream system’s hydrology and sediment dynamics.”

Large wood installation will begin in mid-August, 2024, wrap up by October 31, 2024. These projects are funded by Prop 1 through a grant with the California Department of Fish and Wildlife.

“The fact that these projects are occurring on public land with easy access from Fort Bragg will also make them ideal for showcasing the benefits of this type of work to the local community,” said Ferrarese.

This project supports key elements within JDSF’s management plan to improve fish habitat, including managing riparian zones for the development of late successional forests, recruitment of large trees near streams and establishing priorities to improve or decommission roads. Sustainable practices on JDSF and other public lands can create incentives for private landowners to increase a role in ecosystem management.



This project will require partially closing campgrounds within the Camp 1 area. The Day Use area and several other campsites will remain open. Closures are expected approximately from mid-August through the remaining 2024 camping season. Public notification will be sent through press release prior to closure dates.





JDSF and the Reforestation Pipeline

January is tree planting season on the North Coast and this year at JDSF approximately 30,000 one year-old redwood seedlings were planted in the Chamberlain Confluence timber sale area.

While it may take place over a matter of days or weeks, these planting efforts are the culmination of years of cooperative effort. As part of the preparation of a Timber Harvest Plan (THP) a reforestation plan is also developed which lays out how the forest will be restored. This year's planted trees represent a mix of 10,000 redwood clones and 20,000 seed grown redwood trees, all from genetic material obtained on JDSF through cooperative projects with other government agencies and area landowners.

Reforestation projects rely on a 'reforestation pipeline' of seed collection, seed storage, tree nurseries, and planting personnel. At the start of the pipeline, CAL FIRE tracks the development of cone crops across the state through yearly cone crop surveys with both agency and private personnel. Nursery grown seedlings rely on seed collected from the appropriate local 'seed zone'. The seeds for JDSF's seedlings was collected in 2009 as part of a cooperative regional effort between area landowners and the [CAL FIRE Reforestation Services Program](#). The seed has been stored at CAL FIRE's the LA Moran



Figure 1: Freshly planted redwood seedling.



Figure 2: Processing redwood cones in 2009 on JDSF as part of a cooperative cone collection project with area landowners.

Reforestation Center in Davis since that collection. The genetic material for the cloned trees was collected in 2012 and 2013 as part of a cooperative research project between forest landowners across the redwood region. These cloned trees help provide stability to the local reforestation stock, since cone crops can be several years to a decade apart.

Landowners can store seed at the Reforestation Center until it is time to start growing seedlings for the next



Figure 3: One year-old redwood seedling ready to go in the ground.



Figure 4: Planting crew loading bags. Each member loads 100 trees into a bag. Trees are tracked at each step in the process to ensure the right number of trees are going to each reforestation unit.

planting season. Conifer trees require different growing conditions and methodologies dependent on species and the project need. Tree nurseries grow seedlings based on the orders they receive, so a consistent demand is important for maintaining the nursery capacity of the reforestation pipeline. The redwood trees purchased by JDSF were grown in containers for one year in the nursery prior to planting. (Fig 3)

As planting approaches the trees are lifted from their containers and packed in boxes for shipping to the site. Trees must be kept cool to maintain dormancy until they are ready to be planted in the field. Storage in boxes for more than a few days requires large cold storage containers capable of maintaining temperatures a few degrees above freezing. For JDSF this required coordinating with area landowners to share cooler space and transportation costs.

Once the trees are at the site and the weather is right it is time to start planting. Reforestation foresters pay close attention to the weather to limit the seedlings' exposure to below freezing conditions, while still getting enough rain to see the seedlings through the dry season. JDSF contracted with a local reforestation company to complete this year's project. A crew of 12 planters spent two weeks on JDSF planting an average of 3,000 trees a day. (Figs 4 & 5)



Figure 5: Planting a timber harvest area in the Chamberlain Confluence Timber Harvest Plan.

