

August 18, 2017

**SCIENCE ADVISORY
BOARD**

Scott Hoffman Black
Xerces Society

Robert E. Gresswell, Ph.D.
US Geological Survey

Healy Hamilton, Ph.D.
NatureServe

Lara J. Hansen, Ph.D.
EcoAdapt

Thomas Hardy, Ph.D.
Texas State University

Mark Harmon, Ph.D.
Oregon State University

Richard Hutto, Ph.D.
University of Montana

Steve Jessup, Ph.D.
Southern Oregon University

Wayne Minshall, Ph.D.
Idaho State University

Reed Noss, Ph.D.
University of Central Florida

Dennis Odion, Ph.D.
University of California,
Santa Barbara

Michael Parker, Ph.D.
Southern Oregon University

Thomas Michael Power, Ph.D.
University of Montana

Jim Strittholt, Ph.D.
Conservation Biology Institute

Vicki Tripoli, Ph.D.

Jack Williams, Ph.D.
Trout Unlimited

Logan Feree
Legislative Director
1406 Longworth Building
Washington, D.C. 20515
Via: Logan.ferree@mail.house.gov

Re: Comments on draft Northern California Conservation and Recreation Act (NCCRA)

Dear Logan:

Thank you for the opportunity to comment on Representative Jared Huffman's proposed NCCRA. We greatly appreciate the ten proposed Wilderness areas and over 300 miles of Wild and Scenic additions to some of northern California's most intact and biodiverse landscapes. The draft bill would add much needed protections to the conservation priorities of the northern California portion of this world-class Klamath-Siskiyou ecoregion.

We also thank you for your outstanding leadership in withdrawing from mining, subject to valid existing claims, all forms of entry, appropriation, and patent of the restoration and proposed wilderness areas. Your leadership on mineral withdrawal is much appreciated not only for this draft bill but also for your efforts with the Oregon congressional delegation on the "Southwestern Oregon Watershed and Salmon Protection Act."

The Geos Institute is a science-based organization located in Ashland, Oregon working to develop climate change solutions for forests, watersheds, and communities. Our scientists have published dozens of leading articles in peer-reviewed journals on the global biodiversity importance of the Klamath-Siskiyou, the region's fire ecology, conservation priorities, land-use impacts and climate change. We welcome the opportunity to offer our comments on the draft bill organized by five main subject headings as they relate to the application of best available science commiserate with the region's outstanding biodiversity and the role that natural fires play in maintaining fire-adapted communities.

I. Fire-Mediated Biodiversity Needs to be Recognized as Integral to the Ecological Integrity of the Klamath-Siskiyou Ecoregion

One of the primary reasons why the Klamath-Siskiyou ecoregion is among the world's top temperate conifer regions in terms of biodiversity is because wildfires have uniquely sculptured a remarkable variety of plant and wildlife species over millennia. A wildfire in this region is not a "catastrophe" as often claimed but rather produces a mosaic of natural (i.e., characteristic) burn patterns with most of a burn area experiencing low-to-moderate severity fire effects on the vegetation and only 12 to 20% of a given burn in high severity burn patches (small and large patches of primarily dead trees¹). This complexity of burn severities is associated with extraordinary levels of biodiversity, provides habitat for myriad species that require severe burn patches, and habitat for spotted owls that nest in the low-moderate burn areas and forage in the high-severity patches, if those patches are not logged post fire². Thus, Geos Institute fully supports provisions of the draft bill that would direct the Forest Service to work with fire in the backcountry rather than suppressing all fires. Importantly, the agency needs this kind of direction as it is wedded to a culture of fire suppression by attempting to put out fires in extreme-fire weather, which cannot be humanely suppressed, along with suppressing fires burning safely in steep terrain where suppression forces are unnecessarily placed at risk with limited escape access.

Key Recommendation: We request that you include specific language in the fire management guidance section to direct the Forest Service to apply Minimum Impact Suppression Tactics (MIST) (or light touch fire management with no fire retardants) whenever fires are burning safely in remote areas removed from communities.

