

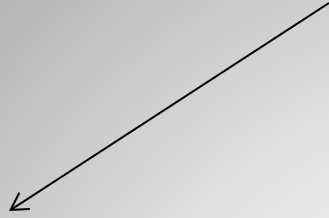
WHY FORESTS ARE PIVOTAL IN PLANNING FOR CLIMATE CHANGE

Dominick A. DellaSala, Ph.D.

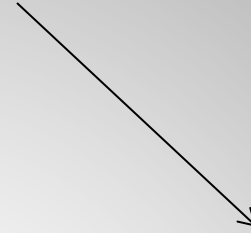
Chief Scientist, Geos Institute

President, Society for Conservation Biology,
North America Section

FORESTS ARE AN INTEGRAL PART OF GLOBAL/REGIONAL CARBON FLUX



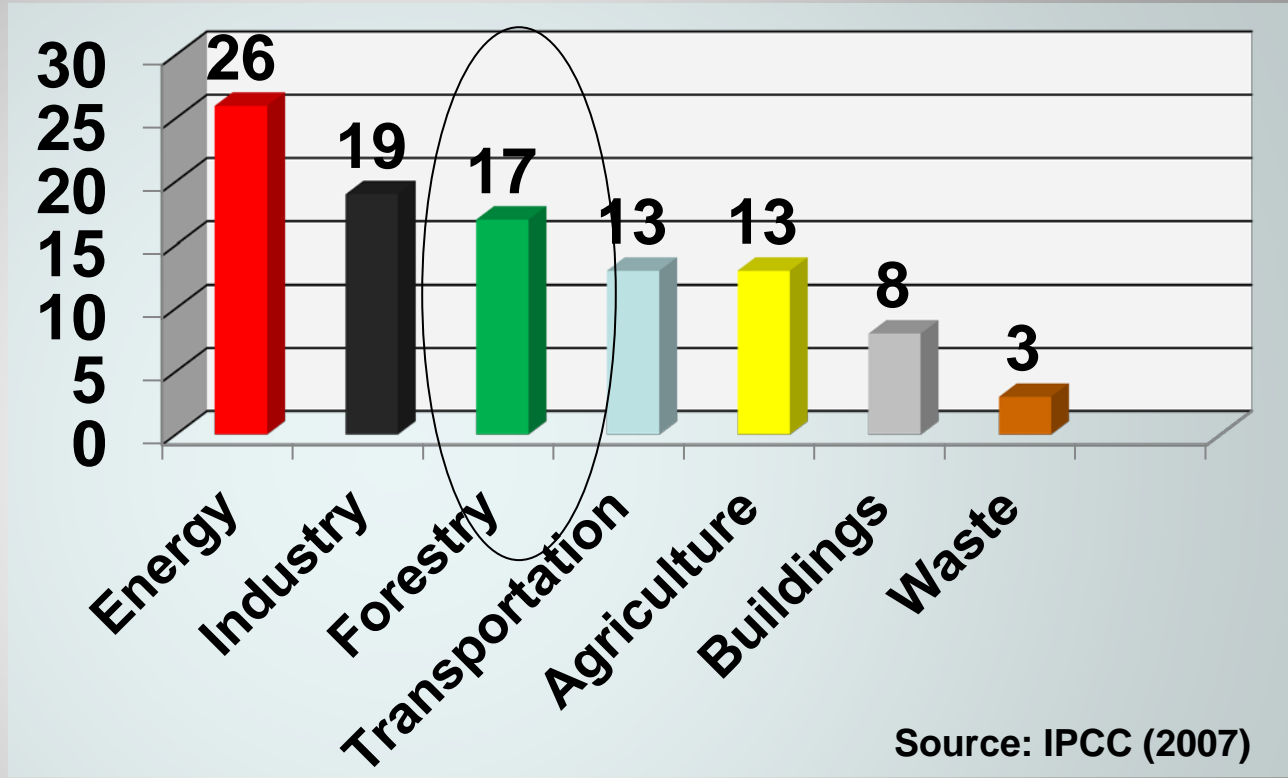
