Climate change and forestry:

Logging burns the climate change candle at both ends. It is a major source of CO2 emissions, and it causes loss of carbon sequestration as well as carbon storage above and below ground.

"A new study by researchers based at Oregon State University and the University of Idaho corroborates Center for Sustainable Economy's 2015 and 2017 research demonstrating that logging is by far the number one source of greenhouse gas emissions in Oregon and that changes in greenhouse gas accounting rules are urgently needed to ensure that the climate impacts of logging are accurately reported. Both the new OSU study and CSE's 2017 research estimate annual logging-related emissions to have averaged over 33 million metric tons carbon dioxide equivalent per year since 2000. This makes logging by far the largest source of emissions in the state, far larger than the 23 Mmt CO2-e/yr attributed to transportation – the leading source presently accounted for by the Oregon Global Warming Commission (OGWC) and the State's Department of Energy." (Talberth, 2018) https://www.newscientist.com/article/2215913-logging-study-reveals-huge-hidden-emissions-of-the-forestry-industry/#:~:text=Talberth%20has%20carried%20out%20a%20study%20like%20this,from%20space%3A%20Shaun%20Quegan%20at%20New%20Scientist%20Live)

Automation has increased deleterious effects of logging on public lands.

The amount of greenhouse gas emissions from logging in Montana or the Bitterroot is not known but is being researched. That information will be fundamental for efforts to mitigate green house gases and for climate change resilience planning.

“As hundreds of climate and forest scientists warned Congress last year, logging in U.S. forests emits 723 million tons of uncounted CO2 into our atmosphere each year—more than 10 times the amount emitted by wildfires and tree mortality from insects combined.” (Scientist letter)

“Logging in U.S. forests emits 617 million tons of CO2 annually (https://www.fs.fed.us/nrs/pubs/jrnl/2016/nrs_2016_harris_001.pdf). Further, logging involves transportation of trucks and machinery across long distances between the forest and the mill. For every ton of carbon emitted from logging, an additional 17.2% (106 million tons of CO2) is emitted from fossil fuel consumption to support transportation, extraction, and processing of wood (Ingerson, 2007). In fact, the annual CO2 emissions from logging in U.S. forests are comparable to yearly U.S. emissions from the residential and commercial sectors combined. (https://www.epa.gov/ghgemissions/inventory-us-greenhouse-gas-emissions-and-sinks)

The cumulative climate change impact of logging in the U.S. is even higher, since logging causes substantial reductions in carbon sequestration and storage potential in forests due to soil compaction and nutrient removal, and these combined impacts can often reduce forest carbon storage potential by 30% or more. (e.g., Elliott et al. 1996, Walmsley et al. 2009)

A fire line far from and upwind of fire activity on the Beaverhead Deerlodge National Forest

Fire vs logging issues:

Can fuel-reduction treatments (aka, logging) really increase forest carbon storage in the western US by reducing future fire emissions?

"In countless public communications, and at numerous Congressional hearings, industry representatives have advocated for increased logging in the context of reducing wildland fire and related emissions. While small-tree thinning can reduce fire intensity when coupled with burning of slash debris (e.g. Perry et al. 2004, Strom and Fulé 2007) under very limited conditions, recent evidence shows intensive forest management characterized by young trees and homogenized fuels burn at higher severity. Further, the extremely low probability (less than1%) of thinned sites encountering a fire where thinning has occurred limits the effectiveness of such activities to forested areas near homes. Troublingly, to make thinning operations economically attractive to logging companies, commercial logging of larger, more fire-resistant trees often occurs across large areas." (https://forestcarboncoalition.org/zald-h-s-dunn-c-j-2018-severe-fire-weather-and-intensive-forest-management-increase-fire-severity-in-a-multi-ownership-landscape-ecological-applications-284-1068-1080/).

"As an example, logging in U.S. forests emit 10 times more carbon than fire and native insects combined (Harris et al. 2016). And, unlike logging, fire cycles nutrients and helps increase new forest growth."

