Harvesting Fuel: Cutting Costs and Reducing Fire Hazards Through Biomass Harvest

Don Arnosti

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Background

- Institute for Agriculture and Trade Policy
  - International NGO founded in 1986
  - Promotes resilient family farms, rural communities and ecosystems around the world through research and education, science and technology, and advocacy.

Background

- The Community Forestry Resource Center
  - Established in 1998 by the Institute for Agriculture and Trade Policy
  - Received its FSC certificate in 2003; renewed in 2008
  - Works with forestry cooperatives and private landowners

Our Mission

CFRC promotes responsible forest management by encouraging the long-term health and prosperity of small, privately-owned woodlots, their owners and their communities

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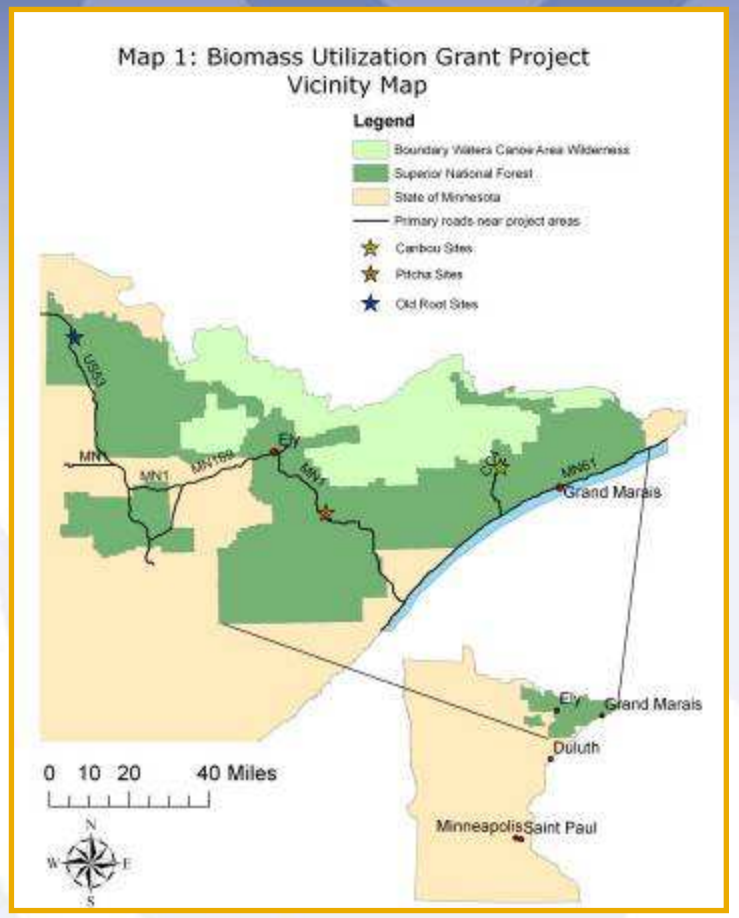
Biomass Utilization Grant Project Partners

- University of Minnesota
  - Dr. Dalia Abbas
  - Dr. Dean Current
- University of Wisconsin – Steven's Point
  - Dr. Michael Demchik
- Superior National Forest
- Laurentian Energy Authority
- Forest Management Systems



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Biomass Utilization Grant (BUG) Program

- Congress and Forest Service decide to investigate how to reduce risk of forest fire, especially in Urban-Rural interface
  - Funds to investigate applicability in NE MN
  - Ongoing program

Community Wildfire Protection Plans at SNF

- Plans were developed after grant was made
- Biomass harvest as a tool to use in these plans to reduce fire risk in Urban-Rural interface

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Project History

- 2005-2006: Site selection, define harvest techniques, equipment selection

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Project History

- 2006-2007: Harvesting

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Project History

- 2007-2008: Data analysis and report publication

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Project Goals

- Economic & operational issues faced by loggers
- Environmental concerns
- Administrative systems and constraints

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The Logger's Voice

- A crucial aspect of understanding biomass harvest is the perspective of the loggers and their viewpoint on what is required for a viable biomass operation.