Maintaining this reforestation pipeline requires consistent public and private investment at all stages. JDSF contributes to this effort through seed sourcing, cooperative research projects, and support for the nursery product. CAL FIRE has also made investments in seed storage, nursery capacity, and reforestation grant programs. Through these cooperative efforts stakeholders across the region are working to ensure the long-term availability of the conifer planting stock for post-harvest restocking and post-fire reforestation and climate change resilience projects.

Learn more about the CAL FIRE Reforestation Services Program [HERE](#).



A Legacy of Fungi Diversity: Mushroom Picking and Surveying Past, Present, and Future at JDSF

In last month's JDSF Newsletter, [we looked at the Annual Mushroom Foray at the forest](#). In This month's edition we take a deeper dive into the history and future of mushroom picking and surveying at JDSF and the important role it plays in the forest's ecology, economy, and culture.

The Past

Here's some interesting historical perspective from the 1980s. According to the 1986 JDSF Annual Report, the "winter of 1986/87 was the third winter during which large numbers of commercial mushroom pickers came to the forest to pick mushrooms...people have added significantly to the patrol workload by causing several problems involving (1) staying in campgrounds longer than the 2-week maximum, (2) causing road damage, (3) camping and picking mushrooms without a permit, and (4) leaving garbage cans full of garbage



A group of Fly Agaric mushrooms (Amanita muscaria).



A cluster of Prince mushrooms (Agaricus augustus) fruiting on the roadside.

during what is normally a slow period. The new mushroom picking permit system (Class 1) implemented last winter (1985/86) has proven to be successful in getting some control of the situation, but further refinements in our procedures are necessary."

In the March 1988 JDSF Newsletter, an article by JDSF Manager Forest Tilley provided some background on the refining of the permitting process: "Commercial mushroom picking on Jackson Demonstration State Forest has been regulated through a permit process since 1985. For the first three years, commercial

permits were sold on a by-the-pound basis to the purchasers, who then issued copies to their pickers. Commercial permits this year are being sold to individual pickers on an annual basis.”

The 1990s saw JDSF continuing to refine the permit process, working to educate pickers on the dangers of consuming mushrooms, while emphasizing personal accountability to keeping the forest from getting damaged or trashed unnecessarily. A 1992 JDSF Newsletter article mentions the issuing of personal permits, which at that time were free and good for one gallon/day, with the understanding that the mushrooms were for personal consumption only and not to be sold. This is also the time in which there were so few permits issued that JDSF could keep track of them on index cards. The mushroom community gave feedback when the forest experimented with dates of issue/expiration. They said starting January 1 with an expiration date of December 31st cut the mushroom season in half, creating a hassle to have to wait for another one when yellow foot and hedgehog were popping up like crazy! JDSF staff agreed and migrated the dates to align with the fiscal year, July 1 to June 30 thus allowing for continuous picking throughout the season.



A close-up of a California King Bolete.

The Present

Fast forward to July 1, 2014. That’s the year in which JDSF streamlined the mushroom permit process into what it is today, when personal mushroom permits were eliminated in favor of making all individual mushroom permits commercial permits. In doing so, the fee for a commercial permit was lowered from \$100 to \$20 to make it more affordable, while also allowing for unlimited collection of mushrooms as opposed to the one gallon/day limit that was imposed on a personal permit. Unfortunately, personal permits were issued with the requirement that individuals would not exceed the imposed limitation or sell the mushrooms they had gathered, and both of those restrictions were being routinely violated. Eliminating the personal gathering permit led to increased permit compliance, which in turn improves our ability to manage JDSF’s natural resources.

