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## Upcoming Events - Save the Date!

**October 21-24** - The 9th International Oak Society Conference 2018 "Adapting to Climate Change - Oak Landscapes of the Future:" UC Davis Arboretum ad Public Garden, Davis, CA

**November 7-10** - Cal-IPC Symposium "Biodiversity: Expanding Our Vision:" Monterey, CA

**November 13-14** - 2018 California Forest Pest Council Annual Meeting, "Will California Forests Regain a Path Toward Recovery?" UC Davis, Davis, CA

**June 25-27, 2019** - Seventh Sudden Oak Death Science and Management Symposium; Presidio, San Francisco, CA

## Are Ponderosa Pine-Dominated Forests on the Move?

A recent US Forest Service study\* found that the 2012 - 2016 historic California drought had a major impact on central Sierra Nevada ponderosa pine (*Pinus ponderosa*). The intent of the research was to measure tree mortality within three elevation bands (on 180, 11.3-m (37.2 ft) fixed-radius plots) on the Eldorado, Stanislaus, Sierra, and Sequoia National Forests in areas experiencing ponderosa mortality. The study found that almost 90% of the ponderosa died, with nearly 40% of the plots having lost 100% of the ponderosa. Mortality was highest in large trees at the lowest elevations (1184 m/3885 ft) and attributed mostly to western pine beetle. Increased mortality was also found in areas with high tree density and steeper slopes.

The 2012-2016 drought is considered to have been the most severe in 1200 years, with 2014 being the driest and hottest year ever recorded in the state, resulting in unprecedented tree mortality. Since 2010, the US Forest Service annual Aerial Detection Survey has estimated that 129 million trees have died. The mortality was driven by drought-incited outbreaks of several native bark beetle species, including fir engraver, *Scolytus ventralis*; Jeffrey pine beetle, *Dendroctonus jeffreyi*; mountain pine beetle, *D. ponderosae*; western pine beetle, *D. brevicomis*; and several engraver beetles (e.g. *Ips* spp.).

Regeneration was found to be predominantly incense-cedar (*Calocedrus decurrens*) and oaks (*Quercus* spp.), which in combination with the lack of oak mortality shown in the study, suggests that a shift in composition from forests previously dominated by ponderosa is likely in some locations.

\*Fettig, C.J.; Mortenson, L.A.; Bulaon, B.M.; and Foulk, P.B. 2019. Tree Mortality Following Drought in the Central and Southern Sierra Nevada, California, US. *Forest Ecology and Management*. 432: 164-178.



Western pine beetle galleries in dead ponderosa pine, Sierra NF 2016. By Leif Mortenson, USFS.



Ponderosa pine mortality, Sierra NF 2016. By Leif Mortenson, USFS.

For more information on these native bark beetles, see the following:

1) Cal Fire Tree Note No. 10: The Fir Engraver Beetle.

<http://calfire.ca.gov/foreststeward/pdf/treenote10.pdf>

2) USDA Forest Service Forest Health Protection. Management Guide for Fir Engraver.

[https://www.fs.usda.gov/Internet/FSE\\_DOCUMENTS/stelprdb5187436.pdf](https://www.fs.usda.gov/Internet/FSE_DOCUMENTS/stelprdb5187436.pdf)

3) USDA Forest Service Forest Health Protection. Douglas-fir Pole and Engraver Beetles.

[https://www.fs.usda.gov/Internet/FSE\\_DOCUMENTS/stelprdb5341332.pdf](https://www.fs.usda.gov/Internet/FSE_DOCUMENTS/stelprdb5341332.pdf)

4) Oregon Department of Forestry. Douglas-fir Pole and Engraver Beetles.

[https://www.oregon.gov/ODF/Documents/ForestBenefits/DF%20Pole%20and%20Engraver\\_2017.pdf](https://www.oregon.gov/ODF/Documents/ForestBenefits/DF%20Pole%20and%20Engraver_2017.pdf)

## How Did Giant Sequoia Fare During the 2012-2016 Drought?

Giant sequoia (*Sequoiadendron giganteum*) fared well compared to other tree species during the 2012-2016 drought, according to a special issue of *Forest Ecology and Management* (July 2018).<sup>\*</sup> The five articles in the issue present integrated leaf-level physiology measurements, crown-level foliage dieback surveys, and remotely sensed canopy water content to shed light on mechanisms and spatial patterns found in relation to drought response. While foliar dieback was common, especially in 2014, very few giant sequoias died during the exceptionally hot drought.

<sup>\*</sup>Nydick, K.R.; Stephenson, N.L.; Ambrose, A.R; Asner, G.P.; and others. 2018. Leaf to Landscape Responses of Giant Sequoia to Hotter Drought. 2018. *Forest Ecology and Management*. 419: 249-304.

## California AB2470 Signed into Law

**California AB2470 (Grayson), "Invasive Species Council of California"** was signed into law September 28, 2018, charging the Invasive Species Council of California with helping to coordinate a comprehensive program to prevent the introduction of invasive species into the state and to advise state agencies as to how to facilitate coordinated, complementary, and cost-effective control or eradication efforts for invasive species that have entered the state. The Council will also coordinate a plan for the cure or suppression of diseases associated with the spread of invasive shot hole borers. Furthermore, an invasive species account has been established to fund invasive species projects and activities recommended by the Council. In addition, the Noxious Weed Management Account has been revised, requiring 20% of the research money to be made available through a grant program administered by the California Department of Food and Agriculture, in consultation with the Range Management Advisory Committee, with an emphasis on funding

needs-based, applied, and practical research.

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Newsletter feedback and ideas are welcome. Please submit comments to [caforestpestcouncil@gmail.com](mailto:caforestpestcouncil@gmail.com).

When buying firewood for camping or home heating this fall, remember to buy wood sourced local to where you will be using it, helping to minimize the spread of pests and diseases - **Buy It Where You Burn It**. For a list of local firewood dealers, go to [firewoodscout.org](http://firewoodscout.org).

Sincerely,

The California Forest Pest Council



California Forest Pest Council | [www.caforestpestcouncil.org/](http://www.caforestpestcouncil.org/) | 805-550-8583

Your copy should address 3 key questions: Who am I writing for? (Audience) Why should they care? (Benefit) What do I want them to do here? (Call-to-Action)

Create a great offer by adding words like "free" "personalized" "complimentary" or "customized." A sense of urgency often helps readers take an action, so think about inserting phrases like "for a limited time only" or "only 7 remaining"!

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