THE BOARD OF FORESTRY AND FIRE PROTECTION



**ANNUAL REPORT *2024***

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***California State Board of Forestry and Fire Protection Mission***

*The mission of the Board is to lead California in developing policies and programs that serve the public interest in environmentally, economically, and socially sustainable management of forest and rangelands and a fire protection system that protects and serves the people of the state*.

# Board Background and Organization

The California State Board of Forestry and Fire Protection (Board) is a Governor-appointed body within the California Department of Forestry and Fire Protection (CAL FIRE). Members are appointed on the basis of their professional and educational qualification and their general knowledge or interest in problems that relate to watershed management, forest management, wildland fire management, fish and wildlife, range improvement, forest economics, or land use policy. Of its nine members, five are chosen from the public, three from the forest products industry, and one from the range-livestock industry.

The Board is responsible for developing the general forest policy for the State, determining the guidance policies of CAL FIRE, and representing the State's interests in federal land located within California. Together, the Board and CAL FIRE work to carry out the California Legislature's mandate to protect and enhance the State's unique forest and wildland resources.

#### Committees of the Board

#### Committees Required by Statute

Range Management Advisory Committee

Professional Foresters Examining Committee

Soquel Advisory Committee

#### Internal Standing Committees

1. Forest Practice: The mission of the Forest Practice Committee is to evaluate and promote an effective regulatory system which ensures the continuous growth and harvest of commercial forests and protects soil, air, fish, wildlands, and water resources.
2. Resource Protection: The mission of the Resource Protection Committee is to develop and promote a policy and regulatory program that implements fire safe land use planning and effective vegetation management, pursues a fire prevention program in alignment with the State Fire Plan, and improves forest and rangeland health in California.
3. Management: The mission of the Management Committee is to evaluate and promote long-term, landscape-level planning approaches to support natural resource management on California’s non-federal forests and rangelands and to evaluate State Forest management plans.

#### External Advisory Committees

1. Effectiveness Monitoring Committee
2. California Forest Pest Council and the California Oak Mortality Task Force
3. Jackson Advisory Group
4. Joint Institute for Wood Products Innovation

## Committee Updates

#### Range Management Advisory Committee

The Range Management Advisory Committee (RMAC) is an advisory body to the Board of Forestry & Fire Protection, statutorily authorized by Public Resources Code (PRC) § 741. A California range policy advisory body has existed in some form since 1945, when the Board of Forestry and Fire Protection requested the appointment of the Range Improvement Advisory Committee (RIAC). Legislation was introduced in 1984 to make the RMAC a statutory advisory body of the Board and the California Natural Resources Agency (CNRA). Additional legislation in 1996 expanded the advisory role to include the California Environmental Protection Agency (CalEPA) and the California Department of Food and Agriculture (CDFA).

The RMAC envisions a resilient rangeland landscape in California that provides a diversity of ecosystem services to support the state’s ecological and human health. To do so, the RMAC may consider issues related to California’s rangeland resources, provide recommendations on addressing them, facilitate strong relationships with local, state, and federal agencies and develop solutions that are based on environmental, social, and economic information that is current, data-driven, and considers diverse perspectives.

The RMAC conducted business virtually and in person in 2024, summarized as follows:

* The RMAC hosted six open, virtual or hybrid public meetings to conduct committee business, and a quorum was reached at five of these meetings. Meeting activities included approval of meeting minutes; membership updates, recruitment, and seat appointments; legislative and partner organization updates; public education and outreach presentations by rangeland and natural resource representatives, professionals, and practitioners; and educational workshop planning.
* Chair Dr. Marc Horney and Vice-Chair Dr. Stephanie Larson were appointed for one-year seats through January 2025. Members Andr*ee* Soaresand Rich Ross were reappointed to four-year terms in January 2024. Jeremy Walker of Corte Madera Ranch was appointed to a four-year term in July 2024, replacing the seat vacated by Billie Roney in January 2024. Member Taylor Hagata’s seat remains open as of June 2024. The membership roster is available [online](https://bof.fire.ca.gov/media/ojpel2hj/rmac-membership-and-terms.pdf).
* In late 2023 past members of the **State Lands Grazing License and Land Management (SLGLLM) subcommittee** began finalizing deliverables and opened a second Public Comment 21-day period on the drafts on November 01, 2024 (the first comment period occurred in 2022, early in the development of these deliverables). The documents were presented to the RMAC and the public at the November 17th RMAC meeting, and it is expected that the documents will be finalized and ready for dissemination and use by state agencies by early to mid-2025. The deliverables, collectively called the State Lands Grazing Packet, include:
  + A **Grazing Agreement** outline for use in developing grazing agreements;
  + A **Management Action Plan** outline to assist in the development and implementation of an associated grazing plan; and,
  + A **Guidebook** to walk users through the development of the Grazing Agreement and Management Action Plan.
* The RMAC continued to plan and implement an **Annual** **Educational Workshop Series**, with one field tour in 2024. The educational series was much reduced from 2023 due to state budget cuts. The RMAC partnered with and leveraged resources from allied range organizations to attract speakers and attendees, including a sponsorship by the California Rangeland Trust. The 2023 educational series focused on livestock grazing impacts to native flora and fauna. Attendees included state legislative staff, private ranchers, academics, non-profit organizations, and agency staff.
* The process of revising the 2024 Annual Priorities, Goals, and Objectives began in late 2023 and will be finalized at the first meeting in 2025.
* Members and support staff worked with advised agencies, Task Forces, and other organizations with synergistic goals:
  + **SB-675 Prescribed grazing: local assistance grant program: Wildfire and Forest Resilience Task Force** (2023-2024): Chapter 772, Statutes of 2024 (SB 675) was signed into law by Governor Newsom on September 27, 2024, and would require the RMAC to consult with the CDFW, fire ecologists, and the University of California Cooperative Extension Livestock and Natural Resources Advisors and Specialists and develop a guidance document for local or regional prescribed grazing plans. Additionally, SB 675 requires the Wildfire and Forest Resilience Task Force (Task Force) to consult with the RMAC to develop a Strategic Action Plan (SAP) to expand the use of prescribed grazing to strength the state’s efforts to increase the pace and scale of wildfire and forest resilience activities, strength community protection, and reduce fire risk. A Budget Change Proposal was developed and submitted on October 7, 2024, with the Board requesting funds to support one permanent position starting in 2025, and ongoing funding thereafter to support revisions to grazing guidance developed under the mandates of SB 675.
  + As a member of the **California Wool Growers Association** (CWGA) and the CWGA’s Targeted Grazing Committee, Member Bush heads an action team to develop work products focused on prescribed grazing for fuels reduction. This team is in the process of a comprehensive update of the [2015 Prescribed Herbivory](https://bof.fire.ca.gov/media/7208/white-paper.pdf) white paper (RMAC 2015) to be finalized in 2024/early 2025. A stand-alone Technical Guide on Prescribed Herbivory in California will also be developed as an accompaniment.
  + Board staff Dr. Wolf continued collaborations with CNRA’s **Natural Working Lands (NWL) Science Team.** Through this Team, Dr. Wolf has solicited input for integration into the RMAC’s Annual Priorities, the Prescribed Herbivory white paper update (see previous bullet-point), and the SLGLLM’s State Lands’ Grazing Packet. Dr. Wolf also interfaced with agency partners to provide input on range-related resource issues into CNRA’s Natural and Working Lands Climate Smart Strategy Update.

Board staff Dr. Wolf developed the majority of the rangelands chapter for the **Forest and Resource Assessment Program's** 2024 report which assesses the amount and extent of California's forests and rangelands, analyzes their conditions, and identifies alternative management and policy guidelines. Members of the RMAC will review the chapter draft prior to finalization.

#### Professional Foresters Examining Committee

In 2024, the Professional Foresters Examining Committee (PFEC) sent to the Board a proposal intended to improve examination outcomes and took steps to shore up the Professional Forester Registration Fund (PFRF) by proposing a $70 dollar across the Board biennial fee increase. The PFEC also approved fifty-two new applications for the RPF exam.

In April and October 2024, Registered Professional Forester (RPF) and Certified Rangeland Manager (CRM) examinations were carried out at three different locations. In total, Eighty-three RPF applicants and two CRM applicants sat for these exams. For the April 2023 exam, twenty-six percent passed the RPF exam. For the October 2023 exam, examinations are currently being graded. All CRM passed their exams in 2024.

The Board of Forestry and Fire Protection’s Office of Professional Foresters Registration continues to perform outreach to increase awareness of careers in forestry in California and the licensing requirements for foresters. A three-year outreach contract was awarded to Forestry Educators Incorporated (FEI) in 2021 to provide our licensing message to multiple Society of American Forester (SAF) accredited forestry programs in the western US and Canada as well as the annual SAF convention. This last year, outreach was conducted as in-person presentations to the following conventions:

Forest Professionals B.C. Conference, Kelowna B.C.

Career and Technical Education Conference, Sacramento, CA

Other items for PFEC consideration in 2024 include:

Approval and submittal to the Board of an Apprentice Professional Forester (APF) educational program proposal to assist in exam preparedness and performance. This includes an abbreviated examination associated with successful completion of an APF program after successful demonstration of core competency forestry concepts by enrollees in a Board approved APF program. This proposed regulation is out for 45-day public comment.

Also approved and submitted to the Board were the 2024 Licensing Fee Amendments to raise renewal fees for RPF and CRM by $70 biennially across the board to improve the PFRF fiscal condition. This proposed regulation is out for 45-day public comment.

