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Newsroom

: 1/8/2020

January 08, 2020

CORVALLIS, Ore. – New digital tools developed by Oregon State University will enable land managers to better adapt to the new reality of large wildfires through analytics that guide planning and suppression across jurisdictional boundaries that fires typically don't adhere to.

Led by Chris Dunn, a research associate in the OSU College of Forestry with several years of firefighting experience, scientists have used machine learning algorithms and risk-analysis science to analyze the many factors involved in handling fires: land management objectives, firefighting decisions, fire mitigation opportunities and the needs of communities, the environment and the fire management system.

Their findings were published in Environmental Research Letters.

"We have to learn to live with fire," Dunn said. "There is no forecast or evidence of a future without more fire. If we accept that view, then the question becomes, what kind of fire do we want?"

Now, Dunn notes, "we suppress 97 or 98% of fires such that we experience the 2 or 3% that are really bad, where we have no chance of successful suppression because they're just so explosive."

But those numbers over time can be inverted, he says.

"We can choose to have more beneficial fires whose impacts aren't as consequential and less of those really bad ones, eventually," Dunn said. "It could ultimately mean more fire, but more of the right kind of fire in the right places for the right reasons."

Using fire-prone landscapes of the Pacific Northwest as their study areas, Dunn and collaborators developed a trio of complementary, risk-based analytics tools – quantitative wildfire risk assessment, mapping of suppression difficulty, and atlases of locations where fires might be controlled.

"These tools can be a foundation for adapting fire management to this new reality," Dunn said. "They integrate fire risk with fire management difficulties and opportunities, which makes for a more complete picture of the fire management landscape."

That picture makes possible a risk-based planning structure that allows for preplanning responses to wildfires, responses that balance risk with the likelihood of success.

The landscapes used in the study are "multijurisdictional" – i.e., a mix of federal, state and private property – which highlights the shared responsibility of wildfire risk mitigation, Dunn said.

“We’re a couple decades into having really large wildfires here in the American West,” he said. “Fires today are bigger, faster and more intense – we’re really in a new fire reality. We see this issue globally, like the intense fires currently burning in Australia.

“It’s time we step up to the plate with risk-analysis analytics and computing power to complement the experiential knowledge of our fire management service,” Dunn said. “As partners, scientists, managers and communities, we can work together to determine how to best interact with fires now and into the future.”

The models allow for a view of landscapes “through a fire lens outside of fire season, so we can think in advance, plan for them, be more strategic with our fire engagement. Ultimately, we can move toward better outcomes,” he said.

Before 1910, frequent low-severity surface fires played a key role in maintaining the forests of the mountain regions of the western United States. In the decades since, the fire deficits that resulted from federal policy – in concert with grazing, logging and land-use changes – have caused major structural shifts in older forests as shade-tolerant and fire-intolerant species have moved in.

The policy of fire suppression traces its roots to the Great Fire of 1910, which killed 87 people, destroyed several towns and burned an area roughly the size of Connecticut. The blaze consumed 3 million acres of forest in Idaho, Montana, Washington and British Columbia and resulted in timber losses of an estimated \$1 billion.

However, attempting total fire exclusion leads to what researchers and forestry professionals refer to as the “wildfire paradox” – the harder you try to stamp out wildfires, the worse the fires are when you can’t extinguish them.

“The instinct to suppress large fires is a pathology that works against us,” Dunn said. “But with our models and process, these decision tools help diversify our initial response and lead to a default fire response that allows fire to play its ecological role while also providing the risk-reduction benefits of recently burned areas.”

Planning units on a map known as PODs – short for potential operational delineations – summarize risk to inform wildfire response decisions. Their boundaries line up with “high probability control features” – roads, rivers, lakes, canyons, etc. – to help ensure that a response will be successful if launched.

“Suppression is necessary in areas where there are high values at risk, and we can be more successful at doing suppression when it’s needed,” Dunn said. “The fires we need to fight, maybe we can catch them at 500 acres instead of 5,000 if we do planning and management ahead of time instead of when we are chasing the fires.”

Jurisdictional or ownership boundaries rarely align with effective control locations, Dunn said, and thus the PODs highlight areas where partners can work together for shared stewardship.

The computer models generate maps that show “how firefighters see the landscape when they’re engaging a fire,” Dunn said – a visual perspective he hopes can spark a cultural change that will lead to living with fire

more constructively.

“Historically, we have zoned landscapes based on timber resources or critical wildlife habitat such as the northern spotted owl,” he said. “Now we have the firefighters’ perspective that we can share with communities, timber companies, NGOs, creating a platform for partners to understand the decisions made by our fire management service. This can foster partnerships to address the fire challenges of today and ultimately provide the best near- and long-term outcomes for our ecosystems and communities.”