Net Carbon (C) Sink



Net CO₂ Source



DEFORESTATION AND FOREST DEGRADATION – CO₂ SOURCE



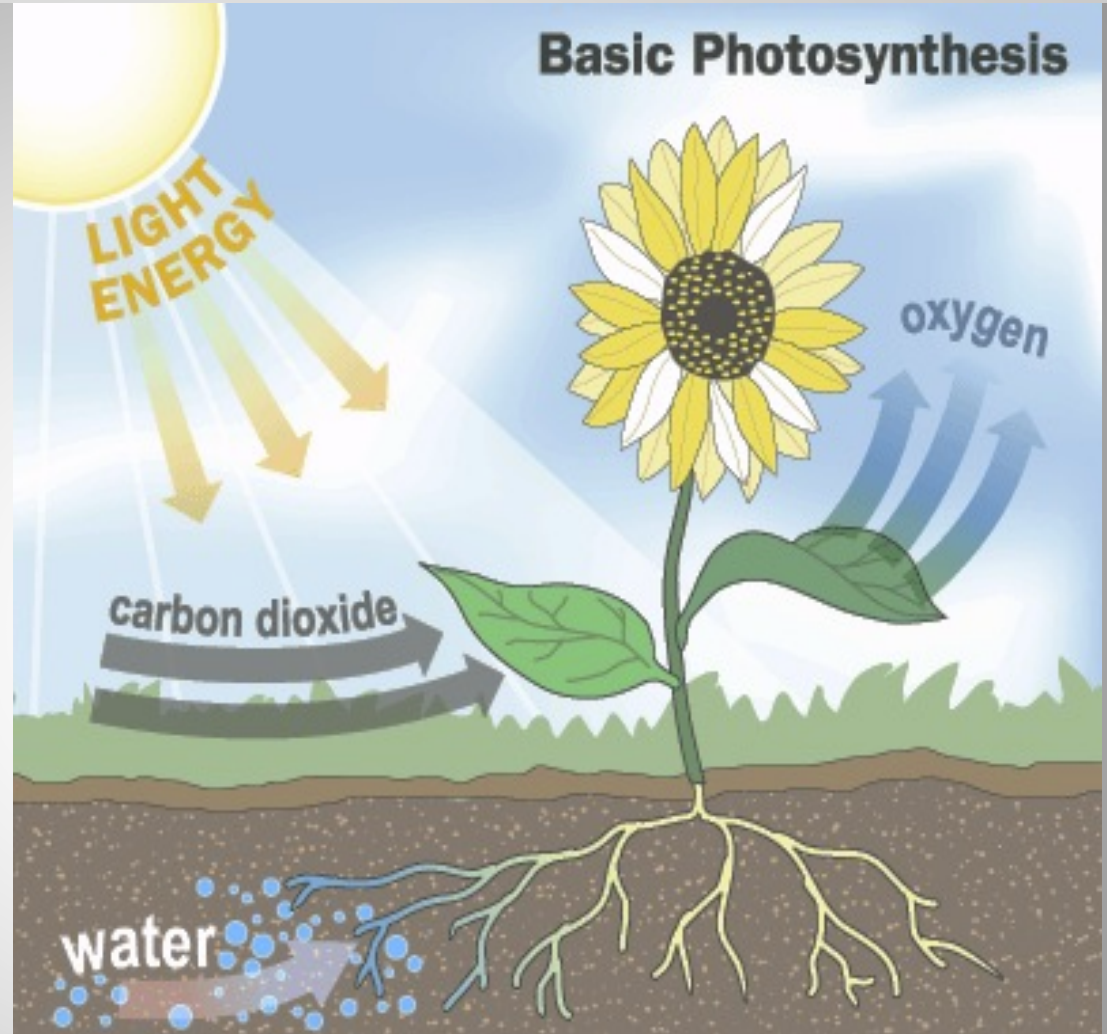
LOGGING AS CO₂ SOURCE



- **Logged forests emit CO₂ for first ~15 years**
- **Up to ½ carbon stored in high biomass forests emitted**
- **Planting trees and storage in wood products is not zero sum**

