Risk perception and relevance of timber harvesting for bioenergy production: A qualitative examination of private woodland owners

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Motivation

• Predicting and understanding timber supply
• Viability of the bioenergy industry
• Decision-making environment of private woodland owners
  – Decision to harvest timber: a moving target (Amacher et al. 2003, Fischer et al. 2010)
  – Willingness to harvest for biomass is typically low (Butler et al. 2010, Becker et al. 2009)
Methods

• 59 interviews (small private woodland owners)
• 11 interviews (large private forest owners)
• Snowball sampling in 3 categories
• Semi-structured
  – History
  – Concerns
  – Relevance
  – Community
  – Biomass scenarios
  – Cognitive mapping
Methods

• Biomass scenarios
  – Your land is harvested. The harvest residue (tops, limbs, small materials, unmerchantable timber) is taken by truck to an existing pulp and paper mill. There, it is converted to gasoline to power commercial automobiles. The char leftover from this conversion process is then landfilled.
  – Your land is harvested. The harvest residue is taken by rail to a power-plant. There, it is used for electricity and the char leftover is sold as a soil amendment for nutrients.
  – Your land is harvested. The harvest residue is taken by truck to a power-plant. There it is converted to diesel for off-road vehicles (i.e. harvesting equipment) and excess energy is used for electricity. The leftover char is burned for fuel in the chemical processes.
Demographics

- 61% belong to a woodland organization (SWOAM, American Tree Farm Association)
- 85% Male
- 69% have a management plan
- 85% conducted at least one timber harvest
- 27% harvested for biomass
- 264 acres (mean), 110 acres (median)
Demographics
Results: Concerns

• Diseases/Pests
• Climate Change
• Trespassers/4-Wheelers
• Not capturing mortality
• What will the neighbors think?

“I guess I think about risk a lot. You know, every time I cut a tree down it's like, that tree could be fine, I could be right to cut it down now, I could be wrong to cut it down now.”
Results: Relevance

- Measures of psychological distance: social, temporal, hypothetical/risk, spatial
- 60% of landowners think about harvesting seasonally
- 40% think of timber harvesting “every time I go in there”
- 15% think about timber harvesting daily
- As a harvesting approaches, landowners tend to consider economics more than if a harvest were ten years away

“It's a very large part of, you know, what we do, we're semi-retired people, so, you know, unfortunately that and going to the doctor is structuring our whole lives.”
Results: Biomass

- Most landowners do not know where their wood products are going
- Most landowners do not care where their wood products are going
- Most landowners do not harvest timber for financial reasons BUT do see price differences
- Scenario aspects would not influence the decision to harvest biomass
# Results: Biomass

<table>
<thead>
<tr>
<th>Concerns</th>
<th>Would harvest biomass</th>
<th>Would not harvest biomass</th>
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| • Nutrient removal  
• Low cost  
• Harvest is destructive | | • Would displace other wood markets  
• Not the ‘highest-value’ product  
• Nutrient removal |

| Definitions | | |
|-------------|-----------------------------|
| • Firewood  
• Take out small material for chips  
• Low dollar | • Byproduct of harvesting  
• Harvesting small diameter materials  
• Wood for fuel/heat |

| Perceived benefits | | |
|-------------------|-----------------------------|
| • Replace fossil fuels  
• Habitat creation for wildlife  
• ‘Clean’ the site | • See Maine wood products used |

Most landowners want or need more information
Results: Biomass Definitions

- Definition related to negative or positive perception
- Firewood and byproduct of harvesting were most common
- 25% of landowners asked for the definition
- Many could not recall if any material was chipped and sent to a bioenergy facility

“uh, I know that you have to cut an awful lot of it in order to get anybody to look at ya”
Results: Biomass Concerns

• Top concerns are price and nutrient removal
• Pervasive need for “better research” and “more information” before deciding to allow a biomass harvest
• General consensus that biomass is not the highest value market for woody material

“Part of the idea of a natural forest is that you are going to have trees fall and decay and that sort of thing, and build the nutrient base of the forest. If, in fact, I'm taking the biomass and pulling it out, am I going to damage that? Right?”
Results: Biomass Benefits

- 50% of landowners mentioned keeping wood local or boosting Maine’s economy.
- Majority acknowledged wood as a renewable resource, but had reservations:
  - Fossil fuel inputs to convert wood to a fuel

“I think that anything that's, I mean, if it's going to help lower fossil fuels, then they're all good options.”
Sample decision map
Conclusions

- Concerns and risks for woodland may influence timber harvesting (particularly diseases and pests)
- Timber harvesting is important, but not a part of landowner’s daily lives
- Major concerns about biomass harvesting
- Multiple definitions of biomass
- Desire for more information about biomass harvesting and wood-derived products
QUESTIONS?

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