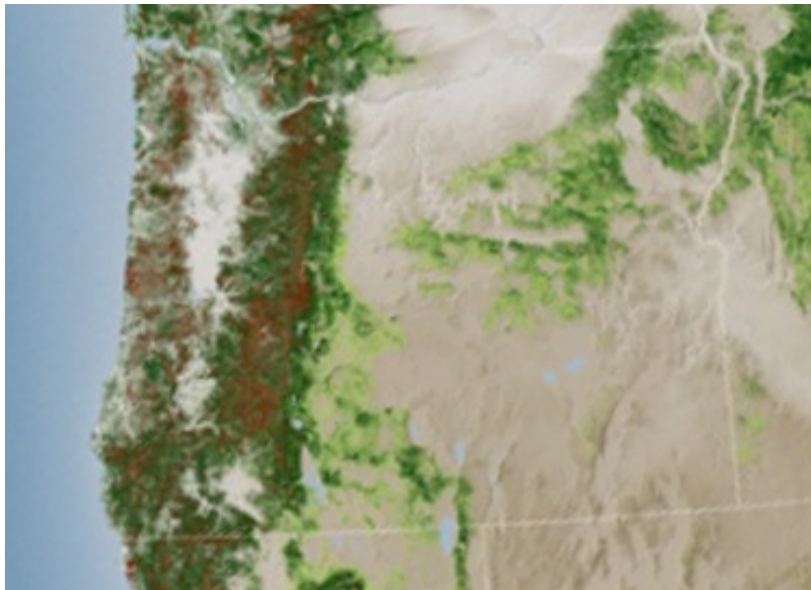


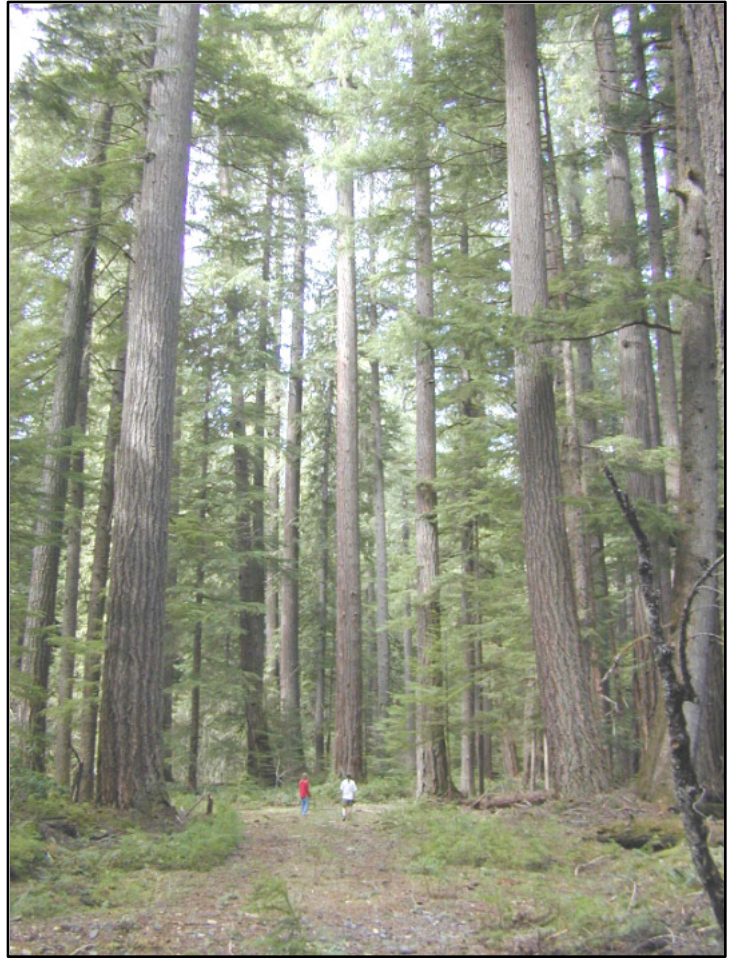


**Oregon's Carbon Sinks**  
an Oregon Wild report localizing national analysis  
by the Woods Hole Research Center  
June 2011



# Key Findings

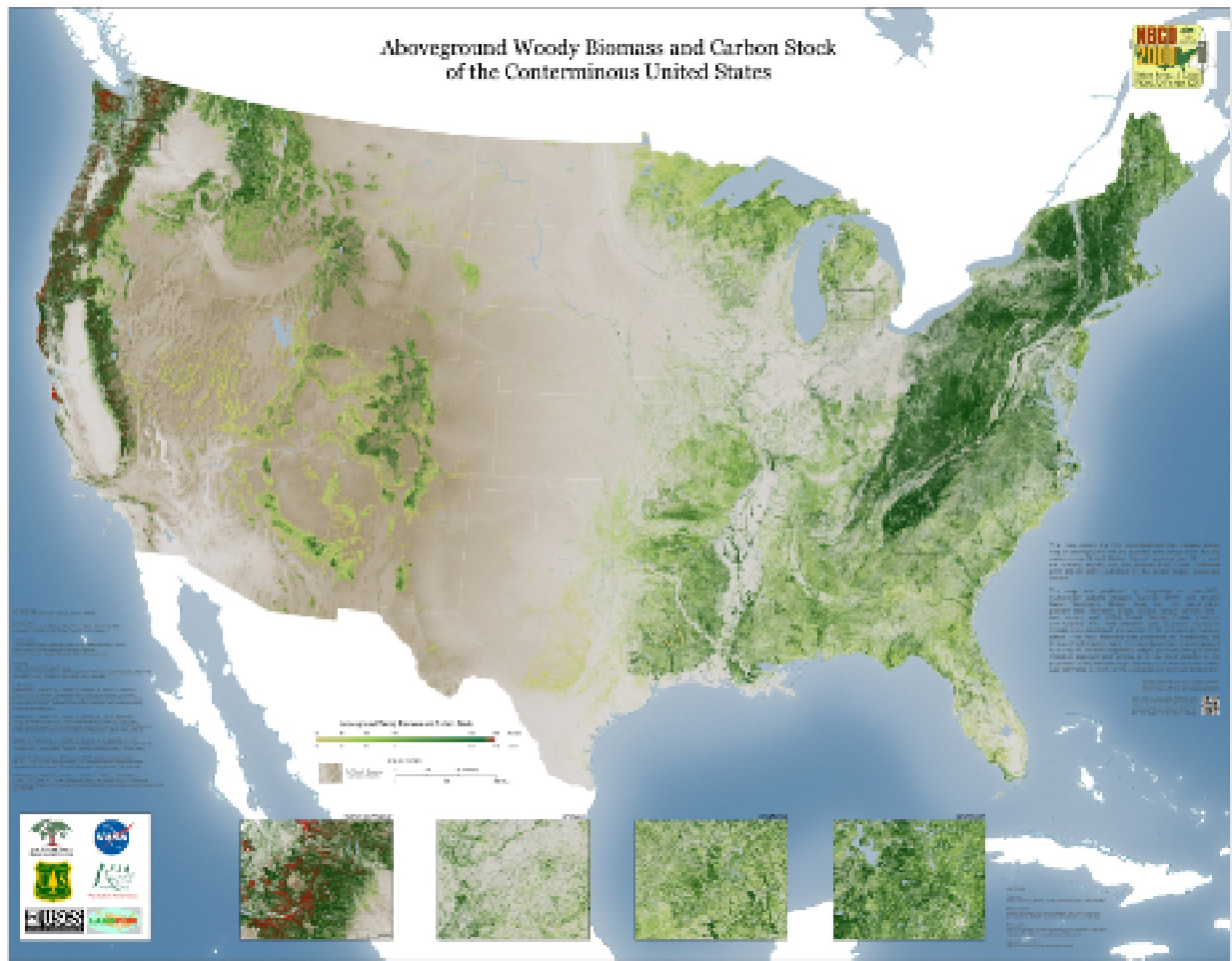
- Private industrial forests in Oregon are largely carbon deserts. This is the result of converting natural forests hundreds of years old to tree farms that are rarely allowed to grow beyond 40-60 years old before being clear-cut again.
- Public forest lands managed by the US Forest Service and BLM currently store far more carbon than private industrial forests. Despite widespread logging on federal lands, they have been logged less intensively than private lands.
- Both public and private forest lands have the potential to store much more carbon.
- The highest levels of carbon storage tend to be found in old-growth forests such as those found in roadless areas, Wilderness areas, and protected forest reserves in western Oregon.
- Proposals to increase logging or sell public BLM lands in western Oregon would have significant consequences for carbon storage and climate change. Logging under the WOPR will release 180 million tons of carbon over the next century compared to letting the forests grow. This is equivalent to: A) operating the 585 Mw Boardman Coal-fired power plant for 132 years, or B) adding one million cars to the road for 132 years.