"Logging conducted as commercial "thinning," under the rubric of fire management, emits about three times more CO2 than wildfire alone." (Scientist letter)

"According to Bruce Maxwell, a lead author of the 2017 Montana Climate Assessment, forest management does not appear to decrease forest fires." (https://bitterrootcag.org/)

A fire that started in a logged area in the Lewis and Clark National Forest

Old growth issues:

"While young forests tend to absorb more carbon overall because trees can be crowded together when they're small, a tree's carbon absorption rate accelerates as it ages. This means that forests comprised of tall, old trees – like the temperate rainforests of North America's Pacific coast – are some of the planet's biggest carbon storehouses." (https://news.mongabay.com/2019/05/tall-and-old-or-dense-and-young-which-kind-of-forest-is-better-for-the-climate/)

Old growth slated for commercial logging in the Gold Butterfly Project area

"The results showed that for most tree species, mass growth rate increases continuously with tree size — in some cases, large trees appear to be adding the carbon mass equivalent of an entire smaller tree each year." "This continuously increasing growth rate means that on an individual basis, large, old trees are better at absorbing carbon from the atmosphere." (https://www.usgs.gov/news/large-old-trees-grow-fastest-storing-more-carbon)

"…large trees accumulated C at a faster rate than small trees on an individual basis…" (https://www.fs.fed.us/pnw/pubs/pnw_gtr931/pnw_gtr931_050.pdf)

Regeneration failures:

"Few or no tree seedlings are establishing on some areas of the 150+ forest fires ["like many disturbances"] sampled across western US" (Camille S. Stevens-Rumann* and Penelope Morgan)

Clearcuts are especially prone to regen failures due to increase in temperatures and evaporation.

Forests sequester and store carbon above ground and in the soil. Soil compaction and disturbance cause CO2 emissions and loss of sequestration. Soil carbon is dominantly associated with fungi, not plants. "…47 percent of soil carbon found on large island samples came about due to fungi, as did a whopping 70 percent of carbon in small island soil samples." https://phys.org/news/2013-03-fungi-responsible-carbon-sequestration-northern.html

Biomass fuels issues:

"Is biomass "Worse than coal"? Yes, if you're interested in reducing carbon dioxide emissions anytime in the next 40 years. It's often claimed that biomass is a "low carbon" or "carbon neutral" fuel, meaning that carbon emitted by biomass burning won't contribute to climate change. But in fact, "biomass burning power plants emit 150% the CO2 of coal, and 300 – 400% the CO2 of natural gas, per unit energy produced." info@pfpi.net

"Most of the carbon in trees removed from forests through logging is emitted almost immediately, as branches and tree tops are burned at biomass energy facilities, and mill residues are burned at the sawmills, typically for energy production—emitting more CO2 than burning coal, for equal energy produced." (Scientist letter)

Local climate change and forestry issues:

Local forestry feeds climate change and compounds damage caused by climate change. In the Bitterroot, impacts to timing of water runoff seem to be the Achilles' heel regarding climate change. Openings caused by logging advance snowmelt timing. Logging roads and log skidding cause soil compaction which decreases groundwater recharge and late season water flows as well as increases high water flows.

Aerial photo of logging on the Bitterroot National Forest

The BNF is logging and road building faster now than it has for several decades. Clearcutting, logging old growth and road building are back with a vengeance. The budget reconciliation bill now before Congress would add $ billions in subsidies for logging nationally. The pace and scale of logging on the Bitterroot is soon due to increase in a very big way.

Clearly, forestry is a major climate change sector that deserves increased attention and immediate action. Forest Service analysis of timber sale impacts to climate change is woefully incomplete and, tragically, lacking best available science.

In the interest of mitigating climate change and increasing resilience to climate change, FOB recommendations for public forests include: no logging of old growth or large diameter trees, no clearcuts, and focus thinning for fire-wise purposes within the Home Ignition Zone (HIZ, up to 110 feet from the home). “It may not be necessary or effective to treat fuels in adjacent areas in order to suppress fires before they reach homes; rather, it is the treatment of the fuels immediately proximate to the residences, and the degree to which the residential structures themselves can ignite that determine if the residences are vulnerable.” (Objectives and considerations for wildland fuel treatment in forested ecosystems of the interior western United States Elizabeth D. Reinhardt *, Robert E. Keane, David E. Calkin, Jack D. Cohen USDA Forest Service, Rocky Mountain Research Station, Fire Sciences Laboratory)