One of the major reasons JDSF requires [permits](#) is education. Part of that education is the proper use of the forest, i.e., no digging (or leaf blowers, or rakes), but also to remind permit holders that mushroom hunting is not a no-risk occupation. Mushrooms can be poisonous, to people and to pets. The North American Mycological Association (NAMA) has some fantastic resources on their website, including an incident reporting feature and [a free poisonous mushrooms poster](#). Utilize caution, never eat anything you can’t identify! As Trevor V. Suslow with the Department of Plant Sciences at UC Davis said, [“There are old mushroom hunters, and bold mushroom hunters, but there are no old, bold mushroom hunters.”](#)

Another fantastic internet resource for California fungi is [MykoWeb](#), which has species accounts, photographs, dichotomous keys for a variety of fungal groups, and other information for the professional as well as the aspiring mycologist.

Ready for some statistics? 256 mushroom permits were issued in calendar year 2013 at JDSF. A decade later, and 1,016 mushroom permits were already issued in 2023 as of November 3, 2023! Why such a big increase in numbers? Well, it's complicated. First, JDSF has been good about educating the public about the need for a permit, and the outreach staff have done with various fungi clubs and the local Mendocino Coast Mushroom Club has borne fruit. Second, early rains. Third, COVID, which caused a large uptick in people looking for outdoor activities, and JDSF has many new devotees collecting fungi.

The Future

What does the future hold for mushroom permits on JDSF? One possibility is working with other Demonstration Forests who have mushroom permit programs to explore the possibility of offering permits online, but that's not quite ready to be rolled out yet. With the exponential growth in mushroom gathering on JDSF, staff will also be looking at what the landscape can support and whether we need to limit numbers to ensure healthy populations. Conversely, research could show that mushrooming is sustainable with a few changes like outlawing plastic buckets and instead requiring net bags for collecting so that spore spreads. That's the fun(gi) of being a research and demonstration forest, getting the opportunity to be on the ground floor of studying the sustainability of harvesting mushrooms.

Are you a mycologist or mycology student with a research project you want to conduct on JDSF? Email us JDSF@fire.ca.gov with the details.



JDSF led a subgroup of mycophiles into the woods in search of a diverse bounty of fungi during the Fungus Federation of Santa Cruz Albion II Foray in January 2023



JDSF Welcomes Ultra Marathon Runners as Part of Mendocino Coast 50K Trail Run

On Saturday, April 20, 2024, Mendocino County witnessed the seventh running of the Mendocino Coast 50K Ultra Marathon. Hosted at the scenic Big River State Park just south of Mendocino Village, the race charted a challenging yet captivating course through the region's diverse landscapes.