This would allow fire to perform its vital role in maintaining fire-resilient plant and wildlife communities and is consistent with the intent of the draft bill, as we understand it.

II. Provisions Related to "Uncharacteristic Fire" Are Unclear and Need to be based on the Characteristic Fire Regime of the Region

Geos Institute has conducted over a decade of peer-reviewed studies of the unique fire ecology of the Klamath-Siskiyou ecoregion. Fires of mixed severities are characteristic of this region historically. Current fire severity patterns are operating within historic bounds based on

¹Odion, D.C., et al. 2004. Fire severity patterns and forest management in the Klamath National Forest, northwest California, USA. *Conservation Biology* 18:927-936.

Odion, D.C., et al. 2014. Examining historical and current mixed-severity fire regimes in ponderosa pine and mixed-conifer forests of western North America. *PlosOne* February 2014 Vol 9:1-14.

²Clark, D. A., et al. 2011. Survival rates of northern spotted owls in postfire landscapes of southwest Oregon. *J Raptor Res* 45:38-47. Clark, D. A., et al. 2013. Relationship between wildfire, salvage logging, and occupancy of nesting territories by northern spotted owls. *Journal of Wildlife Management* 77:672– 688.

comparisons over long-time lines³. Contrary to many perceptions, the acres of forests burning annually in this and other western forested regions are actually below historic levels, meaning there is substantially *less* fire today than during historic conditions⁴. Moreover, there have been no increases in the proportion⁵ of high severity fire that remains a relatively minor component (~12-20%) of the characteristic fire regimes of this region. Size of high severity fire patches also has remained within historic bounds despite many managers being convinced that high severity patches are increasing (so called “mega fires”) even though there is no substantiated basis for this in the Klamath-Siskiyou or nearby regions (DellaSala et al. in prep.).

Also contrary to perceptions, the absence of fire in forests of this region over extended periods (decades) does not necessarily equate with higher fire risks. Scientists have actually determined that long intervals between fires in the Klamath-Siskiyou are coupled to lower severity burns. This is believed related to natural succession in mixed-evergreen forests whereby flammable understory shrubs are shaded out by overstory tree crowns that close as forests mature. The only anomalies in wildfires detected in this region were the result of extensive tree plantations that experienced twice as much severe fire (‘uncharacteristic’) compared to native forests⁶. Notably, using a long-time line of over 2,000 years of charcoal records, scientists determined that the region’s fires are linked to global and regional climatic cycles with high fire activity during drought periods and the reverse under wet conditions⁷. They also concluded that even during extreme drought forests have been quite resilient to this change. The only anomaly detected in this long-fire record was the result of recent increases in sedimentation and water quality problems caused by extensive roads. Thus, we support provisions in the draft bill to close and obliterate roads leaking sediments into streams (water quality problems). Additionally, roads are an ignition source on the landscape and recent studies have shown that over 80% of fires in the West are human caused⁸.

Key Recommendations: We request language that requires the Forest Service to develop a road transportation plan, including seasonal road closures and road obliteration to reduce human caused (uncharacteristic) fire ignitions.

³Odion, D.C., et al. 2004. Ibid. Odion et al. 2014. Ibid. Colombaroli, D., and D.G. Gavin. 2010. Highly episodic fire and erosion regime over the past 2,000 y in the Siskiyou Mountains, Oregon. *PNAS 107:18909-18914*. Whitlock, C, et al. 2015. Climate change: uncertainties, shifting baselines, and fire management. Pp. 265-289, *In DellaSala, D.A., and C.T. Hanson (eds), The ecological importance of mixed-severity fires: nature’s phoenix*. Elsevier, United Kingdom.

⁴Parks, S. et al. 2015. Wildland fire deficit and surplus in the western United States, 1984–2012. *Ecosphere 6:1-13*.

