April 28, 2020
Federal eRulemaking Portal
http://www.regulations.gov
Docket No. USDA-2021-0003.
Re: January 27, 2021 Executive Order on Tackling the Climate Crisis at Home and Abroad

Please accept these comments and supporting citations for the public record regarding President Biden's Executive Order on the climate crisis. Wild Heritage is a science-based non-profit dedicated to protecting primary forests around the world (Mackey et al. 2015, DellaSala et al. 2020a), including in the US where most primary older forests are gone in the lower 48 states but some regions are gradually recovering from past logging (e.g., northeast) and other regions still have substantial older forests remaining (e.g., Tongass and Chugach National Forests). Our chief scientist, Dr. Dominick A. DellaSala, submits these comments for the public record. He has three decades of experience and over 200 peer-reviewed papers and books on forest ecosystems, carbon accounting, wildfire ecology, and imperiled species and has served as a technical reviewer for the IPCC.

We welcome the opportunity to comment on the president's executive order in tackling the climate emergency, the severity of which has been repeatedly warned by thousands of scientists (Ripple et al. 2020, 2021). Our comments are mainly aimed at ensuring USDA uses the best available, independent science in determining the most effective climate change policy and that such policy protects primary (unlogged) forests, large trees, and intact areas for their biodiversity and myriad ecosystems benefits. In general, the Biden administration needs to develop strong solutions to both the climate and biodiversity emergencies (e.g., 1 million species are threatened globally – see https://www.ipbes.net/news/million-threatened-species-thirteen-questions-answers) as President Biden's flagship initiative.

In sum, our main recommendations are as follows:

1 – Protect the carbon stocks as carbon reservoirs – every time trees are removed from the forest, carbon is emitted to the atmosphere. What matters most in a climate emergency is gross emissions, not net (Mackey et al. 2013, Law et al. 2018, Moomaw et al. 2019, Buotte et al. 2020). That means keeping carbon in the forests and out of the atmosphere. Consider, ~ 80% of the carbon in a forest is emitted to the atmosphere

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within a century following logging (Hudiburg et al. 2019). The carbon debt is not made up for by storing carbon in wood product pools or planting trees given most wood products are short lived and young trees do not contain the carbon stores that older trees have built up over decades-centuries (Luyassert et al. 2009, Keith et al. 2009, Mackey et al. 2013, Stephenson et al. 2014, Mildrexler et al. 2020). This is why many scientists are calling on governments to not only protect sinks but the carbon stocks or reservoirs (Zoltan et al. 2021).

2 – Work with independent scientists in creating a natural strategic carbon reserve (DellaSala et al. 2020b, Law 2021) **through full engagement of the public and tribes in national rulemaking.** GIS mapping is underway by several independent researchers using new analysis tools (e.g., Carroll et al. 2021, carbon mapping at Oregon State University and Woodwell Research Center) and USDA should take this under advisement. For example, carbon dense forest mapping has already occurred in the Pacific Northwest where federal lands have more carbon per acre than the tropics (Krankina et al. 2012, 2014), on the Tongass that stores up to 44% of all carbon on the national forest system (DellaSala 2021), and for large trees east of the Cascades in Oregon and Washington (Mildrexler et al. 2020) adding to the global importance of large trees as nature-based climate solutions (Lindenmayer et al. 2012, Lutz et al. 2018). Those studies can form the scientific foundation for national rulemaking to protect all carbon dense older forests and large carbon-storing trees in addition to allowing young forests time to grow and recapture diminished carbon stocks from prior logging (a process called proforestation, Moomaw et al. 2019). Prior estimates indicate ~ 50 million acres of carbon dense forests exist on national forests that could become the foundation for a strategic natural carbon reserve (using methods in Krankina et al. 2014). Carbon set-asides would also contribute to the 30 x 30 targets.

3 – Restore landscape connectivity by reducing anthropogenic stressors and identify candidate climate sanctuaries for protection – this means taking out roads (which are a source of human-caused fire ignitions and fish and wildlife habitat degradation); upgrading culverts for handling storm surge; re-introducing imperiled species; re-introducing beavers for floodplain stability; removing invasive weeds and livestock especially from streams and wetlands, as livestock are a top threat on public lands to biodiversity and climate mitigation (Beschta et al. 2012); and reconnect the landscape and floodplain to facilitate wildlife movements in a rapidly changing climate (Haber et al. 2015). Identifying likely climate refugia/sanctuaries can be based on new tools for locating areas with relatively stable microclimates (microrefugia) such as valley bottoms, riparian corridors, elevation zone connectivity, north-facing slopes, and older forests conditions (e.g., Olson et al. 2012). This includes upholding the National Roadless Conservation Rule and restoring roadless protections on the Tongass National Forest. Roadless areas provide a critically important landscape connectivity function for climate and biodiversity benefits (Ibisch et al. 2017). Adding to the inventory roadless areas, the Forest Service should complete the task of protecting unroaded (<5,000

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acres) areas called out in the 2001 roadless rule but since have not been protected. This is especially important for eastern forests that lack large intact blocks.

4 – Biofuels from forests is not a climate smart strategy and needs to be defunded – the burning of "feed stock" from forests will contribute emissions on par with burning coal (Hudiburg et al. 2011, Schlesinger 2018). Biofuel (pellets) in the southeastern for instance have been the main driver of forest losses and social injustice problems as many polluting pellet plants are located near people of color and disadvantaged communities. We request that you abandon this strategy as it is antithetical to best available independent science on climate mitigation.