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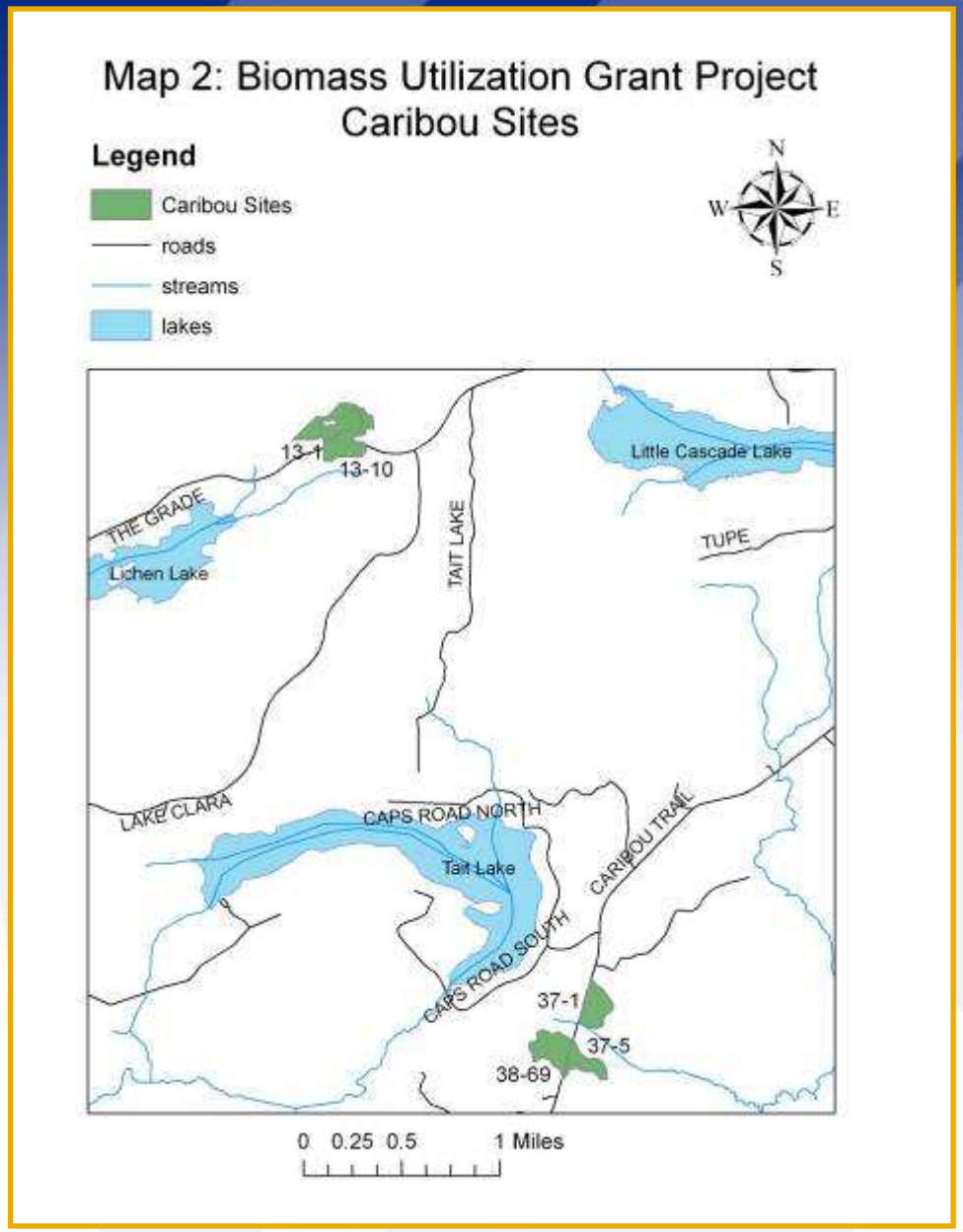
Project Sites

Caribou Trail

- Six test sites totaling 74 acres.
- Stands had experienced heavy spruce budworm kill of understory balsam fir
- Most of the dead balsam had blown over, creating mats of fuel under young regenerating balsam fir and hazel.
- A broken canopy of old-age aspen was present over most test plots, along with standing dead snags and dead and down aspen trees 10 inches and more in diameter.