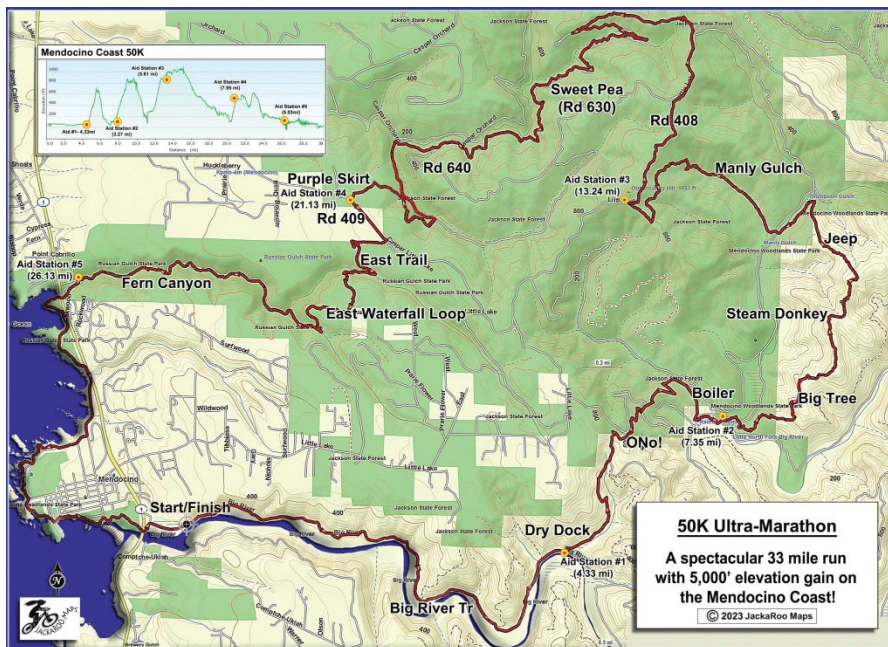


Image credit: Mendocino Coast 50K

Commencing from Big River State Beach, just south of Mendocino, over 150 eager participants embarked on a grueling journey that traversed the banks of the Big River, delved into the depths of the surrounding forests, including JDSF, and ventured westward towards Russian Gulch—a route accentuated by the presence of a striking waterfall.

The event attracted a blend of seasoned athletes and adventurous enthusiasts, each driven by a shared determination to conquer the demanding terrain and embrace the natural beauty that defines Mendocino County. Among the notable contenders, Grant Hotaling emerged as the fastest male runner, completing the course in an impressive time of 4 hours, 25 minutes, and 20 seconds. Similarly, Katherine

Song distinguished herself as the fastest female participant, crossing the finish line in 5 hours, 4 minutes, and 22 seconds.



Beyond the competitive aspect, the Mendocino Coast 50K served as a testament to the resilience and camaraderie fostered within the local running community. As runners crossed the finish line, their achievements echoed the spirit of exploration and determination that defines both the event and the individuals who embrace

its challenges.

Check out the JDSF Trail Map [HERE](#) and start planning your next run.



Mendocino County Sheriff Search and Rescue (SAR) Trains in the Jackson Demonstration State Forest

In a county that features a wide variety of forested landscape, finding the appropriate landscapes for Mendocino County's SAR Team to train in is of the utmost importance. Jackson Demonstration State Forest provides the ideal terrain to train as it is a great example of the coastal redwood forest, providing a real-world setting for essential training. In the state of California, the Sheriff is responsible for search and rescue within the county. For the Mendocino County Sheriff's Office this function is performed under the supervision of County Search and Rescue Coordinator, Lieutenant James Elmore by the volunteer search and rescue team. The team has on average about fifty volunteers who specialize in search and rescue including ground search, communications, all-terrain vehicles (ATV) and canine search (K9). To be successful and effective these volunteers must train frequently to learn and keep proficient in their skills or specialty.



Ground Search



Ground search is the largest portion of operations that the SAR Team performs every year. In Mendocino County the SAR Team average more than 20 search missions per year with some years as high as 64 missions. SAR frequently search on foot for missing persons who may get lost or disoriented while hiking, camping, hunting or otherwise enjoying the outdoors. Volunteers often have outdoor skills that drive their interest in the team and are trained in first aid, radio communications, navigation, map reading and search techniques. New members must complete a 40 + hour training curriculum before being qualified for search operations.

Mendocino SAR training does not stop there as the entire team trains monthly. The Mendocino SAR's most recent class of new members completed their training with a two-day exercise supported by the Forest at the Horse Camp in JDSF.

K9 Search

SAR K9 Teams are an important tool that the team use in search and rescue operations. Mendocino SAR K9s and their handlers train often, more than any other volunteer, frequently two times per week at various locations within the county. They must be qualified in the basic search and rescue skills as required of all our members, but they also have a significant amount of additional training specific to their K9 qualifications. Mendocino SAR's current team includes three mission-qualified teams available to serve the county with more always in training. K9 teams specialize in search techniques including trailing which uses the K9's sensitive nose to follow a specific human scent. Area search, where the K9 will find any human within the assigned search area. K9 teams can also learn skills necessary to locate human remains on land and in water. There are many variations within these skills. Mendocino County currently has one Human Remains Detection K9 (HRD) and handler, one area search handler and K9 and a handler and K9 that perform both area search and Human Remains Detection. Mendocino SAR has one trailing team that is currently in training and should be mission ready soon. Mendocino SAR's K9 training frequently uses areas of JDSF.