Source: Harmon et al. (1990); Smithwick et al. (2007); Law & Harmon (2011); Campbell & Harmon (2011)

INTACT FORESTS AS CARBON SINK

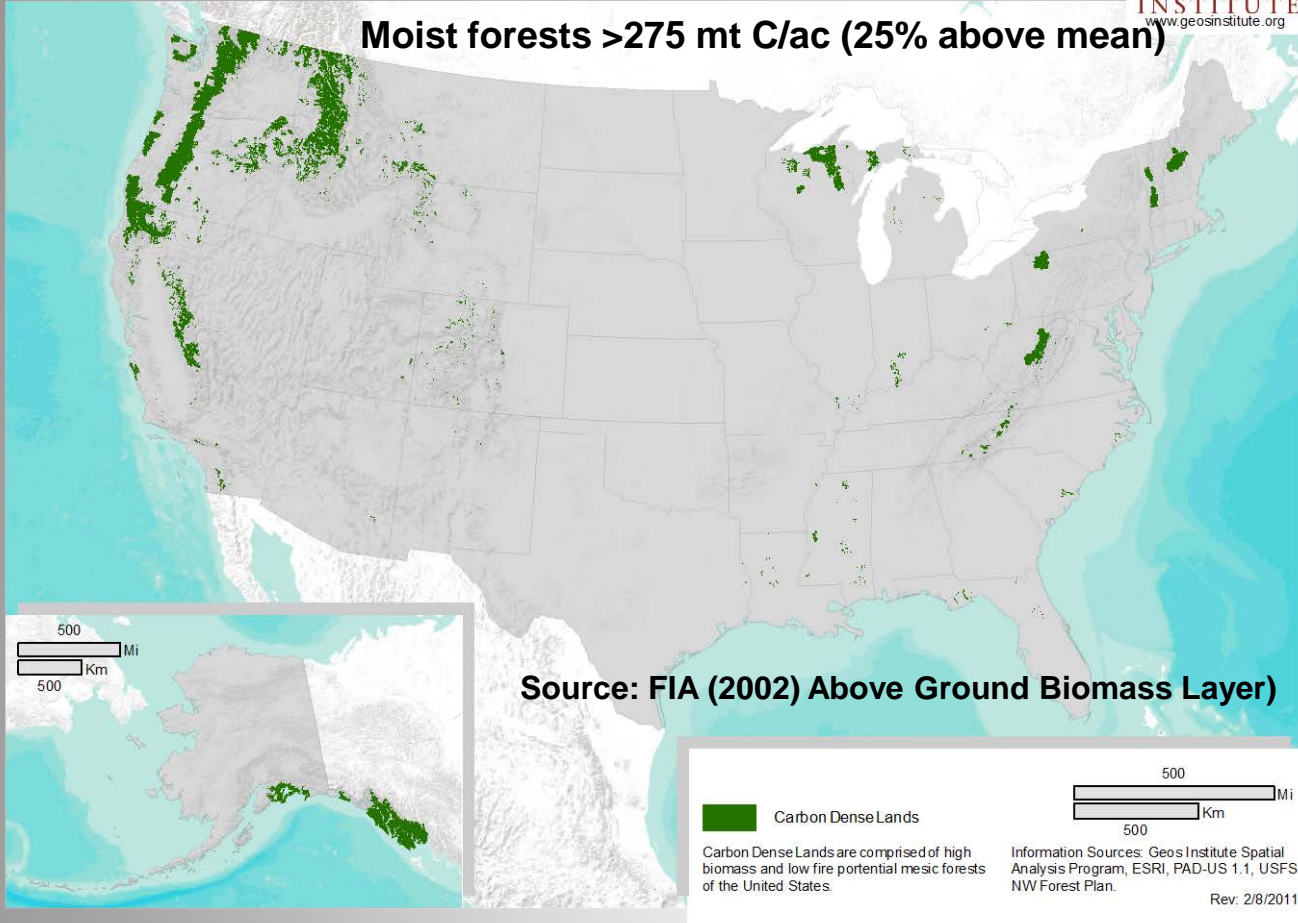


- A single ac temperate rainforests = ~ 1 billion leaves (carbon sponge!)
- Old forests champions in storing C long term
- Old forests continue to also sequester C (Stephenson et al. 2014)