The PFEC will continue consideration of changes to the requirements for qualifying forestry work experience under 14 CCR 1621.1 including proposed changes to 14 CCR 1621.1(b)(4) to include arboriculture when conducted on forested landscapes for public safety purposes. Under this proposal, arboriculture experience would be limited to two years of qualifying forestry experience but would not qualify for experience under an RPF supervisor regardless of the work being conducted at the supervisory or planning level as described in 14 CCR 1622 (c)(1). Also for discussion will be a review and possible update to 14 CCR 1622.2 Contract Forestry Work Experience which allows for an applicant under contract who is in charge of forestry work, or otherwise supervised by an RPF or qualified exempt supervisor to meet the requirements of 1622 through the submission of a contract with their license application that details compliance with the supervisory requirements in 1622.

**Effectiveness Monitoring Committee**

The Board formed the Effectiveness Monitoring Committee (EMC) in 2014 to develop and implement a monitoring program to address both watershed and wildlife concerns and to provide a more effective feedback loop to policymakers, managers, agencies, and the public. Effectiveness monitoring is necessary to assess whether management practices are achieving the resource goals and objectives set forth in the California Forest Practice Rules (FPRs) and other natural resource protection statutes and regulations. This kind of monitoring is a key component of adaptive management. Effectiveness monitoring is also a crucial component for complying with the “ecological performance” reporting requirements outlined in AB 1492 (2012). The EMC annually updates the Research Themes and Critical Monitoring Questions (CMQ) based on input from stakeholders, and uses them to guide and evaluate effectiveness monitoring research projects with the goal of developing a process-based understanding of the effectiveness of the FPRs and associated regulations in maintaining and enhancing water quality and aquatic and wildlife habitats.

The following is a summary of EMC activities in 2024:

* The EMC met four times virtually in open, webcast meetings to conduct business.
* Three new members were welcomed to the EMC, and three members were re-appointed to their seats on the EMC for four-year terms. The updated Membership Roster is available [online](https://bof.fire.ca.gov/media/qqqd0ube/emc-members-and-term-exp_webpage.pdf):
* Members Sal Chinnici, Dr. Leander Love-Anderegg, and Dr. Matthew O’Connor were reappointed to their seats on the Monitoring Community.
* Givonne G. Law of East Bay Regional Park District joined the Monitoring Community, filling one open seat. Izaac Russo backfilled James Burke’s seat as representative of the North Coast Regional Water Quality Control Board; and Marjan Ghotbizadeh backfilled Jessican Leonard’s seat as representative of the State Water Resources Control Board.
* The Research Themes and Critical Monitoring Questions (CMQs) were revised and approved in March. One new CMQ was added to Research Theme 9—Wildlife Habitat: Cumulative Impacts—to address the protection of rare, threatened, and or endangered plants (see [EMC 2024](https://bof.fire.ca.gov/media/nmfbkuub/research-themes-and-critical-monitoring-questions.pdf) for details). The EMC designated four priority CMQs to prioritize for funding in Fiscal Year (FY) 2023/24 FY. As in previous years, these questions were prioritized for research funding, but not to the exclusion of projects focusing on other CMQs or other research needs related to the FPRs and associated regulations.
* In July 2024, The EMC received an allocation of $389,700 from the Timber Regulation and Forest Restoration Fund, down from its usual allocation of $425,000 due to state budget cuts. Of this, $387,448 was allocated to newly and previously awarded ongoing projects. The EMC reviewed seven Initial Concept Proposals (ICPs) and requested Full Project Proposals (FPPs) from four research teams. Upon review and discussion, the committee voted to recommend funding for two proposals totaling $426,564 over the course of three years beginning in FY 2024/25. Project information for these two projects is as follows:
  + [EMC-2024-001: Balancing fuel considerations and rare carnivore habitat: an evaluation of risk and reward](https://bof.fire.ca.gov/media/uvof51er/11g-emc-2024-001-moriarty-full-proposal_redacted.pdf)
  + [EMC-2024-004: Establishing a Survey Protocol for Marbled Murrelet Using Passive Acoustic Technology](https://bof.fire.ca.gov/media/1jtnfkky/11i-emc-2024-004-dotters-full-proposal_redacted.pdf)
* One or more brief project updates were provided by Board staff, Principal Investigators and/or Project Liaisons at EMC meetings for numerous ongoing EMC-supported projects. Project deliverables received in 2024 included presentations provided at public EMC meetings, poster and oral research presentations at conferences, invited talks, and peer-reviewed publications for the following projects:
  + EMC-2018-003: Alternative Meadow Restoration
  + Draft Completed Research Assessment ([O'Connor and Love-Anderegg 2024a](https://bof.fire.ca.gov/media/xfph0q05/11c-completed-research-assessment.pdf))
  + Final Completed Research Assessment (O'Connor and Love-Anderegg 2024b)
  + Master of Science in Environmental Sciences and Management thesis (Ramirez 2024wa)
  + EMC-2018-006: Effect of FPRS on Restoring Canopy Closure, Water Temperature, & Primary Productivity ([Bladon 2024](https://bof.fire.ca.gov/media/phajm1n0/13-final-presentation-june-2024.pdf)) – Final project presentation
  + EMC-2017-006: Fuel treatment alternatives in riparian zones of the Sierra Nevada ([York 2024](https://bof.fire.ca.gov/media/mxqpjsrz/8-presentation-forest-landowners-of-california-may-2024.pdf)) – a presentation to the Forest Landowners of California
  + EMC-2022-004: Assessing Fire Hazard, Risk, and Post Fire Recovery for Watercourse and Lake Protection Zones (WLPZ) and riparian areas of California (Miley 2024) – Progress Report Presentation
  + EMC-2022-003: Santa Cruz Mountains Post-Fire Redwood Defect Study (Hamey 2024) – Progress Report Presentation
  + EMC-2022-005: Decay Rates and Fire Behavior of Woody Debris in Coastal Redwoods (Norville 2024) – Progress Report Presentation
  + EMC-2021-003: Evaluating the Response of Native Pollinators to Fuel-Reduction Treatments in Managed Conifer Forests
  + Progress Report Presentation (Rivers 2024)
  + Oregon State University Spring Poster Symposium ([Gutierrez and Sampognaro 2024](https://bof.fire.ca.gov/media/fttcfirj/4-gutierrez-and-sampognaro-2024.pdf))
  + Invited Talk – ([Rivers 2024](https://bof.fire.ca.gov/media/wreb01kc/5-rivers-2024.pdf))

In 2025, the EMC priorities are as follows:

* Meet at least four times per year in open meetings accessible to the public.
* Meet in the field at least once to observe active or proposed monitoring projects.
* Support projects related to the EMC Themes and CMQs, including funding new projects where knowledge gaps exist.
* Monitor progress on EMC-funded or EMC-supported monitoring projects.
* Review and update EMC Research Themes and CMQs as needed.
* Identify themes/CMQs for priority research funding in the 2024/25 RFP.
* Use an Adaptive Management approach to provide research results that inform management and policy development.
* Review and revise the Charter and the Strategic Plan.

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#### Joint Institute for Wood Products Innovation

The Joint Institute for Wood Products Innovation (Institute) is an advisory committee to the California Board of Forestry and Fire Protection (Board). The Institute is committed to supporting sustainable forestry and forest restoration and funds forest wood and biomass research to help retain and establish related industries in the state.

To date in 2024, the Institute has finalized and published findings from three projects.

* [Recommendations to Advance Forest-Derived Renewable Natural Gas in California](https://bof.fire.ca.gov/media/vmqnq4p1/joint-insittute-forest-derived-rng-revised-final-report_april-2024.pdf) was a study conducted by UC Berkeley. Approved by the Board April 10, 2024, it provided recommendations to the CA Public Utilities Commission and other state agencies on renewable natural gas (RNG) from forest biomass. Recommendations were developed based on a geospatial analysis of existing biomass power plants that were evaluated for possible retrofitting for RNG production, interviews with bioenergy project developers, and an assessment of potential policy scenarios in which RNG would be economically viable.
* [Cross-Laminated Timber Layup Tests Using Mixed Fir Species](https://bof.fire.ca.gov/media/jyyd5ud5/cross-laminated-timber-layup-tests-using-mixed-fir-species.pdf) was a study conducted by the TallWood Design Institute at Oregon State University. Approved by the Board March 6, 2024, it assessed the feasibility of mixed species CLT using white fir and Douglas-fir.
* [Measuring Transport Properties for Concrete Containing Cellulose Nanocrystals (CNC): Porosity, Resistivity, and Chloride Ingress](https://bof.fire.ca.gov/media/prmp4rs1/measuring-transport-properties-for-concrete-containing-cellulose-nanocrystals.pdf) was a study conducted by Oregon State University. Approved by the Board of Forestry and Fire Protection (Board) March 6, 2024, it assessed the influence of CNCs on the service life of steel in concrete elements to extend the time to onset of reinforcing steel corrosion.

Two additional projects are expected to be completed by December 2024.

* Clere, Inc is leading a project on ‘CEQA Support for Wood Utilization.’ This project will produce a CEQA guidebook. It will also consider the value of a new CEQA Guideline amendment that was described in the Institute’s November 2020 ‘Recommendations to Expand Wood and Biomass Utilization in California to determine whether the language proposed should be recommended.
* TSS Consultants is leading a project on ‘Assessment of State Purchasing Protocols Related to Innovative Wood Products.’This project is assessing current state purchasing protocols and identifying barriers and implications of updating the protocols to facilitate procurement of innovative wood products. The final report will include solutions and pathways that allow for implementation over a 2-year-period.

Three other research projects are currently underway.

* UC Berkeley is leading a project on ‘Mountain Community Affordable Workforce Housing with Mass Timber Components.’This project will develop affordable workforce housing designs that will fit the needs of mountain community workforces. Plans will be designed to be permitted in the areas for which they are intended and will include mass timber elements where affordable.
* TYLD Corp is leading a project on ‘Forest Industry Infrastructure Capacity Assessment and Needs Analysis.’ This work will characterize current industry infrastructure by CALVEG sub-region as well as volume and type of supply necessary to retain and sustain the industry infrastructure needed to accomplish relevant California Wildfire and Forest Resilience Task Force goals. This project will also include an analysis of current and reasonably recent successful efforts to increase pace and scale of ecosystem restoration and hazardous fuels reduction within the state.