Volunteers Wanted

If you have an interest in the outdoors and would like to help us support our community, we are always looking for volunteers. We take in new volunteers at least twice per year. Please contact Detective Jared Chaney at chaneyjr@mendocinosheriff.org or 707-671-5846 if you are interested.



A Fungi Foray: Mushroom Gathering on JDSF and the Next Generation of Fungal Taxonomists and Ecologists



*A basket of California King Boletes (*Boletus edulis* var. *grandedulis*).*

Mushroom picking on the Jackson Demonstration State Forest (JDSF) has always been popular. With such a high diversity of species, including edibles species like the Chanterelle, Porcini, Hedgehog, Coccora, Matsutake, Candy Cap—to name just a few—it only makes sense that enthusiasts would come from far and wide to discover the bounty to be had on JDSF. Since 1992, over 700 species of fungi have been documented at the forest. Nowadays, the Forest gets people from as far away as Germany and Australia getting their mushroom permits to go hunting for Matsutake and Morel. JDSF even has mushroom clubs like the Fungus Federation of Santa Cruz (FFSC) and the Mycological Society of San Francisco (MSSF) obtaining [Special Use Permits](#) to put on annual mushroom forays for their members. Indeed, the local Mendocino College offers Spring and Fall Semester agricultural classes taught by professors Teresa Sholars and Glenn Walker whose students use JDSF as their “lab practical” through field trips.

The UC/CSU Academic Mendocino Mushroom Foray, popularized by the late Dr. Harry Thiers (San Francisco State University), has become an annual event on JDSF attended by undergraduate and graduate students in mycology, as well as local and regional mycophiles since the 1970s. Dr. Thiers first discovered the mycological wonder of JDSF in 1960 early in his tenure as a professor at San Francisco State University. His curiosity and astonishment with the high fungal diversity of JDSF inspired him to make numerous visits throughout the fall and winter



*A couple of fresh coccoras (*Amanita calyptroderma*) fruiting in stand of tanoak.*



Some of the participants of the 2022 Mendocino Foray at the Camp 1 Day Use Area at JDSF.

to collect and document the mycota of this special forest along with a cadre of youthful minds that would become the next generation of fungal taxonomists and ecologists. Dr. Thiers popularized areas of JDSF known as “Mushroom Corners” which is the type locality for at least 17 species described by him and his students. The tradition Dr. Thiers established continues to this day as caravans of students can be seen flocking to JDSF during the latter half of November to collect, identify, and learn about

fungi. The foray includes participants from UC Davis, San Francisco State, UC Berkeley, Stanford, CSU East Bay, CSU Chico, CSU Fresno and UC Riverside. The species richness of fungi seen in 2022 was the fifth highest year on record in the past 30 years of the foray--277 species of fungi (and allies).

Are you a mycologist or mycology student with a research project you want to conduct on JDSF? Email us JDSF@fire.ca.gov with the details.

Protecting Communities and Watersheds through Research in a Redwood Forest

By Hilary Clark

Published July 18, 2024



Photo Credit

USDA Forest Service photo by Hilary Clark.

Pacific Southwest Research Station research hydrologist Joe Wagenbrenner speaks about ongoing research at Caspar Creek.

Water trickles in a stream and redwoods tower overhead in Jackson Demonstration State Forest near Fort Bragg in Northern California. [Joe Wagenbrenner](#), a research hydrologist with the U. S. Forest Service's Pacific Southwest Research Station, shares the story behind the scenery.

"Our scientific findings here help inform the regulation of the timber industry within state and private lands in California," Wagenbrenner states.

Over 30 of us listen intently. A diverse group from the U.S. Forest Service, CAL FIRE, Northern Arizona University, Cal Poly Humboldt, and other organizations, we've gathered to learn about, or in some cases, speak about research occurring here.