SOME FORESTS ARE MORE IMPORTANT SINKS



Moist forests >275 mt C/ac (25% above mean)

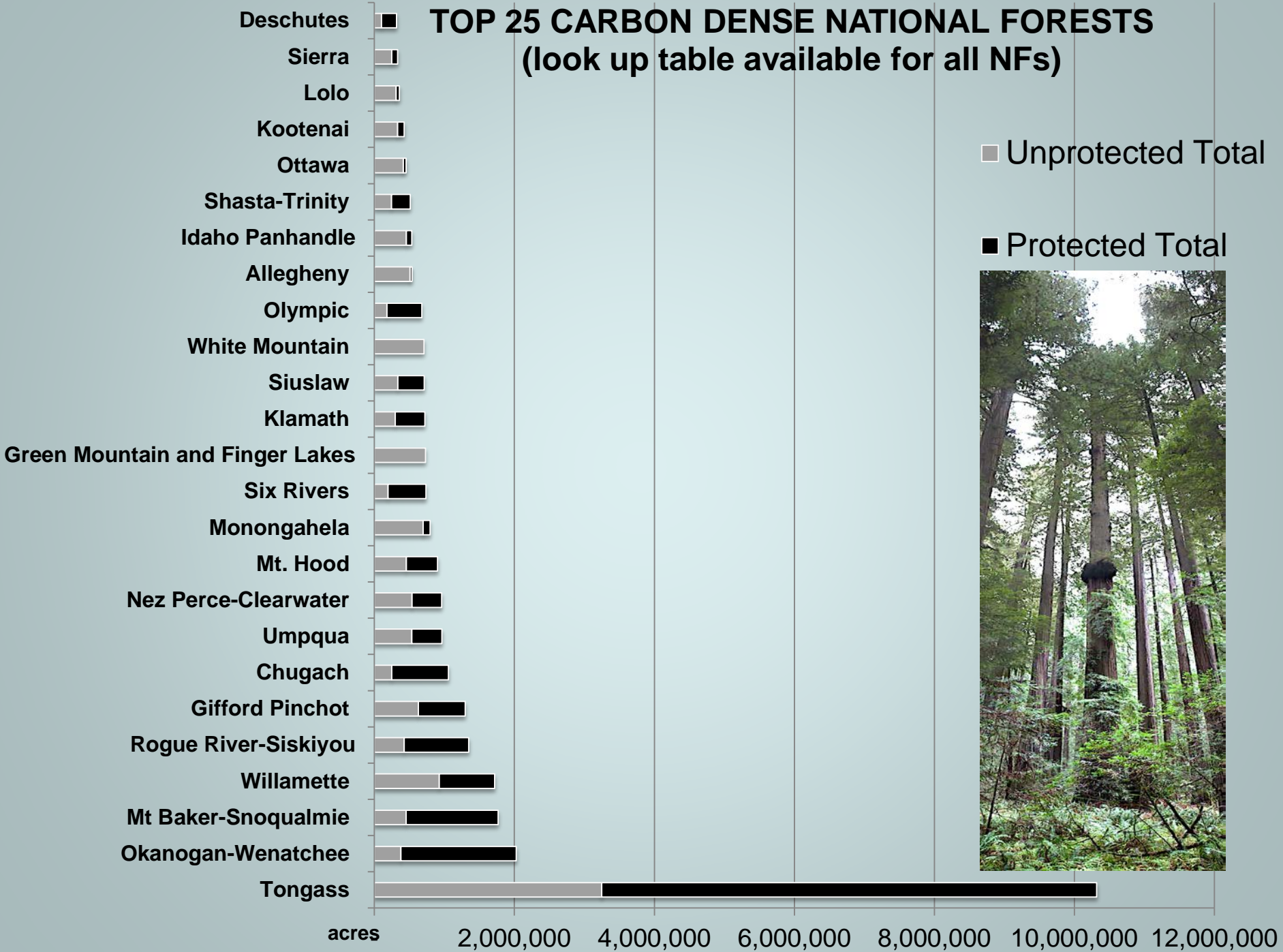


▪ **33 million ac high biomass moist forests = 10 billion mt C!**

▪ **PNW and Tongass globally significant – national champs**

TOP 25 CARBON DENSE NATIONAL FORESTS

(look up table available for all NFs)