Collaborating with Dunn on this project were James Johnston of the College of Forestry and researchers from the U.S. Forest Service, the University of Georgia and Pyrologix, Inc., of Missoula, Montana.

The U.S. Forest Service supported this study.

College of Forestry

About the OSU College of Forestry: For a century, the College of Forestry has been a world class center of teaching, learning and research. It offers graduate and undergraduate degree programs in sustaining ecosystems, managing forests and manufacturing wood products; conducts basic and applied research on the nature and use of forests; and operates more than 15,000 acres of college forests.

Story By:

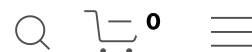
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Multimedia:

Click photos to see a full-size version. Right click and save image to download.



Download a free copy of the Forest & Fire Toolkit here!

Forest & Fire Toolkit

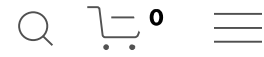
The Forest & Fire Toolkit is a “one-stop-shop” of the resources you need to acquaint yourself with forests in the Siskiyou region—a subset of the larger 10 million acre Klamath-Siskiyou ecoregion. Our goal is to first provide you with a description of the agencies that manage five million acres of public land and provide oversight on nearly two million acres of private industrial forest land in southern Oregon and northern California. We include invaluable resources on how to take part in federal land management activities and to gain a better understanding of the role of fire in these forests. Most importantly, this is a resource to prepare your family, your home, and your community for a wildfire emergency. If you want to know more about fire safety in areas outside the scope of this toolkit please go to www.ready.gov/wildfires.

TOOLKIT AT-A-GLANCE:

- **How to engage in public land management** (page 12)
- **How to engage in private industrial forestry** (page 15)
- **Prepare your home for wildfire: defensible space** (page 19)



- **Home**



industrial forest land, and the decisions made in these forests affect everyone living in the watershed. Forest practices, like thinning near homes and prescribed fire, can help protect communities. Other forest practices, like clearcut logging, can damage watersheds and increase fire hazard. The Siskiyou region is experiencing warmer temperatures, with longer periods of dry weather and drought. Increasing residential development into forestlands places more homes and communities at-risk from wildfire. There is no future free from wildfire, but there are actions we can take to help prepare for the next one.

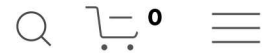
The toolkit is geared towards people who are affected by forest management and who have a desire to become involved in the decision making process for our forests. This includes, for example; rural residents, forest workers, landowners, recreationists, and nature-based businesses.

The ***Forest & Fire Toolkit*** is part of KS Wild's ongoing efforts to support community adaptation to wildfires and a changing climate. Many partner organizations contributed to the creation of the toolkit. **Many thanks to: Lomakatsi Restoration Project, Fairbanks Forest Management, Firesmart Merlin, Smith River Collaborative, IVCDO, and A Greater Applegate.**

WILDFIRE PREPAREDNESS PDFS



- [Fire-resistant landscaping \(page 21\)](#)
- [Steps on how to burn on your property \(page 23\)](#)
- [Post fire checklist & financial assistance \(page 26\)](#)
- [Funding opportunities for fuels work \(page 27\)](#)



The Importance of Prescribed Burning

Prescribed fire can have many benefits. It can reduce fine fuels, brush and small trees and reduce subsequent fire severity. It can help forests become more resilient in the face of climate change. Read more about prescribed fire policy at this KS Wild Blog Post .



New Perspectives on Wildfire Management in Mixed Ownership Landscapes

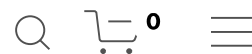
For the second talk in KS Wild's Summer Speaker Series on Fire Management, Dr. Christopher J. Dunn focused on five key things we need to remember in our fire-prone landscape, and a new method derived from his research that may alter how we fight fires in the future.



Healthy Watersheds, Resilient Forests

Following decades of fire suppression and logging that created dense young forests, a return to ecosystem resiliency requires thinning second-growth plantations, retaining large trees and forest canopy, and returning the role of fire to these fire-dependent forests.

KS Wild is a 501(c)3 non profit organization and all donations are tax deductible. KS Wild's EIN number is 93-1246139.



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Rule Title: INCORPORATION BY REFERENCE OF INTERNATIONAL WILDLAND-URBAN INTERFACE CODE (IWUIC)

Department: [LABOR AND INDUSTRY](#)Chapter: [BUILDING CODES](#)Subchapter: [Adoption and Incorporation by Reference of Uniform and Model Codes Having General Applicability](#) [Add to Favorites](#)

Latest version of the adopted rule presented in Administrative Rules of Montana (ARM):

[Printer Friendly Version](#)**24.301.181 INCORPORATION BY REFERENCE OF INTERNATIONAL WILDLAND-URBAN INTERFACE CODE (IWUIC)**

(1) The department adopts and incorporates by reference the International Wildland-Urban Interface Code, 2021 edition, published by the International Code Council, unless another edition is specifically stated, together with Appendix "B" (Vegetation Management Plan) and Appendix "C" (Fire Hazard Severity Form).