⁵Hanson, C.T., D.C. Odion, D.A. DellaSala, and W.L. Baker. 2009. Overestimation of fire risk in the Northern Spotted Owl recovery plan. *Conservation Biology 23:1314-1319*. Baker, W.L., 2015. Are high-severity fires burning at much higher rates recently than historically in dry-forest landscapes of the Western USA? *PLOS ONE* | DOI:10.1371/journal.pone.0136147

⁶Odion D.C., et al. 2004. Ibid

⁷Colombaroli, D., and D.G. Gavin. 2010. Highly episodic fire and erosion regime over the past 2,000 y in the Siskiyou Mountains, Oregon. *PNAS 107:18909-18914*.

⁸Balch, J.K. et al. 2017. Human-started wildfires expand the fire niche across the United States. *Proceedings National Academy of Sciences 114: 2946-2951*

We also encourage you to move away from a fuel-centric approach in this legislation because of two reasons:

(1) As the time since fire increases, fire risks drop in this region and fuel reductions are not needed in back country areas except for plantations; and

(2) Large fires like the 2002 Biscuit burn under extreme fire weather known to override fire suppression and thinning⁹.

We also request that you redirect the fuel reduction provisions of the bill to concentrate fire risk reduction efforts to nearest homes by working from the individual home outward instead of from the wildlands or WUI inward.

This is a proven approach for reducing risks to homeowners¹⁰. Thinning in the backcountry does nothing to change the odds of homeowner safety. We believe that the WUI concept is outdated. This is because home safety is mainly determined by the characteristics of the home and vegetation immediately surrounding it and not the WUI.

Key Recommendation: Tighten up the fuel reduction provisions to focus on home safety as the first line of fire-defense.

This will require partnerships among state, private, and federal landowners as encouraged in your bill.

III. Protections Should be added to Late-Successional Reserves (and Forests) Before and After Natural Disturbances

We thank you for the attention to late-successional forests and reserves in the draft bill. Older forests, in particular, have declined by over 80% in the Pacific Northwest due to decades of unsustainable logging¹¹.

⁹Thompson, J.R. et al. 2007. Reburn severity in managed and unmanaged vegetation in a large wildfire. Proceedings National Academy of Sciences June 19, 2007 104:10743–10748

¹⁰Cohen, J.D. 2000. Preventing disaster: home ignitability in the wildland-urban interface. Journal of Forestry 98: 15- 21. Cohen, J.D. 2004. Relating Flame Radiation to Home Ignition Using Modeling and Experimental Crown Fires. Canadian Journal of Forest Resources 34: 1616-1626. Syphard, A.D. et al. 2012. Housing arrangement and location determine the likelihood of housing loss due to wildfire. PLoS ONE 7: e33954. Syphard, A.D., et al. 2014. The role of defensible space for residential structure protection during wildfires. International Journal of Wildland Fire 23: 1165-1175.

¹¹Strittholt, J.R., et al. 2006. Status of mature and old-growth forests in the Pacific Northwest, USA. Conservation Biology 20:363-374.

Please include language that ensures remaining late-successional reserves (LSRs) receive congressional protections along with late-successional forests not within the reserve network given their regional rarity and global biodiversity importance.

Equally important, high-intensity burns that kill most of the overstory trees within an LSR or late-seral forests result in “complex early seral” or snag forests. These unique forests contain comparable levels of plants and wildlife species richness found in old-growth forests yet are almost always salvage logged, replanted with nursery stock, and sprayed with herbicides that degrade their ecological integrity¹². Post-fire logging is also known to raise fuel hazards by leaving excessive fine fuels on the ground¹³. Fires in previously salvage-logged areas tend to burn uncharacteristically severe¹⁴ and post-fire logged areas are known to cause water quality problems associated with logging on steep, fragile slopes¹⁵. Arguably, post-fire logging is the biggest threat to the region’s fire-mediated biodiversity¹⁶.

Key Recommendation: We urge you to include prohibitions that prevent post-fire logging and associated treatments in older forests experiencing fire with the exception of very limited removal of hazard trees along roads and campgrounds.

