THE JOHN MUIR PROJECT
OF EARTH ISLAND INSTITUTE
P.O. Box 897, Big Bear City, CA 92314
Telephone: 530-273-9290 Facsimile: 909-906-1187

Logging Industry Advocates Misrepresent Climate Science at House Hearing

On January 28, 2020, the House Subcommittee on Energy and the Subcommittee on Environment and Climate Change (of the Committee on Energy and Commerce) are holding a hearing at which they have invited to testify two scientists who are affiliated with the logging industry, and whose testimony consistently denies current climate change science. Brandon Collins is funded by the Trump Administration's U.S. Forest Service, which sells timber from public lands to private logging companies and keeps most of the revenue for its budget. Anthony Davis is a "forest engineering" professor, which means that his expertise is in industrial logging, and the science of how to efficiently extract timber from forests and create artificial tree plantations after logging, including clearcutting. It is troubling that a Democratic House Committee with jurisdiction over climate change issues would promote climate-change denying misinformation from scientists who advocate for industrial logging. Below are just some of the numerous serious misrepresentations of science in the Collins and Davis testimony.

Misrepresentations in Testimony of Brandon Collins

***Logging and Carbon Emissions*:** On pages 3-6 of his testimony, Dr. Collins promotes "commercial timber harvest" at the "landscape-level" across western U.S. forests, claiming that this will have the effect of "stabilizing forest carbon" ostensibly by curbing natural disturbance processes like wildland fire. However, Dr. Collins ignores the wealth of existing climate scientific evidence which concludes that commercial logging, conducted under the guise of "thinning", causes a substantial net reduction in forest carbon storage and a large net increase in carbon emissions (Mitchell et al. 2009, Campbell et al. 2012, Hudiberg et al. 2013) while, conversely, increasing forest protections and dramatically reducing or halting logging results in large increases in forest carbon storage and reduced carbon emissions (Depro et al. 2008, Harris et al. 2016, Law et al. 2018). Nor does Dr. Collins acknowledge that logging in U.S. forests emits 10 times more carbon into the atmosphere than wildland fire and native bark beetles combined (Harris et al. 2016). Moreover, the two "thinning" studies that Dr. Collins references on pages 3-4 of his testimony did not take into account the substantial tree mortality levels caused by the logging itself—a major bias.

***Climate and Wildland Fire*:** Dr. Collins, on page 1 of his testimony, attempts to downplay climate change as a factor in wildland fires, briefly mentioning only that climate merely has "a role", and thereafter claiming repeatedly that forest density and presence of snags (standing dead trees) are the main issues regarding fire severity in forests. This denies the fact that the strong weight of current scientific evidence holds that climate is by far the dominant force in determining forest fire behavior (Bradley et al. 2016, Zald and Dunn 2018), and that the densest, most long-unburned forests do not burn more intensely than other forests and, in fact, often burn less intensely (Odion and Hanson 2008, Miller et al. 2012, van Wagtendonk et al. 2012, Zald and Dunn 2018). Further, the most extensive research, conducted across the western U.S. forests, finds that forests with higher levels of snags do not burn more intensely (Hart et al. 2015), and tend to burn less intensely than forests with few or no snags. This is especially true as more time passes after trees die, and some fall to the ground, soaking up water and retaining soil moisture (Meigs et al. 2016).

***Logging and Fire Severity*:** Dr. Collins claims repeatedly, on pages 3-6 of his testimony, that logging conducted under the rubric of "thinning" will consistently reduce future fire severity, based on modeling assumptions that he and his colleagues created. However, he fails to mention that commercial "thinning",

which removes many mature, fire-resistant trees and reduces the cooling shade of the forest canopy, has been found to increase the rate of spread of wildland fires, by reducing the buffering effect that denser tree cover has against the winds, and it has been found that commercial thinning increases fire severity more often than it decreases it (Cruz et al. 2008, Cruz et al. 2014).

***Current Versus Historical Forest Density, and Fire*:** Dr. Collins repeatedly claims that current forests are too dense, but ignores well-established research finding that current forests actually have significantly less biomass (and, therefore, carbon) in them than they did historically, as a result of decades of logging (McIntyre et al. 2015). Further, Dr. Collins (page 2) cites to discredited studies, such as Stephens et al. (2015) and Collins et al. (2015), that were published by himself and other Forest Service-funded scientists. These studies, which promoted increased commercial logging, misleadingly claimed that historical forests had fairly low densities of trees, based on century-old Forest Service field surveys. However, it was later discovered, after an exhaustive independent examination of these historical records at the National Archives, that Dr. Collins and his colleagues had omitted most of the available data on historical tree density. When all of the data were included, it was revealed that mixed-conifer forests of the Sierra Nevada had 7 times more trees per acre than Dr. Collins and his colleagues misleadingly reported, and ponderosa pine forests had 17 times more trees per acre (Baker and Hanson 2017, Baker et al. 2018). This is uncontested. In addition, abundant historical U.S. government records regarding extensive occurrence of high-intensity fire patches in these forests were also omitted by Dr. Collins and his colleagues (Baker and Hanson 2017, Baker et al. 2018). Dr. Collins, on page 2 of his testimony, falsely claims that historical forests had "low- to moderate-severity" fire regimes, ignoring the stacks of scientific studies that have definitively concluded, based on numerous different methods, that high-severity fire patches were a substantial component of natural fire regimes and are ecologically essential for a large proportion of native plant and animal species (see hundreds of studies reviewed in DellaSala and Hanson 2015; see also Baker and Hanson 2017).