5 – USDA's preoccupation with expansive "fuels reduction" is misguided, will harm ecosystems, and put more emissions into the atmosphere than natural disturbances, thus, funding needs to be redirected to home hardening and defensible space – each year, Congress writes the Forest Service what is essentially a blank check for fire suppression that in most years is more than 50% of the agencies' total budget. Suppression spending has skyrocketed while acres burning have increased (the definition of crazy – doing the same thing over and over and expecting a different outcome). Logging (thinning) to reduce wildfire intensity also degrades ecosystem integrity, habitat for imperiled species, and requires an expansive damaging road system for access – these are all collateral damages that need to be addressed (DellaSala et al. 2018). In addition, based on empirical evidence, while the Forest Service treats thousands of acres per year using "thinning," the likelihood of a fire encountering a treated stand – even if done properly – is <1% (Schoennagel et al. 2017). Increasing the scale and pace of logging will not change those odds appreciably and even if it could the tradeoffs would be increased emissions, loss of wildlife habitat, aquatic ecosystem damage, and removal of large-fire resistant trees that nearly always happens to pay for costs of treatments. This is why many scientists are now requesting that land managers focus strategically on reducing flammable vegetation nearest towns and homes and not in the backcountry (Moritz et al. 2014, Schoennagel et al. 2017). The agency needs to be more surgical with thinning by targeting flammable tree plantations and leaving large trees in place. In areas, where regrowth of fire intolerant trees has come in, some of the large trees could be girdled or tipped into streams and not removed from the site in order to maintain their ecological functions and keep the carbon in dead tree pools and soils (decomposition slowly emits carbon but that takes decades while new growth recaptures carbon). Finally, in a comprehensive national and regional analysis of emissions, scientists found emissions from logging far eclipsed that of natural disturbances (see Harris et al. 2016, Law et al. 2018).

6 – USDA's preoccupation with wildfire as "catastrophic" is harming ecological integrity – the Forest Service is not keeping up with the latest research showing the ecological integrity benefits of large fires of mixed severity (DellaSala and Hanson 2015). It's preoccupation with reducing fire intensity runs counter to ecosystem integrity principles. For instance, while wildfire acres burning have been increasing

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since the 1980s warming period, we are still in a fire deficit for all fire severities (Parks et al. 2015). In particular, the preoccupation with "megafires" and large high severity fire patches fails to take into consideration new science showing how large patches of high severity fire have not increased across the West since the early 1990s (DellaSala and Hanson 2019). These researchers found that even in the largest patches of high severity burns (thousands of acres), there was sufficient conifer establishment within the interior of the largest patches (DellaSala and Hanson 2019). Additionally, it makes no ecological or climate sense to remove large trees post-fire or post-insect disturbance (for reviews see Lindenmayer et al. 2008, DellaSala et al. 2015) as this type of logging is most destructive to complex early seral forests, an early seral stage with levels of biodiversity comparable to that of old-growth forests (Swanson et al. 2011, DellaSala et al. 2014, DellaSala and Hanson 2015, DellaSala et al. 2017, DellaSala 2020). The Forest Service needs to make better use of the Interagency Cohesive Wildfire Strategy by working with wildfire for ecosystem benefits under safe conditions when not threatening towns. The agency also needs to acknowledge how large fires of mixed intensity actually naturally reduce flammable vegetation over large areas and more quickly and cost effectively than any landscape thinning or suppression. Suppression should strategically focus on protecting homes and towns while keeping firefighters out of harms' way. Additionally, fires tend to burn uncharacteristically severe in logged landscapes compared to protected areas (Bradley et al. 2016) especially under severe fire-weather (Zald and Dunn 2017).

7 – Encourage non-federal landowners to keep carbon in the forests and large trees – incentivize longer rotations and set asides (see Law et al. 2018 for climate benefits) by seeking Land & Water Conservation Funds and putting more money into conservation easements. Landowners can be encouraged to enroll in FSC certification to improve forest management and adopt carbon protections by setting aside forests for the maximum period of 100 years in carbon offset agreements. Please note, in no way is planting trees a substitute for long-rotations or proforestation (Moomaw et al. 2019). This is because seedlings take decades to build up carbon stocks while existing young forests have a big head start. It is why the trillion trees initiative has been challenged by scientists (Bastin et al. 2020). Additionally, in no way do offsets compensate for substantial emissions reductions needed in the energy sector even though a portion of emissions reductions can be offset by improved forestry. In other words, while it's important to invest in these strategies to improve forest management and level the economic playing field for nonfederal lands conservation, it by no means a substitute for real emissions cuts, including from forestry and agriculture.

In closing, the best way for forestry to become climate smart is to protect the carbon dense older forests and allow young forests time to grow and accumulate carbon over decades. This can best be accomplished by placing older carbon dense forests – initially from the Tongass and Pacific Northwest older forests – and large carbon-accumulating trees in dry forests – in a strategic natural carbon reserve system that also includes young forests managed for carbon. Forests from the coast redwoods and Tongass rainforest to the eastern hardwoods and southern cypress swamps store massive amounts of carbon and older forests and large trees nationwide should be

enrolled in a natural carbon reserve network as part of the US National Determined Contribution and to contribute to 30 x 30 goals. Emphasizing carbon in forest planning comes with co-benefits including clean water, biodiversity, recreation, and other values (Brandt et al. 2014, Buotte et al. 2020). Finally, USDA should request that all forest plans choose alternatives that minimize emissions from logging, road building, livestock, and other land-uses and that all forest plan revisions conduct a comprehensive life cycle analysis (Hudiburg et al. 2019) that quantifies not only carbon flux from management alternatives but gross emissions and impacts on carbon stores.

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