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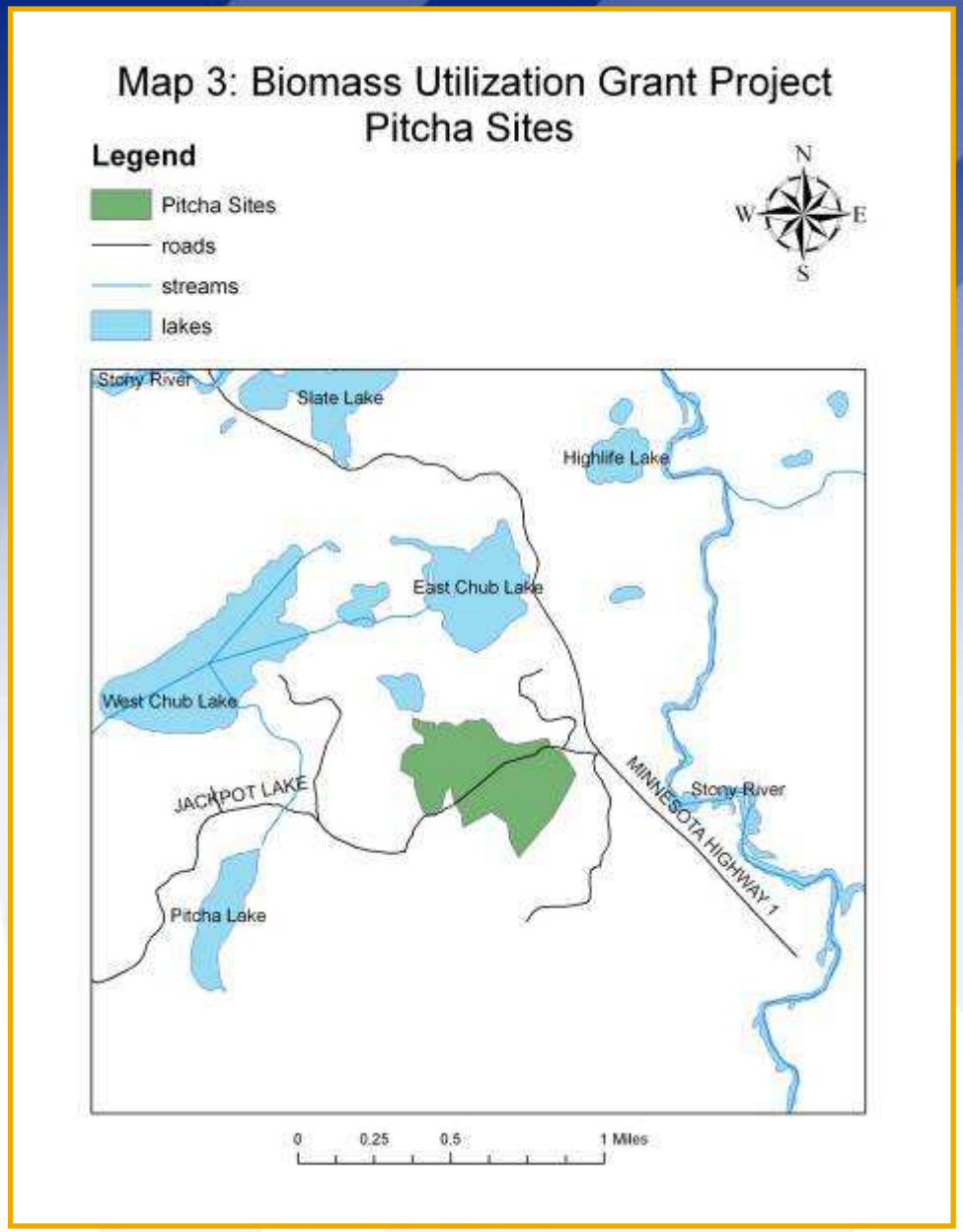
Project Sites

Pitcha Lake

- Three test sites, 32.5 acres.
- 60- to 80-year-old red and white pine overstory managed on a long rotation with a heavy understory growth of healthy balsam fir.
- The balsam provided continuous ladder fuels into the canopy, posing a high risk of a stand-replacing crown fire.



