

Woody Biomass in Southeast Minnesota



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To: AURI –
Renewable Energy
Round Table

Date: July 17, 2015



DNR Mission

- Work with citizens to conserve/manage state's natural resources
- Provide outdoor recreation opportunities
- Provide for commercial uses of natural resources to create sustainable quality of life



Biomass

- Multiple definitions
 - Often used to refer to low value material
- Multiple characteristics
 - Not all biomass meets spec for all end uses

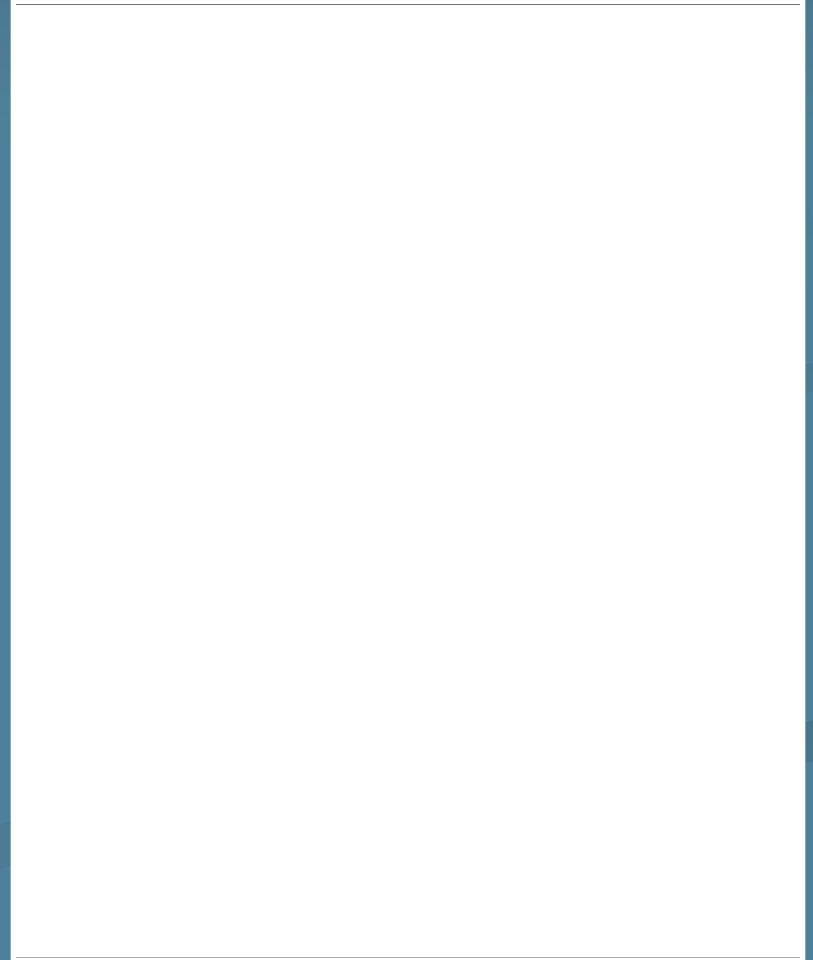


Regional Forest Resource

Hardwoods



Softwoods



DNR 2014 Biomass Estimate

- Completed by DNR Forestry, Resource Assessment group.
- Based on Forestry modeling and Federal Forest Inventory Assessment (FIA) Data
- Looked at 50, 100, 150 mile radii from Rochester



The Biomass Assessment

Conclusions: Physical Production in Green Tons

Radius	Hardwood	Softwood	Total
50 miles	1.5 million	135,000	1.6 million
100 miles	4.75 million	875,000	5.6 million
150 miles	9.1 million	1.9 million	11 million



Physical production– Less Current Consumption in Green Tons

Radius	Hardwood	Softwood	Total
50 miles	930,000	125,000	1.1 million
100 miles	2.75 million	590,000	3.4 million
150 miles	3.7 million	1.0 million	4.7 million