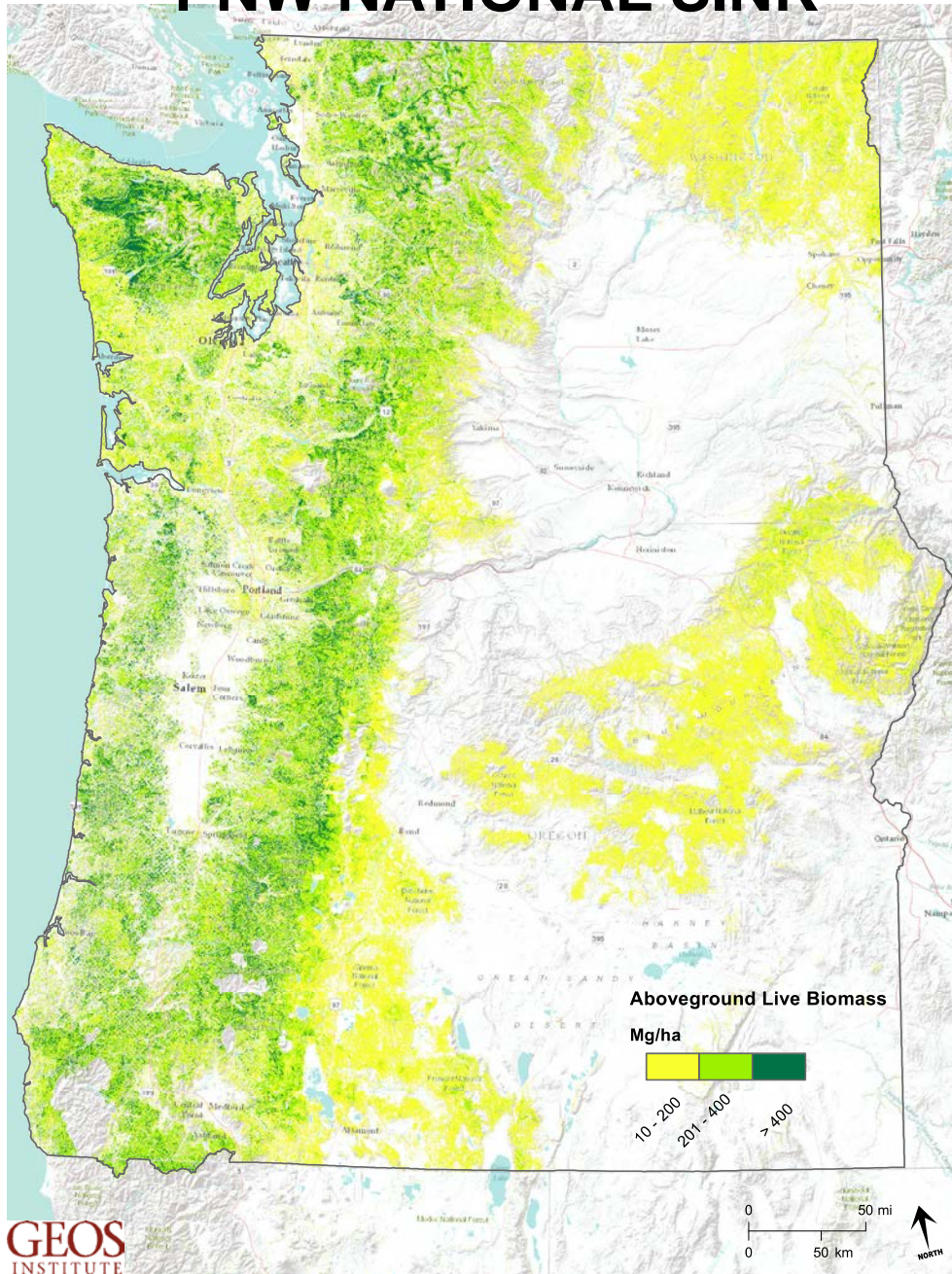


Unprotected Total

Protected Total



PNW NATIONAL SINK



MANAGED SINK