*Clackamas Wilderness, Mount Hood National Forest – Bob Holmstrom*



*Carbon desert - post logging*



*Woods Hole Research Center's national map of carbon storage. The darker green and red represents areas storing the most carbon.*

**About the source data:**

Base data for Oregon Wild's analysis is from the US Forest Service and Bureau of Land Management. The carbon storage data is directly from the Woods Hole Research Center with no values being changed. Woods Hole Research Center describes their data as:

“...a high-resolution “National Biomass and Carbon Dataset for the year 2000” (NBCD2000), the first ever spatially explicit inventory of its kind. The dataset was produced as part of a project funded under NASA’s Terrestrial Ecology Program with additional support from the Landscape Fire and Resource Management Planning Tools Project (LANDFIRE). The project has generated a high-resolution (30 m), year-2000 baseline estimate of basal area-weighted canopy height, aboveground live dry biomass, and standing carbon stock for the conterminous United States.”

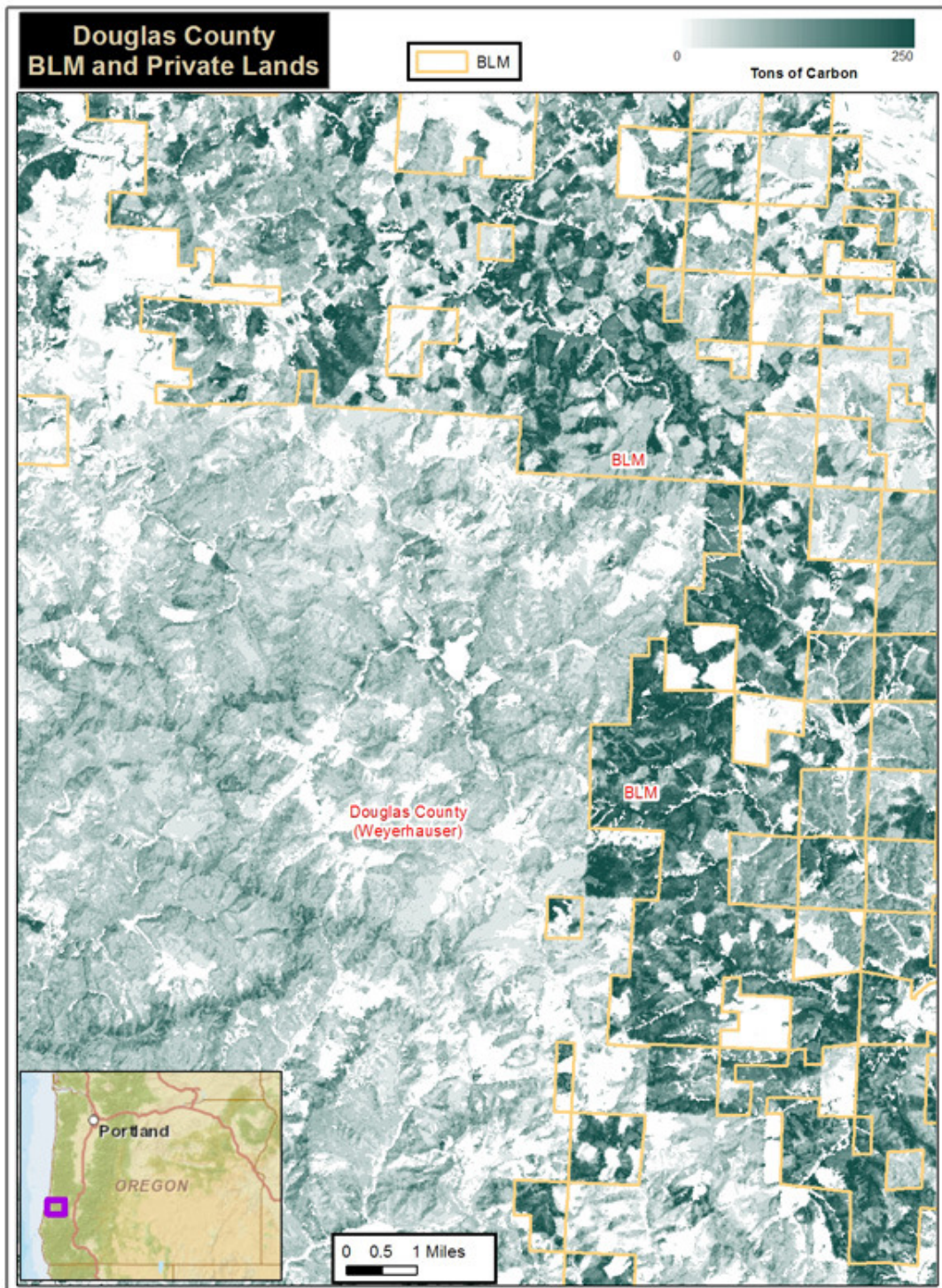
The Woods Hole Research Center generously provides their analysis and Geographic Information System data to the public. The views in this report are those of Oregon Wild and while they are based on research done by Woods Hole Research Center, this report does not represent the views of the Woods Hole Research Center.