Economic and Socially Available Biomass

- Competition with existing users,
- SE Minnesota forest land is largely bluffs,
Traditional hardwood saw logs are high value
Cost of pulling additional material up or down
the hill will impact availability
Harvest practices to prevent soil damage and
erosion, may also limit removals
- SE Minnesota Forest is 90%+/- privately
owned, parcellization and landowner
interest may limit access

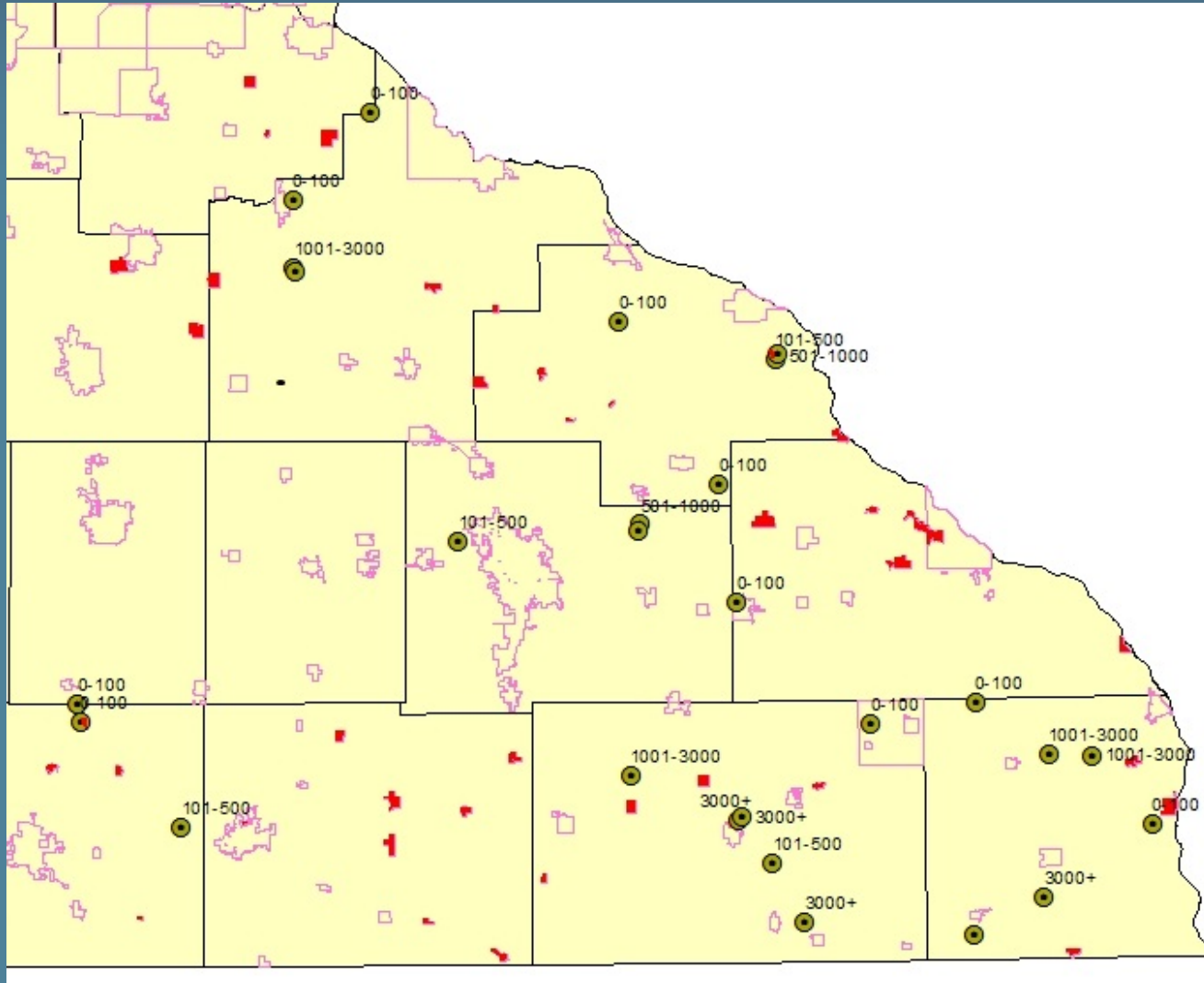


Other sources of Woody Material

- Municipal tree and brush disposal site
Moving away from open burning
- Saw mill residue – bark, dust, ends and slabs
Competition with livestock bedding



