



TITLE: "Natural Climate Solutions to Mitigate and Adapt to Climate Change" PowerPoint
Executive Summary
Professor Beverly Law
DATE: February 14, 2023

"We must listen to the science – and act." (President Joe Biden, Executive Order 14008. 2021)

The climate is changing rapidly at an accelerating rate in every region of the planet, endangering many of the living things on Earth, including humans. We must act quickly and decisively to mitigate the environmental impacts brought on through human activity before crossing an ecological threshold that cannot be reversed. The United Nation's Intergovernmental Panel on Climate Change (IPCC AR6) has identified the next 10 to 30 years as a critical window for climate action, after which ***severe*** ecological disruption is expected to accelerate as the increase in global temperatures exceeds 1.5 degrees Celsius. Reducing emissions from energy systems, deforestation, forest degradation and other sources while increasing accumulation of carbon by natural systems are the primary means by which we will control atmospheric carbon dioxide. Mature and old forests are the most effective at storing and accumulating carbon, and a majority of them are on federal lands. Thus, we suggest that the Biden administration conduct national rulemaking to protect all federal MOG from logging concurrent with the President's Executive Order 14072 (inventory MOG for conservation purposes) and Executive Order 14008 (protect 30% of all lands and waters by 2030).

To be measurably effective in our efforts against climate change, the Intergovernmental Panel on Climate Change (IPCC) recommends conservation of 30% to 50% of the earth's land, freshwater, and oceans, including *near-natural ecosystems*. This goal is reflected in President Biden's Executive Order 14008 (2021), where he outlines the administration's directive.

Protecting 30% of our lands and waters in the next seven years is an ambitious, but crucially important goal if we hope to be successful in addressing climate change. One primary method is to protect mature and old forests on federal lands from extractive uses (logging) as natural climate solutions. Preserving these forests would begin to address both executive orders.

Recent scientific studies document several key points highlighting the need to preserve mature and old forests:

- An essential metric for climate mitigation by forests is carbon density: the amount of carbon stored per acre in aboveground live and dead biomass. It is determined from easy measurements of tree diameter and height, which are also used to estimate structural diversity for biodiversity of plants and animals. Mature and old forests have the highest carbon densities.
- Harvesting forests accounts for the largest percentage of tree mortality and carbon emissions in the western U.S. compared with beetles and wildfire. Of wood harvested in Oregon, California and Washington since 1900, a majority of the carbon returned to the atmosphere quickly or is in landfills, and only a small portion (19%) is stored in long-lived products.
- On six National Forests in eastern Oregon, large trees account for 3% of the trees, but store 42% of the carbon. In forests with a mix of tree sizes, the large ones should be protected.
- Converting mature and old forests to young forests has resulted in a significant loss of total carbon stores, even when storage in wood products is considered.

- Approximately 65% of high priority forests for carbon storage is on federal lands.
- Currently, only 20% of carbon stocks (mature forests) within federal lands are protected.
- Oregon has the most total forest area and aboveground carbon density in the western U.S., but only 10% are protected, the lowest level among the 11 Western States.

Protecting mature and old forests offers a number of co-benefits, including:

- Habitat for numerous imperiled ecosystems and Threatened and Endangered (T&E) species.
- Cooler interior for climate-sensitive species and those needing to migrate and adapt to climate change.
- Structural and functional complexity for aquatic and terrestrial species.
- Storage and slow release of rain and ground water.

As forests age, they develop tall canopies, and self-prune their lower branches making it more difficult for fires to reach the crown. Densely stocked stands of uniform small trees are a more serious fire risk and are places where ecologically-based thinning would be beneficial. Natural regeneration after stand-replacing fire provides unique biodiversity benefits, and has lower fire risk because much of understory combusted. Some of the understory will resprout and provide food and habitat for many species.

In summary, we support the mature and old forest inventory directed by EO 14072. We suggest combining EO14072 and EO 14008 to begin the process of contributing to the nation's 30 x 30 goal that is consistent with global forest protection goals. The U.S. was one of 145 nations that signed the Glasgow Forest Pledge to end global deforestation and forest degradation by 2030, and is a signing member of the Paris Climate Agreement that includes measures to protect natural carbon stocks. A nationwide rule that protects mature and old forests from logging would set the bar on U.S. global leadership. As President Biden stated in 2021, we must listen to the science and act.