(2) Section 302 is deleted in its entirety and replaced with the following:

"The governmental body or some other official state or local agency shall declare the wildland-urban interface areas within the jurisdiction. Such declaration or designation shall be based on findings of fact or some other process already completed such as mapping, boundary designations, or other informative processes such as wildland fire plans. Cities, counties, and towns that have adopted the International Building Code or the International Residential Code in connection with their certification to enforce building codes will, if they elect to enforce the International Wildland-Urban Interface Code, record the official wildland-urban interface areas on maps available for inspection by the public.

(3) Chapter 4 is deleted in its entirety.

(4) Subsection 101.2, Scope, is modified by:

(a) Deleting the first sentence and replacing with: "The provisions of this code shall apply to the construction, alteration, movement, repair, addition, change-of-use or remodeling of any building, structure, or premises within the designated wildland-urban interface within the jurisdiction."

(5) Subsection 101.4, Retroactivity, is deleted in its entirety.

(6) Subsection 101.5, Additions or Alterations, delete the written exception.

(7) Subsection 101.6, Maintenance, is deleted in its entirety.

(8) Subsection 102.6, Existing Conditions, is modified by:

(a) Deleting "International Property Maintenance Code."

(9) Section 103, Enforcement Agency, is deleted in its entirety.

(10) Subsection 107.2, Permits Required, retain the first sentence and delete the remainder of the subsection.

(11) Subsection 110.4.4, Citations, is deleted in its entirety.

(12) Subsection 110.4.5, Unsafe Conditions, is deleted in its entirety.

(13) Subsection 110.4.5.1, Record, is deleted in its entirety.

(14) Subsection 110.4.5.2, Notice, is deleted in its entirety.

(15) Subsection 110.4.5.2.1, Method of Service, is deleted in its entirety.

(16) Subsection 110.4.5.3, Placarding, is deleted in its entirety.

(17) Subsection 110.4.5.3.1, Placard Removal, is deleted in its entirety.

(18) Subsection 110.4.5.4, Abatement, is deleted in its entirety.

(19) Subsection 110.4.5.5, Summary Abatement, is deleted in its entirety.

(20) Subsection 110.4.5.6, Evacuation, is deleted in its entirety.

(21) Replace Table 503.1 "Ignition-Resistant Construction" with the one below:

DEFENSIBLE SPACE	Fire Hazard Severity		
	Moderate Hazard	High Hazard	Extreme Hazard

Nonconforming	IR2	IR1	IR1 N.C.
Conforming	IR3	IR2	IR1
1.5 X Conforming	Not Required	IR3	IR2

(22) Section 602, Automatic Sprinkler Systems, is deleted in its entirety.

(23) Section 604, Maintenance of Defensible Space, is deleted in its entirety.

(24) The IWUIC adopted by reference in (1) is a nationally recognized model code setting forth minimum standards and requirements for the safeguarding of life and property. A copy of the IWUIC may be obtained from the International Code Council at www.ICCSafe.org.

History: 50-60-203, MCA; IMP; 50-60-201, 50-60-202, 50-60-203, MCA; NEW, 2016 MAR p. 316, Eff. 2/20/16; AMD, 2019 MAR p. 2242, Eff. 12/7/19; AMD, 2022 MAR p. 911, Eff. 6/11/22.

MAR Notices	Effective From	Effective To	History Notes
<u>24-301-351</u>	6/11/2022	Current	History: <u>50-60-203</u> , MCA; <u>IMP</u> ; <u>50-60-201</u> , <u>50-60-202</u> , <u>50-60-203</u> , MCA; <u>NEW</u> , 2016 MAR p. 316, Eff. 2/20/16; <u>AMD</u> , 2019 MAR p. 2242, Eff. 12/7/19; <u>AMD</u> , 2022 MAR p. 911, Eff. 6/11/22.
<u>24-301-347</u>	<u>12/7/2019</u>	6/11/2022	History: <u>50-60-202</u> , <u>50-60-203</u> , MCA; <u>IMP</u> ; <u>50-60-201</u> , <u>50-60-202</u> , <u>50-60-203</u> , MCA; <u>NEW</u> , 2016 MAR p. 316, Eff. 2/20/16; <u>AMD</u> , 2019 MAR p. 2242, Eff. 12/7/19.
<u>24-301-309</u>	<u>2/20/2016</u>	12/7/2019	History: <u>50-60-202</u> , <u>50-60-203</u> , MCA; <u>IMP</u> ; <u>50-60-201</u> , <u>50-60-202</u> , <u>50-60-203</u> , MCA; <u>NEW</u> , 2016 MAR p. 316, Eff. 2/20/16.

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