IV. Further Limitations on the Use of Fuel Breaks Along Roads and Plantations Are Needed

We have concerns about the extensive use of fuel breaks for a number of reasons. Fuel breaks are expensive, as they require ongoing maintenance to deal with vegetation growth post-treatment. Importantly, the efficacy of fuel breaks in reducing fire spread remains in question as firebrands are known to ignite fires miles ahead of an advancing flame front. We do, however, understand the logic in limiting fuel breaks to the road system to minimize human-caused fire ignitions. However, given that road densities are extensive in this area fuel breaks along roads would result in substantial fragmentation of wildlife habitat, magnify soil erosion, create water quality problems, and spread so called “road-runner” invasive species like Port-Orford cedar root rot. Many invasive species are also flammable plants that can cause rapid fire spread as plant

¹²Swanson, M.E., et al. 2011. The forgotten stage of forest succession: early-successional ecosystems on forested sites. *Frontiers in Ecology and Environment* 9:117-125 doi:10.1890/090157. DellaSala, D.A., et al. 2014. Complex early seral forests of the Sierra Nevada: what are they and how can they be managed for ecological integrity? *Natural Areas Journal* 34:310-324.

¹³Donato, D.C., et al. 2006. Post-wildfire logging hinders regeneration and increases fire risk. *Science* 311:352-

¹⁴Thompson, J.R. et al. 2007. Re-burn severity in managed and unmanaged vegetation in a large wildfire. *Proceedings of the National Academy of Science*, 104, 10743–10748. DellaSala, D.A., et al. 2015. In the aftermath of fire: logging and related actions degrade mixed- and high-severity burn areas. Pp. 313-347, *In* DellaSala, D.A., and C.T. Hanson (eds), *The ecological importance of mixed-severity fires: nature’s phoenix*. Elsevier, United Kingdom

¹⁵Beschta, R.L. et al. 2004. Postfire management on forested public lands of the western United States. *Conservation Biology* 18:957-967.

¹⁶Lindenmayer, D.B. et al. 2008. *Salvage logging and its ecological consequences*. Island Press: Washington, D.C., DellaSala, D.A. et al. 2015. *Ibid*.

understories are transformed by vectors of their spread such as cows, people, cars, and logging equipment.

Key Recommendation: We urge you to include additional language to restrict fuel breaks to identified evacuation corridors nearest towns that aid in fire fighter safety and escape routes and greatly reduce the fuel break footprint along roads.

We also do not understand the logic or science behind creating 150-foot buffers around plantations, as this would disrupt wildlife movements, cause unnecessary soil damage, remove important pre- and post-fire wildlife habitat and have little effect on uncharacteristic fires in plantations. It would be more prudent to treat plantations directly.

Key Recommendation: Please add language that requires managers to break up fuel continuities within plantations by enhancing forest structure mainly via girdling and thinning of small trees, dropping some as logs for additional structure (especially near streams), and removing hazardous fine fuels using best practices that minimize soil damage and spread of invasive species.

Plantations can be made less fire prone by direct treatments rather than creating unnecessary buffers that seem arbitrary, likely to be ineffective, and costly ecologically.

V. Multiparty Monitoring Requires Funding and Scientific Guidance

While we support monitoring as a prerequisite of adaptive management approaches on federal lands, monitoring is seldom fully funded and our experience indicates there are problems with multi-party monitoring not following rigorous scientific protocols.

Key Recommendation: Please include language in the draft to appoint a science board to provide guidance to participants and managers so that multi-party monitoring follows rigorous scientific protocols, well-defined questions and hypotheses, and statistical analyses.

Final Recommendations and Conclusions

We applaud your efforts in drafting a bill that accomplishes the main purpose and need of protecting intact landscapes of the Klamath-Siskiyou, as they are essential to the region's future in a changing climate, its remarkable biodiversity, and the burgeoning recreation economy. You have captured most of the areas identified as potential climate refugia in published studies of the region with the exception that *we now urge you to add legislative language to protect mature forests given their anticipated climate refugia benefits and mature forests that have burned given their rarity and biodiversity importance*¹⁷.

¹⁷Swanson, M.L. et al. 2011. Ibid. Olson, D.M., et al. 2012. Climate change refugia for biodiversity in the Klamath-Siskiyou ecoregion. *Natural Areas Journal* 32:65-74. DellaSala, D.A. et al. 2014. Ibid.