Sawmills, Cities and Cities without Natural Gas



Biomass Quality

Parameters impact suitability of biomass for some uses:

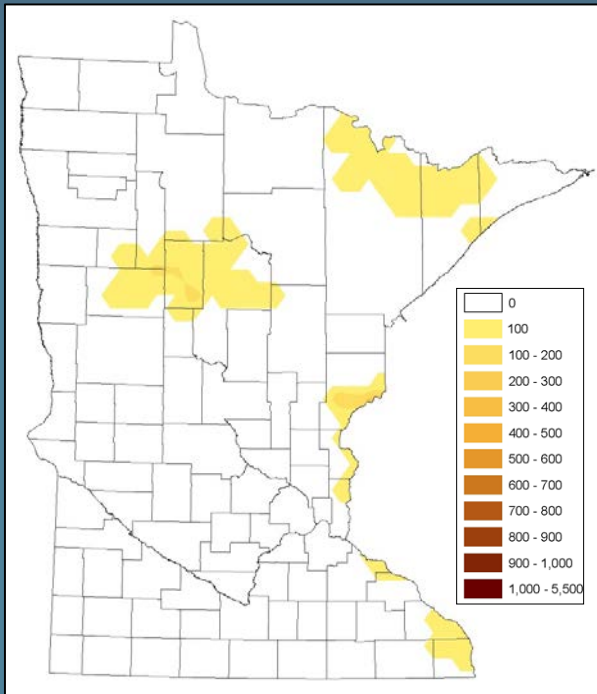
- Residential pellets, low ash – need round wood
- Gasification, low moisture, low ash
- Stoker boilers, fluidized bed boiler – more variability ok

Biochemical – looking for sugar not ash.