Experimental Forests and Watershed Studies

Standing next to a fiberglass structure, Wagenbrenner explains how this flume controls the flow of the stream, so scientists can more accurately measure streamflow. Caspar Creek, he adds, has a South and North Fork, each divided into smaller sub-watersheds, allowing researchers to do paired watershed studies. In these studies, researchers treat some areas and not others, so they can compare the results. In their latest experiment, they monitored several watersheds where logging up to 75% of trees occurred in the smaller parts of the South Fork.

“We’re still analyzing the results of the current study. In addition to streamflow and sediment movement, we’re looking at soil moisture changes, how much water trees are using, groundwater conditions, light availability, and understory regeneration across the range of harvest conditions,” Wagenbrenner states.



Photo Credit

USDA Forest Service photo by Joe Wagenbrenner.

Colleagues present Liz Keppeler with sign, honoring her nearly 40 years of service with the U.S. Forest Service.

A Proud History and a Tightknit Partnership

Research at the site dates back to 1961 when CAL FIRE joined forces with the Forest Service’s Pacific Southwest Research Station to collaboratively manage the Caspar Creek Experimental Watersheds. Over 60 years later, that partnership is still going strong.

“When the state of California acquired Jackson Demonstration State Forest, they wanted to show it was still viable for timber production,” [Liz Keppeler](#), hydrologist with the Pacific Southwest Research Station, adds.

In the 1970s, researchers removed trees from the South Fork for their first experiment. Removing the trees, especially those near watercourses, enhanced erosion and sent sediment into streams. Those findings informed California's forest practice rules, which evolve over time, as has the research.

After nearly 40 years in her role, Keppeler has witnessed management priorities change from focusing mainly on timber production to a more holistic approach. Today, in the grip of climate change, making forests more resilient is a priority.

"We work really closely with the Forest Service in the research we do," says Caitlin Grace an environmental scientist with CAL FIRE.

Protecting Communities, Redwoods, and Watersheds

Even hardy, fire-adapted coast redwoods that can live for thousands of years are not immune to raging wildfires.



Photo Credit

USDA Forest Service photo by Hilary Clark.

Jackson Demonstration State Forest tour group gathers to listen to research presentations.

"Redwoods have thick bark and are high in tannins, which makes them naturally fire resistant. But their defense mechanisms may not be enough to survive with unprecedented climate change-driven fires we've seen recently," Grace adds.

CAL FIRE and research partners are using a combination of different fuel treatments, such as controlled burning, to see how the forest fares. They're assessing if cutting small trees before controlled burning helps reduce the fuels on the forest floor, and therefore, wildfire risk.

"These treatments will allow researchers to measure and compare different fire fuel mitigation methods for cost, vegetation change, wildlife use, as well as short- and long-term benefits," Grace emphasizes.

The partnership between CAL FIRE and the Forest Service is as interdependent as the health of the forest is to that of the watershed. CAL FIRE's work is particularly critical to supporting the Forest Service's Wildfire Crisis Strategy, which aims to sustain forests and protect communities. That fuel mitigation work also compliments the Forest Service's hydrology research at Caspar Creek.

"This research has informed California's regulations on protecting watersheds through streamside buffers, road design, and other rules. That's critical," Keppeler stated.

The passion of Keppeler and others for this stunning coast redwood forest and enthusiasm for their research are contagious. The tour has ended. But the buzz of excitement remains.

<https://research.fs.usda.gov/psw/news/featured/protecting-communities-and-watersheds-through-research-redwood-forest>



Redwood Resiliency Project in Caspar Creek Watershed Leading the Way for Redwood Ecosystem Research at JDSF



Researchers Drew Coe, Joe Wagenbrenner, Anna Thompson, Mairead Brogan, Salli Dymond, and Liz Keppler checking monitoring stations in the Caspar Creek watershed.

At multiple positions along the hillslopes in the Caspar Creek watersheds, hillslope transects are used to measure changes in the ecosystem before and after timber harvest. The Redwood Resiliency Project, a collaboration between University of Arizona, USDA Forest Service, and CAL FIRE, aims to expand the existing study sites from four to six transects, and to collect additional data that will expand the scope of the research.