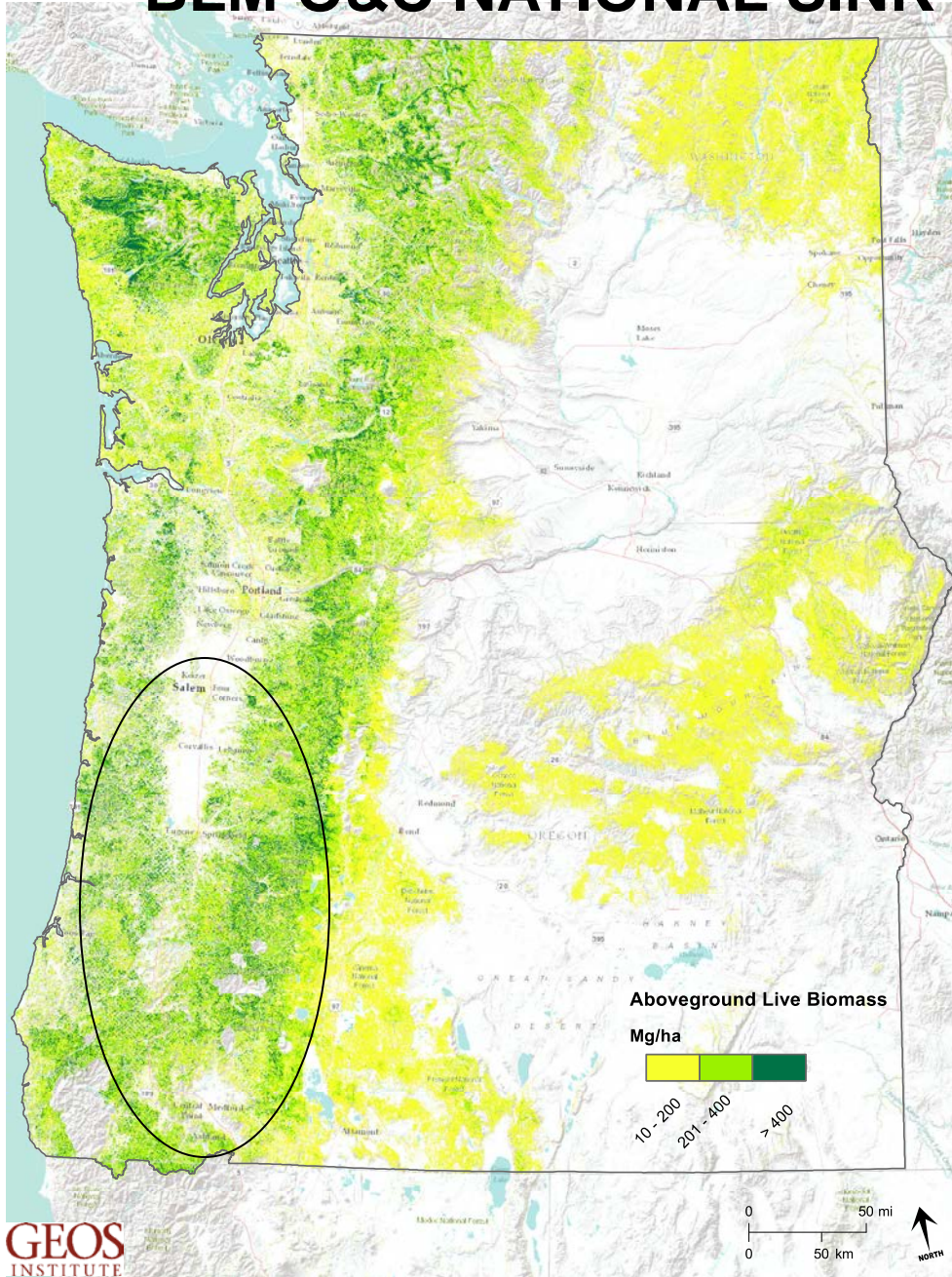
- OR + WA high-biomass forests (USFS/BLM) = 9 million ac = 15 billion mtCO₂(e)