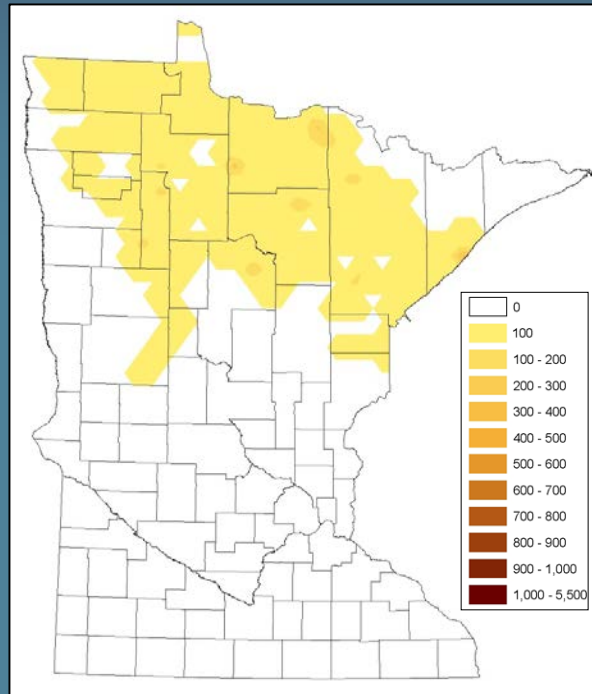


Aspen

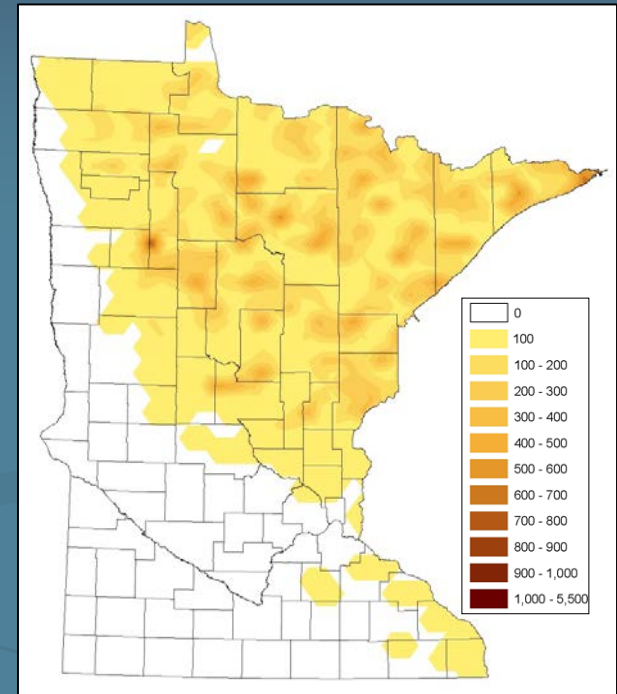
Largetooth aspen



Balsam poplar (Balm)