The Redwood Resiliency Project sits within the [Caspar Creek Experimental Watershed Study](#) (CCEWS).

Established in 1961 as a cooperative effort between the CAL FIRE and the

Pacific Southwest Research Station, the CCEWS is a testament to JDSF's unique role as a living laboratory for redwood ecosystem study. It is the longest continuous research project at JDSF and has important implications for forests worldwide.

The four existing hillslope transects in the South Fork of Caspar Creek measure soil moisture, ground water level, sap flow (the movement of water and nutrients in the tree), and micro-climate. They are positioned within drainages that were subjected to a range of different harvest intensities in 2018 (0% to 76% basal area reduction). Two new hillslope transects will be added in the North Fork of Caspar Creek, which will represent two new stand types. One new transect represents late seral (closest to untouched as possible), and the other represents an overstocked clearcut from the late 80s (likely a common stand type for private landowners).

The existing hillslope transects in Caspar Creek allow researchers to study the influence of stand density and structure on watershed dynamics, like soil moisture dynamics and transpiration (a tree's process of taking up water from the soil and releasing it as water



Salli Dymond, Mairead Brogan, Fey Egan, Cristina Winters, and Anna Thompson pose for a photo inside redwood tree stump.

vapor from its leaves). Researchers will also quantify fuel characteristics, including feedback between microclimate, fuel load, and fuel moisture across stand types. Tree cores will be taken from redwood and Douglas-fir trees and analyzed to interpret their growth rate and water use efficiency. Results from the various transect sites will allow the study of drought resiliency under different management and water availability conditions.

Stay up to date with research projects at JDSF by following the forest on [Facebook](#).

Learn more about the Caspar Creek Watershed Experiment [HERE](#).

HOW MUCH DOES JDSF HARVEST AND WHAT DOES THAT MEAN FOR CARBON AND THE MENDOCINO ECONOMY?

Jackson Demonstration State Forest (JDSF) was created to be a model of sustainable forest management for the redwood region. Sustainable forest management carefully balances the amount of volume (wood) grown over time (i.e. 5 to 10 years) to the amount of volume harvested across the entire landscape each year. Forests that are managed sustainably have more diversity in plants and wildlife, as they provide a variety of habitats and forest conditions. Sustainably managed forests also continuously sequester carbon.

Since 1990, JDSF has cut 472,606,080 board feet of volume, enough to build 26,725 houses. Figure 1 illustrates the amount cut each year. Forest wide inventories, Continuous Forest Inventories (CFI) and third-party Forest Resources Inventories (FRI), are cyclically conducted on JDSF every 5 to 10 years. They are used as monitoring tools to document the growth of the forest through decades. Figure 2 (below) demonstrates that while JDSF is harvesting nearly every year, the growth of the Forest is continuing to far surpass what is harvested and is in an upward trend. To relate this to climate change, active forest growth is carbon sequestration while the existing forest is carbon storage. Through harvests, JDSF is meeting consumer demand for wood products while creating space and freeing nutrients, water, and sunlight to increase stand growth and foster a new generation of vigorously growing trees. This cycle allows the forest to continuously sequester and store carbon¹.