LOGGING SOURCE

- If all high biomass forests logged = 130 x State GHGs

Source: Krankina et al. (2012), Krankina, DellaSala et al. (in review)

BLM O&C NATIONAL SINK



MANAGED SINK

▪ 102,000 acres = 46 mmt C = 117 mmtCO₂ (e)

O&C ACT (2013) SOURCE

▪ 84 mmtCO₂ (e) released in 20 years = ~4 mmtCO₂ (e) annual

▪ ~Equivalent to Oregon's dirtiest coal-fired plant

TONGASS NATIONAL SINK

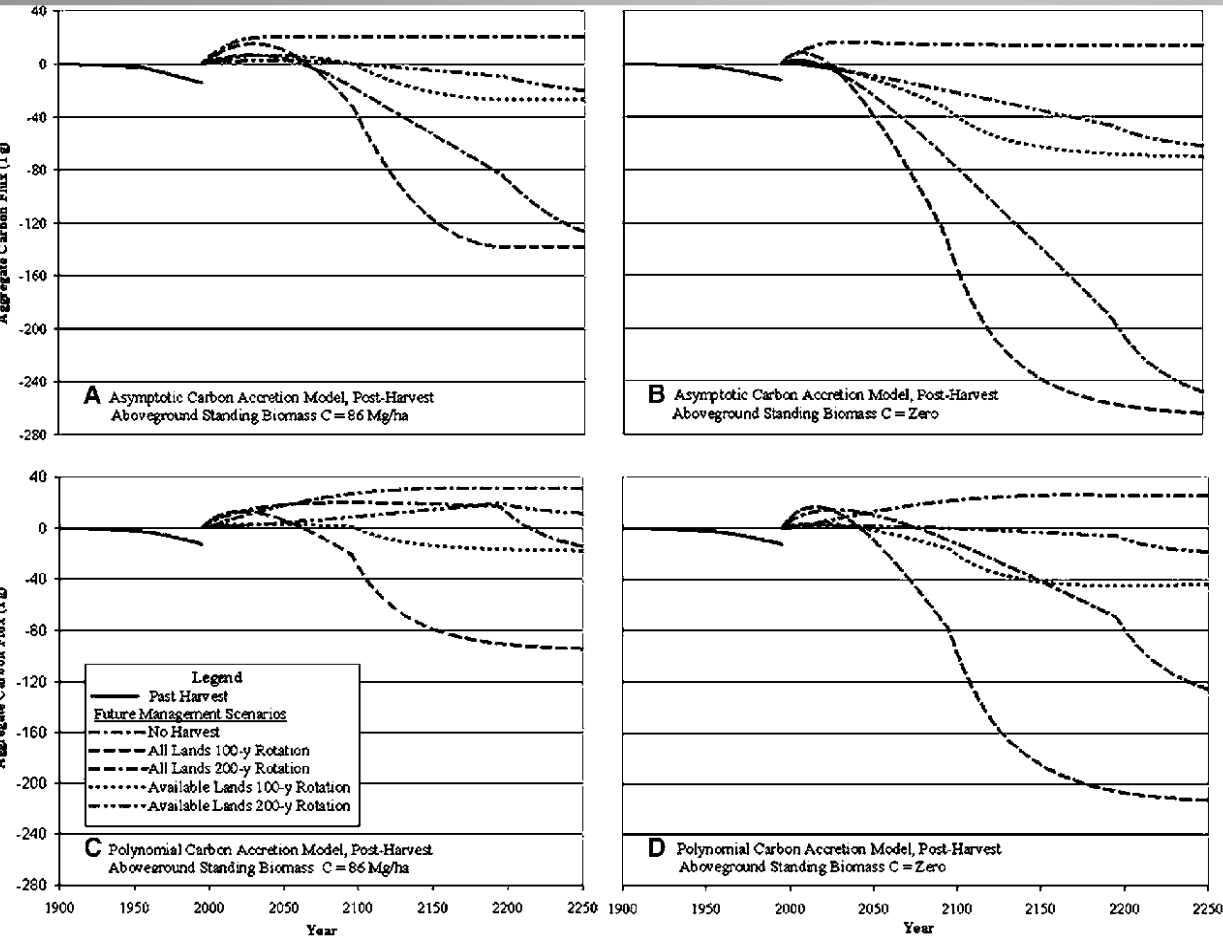


10,318,058
7,070,357



ator Auxillary Sphere. Analysis performed
in North America Albers Equal Area Conic.

NET CARBON FLUX (Leighty et al. 2006)



MANAGED SINK

- Only the no harvest scenario sustains the Tongass C sink
- 8% of nation's forest carbon stores



Photos: J. Schoen



HOW DOES CARBON SHOW UP ON PUBLIC LANDS?

- “Conservation and sustainable management can help to ensure our **forests** continue to **remove carbon from the atmosphere** while also improving soil and water quality, **reducing wildfire risk**, and otherwise **managing forests to be more resilient in the face of climate change.**”
- “The Administration is working to identify **new approaches to protect and restore our forests.....**, in the face of a changing climate.” (yeah, but, how?)

*President Obama’s Climate Action Plan
June 2013*



HOW DOES CARBON SHOW UP ON PUBLIC LANDS (CEQ)?

- “ An interagency Task Force is working to provide more accurate and consistent annual updates of **carbon fluxes from forests**.....
- This will help us ensure that we have up-to-date information on how major disturbances like **wildfires**, as well as land development trends, impact the capacity of the nation’s forests to absorb carbon.
-make more effective policy decisions, ensuring land managers are able to take into account the **carbon sequestration** value of our forests.”