Additional info regarding the Woods Hole data and analysis can be found at:

<http://www.whrc.org/mapping/nbcd/index.html>

Or by contacting Josef Kelldorfer, josefk@whrc.org

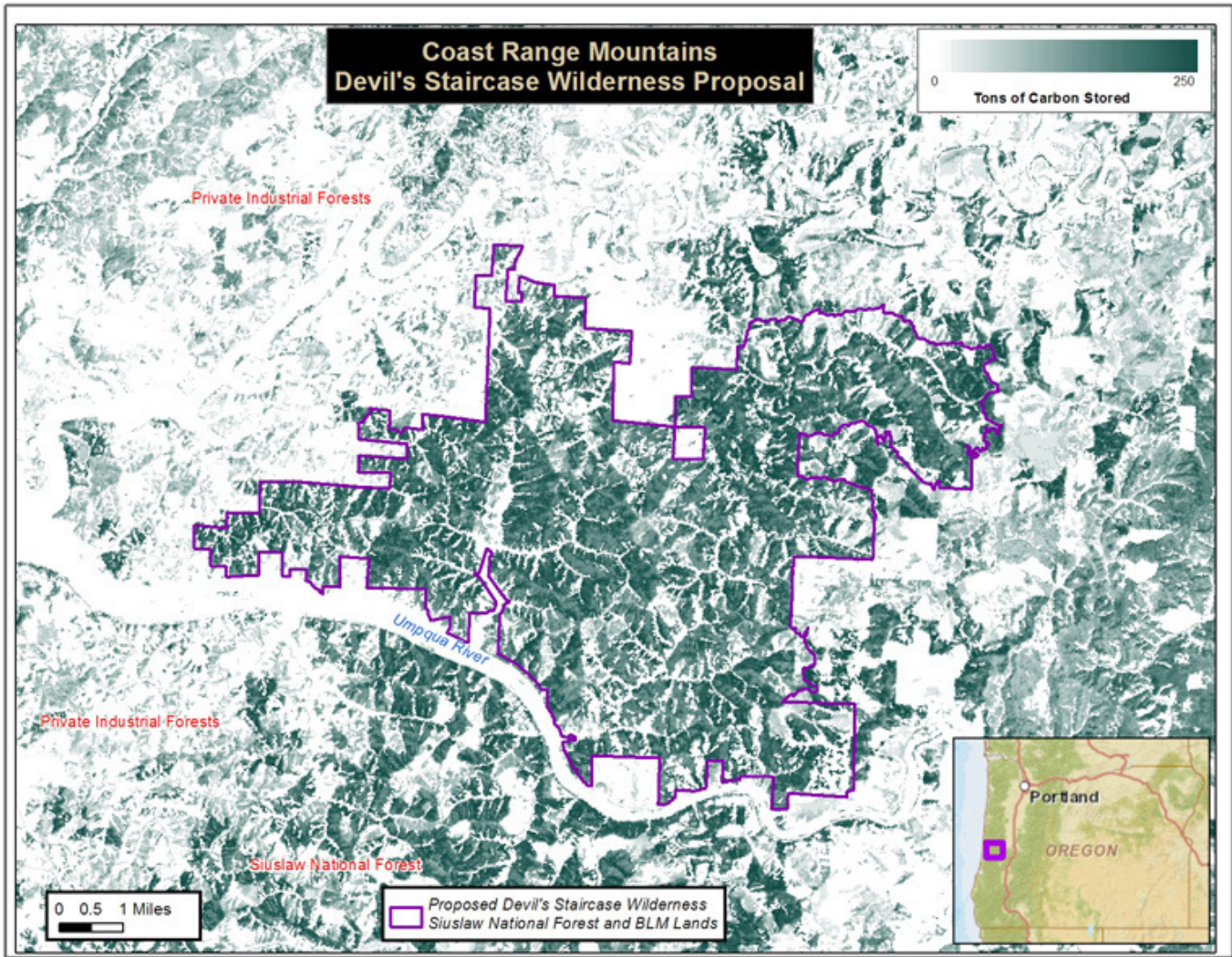




Map 1

The upper Mill Creek (tributary to the Umpqua River) watershed in the Oregon Coast Range has a combination of ownerships including the Bureau of Land Management and private timber companies. *Map 1* demonstrates a substantially lower level of carbon storage on private lands in stark contrast to the adjacent public lands managed by the BLM. This map demonstrates the high levels of potential carbon storage in the Coast Range mountains of Douglas County. Despite the BLM lands storing vastly higher quantities of carbon, there is still considerable potential for additional carbon storage if managed for that purpose. Currently there are proposals to sell off or drastically increase logging on many of the publicly owned BLM lands in western Oregon. Based on this analysis, the areas being considered for sale and/or increased logging would undergo a management change that would result in storing considerably less carbon. **Conclusion:** The Oregon Coast Range Mountains have the potential to store vast amounts of carbon if they aren't logged and will store very little carbon on private lands under current practices.