Cal Poly, Humboldt is leading a project on the ‘Development of a Life Cycle Accounting Model for Biofuel Production from Forest Biomass Waste in California.’ This project is developing a lifecycle assessment (LCA) calculator tool quantifying the greenhouse gas (GHG) impact of diverting forest residues from current management practices to bioenergy products. The LCA tools will model the life cycle GHG impact of electricity or hydrogen fuel pathways. This will help state agencies evaluate the carbon intensity of forest residue liquid and gaseous transportation fuels and their potential role in the state’s climate and forest plans.

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# Chaptered Legislation with Future Regulatory Action by the Board

**AB 2276 (Statutes of 2024, Chapter 388)**

This bill repeals the Small Timberland Owner Exemption, renames the Forest Fire Prevention Exemption the Forest Resilience Exemption, revises the standards and criteria for qualifying for that exemption, and extends that exemption until January 1, 2031, and extends until January 1, 2031, the other exemption described above.

**SB 504 (Statutes of 2024, Chapter 982)**

This bill, without reference to weather conditions, requires fuels to be maintained and spaced in a condition so that a wildfire would be unlikely to ignite the structure. The bill authorizes regulations to alter the fuel reduction required between 5 and 30 feet to integrate the ember-resistant zone, and would provide that the requirement for the ember-resistant zone shall instead take effect for existing structures 3 years after the effective date for new structures, as specified.

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# Forest Health Trends

## Monitoring Efforts

The Forest Practice Program’s Watershed Protection Program oversees programmatic monitoring of the Forest Practice Rules (FPRs). Programmatic monitoring on private and public forestlands has shown generally high compliance with water-quality related rules, and that those rules are generally effective in preventing erosion and sedimentation when properly implemented (FORPRIEM, 2014). Additionally, since the passage of SB 901 in 2018, CAL FIRE has been engaged in the monitoring and reporting on of ministerial Exemptions and Emergency Notices. To date, CAL FIRE has released legislative reports on the following: the §1052 Emergency Notice of Timber Operations (Olsen et al., 2019); §1038(c) Structure Protection 0-150 Foot Fire Safe Exemption Notices (Olsen and Coe, 2021); §1038(c)(6) Fire Hazard Reduction Within 300 Feet of Residences Exemption Notices (Olsen and Coe, 2021); and the §1038.3 Forest Fire Prevention Exemption Notice (Olsen et al., 2022). The second phase of post-fire §1052 Emergency Notice of Timber Operations monitoring has been completed, and results will be presented in California Forestry Report #8 (Olsen et al., in review). A report is currently being prepared on the §1038(d) Exemption Notice, which allows for the harvesting of dead, dying, or diseased trees in response to drought stress or when sawlog-sized trees are deemed unmerchantable on Substantially Damaged Timberland. In addition, a new iteration of Forest Practice Implementation and Effectiveness Monitoring (FORPRIEM 2.0) will initiate in 2025, with a renewed focus on Timber Harvesting Plans (THP).

In addition to programmatic monitoring, CAL FIRE implements and coordinates applied forest research. Examples of this includes the collaborative research partnership between CAL FIRE and the USFS Pacific Southwest Research Station on Jackson Demonstration State Forest’s Caspar Creek watersheds, which has been active since 1962. Over 330 publications have been generated from the Caspar Creek Watersheds, with two peer-reviewed manuscripts were published in 2024 (Keppeler et al., 2024; McKeever et al., 2024). Also, post-fire salvage logging-related research conducted on the Boggs Mountain Demonstration State Forest following the 2015 Valley Fire resulted in several published manuscripts, as well as the generation of the world’s first guidance document on how to reduce water quality impacts from post-fire salvage logging (California Forestry Report #7; Wagenbrenner et al., 2023). Monitoring and research conducted by the Effectiveness Monitoring Committee has resulted in FPR rule refinement related to the Anadromous Salmonid Protection Rules riparian prescriptions for Class II watercourses (Pate et al., 2020; Miralha et al., 2023; Miralha et al., 2024).

## 

## Pest Conditions

The following is a summary of notable insect, disease, and forest health issues that continue to threaten and alter urban and wildland forests in California in 2024. Forest pest conditions can change dramatically from year to year. For a summary of forest pests and diseases, see the [2023 California Forest Pest Conditions Report](https://www.caforestpestcouncil.org/_files/ugd/8ecc61_d9d3075b463d42eeadb60ea136f799d1.pdf). The 2023 California Forest Pest Conditions Report will be available on the [California Forest Pest Council website](http://caforestpestcouncil.org/) in early 2025.

**Invasive Shot Hole Borer (ISHB)**

Polyphagous shot hole borer (PSHB; *Euwallacea formicatus*) is established in Los Angeles, Orange, Riverside, San Bernardino, San Diego, and Ventura Counties. Kuroshio shot hole borer (KSHB; *E. kuroshio*) is established in Los Angeles, Orange, Santa Barbara, San Diego, and Riverside Counties. KSHB was found in a San Luis Obispo County trap once in 2020. While no infestations have been found in the landscape there to date, trapping and surveying continues in high-risk locations throughout the county. PSHB and KSHB, together known as ISHB, are associated with several fungi, including species of *Fusarium*, which are known plant pathogens. Major reproductive hosts include species of willow, oak, maple, sycamore, cottonwood, and numerous other hardwoods. Extensive damage continues to occur in parks, urban trees, and riparian areas. No new sites have been found outside of the eight-county ISHB Zone of Infestation (ZOI), although there has been intensification throughout the range. Ten million dollars has been spent since 2020 on education, outreach, tree removal, trapping, and proper disposal of infested material. Funding through CAL FIRE for tree removal and proper disposal of amplifier trees (trees producing large quantities of beetles) will end in March 2024. In 2023 a single ISHB was found in a trap in the city of San Jose. Surveys and trapping in that area found an extensive infestation along a riparian area and in nearby street trees. In late 2024 ISHB was positively identified in Santa Cruz County near the community of Felton. Surveys will continue to determine the extent of the infestation. Reports from other countries that have been infested with ISHB (Israel, Australia, and South Africa) indicate that the pest complexes may be detrimental to various fruit and nut crops as well as forest and shade tree species.

**Goldspotted Oak Borer (GSOB)**

GSOB (*Agrilus auroguttatus*) continues to spread in southern California through localized beetle flight as well as firewood movement. It is now found in extensive areas of San Diego, Los Angeles, Orange, Riverside, and San Bernardino Counties, with new spot outbreaks found outside of previous infestation locations. GSOB attacks and can kill California black oak, coast live oak, and, to a lesser extent, canyon live oak, preferring larger diameter and older trees. In 2024 new infestations were found in parts of Los Angeles County and an infestation was found for the first time in Santa Barbara County thus adding a new county to the infested list.

**Bark Beetles (various species)**

Conifer-killing bark and engraver beetle populations remain an issue throughout northern and central California due to previous drought conditions, overstocking, and climate change. Most infestations are in the northern and central Sierra Nevada, the Cascades, the northern Coast Range, and counties around Clear Lake, where both Napa and Lake Counties declared tree mortality emergencies. Stress from the past drought is exacerbating the outbreaks of western pine bark beetle (*Dendroctonus brevicomis*) in ponderosa pine and Ips engraver beetles (*Ips* spp.) in all pine species, though outbreaks of each diminished in 2023. Fir engraver beetles (*Scolytus ventralis*) are causing extensive top kill and mortality in true firs throughout the upper reaches of the Sierra Nevada and were the main bark beetle issue in 2024. This is the traditional pattern for fir engraver beetles Fir engraver beetles are following the traditional pattern of becoming major outbreaks following a year or two after a pine bark beetle epidemic has diminished. Although a small Douglas-fir beetle (*Dendroctonus pseudotsugae*) outbreak occurred on Douglas-fir trees in Jackson Demonstration State Forest and surrounding areas, the main cause of Douglas-fir die-off in the state is the flatheaded fir borer *(Phaenops drummondi*), which is causing a significant increase in the number and size of mortality patches throughout the northern half of the state. Pinyon Ips (*Ips confusus*) has caused mortality of pinyon pine on the eastside of the Sierra Nevada Range. In hardwoods, the western oak bark beetle (*Pseudopityophthorus pubipennis*) continues to infest true oaks around the Central Valley and Coast Range. Associated foamy bark canker outbreaks have been detected statewide and are particularly bad in the foothills around the Central Valley.

**Mediterranean Oak Borer (MOB)**

MOB (*Xyleborus monographus*) and its associated fungi continue to kill valley and blue oaks throughout Napa, Sonoma, and Lake Counties as well as a satellite infestation in Sacramento County. Splat verbenone appears to have moderate repellency against MOB for 4 – 6 weeks after application. Long-term plots have been established to track decline in valley, blue, and Oregon oak in Napa and Sonoma Counties in burned and unburned plots post wildfires. After 1 year, burned plots appear to be slightly more susceptible to MOB attack and valley oaks in dry and fire disturbed areas show the greatest levels of MOB-related decline. No new infestations have been found outside of the known impacted counties; however, in Oregon, 21 beetles were found in traps in four counties showing the potential for further spread. Genetic testing indicates the Oregon MOB originated in Germany, whereas the California MOB originated in France. The potential for further introductions into California remains a concern.

In 2024 the infestation in Sacramento County expanded rapidly into the city limits of Sacramento as well across the Sacramento River into Yolo County. A trap find in Eldorado County indicates a potential infestation near the Marshall Gold Discovery Park.

