

*Forestry Based Offsets
A Maturing Market*

*Carbon Offsets
& the Opportunity for Small Forest Landowners*



Ian Hanna
Director, Northwest Certified Forestry
Northwest Natural Resource Group
360-379-9421 x 2
ian@nnrg.org
www.nnrg.org

THE OFFSET MARKET

- Tool for emission reduction
- Likely a transitional tool
- \$10B in 05; 30B in 06; 70B in 07
- Voluntary vs regulatory
- First reduce, then offset remainder
- Forestry will play a major role: Net sink or net emission

*Climate change isn't just an energy issue:
It's a land use issue*


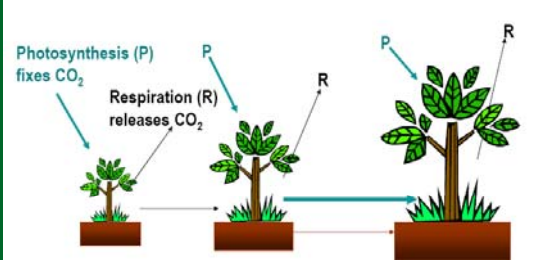


Figure 1: Global Greenhouse Gas Emissions 2000

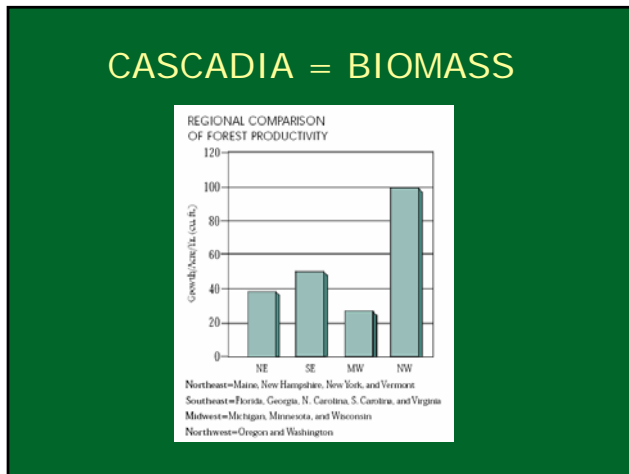
Category	Percentage
CO ₂ Fuel & Cement	55%
CO ₂ Land Use Change and Forestry	19%
Methane	16%
Nitrous Oxide	9%
High GWP Gases	1%



Photosynthesis (P) fixes CO₂

Respiration (R) releases CO₂

Photosynthesis exceeds respiration resulting in storage of carbon in plants, dead organic matter and soil



CARBON VOCABULARY

- Additionality
- Baseline
- Permanence
- Leakage




CARBON PRICING

Chicago Climate Exchange
5/08 (all sectors) = \$6.70/mtCO₂

European Trading Scheme
5/08 (all sectors except forestry) = \$34/mtCO₂

PGE's CCAR RFP (forestry only)
\$9.00/mtCO₂

Climate Trust (retail, all sectors)
\$12.00/mtCO₂

The Nature Conservancy (retail, forestry only)
\$20.00/mtCO₂

9

IN THE WEST

- Western Climate Initiative
- Will jointly set emissions targets and offset requirements
- Existing CA program allows for forest conservation, forest management, reforestation
- What will happen at the federal level?

LANDOWNER IMPLICATIONS

- Verification preparation
- Combined audit
- Financial planning
- Contract or easement
- Timing and scale of sales
- Financial management
- Ongoing auditing


NNRG TIMELINE

- NW Neutral trademarked
- Protocol and calculator developed
- Pilot projects developed
- Contract templates
- Marketing plan (current)
- Verification audit (Jan)
- Pilot sale (Feb)
- Member verification trainings (ongoing)




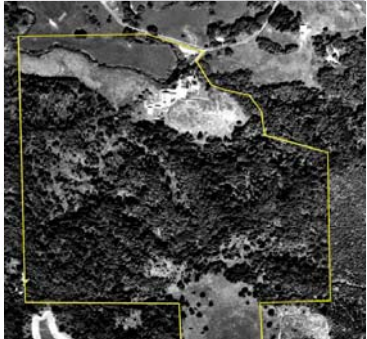
Wild Thyme Farm Carbon Model

A hardwood dominated forest in
Grays Harbor County



Stand Composition

- 40 years old
- 45 acres
- Predominantly alder/maple
- Mean TPA: 145
- Mean dbh: 12"
- Streams

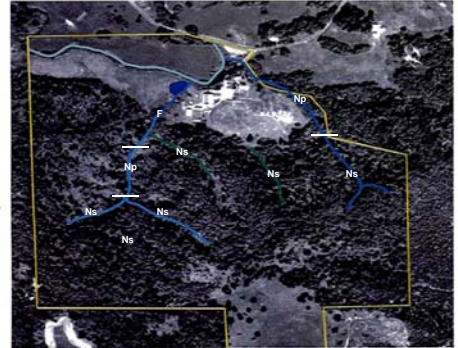



Stand	Name
1	Westside
2	Southwest
3	Upper Meadow
4	Southside
5	Open North Face
6	Barred Zone
7	Center
8	Meadow Edge

Note: Yellow line indicates property boundary


Carbon Variables

<u>Forest</u>	<u>Harvest</u>
Tree species	Harvest history
Snags & CWD	Future harvest
Streams & riparian mngt. zones	• % in wood product
Upland leave trees	• % waste
Other reg. retention	C emitted @ harvest
Forest growth	C in wood product
	C emitted ~ 100 yrs
	"F&F" harvest option



Riparian Feature
East Ravine
West Ravine
Central Creek
Seasonal unimproved stream
Pond

Note: Yellow line indicates property boundary



Carbon Profile

Current stocks

Total acreage	45
Total C	1,705.5 t (37.9 t/acre)
Acres in RMZ	2.98 (6%)
C in RMZ	113 t
Net C	1,592 t

Carbon Profile

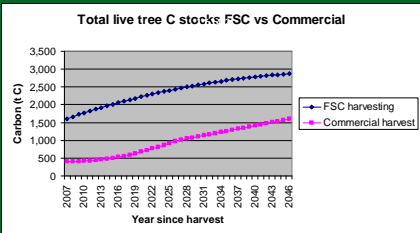
Timber harvest & Wood products (40 yrs)

Conventional Harvest Regime		FSC Harvest Regime	
45 acres		45 acres	
Total Harvest (2007) 75% of biomass		Annual Harvest (2007 - 2009) 2,000 bf	Annual Harvest (2010-2046) 20,000 bf
C removed at harvest 1,199 t		C removed at harvest 1.3 t	C removed at harvest 13 t
C emitted at harvest 395		C emitted at harvest 0.4 t	C emitted at harvest 4.3 t
C in wood product 331 t		C in wood product .4 t	C in wood product 3.6 t
C in wp emitted over 100 years 242 t		C in wp emitted over 100 years 3.6 t	C in wp emitted over 100 years 3.51 t

Wild Thyme Farm

Summary of Net CO2 Benefits Over 40 years (45 acres)

Net Avoided emissions of harvest	Net Avoided WP emissions	Sub total t C	Sub total t CO2	\$20/ton	NNRG insurance pool	Net to landowner (\$)
235	111	1,614.2	5,918.8	\$118,376	\$23,675	\$94,701



CONCLUSIONS

- Forest sequestration is part of the climate mitigation toolbox
- Forest loss is a major CO2 Emission
- Markets are coming quickly, start preparing now
- Verification legitimizes claims
- Differentiation = more value
- Emerging markets will be volatile