Map 2

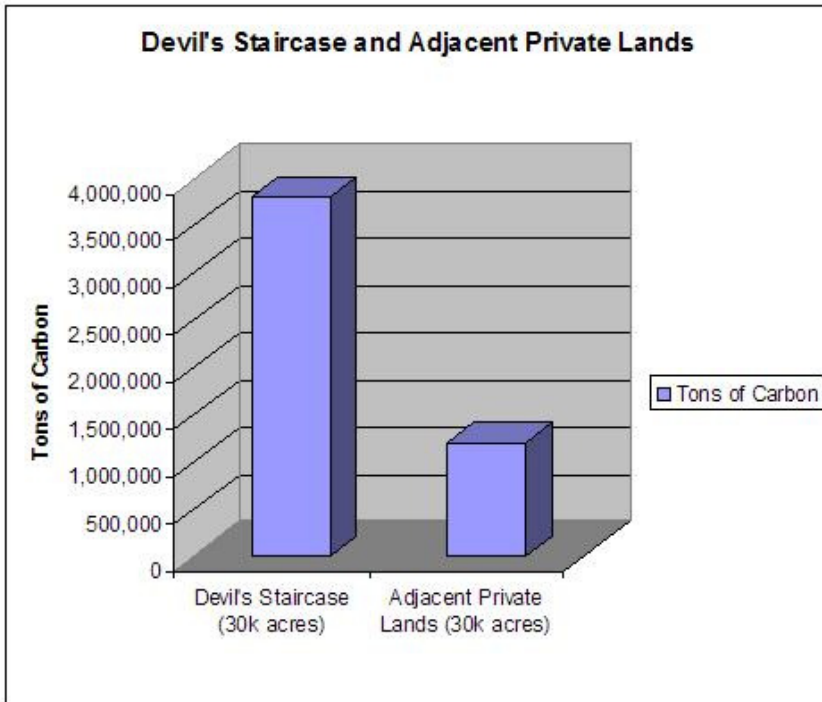
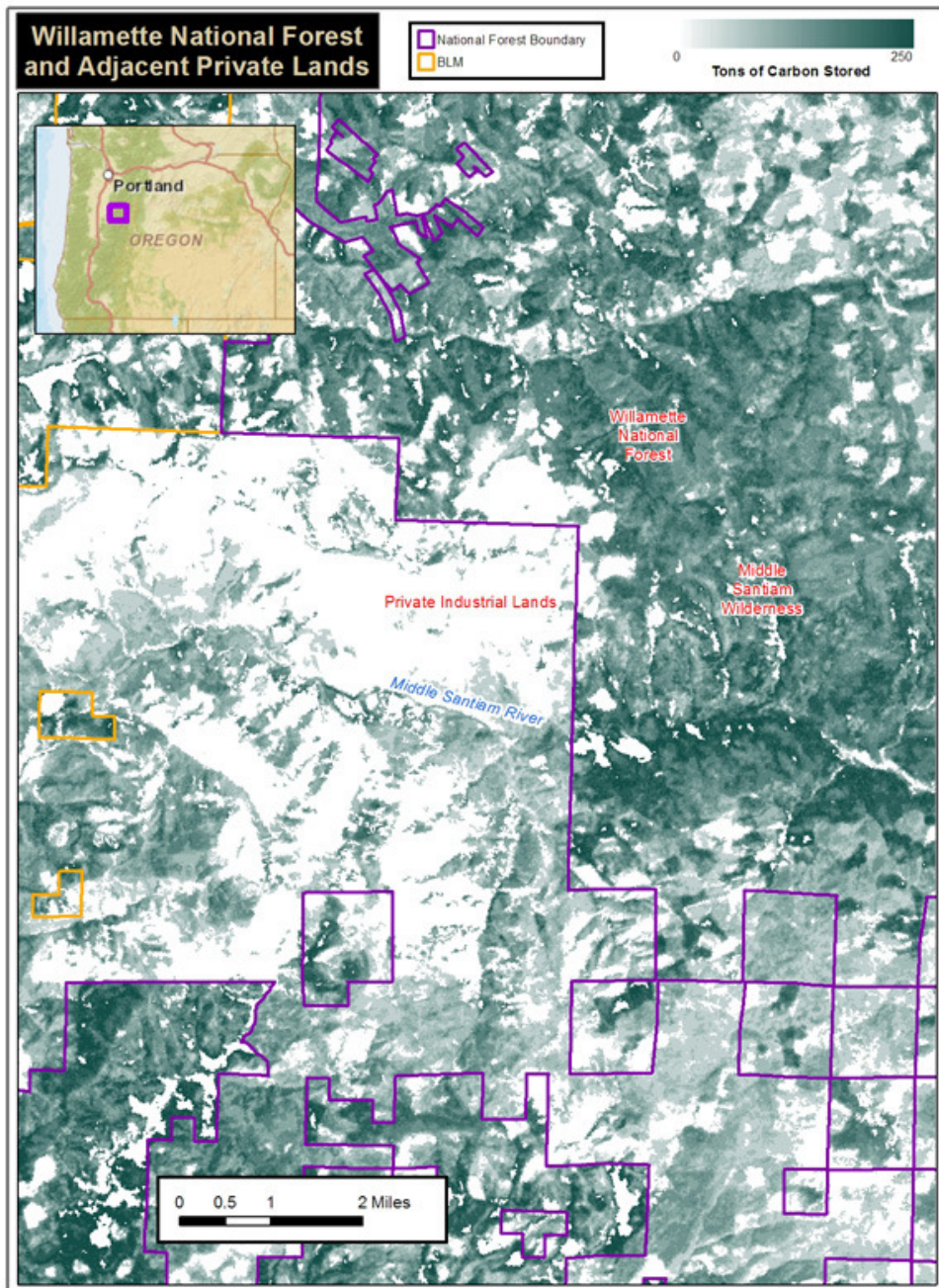


Figure 1

The Devil's Staircase Wilderness Proposal is home to one of the most intact old-growth forests in the Oregon Coast Range Mountains. The proposal area highlighted on *Map 2* consists of US Forest Service land and Bureau of Land Management lands in the Coast Range Mountains southwest of Eugene. Lands adjacent to the proposal are comprised of a mixture of public and private. The stark contrast between the carbon deserts of aggressively logged lands and the intact carbon sinks of the Devil's Staircase are very distinct. *Figure 1*, to the left, shows that the wilderness quality lands are storing more than three times more carbon than adjacent private lands. **Conclusion:** While public lands store more carbon than private lands, Wilderness areas are where the biggest carbon sinks are found in this part of the Coast Range.