**Sudden Oak Death (SOD)**

In late 2021 and early 2022, CAL FIRE and UC Cooperative Extension Humboldt-Del Norte Counties detected a satellite *Phytophthora ramorum* EU1 (plant pathogen known to cause SOD; a European strain of the pathogen) infestation near the original EU1 site found in Del Norte County. These detections were later confirmed by UC Berkeley as part of the 2022 SOD Blitz. Further surveys and plans for treating this infestation were underway in 2024, as was discussion of the optimal size and location for a requested SOD zone of infestation (ZOI) in Del Norte County. Wet winters and springs over the past two years increased SOD activity in 2024. There is typically a two-year delay from infection during wet periods to increases in symptoms and mortality in oaks and tanoaks.

In 2024 both North American strains (NA1 and NA2) as well as the European strain (EU1) were found in the same watershed (Peacock Creek) in Del Norte County. This represented the first time that all three known strains of the disease were found in the same location anywhere in the world and offered the possibility of genetic recombination of the fungal pathogen with unknown impacts.

Positive stream samples for SOD in San Luis Obispo County remain a concern. The potential vegetative source of the infestation has yet to be found despite numerous surveys over the past several years in the area.

**Pitch Canker Disease**

Pitch Canker (*Fusarium circinatum*) has spread into Sonoma and Mendocino Counties and is causing significant mortality in Monterey, bishop, and shore pine. Mortality is occurring from Salt Point north, through Pt. Arena and Manchester. This northern distribution is much further than was originally predicted and continues to spread. Surveys continued into 2023 with no further spread of the pathogen northward found.

At the southern end of the infestation pitch canker was found for the first time in Torrey Pines State Preserve in San Diego County. Although the species was known to be susceptible to the disease in laboratory tests this was the first find in the natural ecosystem. The disease and associated Ips bark beetles are causing extensive dieback and mortality in one of the rarest pine species in the world (there are only two native stands of Torrey pines).

**White Pine Blister Rust**

White pine blister rust (caused by *Cronartium ribicola*) was found in Los Angeles County in 2023 and is confirmed to be fruiting on several species of gooseberry (*Ribes* spp). While western white pine, sugar pine, whitebark pine, and limber pine are primary white pine blister rust hosts, Ribes species are required alternate hosts for the fungus lifecycle. This is the first time white pine blister rust has been found this far south in California. To date, no primary hosts have been found infected in the area although further Ribes infestations have been found.

White pine blister rust has been causing extensive damage and mortality to higher elevation five needle pines on the eastside of the Sierra Nevada Range. No rust has yet to be detected in the White Mountains in the ancient bristlecone pine forest however there is a concern that the main understory shrub in the main stand is a species of Ribes that could carry the disease to these most ancient trees.

**Acute Oak Decline**

Blue oaks with basal trunk cankers were found in Santa Benito County in 2023. Several bacteria were isolated from tree samples (*Rahnella victoriana, Brenneria goodwinii, Gibbsiella quercinecans*, and *Erwinia* sp.). These bacteria have been associated with acute oak decline in Britain. Further surveys and sampling have found the bacteria in Los Angeles County on blue and coast live oaks with potential sites throughout southern and central California. It is unknown if these are new introductions of the bacteria or if it has been present and previously gone undetected.

**Ghost Canker of Pines in Southern California**

Ghost canker (caused by two species of the fungus *Neofusicoccum*)is a new pest of pines in Orange County. The fungi are native and have been recorded causing disease in grapevine and fruit and nut trees in the area. The disease was not previously found on pines but have attacked other conifer species in far northern California. In Orange County it is killing planted Monterey, Aleppo, and Canary Island pines. The potential host range for the disease is unknown, and there is concern about what impacts it might have on native pine species if and when it spreads.

**Emerald Ash Borer in Oregon**

Emerald ash borer (*Agrilus planipennis*), a non-native insect, has killed hundreds of thousands of ash trees in the eastern and midwestern regions of the U.S. In 2023 it was found for the first time on the West Coast in the greater Portland, Oregon area. There is a high probability of the insect moving into California via firewood where it could affect native and urban ash trees.

**Spongy Moth**

Spongy moth (*Lymantria dispar*), formerly known as gypsy moth, is a non-native insect known for defoliating and damaging oaks and other hardwood trees in the eastern U.S. In 2024, a spot infestation was found in the community of Monte Nido in Los Angeles County. The infestation triggered a control and eradication effort to eliminate the insect. Spray operations with the organic pesticide BtK will happen in the spring of 2025. The Los Angeles County find is especially concerning since it is of Asian or Siberian decent, which differs from the more common European moth in that the females can fly and the caterpillars feed on both hardwood and conifer tree species.

A second potential infestation has been located in Orange County. Several moths were trapped, and delimitation trapping has begun. The Orange County infestation is of the Asian variety of the moth. Asian spongy moth is especially concerning since the females can fly (they are flightless in the European variety), and they can feed on conifer foliage unlike the European variety.

# Timber Harvest Permitting

Annual timber harvesting permits are shown in the below tables. The use of exemptions, as allowed for under PRC § 4584 and 14 CCR § 1038, remained stable the last two years, however emergency notices were significantly down, corresponding to lower fire incident years in the 22/23 and 23/24 fiscal reporting period. NTMP’s were slightly down. Individual Timber Harvesting Plans (THPs) decreased slightly in number and decreased in acreage in Fiscal Year 2023-24 (Figure 3). The number and acreage of Non-Industrial Timber Management Plans (NTMPs) decreased this year (Figure 4).

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#### F**igure 1. Exemption Statistics for Fiscal Years 14/15-23/24**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Fiscal Year** | **Harvest Document Type** | **Number of Notifications** | **Acres** | **Total Acres** |
| **2014/15** | 1038(b) Exemptions | 781 | 2,884,982 |  |
|  | All other Exemptions | 1,009 | 41,563 |  |
|  | Total Exemptions | 1,790 |  | 2,926,545 |
| **2015/16** | 1038(b) Exemptions | 697 | 2,589,358 |  |
|  | 1038(k) Exemptions | 776 | 110,224 |  |
|  | All other Exemptions | 1,003 | 27,433 |  |
|  | Total Exemptions | 2,476 |  | 2,721,015 |
| **2016/17** | 1038(b) Exemptions | 522 | 2,592,252 |  |
|  | 1038(k) Exemptions | 956 | 10,358 |  |
|  | All other Exemptions | 1,032 | 208,111 |  |
|  | Total Exemptions | 2,510 |  | 2,910,721 |
| **2017/18** | 1038(b) Exemptions | 554 | 2,933,286 |  |
|  | 1038(k) Exemptions | 414 | 44,357 |  |
|  | All other Exemptions | 1,042 | 482,206 |  |
|  | Total Exemptions | 2,010 |  | 3,459,849 |
| **2018/19** | 1038(a) & 1038(b) Exemptions | 451 | 2,310,695 |  |
|  | 1038(f) Exemptions | 3 | 112 |  |
|  | 1038(k) Exemptions | 94 | 7,464 |  |
|  | 1038.3 Exemptions | 15 | 1,892 |  |
|  | All other Exemptions | 1,605 | 454,582 |  |
|  | Total Exemptions | 2,168 |  | 2,774,745 |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Fiscal Year** | **Harvest Document Type** | **Number of Notifications** | **Acres** | **Total Acres** |
| **2019/20** | 1038.3 | 48 | 5,447 |  |
|  | 1038(b) | 463 | 2,281,985 |  |
|  | 1038(f) | 8 | 165 |  |
|  | 1038(g) | 0 | 0 |  |
|  | All other Exemptions | 2,246 | 733,933 |  |
|  | Total Exemptions | 2,765 |  | 2,706,977 |
| **2020/21** | 1038.3 | 66 | 5,039 |  |
|  | 1038 (b) | 384 | 2,023,689 |  |
|  | 1038 (f) | 3 | 55 |  |
|  | 1038 (g) | 126 | 602 |  |
|  | All other Exemptions | 1020 | 879,956 |  |
|  | Total Exemptions | 1,599 |  | 2,909,341 |
| **2021/22** | 1038.3 | 70 | 6,065 |  |
|  | 1038 (b) | 289 | 1,408,843 |  |
|  | 1038 (f) | 2 | 69 |  |
|  | 1038 (g) | 0 | 0 |  |
|  | All other Exemptions | 809 | 1,410,076 |  |
|  | Total Exemptions | 1,170 |  | 2,825,053 |
| **2022/23** | 1038.3 | 61 | 5,953 |  |
|  | 1038 (b) | 255 | 1,380,384 |  |
|  | 1038 (f) | 1 | 40 |  |
|  | 1038 (g) | 38 | 272 |  |
|  | All other Exemptions | 633 | 373,640 |  |
|  | Total Exemptions | 988 |  | 1,760,289 |
| **2023/24** | 1038.3 | 57 | 4,315 |  |
|  | 1038 (b) | 288 | 1,762,331 |  |
|  | 1038 (f) | 1 | 40 |  |
|  | 1038 (g) | 0 | 0 |  |
|  | All other Exemptions | 619 | 159,497 |  |
|  | Total Exemptions | 965 |  | 1,926,183 |

#### Figure 2. Emergency Notice Statistics for Fiscal Years 14/15-23/24

|  |  |  |  |
| --- | --- | --- | --- |
| **Fiscal Year** | **Harvest Document Type** | **Number of Notifications** | **Total Acres** |
| **2014/15** | Emergency Notice | 266 | 66,735 |
| **2015/16** | Emergency Notice | 231 | 28,921 |
| **2016/17** | Emergency Notice | 81 | 15,123 |
| **2017/18** | Emergency Notice | 189 | 14,133 |
| **2018/19** | Emergency Notice | 289 | 42,247 |
| **2019/20** | Emergency Notice | 158 | 16,056 |
| **2020/21** | Emergency Notice | 452 | 86,616 |
| **2021/22** | Emergency Notice | 289 | 94,552 |
| **2022/23** | Emergency Notice | 299 | 65,646 |
| **2023/24** | Emergency Notice | 143 | 27,896 |

Note: Calculated as Emergency Notices validated by CAL FIRE review team between July 1 and June 30 of each FY.