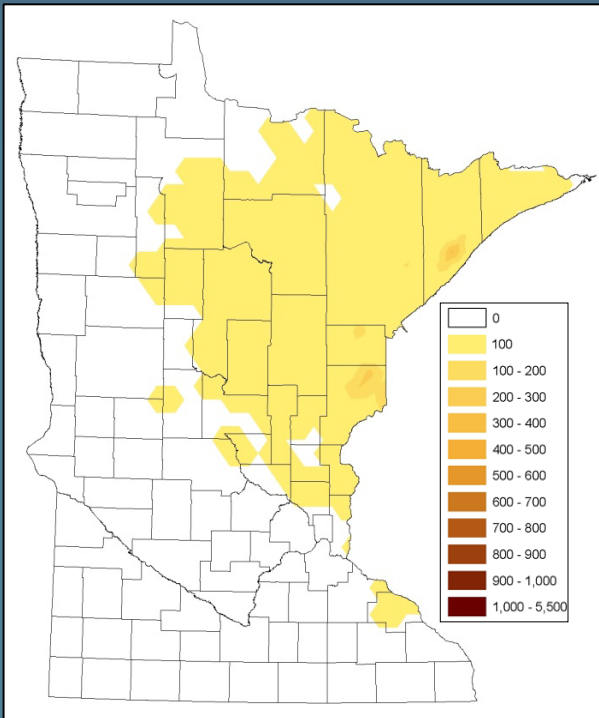


Trembling aspen

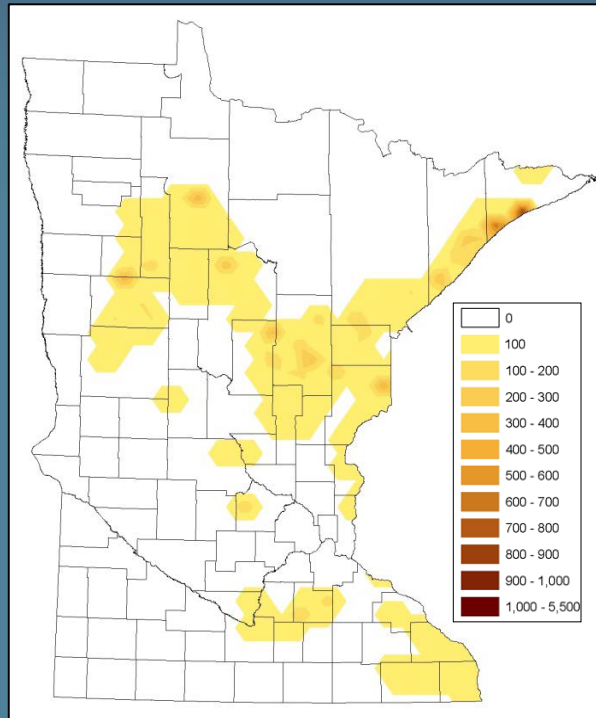


Maple- Basswood

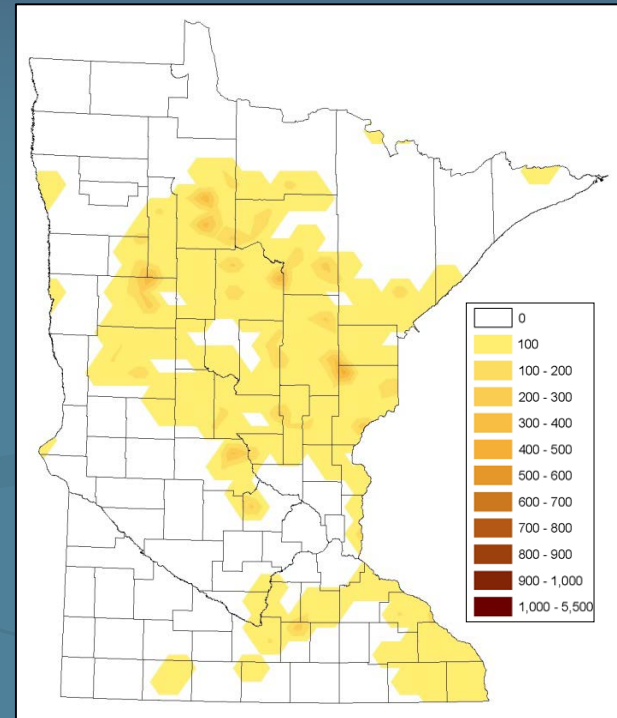
Red maple



Sugar maple

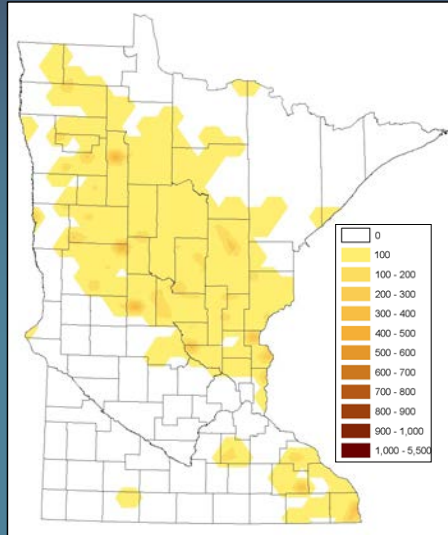


Basswood

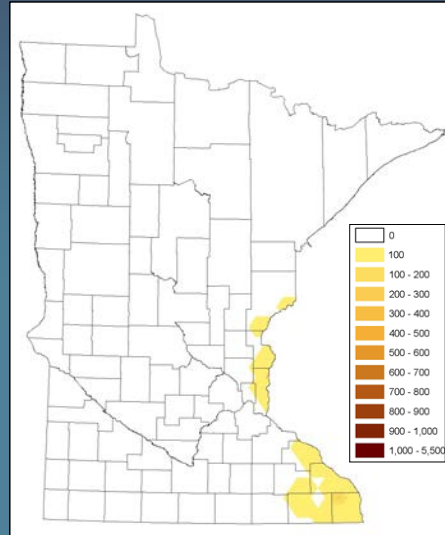


Oak

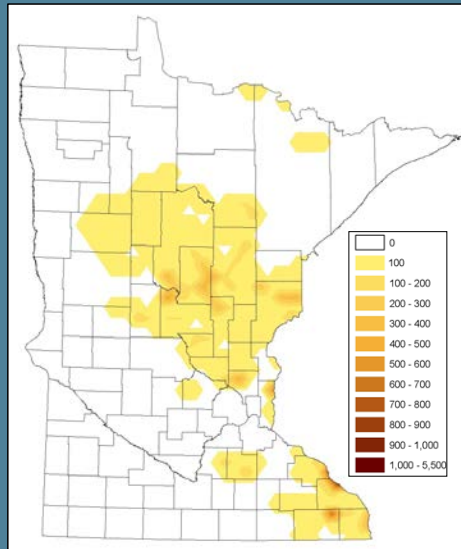
Bur oak



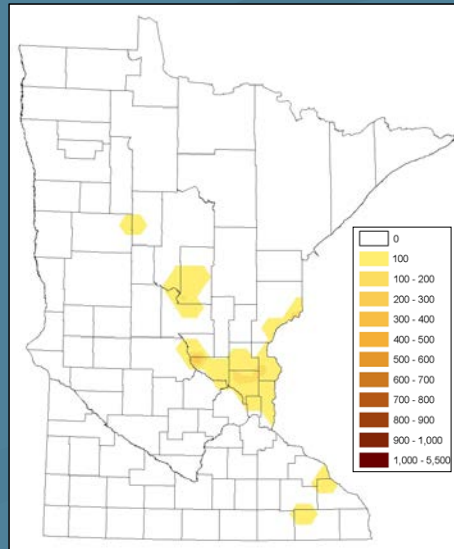