Map 3

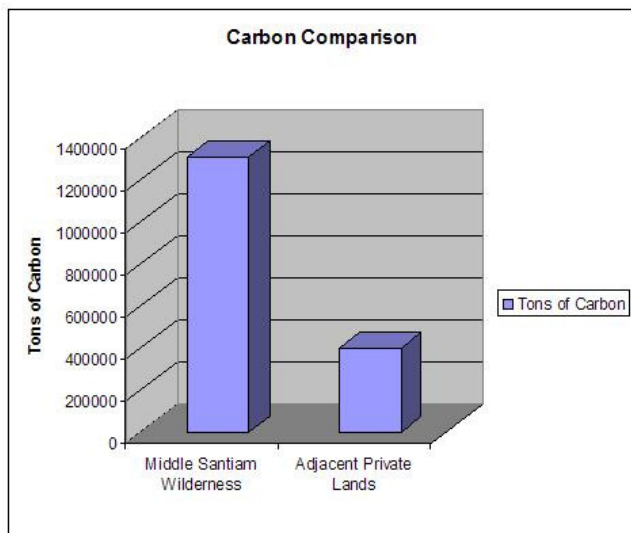
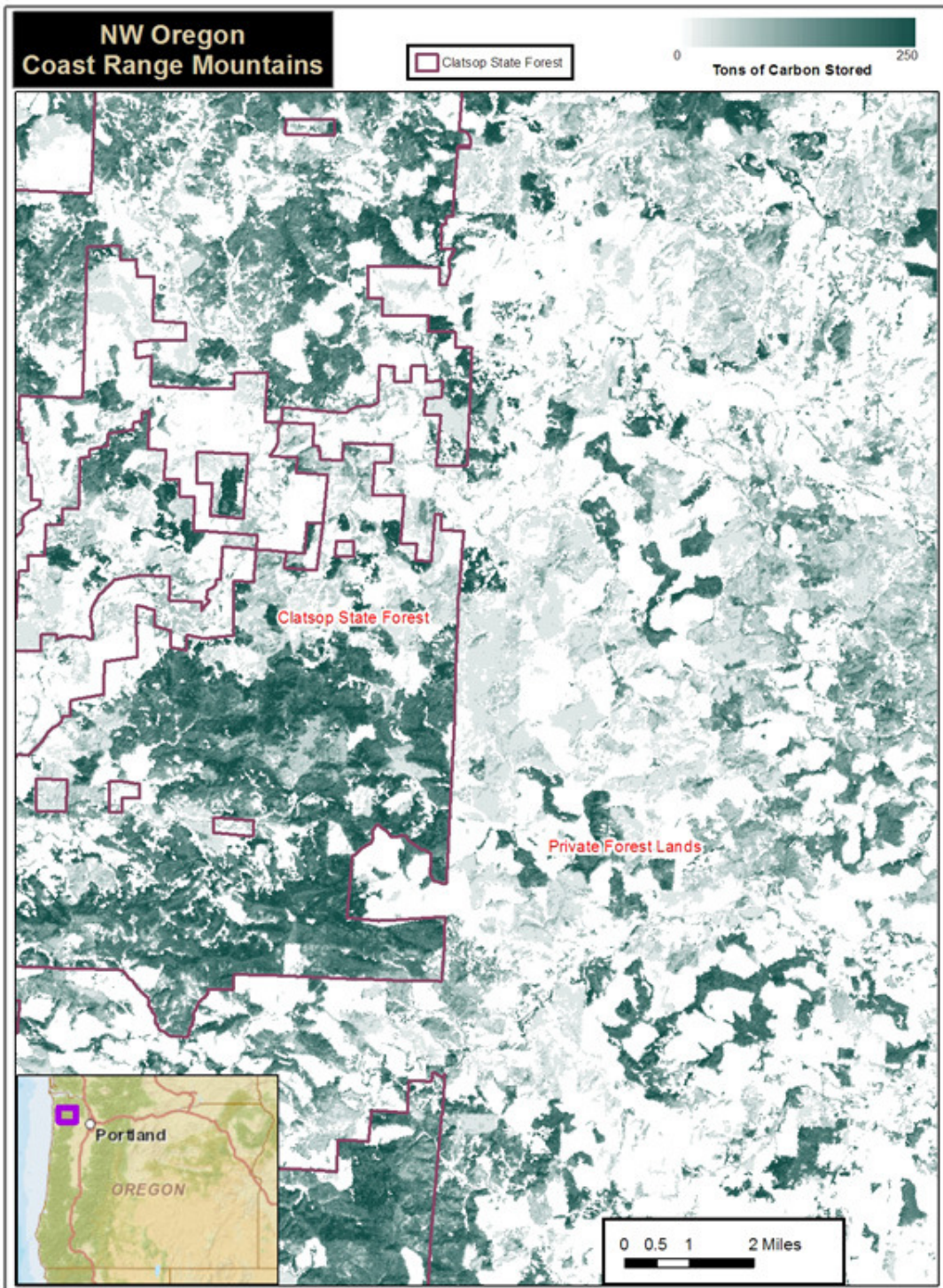


Figure 2

The Willamette National Forest (NF) stores more carbon per acre than any other forest in the country. The low elevation Wilderness areas on the Willamette NF store even higher levels of carbon (*Map 3*). On a local level the Santiam Wilderness stores about four times more carbon than adjacent private industrial timber lands (*Figure 2*). **Conclusion:** The Willamette National Forest, specifically protected portions of the forest, stores exponentially more carbon than industrially managed timber lands.