#### Figure 3. THP Statistics for Fiscal Years 11/12-23/24

| **Fiscal Year** | **Harvest Document Type** | **Number of Plans** | **Acres** |
| --- | --- | --- | --- |
| **2011-12** | THP | 270 | 139,553 |
| **2012-13** | THP | 243 | 107,051 |
| **2013-14** | THP | 278 | 146,384 |
| **2014-15** | THP | 260 | 128,644 |
| **2015-16** | THP | 249 | 99,271 |
| **2016-17** | THP | 219 | 91,067 |
| **2017-18** | THP | 266 | 105,433 |
| **2018-19** | THP | 244 | 100,888 |
| **2019-20** | THP | 234 | 122,586 |
| **2020-21** | THP | 207 | 92,917 |
| **2021-22** | THP | 194 | 64,272 |
| **2022-23** | THP | 174 | 56,414 |
| **2023-24** | THP | 157 | 52,628 |

Note: Calculated as Timber Harvest Plans validated by CAL FIRE review team between July 1 and June 30 of each FY.

#### Figure 4. NTMP Statistics for Fiscal Years 11/12-23/24

| **Fiscal Year** | **Harvest Document Type** | **Number of Plans** | **Acres** |
| --- | --- | --- | --- |
| **2011-12** | NTMP | 14 | 10,932 |
| **2012-13** | NTMP | 12 | 7,365 |
| **2013-14** | NTMP | 10 | 4,126 |
| **2014-15** | NTMP | 12 | 3,367 |
| **2015-16** | NTMP | 17 | 8,100 |
| **2016-17** | NTMP | 23 | 5,105 |
| **2017-18** | NTMP | 14 | 4,448 |
| **2018-19** | NTMP | 14 | 2,410 |
| **2019-20** | NTMP | 13 | 4,215 |
| **2020-21** | NTMP | 8 | 1,542 |
| **2021-22** | NTMP | 5 | 2,413 |
| **2022-23** | NTMP | 9 | 2,482 |
| **2023-24** | NTMP | 6 | 1,215 |

Note: Calculated as Nonindustrial Timber Management Plans validated by CAL FIRE review team between July 1 and June 30 of each FY.

## Timber Harvesting Volumes

The 2024 timber harvesting volume data has yet to be updated for this report.   
  
The statewide estimate for timber harvesting data from California state forests and other public lands for Calendar Year 2024. Information presented in this table is generated through a statewide census of California’s database of forest inventory.

#### Figure 5. Timber Harvesting Volumes (January through September 2023).

| **Private and Tribal** | **State** | **BLM and other Public** | **Forest Service** |
| --- | --- | --- | --- |
| 1,586,774 MBF | 14,038 MBF | 1,069 MBF | 183,068 MBF \* |

## Prescribed Fire and Fuel Reduction Efforts

As fire size and severity have worsened over the past decade, mandates to focus on fuels reduction treatments have arisen. In 2018, Executive Order B-52-18 from then-governor Brown ordered the doubling of forest acres treated per year from 250,000 to 500,000 statewide within five years. The expanded use of fuels treatments to prevent catastrophic wildfire continues to be a high priority for the Board and CAL FIRE. Fuel treatments are intended to reduce the amount of surface and ladder fuels and thereby reduce the risk of catastrophic fires that burn longer, further, and hotter. The modification of fire behavior because of fuel reduction efforts may prevent loss of life, reduce fire suppression costs, reduce property losses, and protect natural resources. Fuel treatments utilized by CAL FIRE include, but are not limited to, prescribed fire, mechanical clearing, cooperative fuel reduction grants, and encouraging stand management by timber owners through application of the FPRs. EO B-52-18 also encouraged the use of prescribed fire as a management tool.

CAL FIRE’s Vegetation Management Program (VMP) is a cost-sharing program that encourages fuel reduction in state responsibility area lands (SRA) and focuses on prescribed fire. The use of fire mimics natural processes, enables fuel reduction, and restores fire to its historic role in wildland ecosystems, which may improve native communities. The VMP can be utilized by private landowners to accomplish fuel reduction goals on their property using prescribed fire and other fuel management techniques. Figures 12 and 13 below illustrate the acreage goals and number of acres treated in the three most recent fiscal years.

#### Figure 12. Broadcast/Prescribed Burn Targets and Acres Completed.

**\*FY 2023/24 is through June 30, 2024**

| **Fiscal Year** | **Target** | **Completed** | **% Completed** |
| --- | --- | --- | --- |
| **2017/2018** | 20,000 | 19,413 | 97.07% |
| **2018/2019** | 25,000 | 30,781 | 123.12% |
| **2019/2020** | 25,000 | 31,923 | 127.68% |
| **2020/2021** | 25,000 | 32,107 | 128.43% |
| **2021/2022** | 30,000 | 17,032 | 56.77% |
| **2022/2023** | 50,000 | 36,046 | 72.09% |
| **2023/2024** | 50,000 | 30,416 | 60.83% |

#### Figure 13. All Other Fuel Reduction Method Targets and Acres Completed.

**\*FY 2023/24 is through December 31, 2024**

| **Fiscal Year** | **Target** | **Completed** | **% Completed** |
| --- | --- | --- | --- |
| **2017/2018** | 20,000 | 18,762 | 93.81% |
| **2018/2019** | 20,000 | 33,601 | 168.00% |
| **2019/2020** | 50,000 | 80,591 | 161.18% |
| **2020/2021** | 50,000 | 89,807 | 179.61% |
| **2021/2022** | 50,000 | 104,308 | 208.62% |
| **2022/2023** | 50,000 | 80,865 | 161.73% |
| **2023/2024** | 50,000 | 100,619 | 201.24% |

Defensible space is managed space around a structure that creates a buffer between the structure and the plants, brush, trees, or other flammable items that could ignite in the event of a fire. Reduced natural fuel loads, decreased continuity of fuels, the removal of flammable materials from near structures, and the use of fire-resistant materials in landscaping and home construction are just some of the techniques that contribute to defensible space. These techniques reduce the chances of a structure igniting during a wildfire and increase firefighter safety during structure defense operations. Defensible space and the management of fuels, particularly around homes and public buildings, have become increasingly important as the Wildland-Urban Interface (WUI) continues to expand and more severe fires threaten WUI areas. CAL FIRE recently updated the Defensible Space Collector App to make inspections more efficient and accurate. Figure 14 illustrates the goals for defensible space inspections and how many were accomplished within the three most recent fiscal years.

#### 

#### Figure 14. Defensible Space Inspections Completed.

| **Fiscal Year** | **Target** | **Completed** | **% Completed** |
| --- | --- | --- | --- |
| **2017/2018** | 250,000 | 217,666 | 87.07% |
| **2018/2019** | 250,000 | 204,341 | 81.74% |
| **2019/2020** | 250,000 | 222,040 | 88.82% |
| **2020/2021** | 250,000 | 150,056 | 60.02% |
| **2021/2022** | 250,000 | 289,255 | 115.70% |
| **2022/2023** | 250,000 | 253,587 | 101.43% |
| **2023/2024** |  |  |  |

CAL FIRE also sponsors several grant opportunities which focus on fuels reduction and forest health. The California Forest Improvement Program (CFIP) can be used by small landowners for reimbursement of forestry practices that improve the health and resilience of their lands. These activities may include fuels reduction practices. Additionally, CAL FIRE sponsors the Forest Health, Urban and Community Forestry, and Fire Prevention grants, which are funded through the Greenhouse Gas Reduction Fund. Part of their overarching goal is improving carbon sequestration by reducing the risk of wildfires and improving general forest health.

Finally, CAL FIRE has developed designated fuels reduction crews. Previously, fuels reduction was often completed by local CAL FIRE teams when they were not fighting fire. The development of designated crews for fuels reduction is anticipated to increase prescribed fire and manual fuels treatment numbers in the coming years. Five crews are headquartered in the Northern Region and five in the Southern Region. CAL FIRE approved 318 applicants to take the most recent Forestry Technician exam. The new members of these crews are currently rotating between their required trainings and working in the field.

# Fire Protection Trends

**Weather Patterns**  
  
Water Year 2024 exhibited a continuation of California's highly variable hydrology, marked by near-average precipitation, significant atmospheric river activity, and late-season tropical storm impacts. These conditions highlighted the state's ongoing vulnerability to extreme weather patterns and underscored the importance of adaptive water management strategies.  
  
Statewide precipitation reached approximately 98% of average, with the Sierra-Cascades snowpack peaking at 112% of average. While these values are less remarkable than those recorded in the preceding year, they contributed substantially to the state’s water supply, particularly for agricultural and urban systems. Snowpack at higher elevations melted gradually due to cooler early-season temperatures, delaying runoff until late spring. However, unusually warm temperatures in April and May accelerated snowmelt in lower elevations, resulting in localized flooding in some areas of the Central Valley.  
  
The early portion of the water year remained relatively dry, but January brought a series of impactful atmospheric river events. While not as intense or clustered as those in the prior year, these systems delivered vital precipitation across much of the state. Regions along the Central Coast and in the Los Angeles Basin experienced significant urban flooding and landslides, demonstrating the ongoing challenges posed by heavy rainfall on saturated soils.  
  
Late summer was characterized by above-average ocean temperatures, which contributed to an active tropical storm season. In August, one such storm delivered heavy precipitation to Southern California, marking the second consecutive year of tropical storm activity in the region. This rare phenomenon highlights the influence of broader climate variability on California’s hydrological patterns.  
  
The year’s conditions reflect the state’s continued exposure to both drought and flood risks. Efforts to address these challenges have included infrastructure improvements and emergency measures to mitigate the impacts of extreme events. However, the variability observed in Water Year 2024 underscores the need for sustained investment in resilience strategies to support water security and forest health in the face of changing climatic conditions.