White oak



Northern red oak

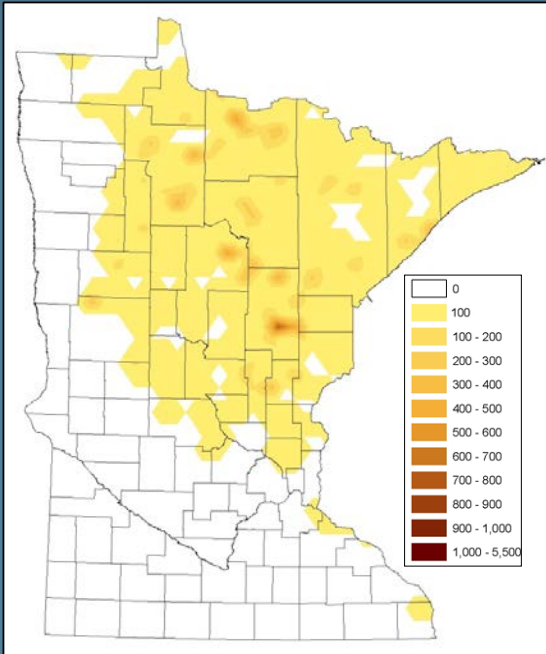


Northern pin oak

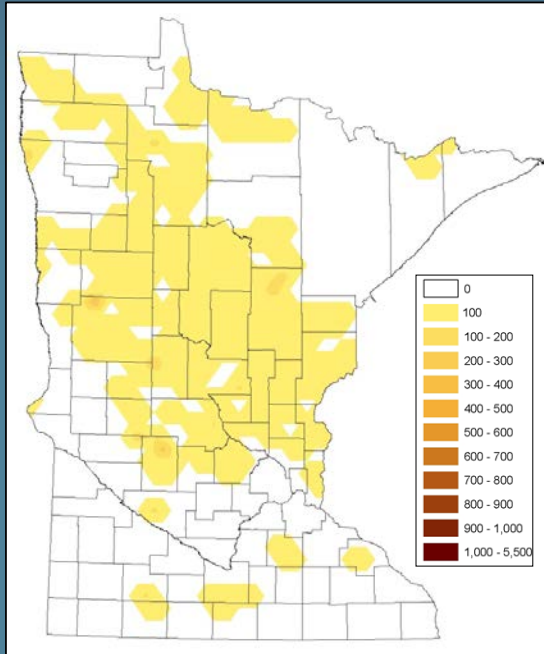


Ash

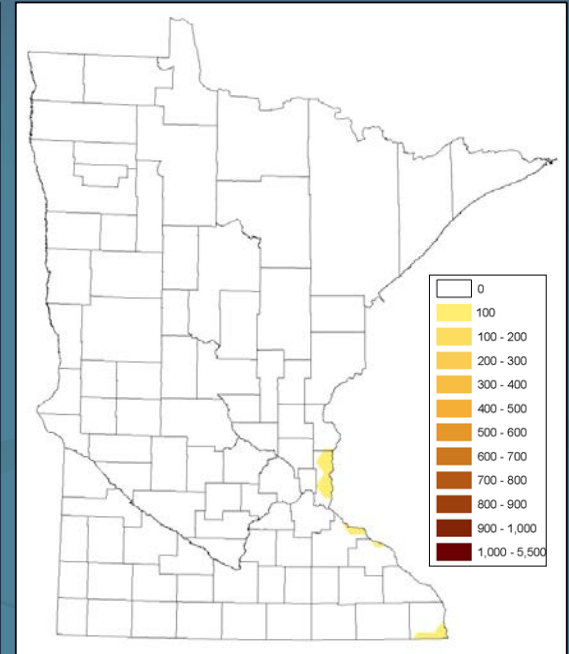
Black ash



Green ash

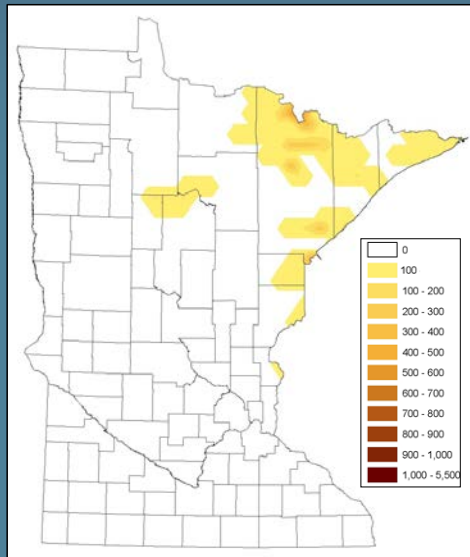


White ash

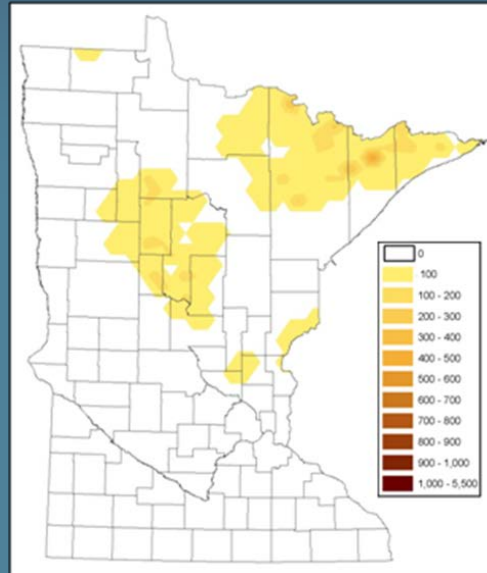


Pine

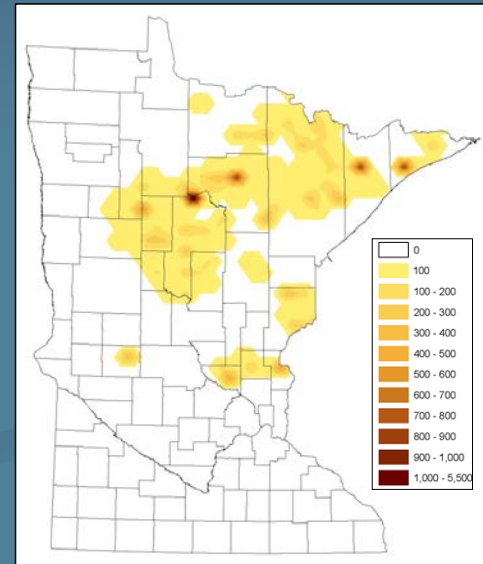
Eastern white pine



Jack pine



Red pine



Take Aways

- There is a significant wood resource in south east Minnesota
- Supply chain will need some development
At least for large scale projects –
Smaller commercial heating, relatively easy to bite off
- We probably are going to see some costs higher than northern MN



Thank You

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