We also applaud your efforts to limit most logging in the backcountry as this will do nothing to protect homes and is known to result in uncharacteristic forest fires¹⁸. Observations of prior fires and regional studies demonstrate that the preponderance of uncharacteristic fires occur in plantations and heavily logged areas¹⁹. Some examples with high levels of uncharacteristic fires that burned predominantly through plantations include the Douglas-fire complex, Biscuit fire, Antelope fire, and Oregon Gulch fire. In these cases, we observed slash piles on private lands as tall as three-story buildings provide fuel for rapidly advancing fires moving through dense plantations. Thus, we support your efforts to remove hazardous fine fuels via plantation restoration.

Key Recommendation - Add language that prioritizes fuel reduction efforts to a 100-200 feet radius surrounding homes and a narrow buffer along the road prism nearest towns along evacuation routes to better ensure fire fighter safety in defending towns.

Because fire is an integral part of the resilience and biodiversity of the Klamath-Siskiyou, we urge you to add language that directs the Forest Service to use Minimum Impact Suppression Tactics (MIST) in wilderness areas and to allow more fires to burn in the backcountry under safe conditions.

Our experience in fire-adapted regions of the West is that despite the importance of the Federal Wildland Fire Management Guidelines, the Forest Service seldom allows fires to burn even under safe conditions and is deeply wedded to a culture of suppress at all costs. Some notable exceptions of where MIST was eventually tried, after initial fire attack failed or was backed off, have occurred with fire in very remote areas of the Kalmiopsis but even those sustained damages from fire suppression activities (bulldozed fire lines, chemical retardants). Back-burning during the Biscuit fire, for instance, is believed to have caused one-third of the fires' high severity effects. Thus, without direction to the Forest Service about when to work with fire via MIST vs. when to suppress for human safety, we are dubious that the draft bill will change agency fire suppression culture much, particularly if there is no accountability to Congress.

Finally, it is not clear to us what sort of restoration will occur in wilderness areas and for Threatened and Endangered Species. Wilderness areas have exceptional ecological values and are the places where fires are mainly operating within historic bounds²⁰. While we understand that all activities must follow the intent of the Wilderness Act, we do not see the purpose and need for treating wilderness areas for fires, insects, and other forest "health" problems. This is the last place that managers should be tinkering with complex ecosystems already operating within historic bounds and not in need of "restoration." Moreover, it would be prudent to provide

¹⁸Bradley, C.M., et al. 2016. Does increased forest protection correspond to higher fire severity in frequent-fire forests of the western United States? *Ecosphere* 7: Ecosphere 7:1-13.

¹⁹Odion et al. 2004. Ibid. Bradley, C.M. et al. 2016. Ibid.

²⁰Bradley, C.M. et al. 2016. Ibid.

additional guidance to land managers on what sort of restoration treatments are compatible with recovery of threatened and endangered species.

Key Recommendation: Post-fire logging and thinning represent cumulative impacts to owls²¹ and other threatened wildlife and therefore we request that you include language that prohibits this activity from restoration areas and habitat of federally listed species.

This is also true for riparian areas that are naturally dense (do not need thinning) and that harbor high levels of biodiversity.

Key Recommendation – Add language and direction that thinning in riparian areas is not scientifically justified. Riparian thinning should be removed from provisions of the bill for at least water quality concerns²².

We thank you for this opportunity to comment on your draft legislation and would welcome opportunities to work with you on any questions you have regarding our comment letter and future drafts.

Sincerely,



Dominick A. DellaSala, Ph.D.
Chief Scientist, President

²¹Clark, D. et al. 2011, 2013. Ibid. Odion, D.C., et al. 2014. Effects of fire and commercial thinning on future habitat of the northern spotted owl. *Open Ecology Journal* 7:37-51

²²Frissell, C. et al. 2014. Conservation of aquatic and fishery resources in the Pacific Northwest: implications of new science for the aquatic conservation strategy of the Northwest Forest Plan. Report Coast Range Association.