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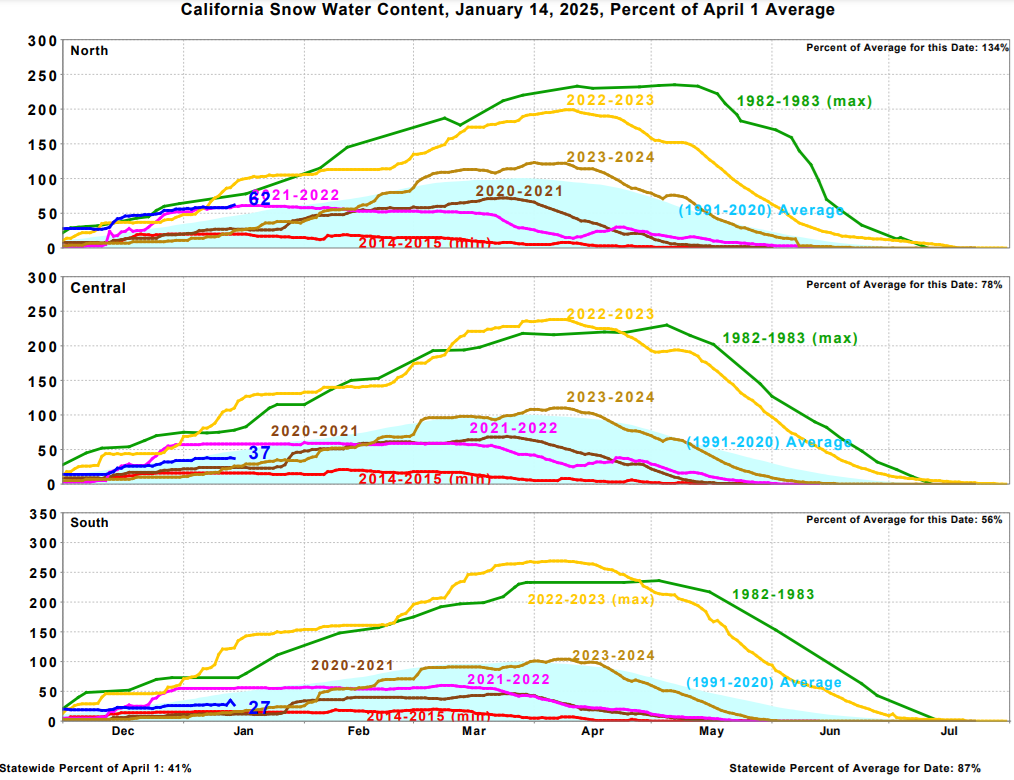
#### Figure 9. Precipitation Rankings for January - December 2024 When Compared with Local Averages from 1895-2024. NOAA National Centers for Environmental Information.*[[1]](#footnote-2)*

#### 

#### Figure 10. Average Temperature Percentiles for January-December 2024 When Compared with Local Averages from 1895-2024. NOAA National Centers for Environmental Information.

#### 

**Figure 11. California Snow Water Content,*[[2]](#footnote-3)* January 14, 2025, Percent of April 1 Average. California Department of Water Resources.**



## California Vegetation Treatment Program (CalVTP)

On December 30, 2019, the Board certified a Program Environmental Impact Report (PEIR) and approved the California Vegetation Treatment Program (CalVTP), a Statement of Overriding Considerations, and a Mitigation Monitoring and Reporting program. This CalVTP and PEIR will streamline California Environmental Quality Act (CEQA) compliance for CAL FIRE and other state and local public agencies’ vegetation management projects. The CalVTP PEIR is intended for vegetation management activities that lower the risk of catastrophic wildfires on non-federal lands by managing vegetation to modify or reduce hazardous fuels.

Training sessions have been conducted in previous years starting in 2021 to provide guidance on using the CalVTP for CEQA streamlining. These videos are available for viewing on the Board’s website. From 2021 through 2024, the Board was allocated early action technical assistance funding to support lead agencies in preparing Project-Specific Analyses (PSAs). These projects were selected to present a cross-section of contexts and examples in which the CalVTP can be used for CEQA compliance for eligible vegetation management projects. A StoryMap of these projects, along with a CalVTP Resource Library, were developed in partnership with Ascent Environmental (https://mailchi.mp/bof.ca.gov/calvtp). These webpages feature example PSAs and PSA/Addenda, mitigation monitoring and reporting program implementation tools, updated frequently asked questions, and treatable landscape calculator; downloadable spatial files for proposed and approved CalVTP projects, completed treatments, and the treatable landscape; updated User Guides for submission of required environmental documentation and project calculation of the treatable landscape; and an online submission tool for Proposed Projects.

As of December 31, 2024, of 120 projects, 93 had been approved for implementation, and the environmental documentation (i.e., Project Specific Analysis and supporting addendums, if any) certifying fulfilment of the CEQA compliance is posted on the Board’s webpage for Environmental Documentation for Approved Projects (also see Figure/Table 11). Several new endeavors are in various stages of development and implementation to improve the CalVTP reporting process and quality of the data received by lead and implementing agencies, with expected completion and roll-out in 2024, including:

· Online submission of Approved and Completed Projects, including Treatment Reporting, using GIS Web Applications.

· A CalVTP Report Summary platform for internal agency use.

**Figure 15. Vegetation Treatment Projects Proposed for or Certified under the CalVTP as of December 31, 2024.**

|  |  |  |  |
| --- | --- | --- | --- |
| **# Total Projects** | **120** | **Acres Approved for Treatment (Footprint)\*** | **190,653** |
| Manual Treatment | 83,012 |
| Mechanical Treatment | 65,079 |
| Prescribed Fire (Broadcast) | 134,730 |
| Prescribed Fire (Pile Burn) | 82,826 |
| Herbicide Applications | 72,475 |
| Prescribed Herbivory | 40,851 |
| **# Projects with Reported Treatments\*\*** | **17** | **Reported Acres of Completed Treatments** | **1,895** |
| Manual Treatment | 1,096 |
| Mechanical Treatment | 2,063 |
| Prescribed Fire (Broadcast) | 896 |
| Prescribed Fire (Pile Burn) | 800 |
| Herbicide Applications | 200 |
| Prescribed Herbivory | 654 |
| \*  The sum of acres for the treatment footprint will not match the sum of acres by treatment activity, as treatment activities may overlap temporo-geospatially.  \*\*This is the most accurate reflection of treated acres, given that acres approved for treatment may or may not be treated depending on a variety of factors. Project proponents are not required to report treated acres until projects are complete and closed. The Board of Forestry & Fire Protection makes efforts to collect treatment data on a regular basis but cannot compel reporting before a project is closed. | | | |

# 

# Wildfire Activity

The 2024 wildfire season in California has seen a significant increase in both the number of wildfires and the total acreage burned compared to the previous year. As of October 31, 2024, a total of 7,194 wildfires have burned approximately 1,014,375 acres across the state.

This uptick in wildfire activity is attributed to several factors:

* Climatic Conditions: The state experienced hotter than normal temperatures in June, combined with an excess of fine fuels from unusually wet winter and spring seasons. This resulted in vegetation being more susceptible to ignition and fire spread than in previous years.
* Vegetation Growth: Abundant rainfall during the winter and spring led to increased vegetation growth, which, upon drying, provided ample fuel for wildfires.

Despite the rise in wildfire incidents, proactive management and community preparedness have played crucial roles in mitigating the impact of these fires. Efforts by CAL FIRE, including controlled burns and vegetation management, have been instrumental in reducing fire severity and scale.

Notably, the Park Fire, which ignited in July 2024, has become one of the largest wildfires in California's history, burning over 425,000 acres.

**Figure 16. Top 2024 Largest Fires**

|  |  |  |  |
| --- | --- | --- | --- |
| ***FIRE NAME*** | ***DATE*** | ***COUNTY*** | ***ACRES BURNED*** |
| **Park Fire** | July 2024 | Butte, Tehama | 429,603 |
| **Borel Fire** | July 2024 | Kern | 59,288 |
| **Bridge Fire** | September 2024 | Los Angeles, San Bernardino | 56,030 |
| **Line Fire** | September 2024 | San Bernardino | 43,978 |

\*These are the largest fires regardless of state, federal, or local responsibility.

# 2024 Regulatory Accomplishments

**Less than 3-acre Conversion Exemptions**

The Management Committee started revisions to the Less Than 3-Acre Conversion Exemption pursuant to 14 CCR § 1104.1(a). In 2023 the Governor signed AB 1526, authorizing the Board of Forestry and Fire Protection to adopt regulations to waive the one-time limitation for conversion of less than three acres of timberland for another use, pursuant to a finding of undue hardship on applicants. Previous rule language prevented landowners from obtaining future exemptions on the same ownership once the Less than 3-acre conversion was submitted within an ownership. This presented a hardship for landowners who may not have been fully able to complete the initial conversion. Additionally, this also prevented landowners the opportunity to convert other areas of the ownership to accommodate potential dwellings many years in the future to accommodate future generations. The Management Committee developed revisions to the Less than 3-Acre Conversion Exemptions allowing the opportunity for future conversion exemptions within the footprint of the initial conversion, providing relief for these individuals without providing for “additional”, or serialized, conversion of timberland acres.

**Wet Areas, Meadows, and Restoration Activities**

The Management Committee reviewed and modified the definitions of “Meadows and Wet Areas”. The Forest Practice Rules (FPR) describe both wet areas and meadows as areas in the forested landscape that do not support the growth of trees and areas that require additional consideration of ecological impacts. The definition in 14 § CCR 895.1 states “Those areas which are moist on the surface throughout most of the year and/or support aquatic vegetation, grasses and forbs as their principal vegetation cover.” Given this definition did not distinguish between the different ecological importance of these landscape features. At issue was the wording “moist on the surface during most of the year”. Given the historical fluctuations in precipitation form year to year the level of surface moisture in any given year can be significantly different. This inconsistency in precipitation and the definition requiring moist surfaces thought out the year created uncertainty for stakeholders attempting to work with meadows and wet areas and created a problem for reviewing entities and enforcement. The Management Committee separated the two definitions, so they are recognized as two different ecological systems. Wet areas are now defined to address temporal consistency, include duration of such saturation, and specify that the area’s vegetation should be dominated by hydrophytes or lack vegetation.