Misrepresentations in Testimony of Anthony Davis

In addition to making most of the same scientific misrepresentations that Dr. Collins does, Dr. Davis also falsely claims that 20th century timber "harvesting" (logging of all types) "reduced wildfire impacts". However, the most comprehensive scientific analysis ever conducted on this question—an analysis spanning three decades, over 1,500 fires, and more than 23 million acres of burned area across the entire western U.S.—found that, in the same forest types, forests with the fewest environmental protections and the most logging actually burned the most intensely, while forests protected from logging had the lowest fire intensities (Bradley et al. 2016), a finding later backed up by additional research (Zald and Dunn 2018). Dr. Davis also falsely claims, on page 1 of his testimony, that mixed-intensity wildland fires "damage" forests and remove wildlife habitat. This is very outdated, 20th-century thinking, which ignores the massive body of newer scientific evidence finding that patches of high-intensity fire create "snag forest habitat", which is comparable to old-growth forest in terms of native biodiversity and wildlife abundance, and many native species depend on this habitat (see hundreds of studies reviewed in DellaSala and Hanson 2015).

References

Baker, W.L., and C.T. Hanson. 2017. Improving the use of early timber inventories in reconstructing historical dry forests and fire in the western United States. Ecosphere 8: Article e01935.

Baker, W.L., C.T. Hanson, and M.A. Williams. 2018. Improving the use of early timber inventories in reconstructing historical dry forests and fire in the western United States: reply. Ecosphere **9**: Article e02325.

Bradley, C.M. C.T. Hanson, and D.A. DellaSala. 2016. Does increased forest protection correspond to higher fire severity in frequent-fire forests of the western USA? Ecosphere **7**: article e01492.

Campbell, J.L., M.E. Harmon, and S.R. Mitchell. 2012. Can fuel-reduction treatments really increase forest carbon storage in the western US by reducing future fire emissions? Frontiers in Ecology and Environment 10: 83-90.

Cruz, M.G., M.E. Alexander, and J.E. Dam. 2014. Using modeled surface and crown fire behavior characteristics to evaluate fuel treatment effectiveness: a caution. Forest Science 60: 1000-1004.

Cruz, M.G., M.E. Alexander, and P.A.M. Fernandes. 2008. Development of a model system to predict wildfire behavior in pine plantations. Australian Forestry 71: 113-121.
DellaSala, D.A., and C.T. Hanson (Editors). 2015. The ecological importance of mixed-severity fires: nature's phoenix. Elsevier Inc., Waltham, MA, USA.
Depro, B.M., et al. 2008. Public land, timber harvests, and climate mitigation: Quantifying carbon sequestration potential on U.S. public timberlands. Forest Ecology and Management 255: 1122-1134.
Harris, N.L., et al. 2016. Attribution of net carbon change by disturbance type across forest lands of the conterminous United States. Carbon Balance Management 11: Article 24.
Hart, S.J., T. Schoennagel, T.T. Veblen, and T.B. Chapman. 2015. Area burned in the western United States is unaffected by recent mountain pine beetle outbreaks. Proceedings of the National Academy of Sciences of the USA 112: 4375−4380.
Hudiburg, T.W., et al. 2013. Interactive effects of environmental change and management strategies on regional forest carbon emissions. Environmental Science and Technology 47: 13132-13140.
Law, B.E., et al. 2018. Land use strategies to mitigate climate change in carbon dense temperate forests. Proceedings of the National Academy of Sciences of the United States of America 115: 3663-3668.
McIntyre, P.J., et al. 2015. Twentieth-century shifts in forest structure in California: Denser forests, smaller trees, and increased dominance of oaks. Proceedings of the National Academy of Sciences of the United States of America 112: 1458-1463.
Meigs, G.W., H.S.J. Zald, J.L. Campbell, W.S. Keeton, and R.E. Kennedy. 2016. Do insect outbreaks reduce the severity of subsequent forest fires? Environmental Research Letters 11: 045008.
Miller, J.D., Skinner, C.N., Safford, H.D., Knapp, E.E., Ramirez, C.M., 2012. Trends and causes of severity, size, and number of fires in northwestern California, USA. Ecological Applications 22: 184–203.
Mitchell SR, Harmon ME, and O'Connell KEB. 2009. Forest fuel reduction alters fire severity and long-term carbon storage in three Pacific Northwest ecosystems. Ecological Applications 19: 643–55.
Odion, D.C., and C.T. Hanson. 2008. Fire severity in the Sierra Nevada revisited: conclusions robust to further analysis. Ecosystems 11: 12-15.
van Wagtendonk, J.W., van Wagtendonk, K.A., Thode, A.E., 2012. Factors associated with the severity of intersecting fires in Yosemite National Park, California, USA. Fire Ecology 8: 11–32.
Zald, H.S.J., and C.J. Dunn. 2018. Severe fire weather and intensive forest management increase fire severity in a multi-ownership landscape. Ecological Applications 28: 1068-1080.