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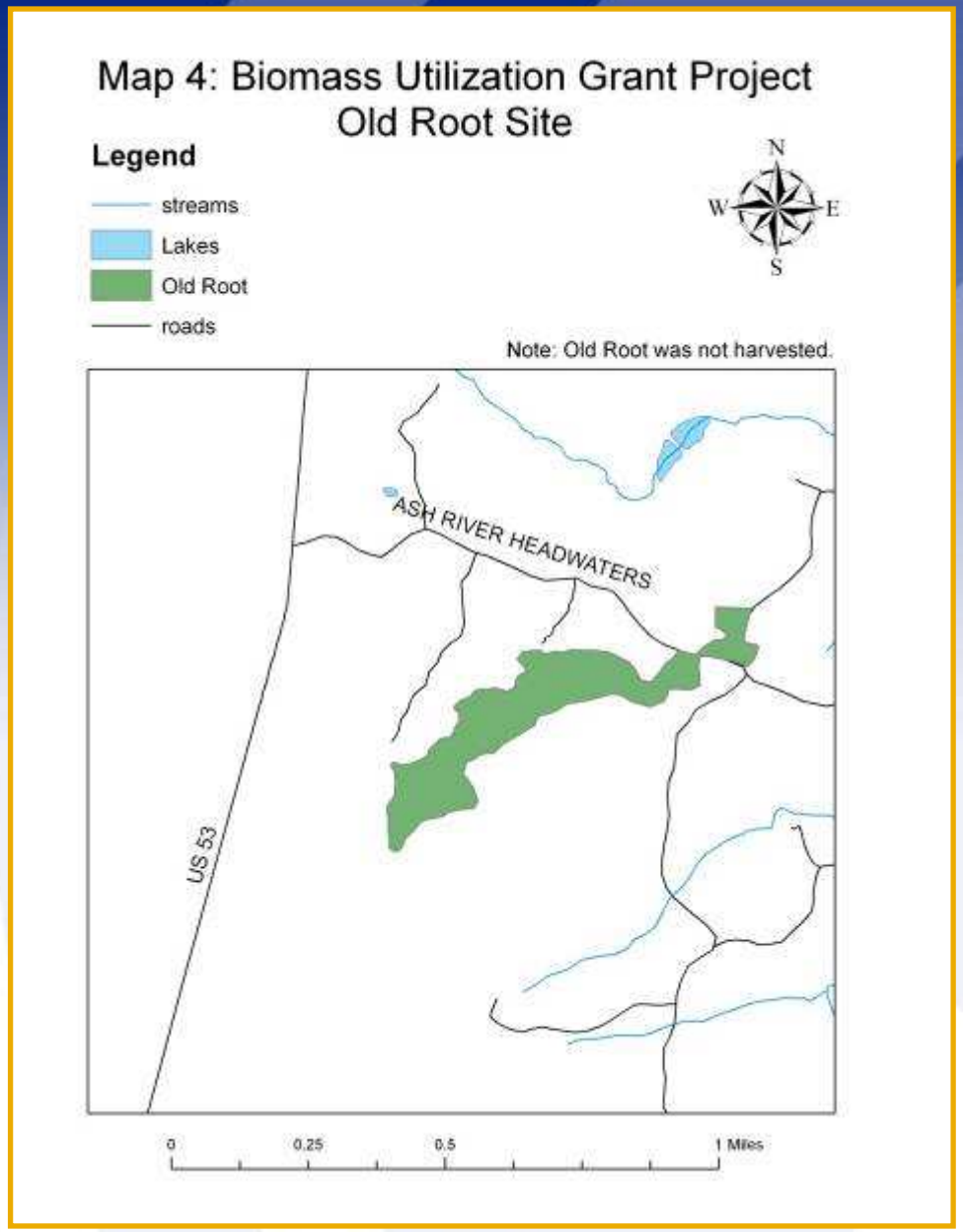
Project Sites

Old Root

- Two test sites, 60 acres.
- "straight-line" winds about five years previously that bent, tipped and broke nearly all stems in a 25-year-old aspen stand.
- Not Harvested



Key Findings

- Administrative Issues
  - Biomass management activities must be considered and incorporated at early phases of planning.
  - Site prescriptions tailored to the practical and operational needs of biomass harvest are critical.
  - Larger management units are preferred.
  - Combining roundwood and biomass harvest can improve on-site maneuverability and efficiency.
  - Skid trails must be arranged efficiently.
  - Emphasize communication and coordination between forest managers, purchaser and operators early in planning.

Key Findings

- Operations
  - Select equipment suitable to terrain and forest conditions.
  - No adaptions to standard forwarding equipment are necessary for biomass.
  - Operators need to learn new techniques of loading and maneuvering to be successful.
  - Learning techniques necessary to search for, harvest and recover smaller biomass material is a new practice for loggers in MN.
  - Forwarding of materials should take place immediately after cutting.

Key Findings

- Environmental Considerations
  - Harvest should follow the *Biomass Harvesting on Forest Management Sites* Guidelines in Minnesota.
  - Can be downloaded at: http://www.frc.state.mn.us/FMgdline/Guidebook.html
- Market Considerations
  - Distance to biomass markets should be no greater than 100 miles, preferably less.

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Conclusion

- Biomass is a co-product. It is most valuable when part of a multipurpose management activity
- For example: Timber harvest, habitat improvement, fuels reduction, insect and disease control, etc.