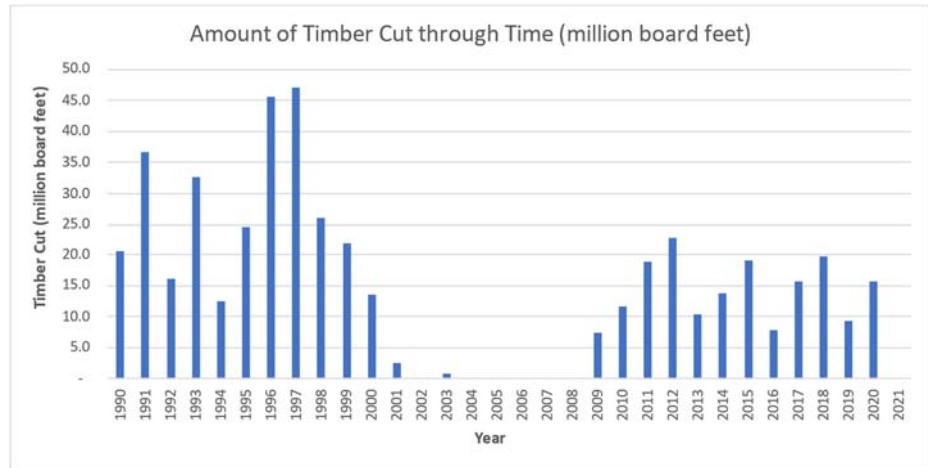


Figure 1: Amount of volume cut from 1990 to present. Data was obtained from JDSF cutting records. 2021 data has not been finalized at this time. The gap between 2003 and 2009 is the shutdown that resulted in the current Forest Management Plan.

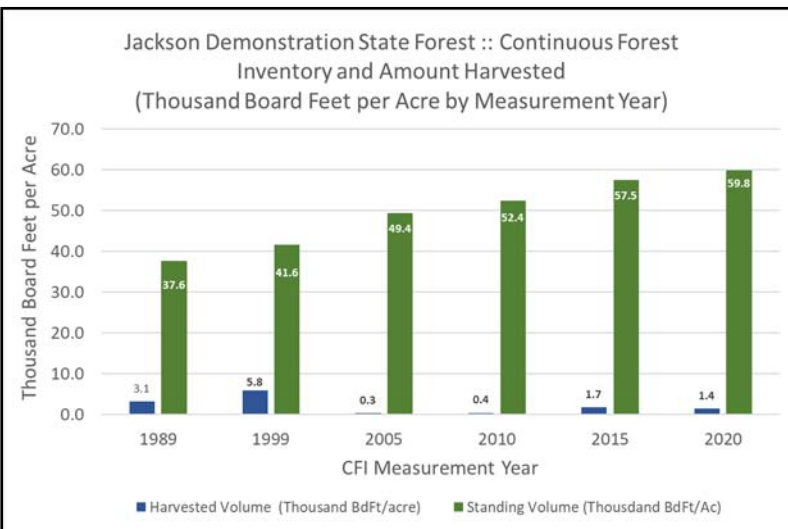


Figure 2: JDSF standing volume per acre compared by harvest amount per acre. The amount of harvested volume (blue) is for the time period between the dates (i.e. the 1989 blue = 3.1 thousand board feet per acre was harvested between the years 1989 and 1985). The amount of standing volume (green) is the volume measured at that date (i.e. the 1989 green = 37.6 thousand board feet per acre was measured to be standing in 1989). Growth is the difference between each year's standing volume (i.e. growth between 1989 and 1999 was 4 thousand board feet per acre).

The JDSF Environmental Impact Report (2008) Forest Management Plan (2016) conducted economic analysis which concluded that for every 10 million board feet of annual harvest:

- 160 jobs are created
- \$4.3 million of local wages paid
- \$184,000 in local taxes generated

Since 1990, JDSF has provided for:

- ~7,561 jobs
- ~\$203.2 million local wages
- Mendocino County ~\$3.3 million in timber yield tax revenue that contributes to the County's General Fund and Mendocino County Water Agency Board Fund²

¹ Lippke et al. 2021. "The Plant a Trillion Trees Campaign to Reduce Global Warming – Fleshing out the Concept." *Journal of Sustainable Forestry*. 40(1): 1-31 <https://doi.org/10.1080/10549811.2021.1894951>
² Angelo, Carmel, J. and Weer, Lloyd. 2020. FY 2020-21 Adopted Budget. *State of California, County of Mendocino*. <https://www.mendocinocounty.org/home/showpublisheddocument/39202/637414011645070000>