**Utility ROW Operations**

The Management Committee has made great progress in its efforts to modify existing regulations related to the Utility Right-of-Way Exemption pursuant to 14 CCR § 1104.1(b) and (c). While regulatory language hasn’t been finalized and will not be ready for implementation in 2025 it should be noted that the Committee did hold three public workshops and has developed draft rule text and the Initial Statement of Reasoning (ISOR). Currently Board staff is working with stakeholders drafting a SRIA to evaluate economic impacts of the proposed rulemaking. It is not anticipated there will be any additional significant changes to the draft rule plea and the final steps to be completed will be the economic impact (SIRA).

**Acreage Limitations for 1038(d) Dead, Dying, or Diseased Trees Exemption**

The Forest Practice Committee has been working to addressing CAL FIRES concern for inspecting and monitoring exemptions due to the absence of acreage limitations which has allowed the submittal of property wide exemptions especially with respect to the 14 CCR § 1038(d). To achieve this goal the Committee has made regulatory adjustments to the “Drought Mortality and Forest Fire Prevention Exemption. This language is in OAL review and is expected to be ready January 1, 2025.

In 2024 the Forest Practice Committee continues to work on other regulatory language addressing this issue, currently the Committee is drafting revisions to 14 §§ CCR 1038 & 1038.3 to eliminate the use of exemptions which geographically overlap other exemptions and Timber Harvest Plans. This revision will allow CAL FIRE the ability to better determine the regulatory standards that are being applied to the specific area of harvest and identify the responsible Licensed timber Operator (LTO).

Further revision related to this issue will be reviewed in 2025 with the passing of AB2276. This bill gives the Board authority to rescind the Small Landowner exemption, which had expired, change the Forest Fire Prevention Exemption to the “Forest Resilience Exemption” and revise the standards and criteria for qualifying for that exemption. The Bill authorized the Board to consider these changes as Emergency rules taken effect in 2025.

**Watercourse Crossings and Emergency Notice Watercourse Crossings**

The State and Regional Water Boards requested the Board to consider regulatory change to the Forest Practice Rules to address regulatory coverage for road and watercourse crossing construction or reconstruction activities that are nit currently authorized under an emergency notice. Emergency Notices for timber operations may involve the construction or reconstruction of roads and watercourse crossings, however, the language in the Forest Practice Rules requires the approval of watercourse crossings by a process outside of the Emergency notice. It currently is unclear how under the Notice of Emergency how watercourse crossings are approved, and which agency provides approval under exemption and emergency notices which are ministerial permits. The Committee removed language which implies that construction or reconstruction of approved watercourse crossings under notices of exemption is permitted and also amends 14 CCR § 916.9(t)(4) [§936.9(t)(4), §956.9(t)(4)], which concerns watercourse crossings in emergency notices. The proposed text changes the term “approved watercourse crossings” to “described and mapped watercourse crossings” This language will become effective January 1, 2025.

**Treatment of Vegetation and Fuels in the WLPZ**

Current Forest Practice Rules allow for limited timber operations within the Watercourse and Lake Protection Zone (WLPZ) of Class I, II, II & IV watercourses. Existing regulations allow for the Registered Professional Forester (RPF) to prepare In-lieu practices if there is a site specific need to conduct timber operations within the WLPZ. In-lieu practices are reviewed by a multiagency review team making it challenging for the RPF to be able to prepare in-lieu practices that will meet the various levels of concern for operations around watercourses. There has been an awareness for the need for fuel modification within forested landscapes to alter the horizontal and vertical fuel loads, this fuel modification is taking place across forested landscapes but current forest practice regulations ignore operations within the buffer zones to riparian areas. As wildland fire and fire intensity increase in the forested landscape the concern for impacts to riparian areas has been increasing. The Foret Practice Committee has been developing regulatory language with stakeholders and other resource professionals which will allow for the reduction and modification of vertical and horizontal fuel loads with the WLPZ around watercourse. The purpose of this regulation is to provide the regulatory boundaries for all agencies and departments developing a standardized and environmentally sound approach to fuel reduction within the WLPZ. This practice will be done in conjunction with the Timber Harvest Plan (THP) process and compliment the fuel reduction work occurring across the landscape for the protection of riparian zones. Draft language has been developed in committee and is near completion, however, this regulation once approved will not go into effect until January 1, 2026

**Licensing Fee Amendments**

The Licensing Fee Amendments aim to address long-standing budgetary challenges faced by the Professional Foresters Licensing (PFL) program, which is administered under the Registered Professional Foresters Fund (PRC § 780). Following years of budgetary review by the Office of Foresters Registration and CAL FIRE, it was determined that the fund was insufficient to sustain the examination and licensing processes for Professional Foresters and the Certified Specialty program. The issue stemmed from declining registrants and a fee structure unchanged since 1991.

In 2019, the Professional Foresters Examination Committee (PFEC) recommended and implemented a significant fee increase, including an 84% renewal fee adjustment for Registered Professional Foresters (RPFs) and an 86% adjustment for Certified Rangeland Managers (CRMs). Measures to retain long-term RPFs included discounted renewal fees for those with 30 or more years of registration. Additionally, regulatory amendments under 14 CCR 1605 introduced periodic fund condition reviews to avoid future drastic fee increases. The Board of Forestry and Fire Protection has approved further adjustments, including a $35 annual or $70 biennial fee increase for RPFs and CRMs. Finalization of these amendments awaits the Final Statement of Reasons from the Board.

**Apprentice Professional Forester Educational Program**

The Foresters Apprentice Program represents a significant initiative by the Professional Foresters Examination Committee (PFEC) to create an alternative licensing pathway through the Apprentice Professional Forester (APF) educational program. Modeled after the existing Certified Specialty program (14 CCR 1651, PRC 772), this program allows public agencies or professional societies to propose educational frameworks for licensing applicants. These proposals are evaluated by the Board to ensure alignment with forestry licensing standards.

The program enables applicants to join with four years of qualifying forestry work experience or a combination of work and educational credits, accelerating their path toward licensure. Mentorship, education, and evaluation of core forestry competencies are central to the program, ensuring applicants are prepared to meet licensure requirements by year four of the seven typically required. The program supports sustainable forest management and enhances workforce readiness to address wildland fire challenges. The regulation is currently in its 45-day public comment period, with the comment window closing on January 20, 2025.

**Local Government**

**General Plan Safety Elements**

Under Government Code § 65302.5, the Board is required to review the General Plan Safety Elements for jurisdictions with SRA or very high fire hazard severity zones (VHFHSZ). Utilizing staff from CAL FIRE’s Land Use Planning team, the Board established a standardized method to review the safety element of general plans. The methodology includes:

1. Reviewing the safety element for the requirements in Government Code §65302, subdivision (g)(3)(A),
2. Examining the safety element for goals, policies, objectives, and implementation measures that mitigate the wildfire risk in the planning area (Gov. Code, § 65302, subd. (g)(3)(B) & (C)), and
3. Making recommendations for methods and strategies that would reduce the risk of wildfires (Gov. Code, § 65302.5, subd. (b)(3)(B)).

Once completed, the Safety Element Assessment should provide clear guidance to a city or county regarding any areas of deficiency in the safety element as well as specific goals, policies, objectives, and implementation measures the Board recommends adopting to mitigate or reduce the wildfire threat in the planning area. The Board does not have the authority to approve safety elements, but rather offers recommendations to improve fire hazard planning in the planning area. If jurisdictions choose not to implement the Board’s recommendations, they must respond in writing to the Board discussing the reasons why not. If a local jurisdiction chooses not to adopt the Board’s recommendations, the Board may request a consultation which must occur before the local jurisdiction proceeds with adopting its draft safety element. The Board has reviewed 171 safety elements since the requirement took effect in 2013, 22 of which occurred in 2024.

**Figure 17. General Plan Safety Elements Reviewed by the Board January – December 2024**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Region | Type | Jurisdiction | Received | Reviewer | Board Review |
| CNR | CITY | SAN MATEO | 11/28/23 | Malcom Kenndy | 1/23/2024 |
| CSR | CITY | YORBA LINDA | 12/22/23 | Joseph Kennedy | 1/23/2024 |
| CNR | CITY | PARADISE | 1/3/24 | James Ausboe | 1/23/2024 |
| CNR | COUNTY | EL DORADO | 2/20/24 | James Ausboe | 3/5/2024 |
| CSR | CITY | CHULA VISTA | 2/22/24 | Brian Olson | 4/9/2024 |
| CSR | City | Monterey | 3/11/24 | Kyle Oneil | 4/9/2024 |
| CSR | CITY | Irvine | 3/11/24 | Joseph Kennedy | 6/18/2024 |
| CSR | CITY | Yucaipa | 3/16/24 | Brian Olson | 4/9/2024 |
| CSR | City | Irwindale | 4/16/24 | Kevin Merkh | 5/14/2024 |
| CNR | COUNTY | Alameda | 5/8/24 | Malcolm Kennedy | 6/18/2024 |
| CNR | COUNTY | Solano | 5/29/24 | Malcolm Kennedy | 6/18/2024 |
| CNR | City | Hemet | 6/27/24 | Joseph Kennedy | 7/23/2024 |
| CSR | City | Culver City | 7/2/24 | Kevin Merkh | 7/23/2024 |
| CSR | City | Orange | 7/8/24 | Joseph Kennedy | 7/23/2024 |
| CSR | City | Fullerton | 7/9/24 | Joseph Kennedy | 7/23/2024 |
| CSR | City | Palm Springs | 7/25/24 | Joseph Kennedy | 8/20/2024 |
| CNR | City | San Leandro | 7/25/24 | Malcolm Kennedy | 8/20/2024 |
| CNR | County | Contra Costa | 7/29/24 | Malcolm Kennedy | 8/20/2024 |
| CSR | City | Lompoc | 7/29/24 | Shawn Arnold | 8/20/2024 |
| CSR | County | Los Angeles | 10/16/24 | Joseph Kennedy | 11/5/2024 |
| CSR | City | Chino Hills | 10/15/24 | Jose Quintana | 11/5/2024 |
| CSR | City | Camarillo | 10/17/24 | Shawn Arnold | 12/10/2024 |

**Subdivision Review Program**

Public Resources Code §4290.5 requires the Board, in consultation with the State Fire Marshal, to “survey local governments, including counties, cities, and fire districts, to identify existing subdivisions located in a state responsibility area or a very high fire hazard severity zone [SRA or LRA VHFHSZ], identified pursuant to Section 51178 of the Government Code, without a secondary egress route that are at significant fire risk” on or before July 1, 2022.