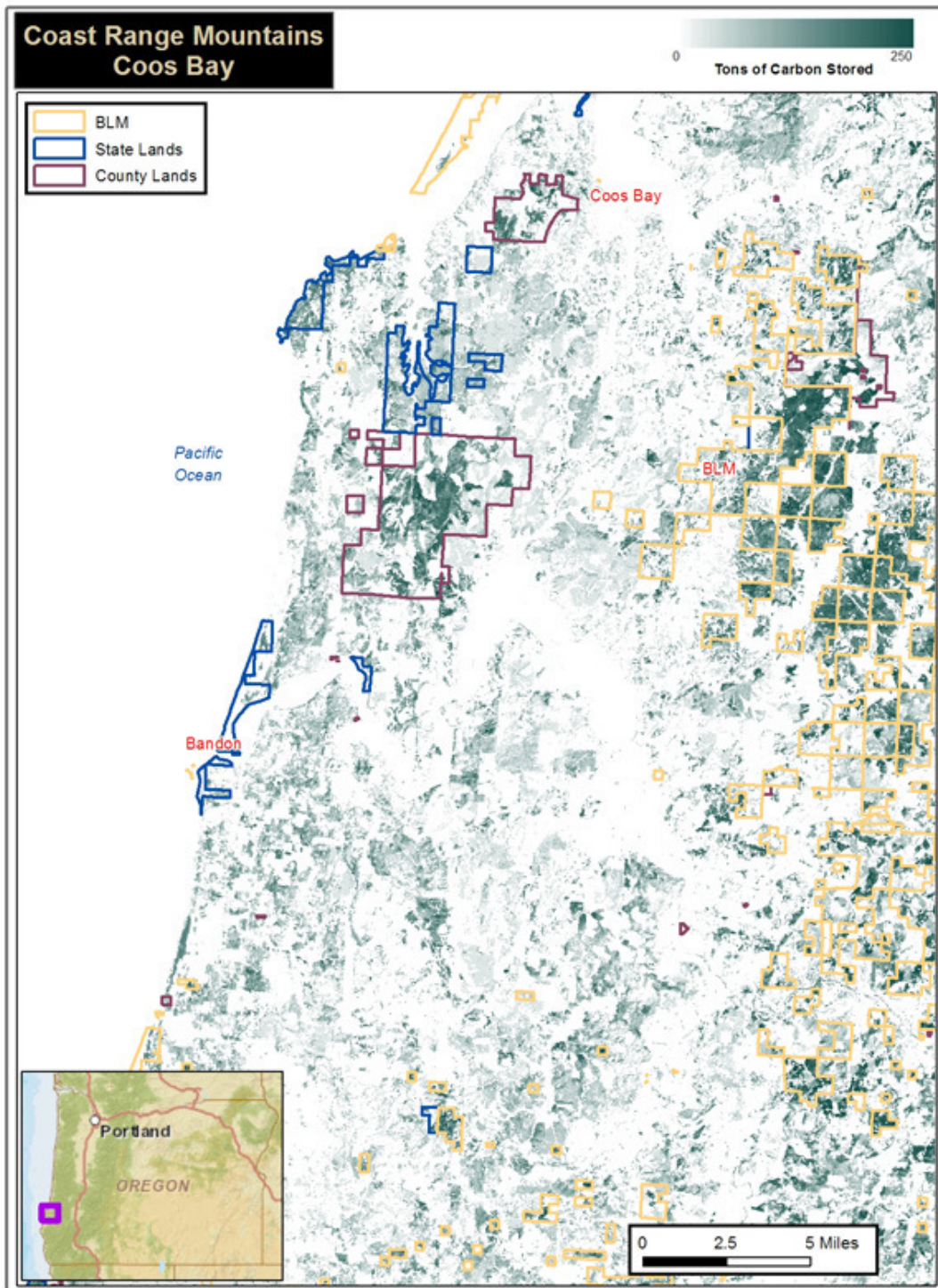




Map 4

The temperate rain forests of the northern Oregon Coast Range have the capacity to store large amounts of carbon. The northern Oregon Coast Range Mountains have a mixture of ownership consisting primarily of state forests (Tillamook and Clatsop) and private industrial timberlands. *Map 4* highlights the contrast between carbon storage on the Clatsop State Forest and adjacent privately managed lands in the Nehalem River watershed. **Conclusion:** The northern Oregon Coast Range mountains have far more potential for carbon storage than current management is providing for.

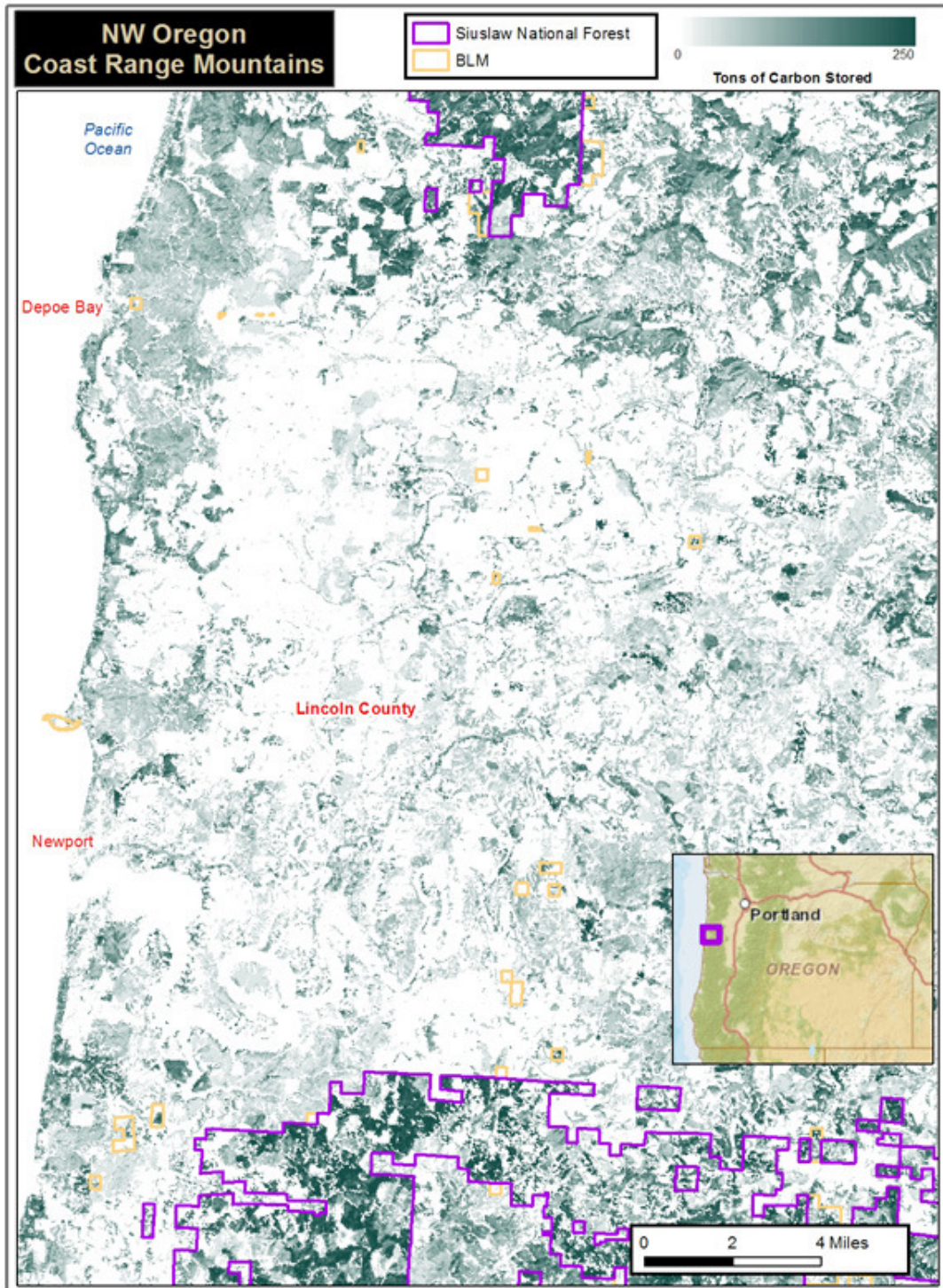




Map 5

Map 5 highlights the Coos Bay and Coquille River watershed region of the southern Oregon Coast Range Mountains. This portion of the Coast Range has historically been aggressively logged. **Conclusion:** The relatively low amount of public lands in this region of the Coast Range highlights the resulting carbon deserts when private industry manages the majority of a region.