HOW DOES CARBON SHOW UP ON NATIONAL FORESTS?

- “..... increase the amount of carbon **sequestered** on U.S. lands, and bring all National Forests into compliance with a climate change adaptation and mitigation strategy (Road Map for Responding to Climate Change).”
- “Planning units are expected to include a basic analysis of conditions and trends of **carbon stocks and fluxes** on the planning unit and **greenhouse gas emissions influenced by the management** of the planning unit” (USFS Planning Rule).”



LEVELING THE PLAYING FIELD FOR CONSERVATION

- Forest carbon market values increased 29% to \$237 million in 2010 to 2011.
- Forest carbon transactions accounted for >40% of total voluntary carbon market in 2011.
- 6.9 MMtCO₂e transacted in forest carbon offsets in 2011 (US and Canada).
- Offsets + FSC certification



**“The Administration is working to identify
new approaches to protect and restore our
forests....” (yeah, but.....)**

- Over emphasis on sequestration, fire, biomass
- Little emphasis on logging-related fluxes
- “Upstream/downstream” C losses need rigorous accounting standards for thinning/biomass (NEPA)
- National “carbon trust” ~33 million ac moist forests managed as a C sink in perpetuity
- Optimize C = wildlife habitat, connectivity, water quality, refugia, ecotourism, aesthetics, resilience (e.g., NW Forest Plan, carbon trust)
- Private lands must play a role (offsets)

NATIONAL CARBON TRUST PURPOSE

Safeguard current and enhance future, biological carbon stores in a manner that is consistent with protecting water quality and quantity, biodiversity conservation, ecosystem resilience and compatible forms of recreation. Science-based management would be the guide to protecting current and enhancing future carbon stores.

dominick@geosinstitute.org

541-482-4459 x 302