The Board is additionally required to develop recommendations to improve fire safety in the identified subdivisions, in consultation with the State Fire Marshal and the local government that identified the subdivision. Subdivision Review Program staff at the Office of the State Fire Marshal conduct an on-the-ground fire safety survey of each identified subdivision. Program staff then develop survey reports, which include fire safety recommendations, for review by the Board’s Resource Protection Committee. The Board does not vote to approve or deny reports and recommendations; its role is to review and provide input before reports are sent back to local jurisdictions on the Board’s behalf. The Resource Protection Committee began reviewing these reports on a county-by-county basis at its November 2021 meeting. The recommendations included in these reports are non-binding, and the Board does not have legal authority to require their implementation.

Of the state’s 56 counties that contain Unincorporated SRA or LRA VHFHSZ, 54 that contain subdivisions that meet the criteria have been completed. Surveys have been completed for approximately 2,350 subdivisions, and approximately 2,300 of those have been found to meet the intent of the legislation. Approximately 2,200 of these have been reported to the Board, and the Board has reviewed approximately 2,100 of the resulting reports as of November 2024.

**Figure 18. Jurisdictions for which all Fire Safety Survey Reports have been completed and reviewed by the Board, Jan 2024 - December 2024**

|  |  |  |
| --- | --- | --- |
| Region | Jurisdiction | Board Review |
| CNR | Contra Costa County | 1/22/2024 |
| CSR | City of Riverside | 1/22/2024 |
| CSR | City of Corona | 1/22/2024 |
| CSR | City of Malibu | 1/22/2024 |
| CNR | Marin County | 3/5/2024 |
| CNR | Shasta County | 4/9/2024 |
| CNR | Trinity County | 4/9/2024 |
| CNR | Modoc County | 5/14/2024 |
| CNR | Sierra County | 5/14/2024 |
| CNR | City of Dunsmuir | 6/18/2024 |
| CSR | San Bernardino County | 6/18/2024 |
| CSR | City of Chino Hills | 6/18/2024 |
| CNR | Lassen County | 7/23/2024 |
| CNR | Plumas County | 8/20/2024 |
| CNR | City of Redding | 8/20/2024 |
| CNR | City of Shasta Lake | 8/20/2024 |
| CNR | City of Susanville | 8/20/2024 |
| CSR | City of Calimesa | 8/20/2024 |
| CSR | Inyo County | 8/20/2024 |
| CSR | Mono County | 8/20/2024 |
| CNR | Amador County | 9/24/24 |
| CNR | Alpine County | 9/24/24 |
| CNR | Shasta County | 9/24/24 |
| CSR | Ventura County | 11/5/24 |

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# State Forests

The Board has changed the review periods for Initial State Forest Management Plans from five to ten years. This change was made following concerns expressed by forest managers, citing limited staffing and increasing workload. The longer period will allow the plans to be broader, encompass longer-term changes and trends, and reduce pressure on staff. Figure 19 (below) outlines the proposed schedule for management plan updates. The Department committed to an early review of the Jackson Forest Management Plan in 2022 as part of government-to-government discussions with a local tribe. The public process began in 2024 and a Management Plan is expected to be brought to the Board in late 2025 or early 2026.

|  |  |  |
| --- | --- | --- |
| **Figure 19. Proposed Management Plan Update Schedule Demonstration State Forest** | **Management Plan Update (Year)** | **Management Plan Status** |
| LaTour | 2022 | Approved 2013 |
| Soquel | 2024 | Approved 2014 |
| Jackson | 2026 | Approved 2016 |
| Boggs Mountain | 2028 | Approved 2018 |
| Mountain Home | 2030 | Approved 2020 |

**Stewardship Lands**

With the acquisition of nearly 15,000 acres in 5 different management units from PG&E through the Pacific Watershed Stewardship Council complete, the Department now operates 14 Demonstration State Forests totaling 85,135 acres. An updated fact sheet with the general location of each is on the State Forest website ([link](https://34c031f8-c9fd-4018-8c5a-4159cdff6b0d-cdn-endpoint.azureedge.net/-/media/calfire-website/what-we-do/natural-resource-management/demostration-forests/files/dsf-fact-sheet-1223.pdf?rev=052696a05e6d4447bad4d0f9056e0923&hash=54F454AF5EBF04E6C47AE99116DFC065)).

The Conservation Easements require forest management activities to conform to a forest management plan approved by the Board. The Department will work with the Board to develop these plans and work them into the review schedule outlined in Figure 19. Inventory information was collected on the new Emigrant Gap, Miller, and Big Bend Demonstration State Forests 2024 to start developing information in support of writing forest management plans.  

# Professional Licensing and Forest Practice Enforcement

Pursuant to California Public Resources Code (PRC) § 750 *et seq.,* the Board is authorized to grant licenses to Registered Professional Foresters (RPFs) and specialty certificates for Certified Rangeland Managers (CRMs). Earning either license is contingent upon meeting educational and work experience standards and ultimately passing an examination specific to the license or specialty.

The term “Professional Forester” is defined in PRC § 752 and refers to a person who, by reason of his or her knowledge of the natural sciences, mathematics, and the principles of forestry, acquired by forestry education and experience, performs services, including, but not limited to, consultation, investigation, evaluation, planning, or responsible supervision of forestry activities when those professional services require the application of forestry principles and techniques. The CRM certification is the only “Certified Specialist” credential bestowed and recognized by the Board. A CRM is defined in 14 CCR § 1651 as “… a person who provides services pursuant to 14 California Code of Regulations (CCR) 1602, at the request of the landowner or hiring agent, relating to the application of scientific principles to the art and science of managing rangelands and range.

*Figure 16. Board Licensed Professionals and Certified Specialists*

|  |  |  |
| --- | --- | --- |
| Year | RPFs | CRMs |
| 2020 | 1105 | 86 |
| 2021 | 1108 | 81 |
| 2022 | 1110 | 80 |
| 2023 | 1110 | 79 |
| 2024 | 1119 | 78 |

**Professional Discipline**

Professional disciplinary matters are confidential. They are handled administratively and generally do not culminate in a hearing before an Administrative Law Judge and/or the Board. In 2024, the PFEC received no RPF or CRM complaints. Case 347 was received in 2023 but was resolved in 2024. In this case, a stipulated settlement was entered into between the RPF and the Board. The RPF license of the RPF respondent was suspended for 6 months and will remain on probation for two years for not adequately mapping significant archaeological sites and not adequately mapping and classifying watercourses on an exemption. This was the second disciplinary action taken by the Board for similar professional failures by the RPF on Emergency Notices under Case 335 in 2019.

**Enforcement**

PRC § 4601 *et seq.* authorizes the Board to investigate and discipline, “Any person who willfully violates any provision of this chapter or rule or regulation of the Board….” These civil penalties are identified, investigated, and pursued by CAL FIRE, with final adjudicative authority on these matters residing with the Board. During the 2024 calendar year, the Board deliberated and acted on two civil penalties for non-compliance with the Forest Practice Act and/or the Forest Practice Rules.

# Acronyms

The following acronyms and abbreviations are used in this document:

APA: Administrative Procedure Act

Board: California State Board of Forestry and Fire Protection

CalEPA: California Environmental Protection Agency

CAL FIRE: California Department of Forestry and Fire Protection

CalVTP: California Vegetation Treatment Program

CDTFA: California Department of Tax and Fee Administration

CEQA: California Environmental Quality Act

CFIP: California Forest Improvement Program

CLFA: California Licensed Foresters Association

CRM: Certified Rangeland Manager

DWR: California Department of Water Resources

EMC: Effectiveness Monitoring Committee

FCAT: Forest Climate Action Team

FPA: Z’berg-Nejedly Forest Practice Act of 1973

FPRs: Forest Practice Rules

FRAP: Fire and Resource Assessment Program

FRID: Fire Return Interval Departure

LRA: Local Responsibility Area

NTMP: Nonindustrial Timber Management Plan

OAL: Office of Administrative Law

PG&E: Pacific Gas & Electric

PEIR: Program Environmental Impact Report

PFEC: Professional Foresters Examining Committee

RMAC: Range Management Advisory Committee

RPF: Registered Professional Forester

SRA: State Responsibility Area

SYP: Sustained Yield Plan

UCANR: University of California Agriculture and Natural Resources

USDM: United States Drought Monitor

USFS: United States Forest Service

VHFHSZ: Very High Fire Hazard Severity Zone

WFMP: Working Forest Management Plan

WUI: Wildland-Urban Interface

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1. Note: Data for this period were not found presented at the same fine scale used for the annual data. [↑](#footnote-ref-2)
2. The Y-axis of the figure is percent of April 1st average Snow Water Content, which refers to the depth of liquid that would result over the same land area if the entire snowpack were to be melted instantaneously. [↑](#footnote-ref-3)