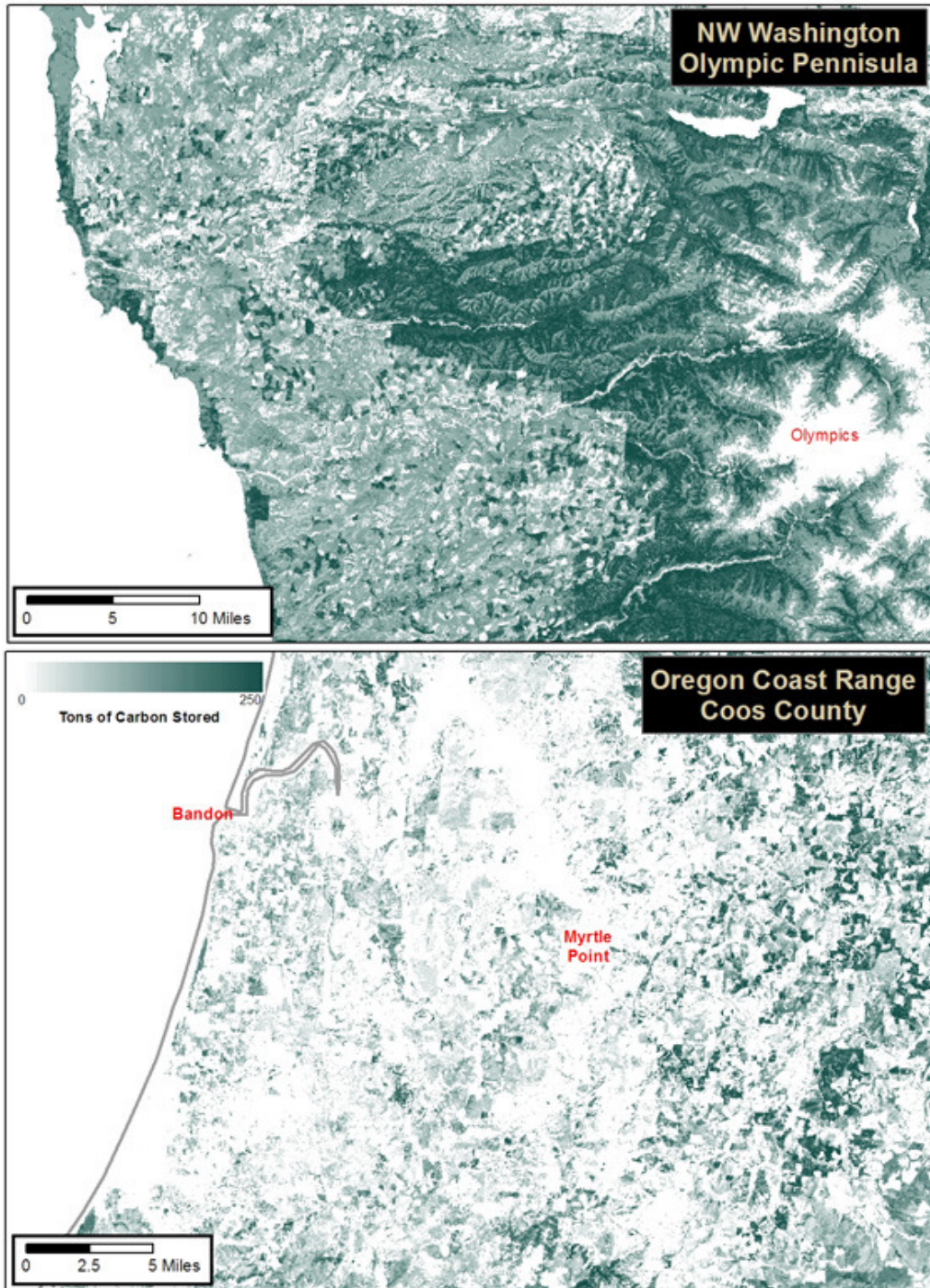




Map 6

Carbon storage in Lincoln County and the Siletz River watershed region of the NW Oregon Coast Range Mountains is highlighted in *Map 6*. The northern and southern edges of this map highlight public lands management in two units of the Siuslaw National Forest. While portions of these units have been logged in the past, these areas are storing exponentially more carbon than the adjacent private lands. **Conclusion:** Public lands management has room for improvement, but private lands management by the timber industry has produced carbon deserts in this region.





Map 7

Map 7 contrasts the varying levels of carbon storage between the Oregon Coast Range and the Washington Coast Range. These maps specifically highlight the deep carbon sinks in the Olympic Peninsula and the carbon deserts in the forests of Coos County (Coquille River watershed) that have been intensively logged. While the Olympic National Park is clearly better managed for carbon storage than the adjacent US Forest Service and private timberlands, the biggest contrast is between WA and OR. In these two regions, Oregon's forests actually have slightly more potential for storage as they are all lower elevation whereas portions of the Olympics are high elevation and unable to store as much carbon. **Conclusion:** Oregon's coastal forests are being managed in a manner that minimizes carbon storage yet have the potential to store vast amounts of carbon as demonstrated in Washington.

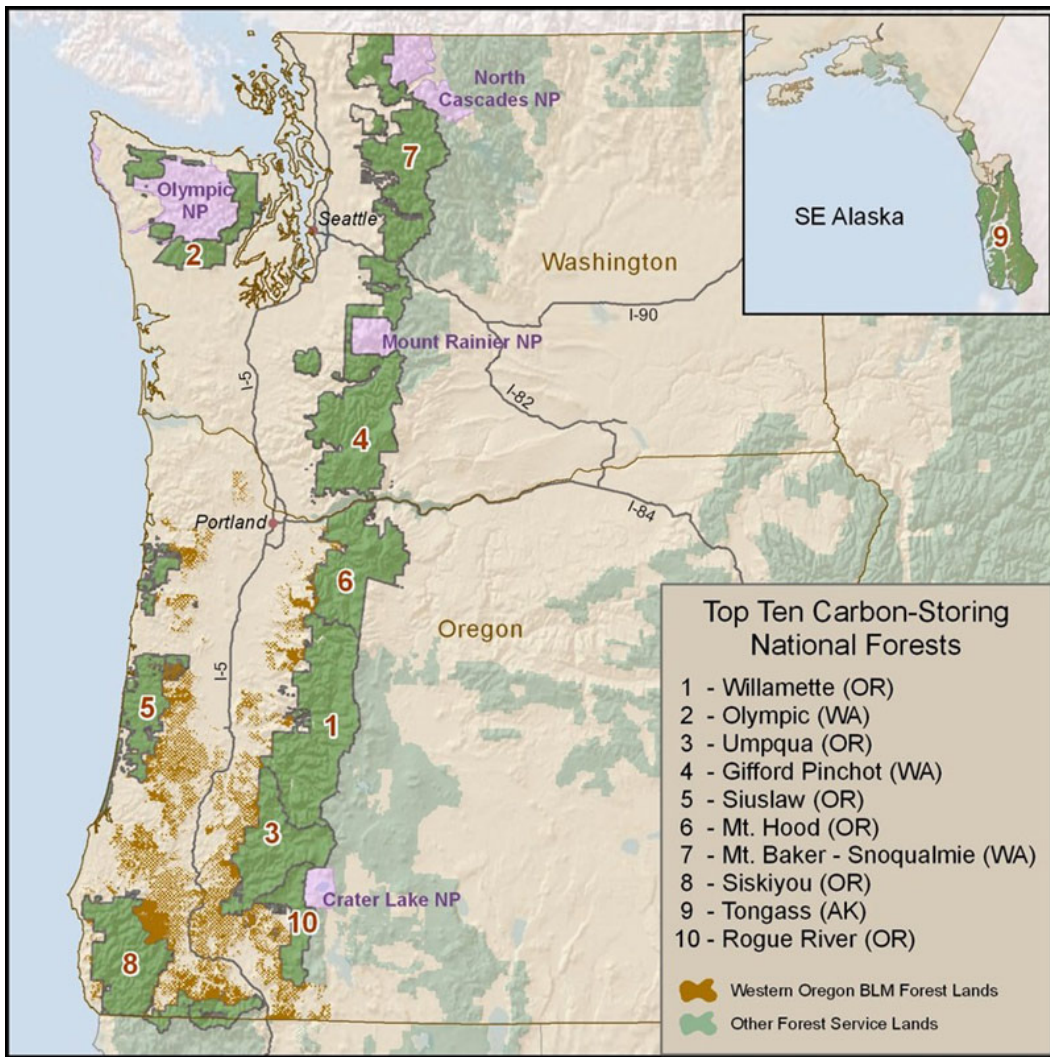


## Top 10 Carbon Storing Forests in the Country

Using similar data from federal agencies like the US Forest Service and satellite imagery, the Wilderness Society compiled a list of the 10 National Forests in the US that store the most carbon per acre. More info on this study can be found at: <http://wilderness.org/content/top-ten-carbon-storing-forests>

The results are:

1. Willamette National Forest (Oregon)
2. Olympic National Forest (Washington)
3. Umpqua National Forest (Oregon)
4. Gifford Pinchot National Forest (Washington)
5. Siuslaw National Forest (Oregon)
6. Mount Hood National Forest (Oregon)
7. Mount Baker-Snoqualmie (Washington)
8. Siskiyou National Forest (Oregon)
9. Tongass National Forest (Alaska)
10. Rogue River National Forest (Oregon)



Map by The Wilderness Society



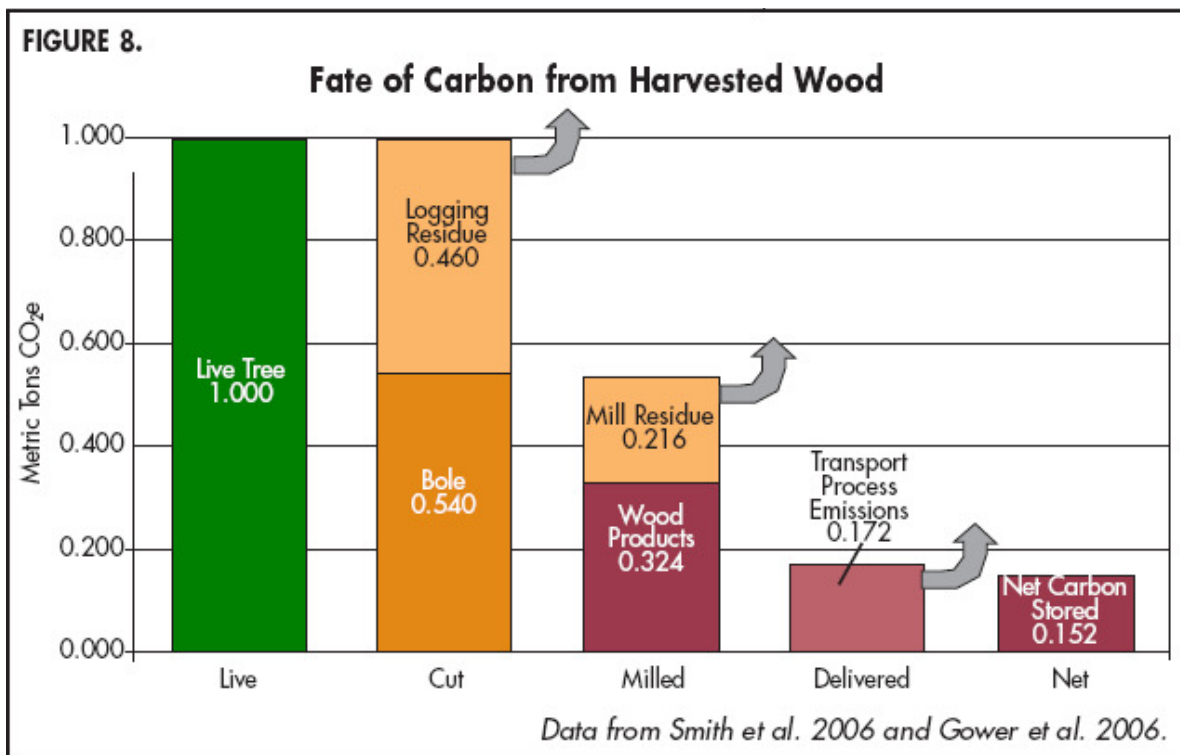
Notably, all of the top 10 carbon storing forests are in the Pacific Northwest, and 6 of the top 10 are in Oregon. The forests of the Pacific Northwest are very good at storing carbon.

Old-growth trees,  
Willamette National Forest



## Carbon Storage and Logging

Logging transfers most of the carbon in the forest to the atmosphere as logging slash, mill waste, and as processing and transportation emissions. Only 15% of a tree goes into wood products. Furthermore, much of this is short term storage in materials such as wood pallets for shipping.



*Only 15% of a tree is stored in wood products after logging.*

- More recent analysis by the Bureau of Land Management in the Western Oregon Plan Revision FEIS shows even more compelling evidence that decades of converting old-growth forests to plantations has reduced current stores of forest carbon. On BLM lands in western Oregon carbon stores were reduced by 149 million tons (even after accounting for decades of forest re-growth on logged sites). While some of that carbon was converted into



wood products, most wood products do not last very long. Of the 149 million tons of carbon *missing* from the forest, only 11 million tons of that carbon remains stored in wood products today. This means that logging our public forests to make wood products resulted in approximately 13 times more carbon emissions than carbon storage. Put another way, for every ton of carbon in wood products, there are 13 tons emitted to the atmosphere. See WOPR FEIS Figures 3-17 (p 3-221) and Figure 3-18 (p 3-224).