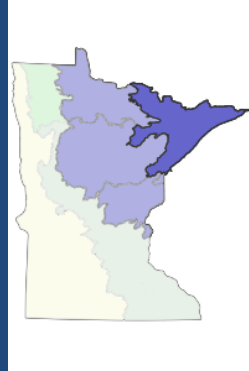# Northern Superior Uplands Section Forest Resource Management Plan

- **Relationship to Other Planning Efforts,**
- **Desired Future Conditions for Habitat, and**
- **Summary of Harvest Scenario Webinar**

Presented by Dave Ingebrigtsen to North Shore Forest Collaborative

29 October 2015

Northern Superior Uplands (NSU)
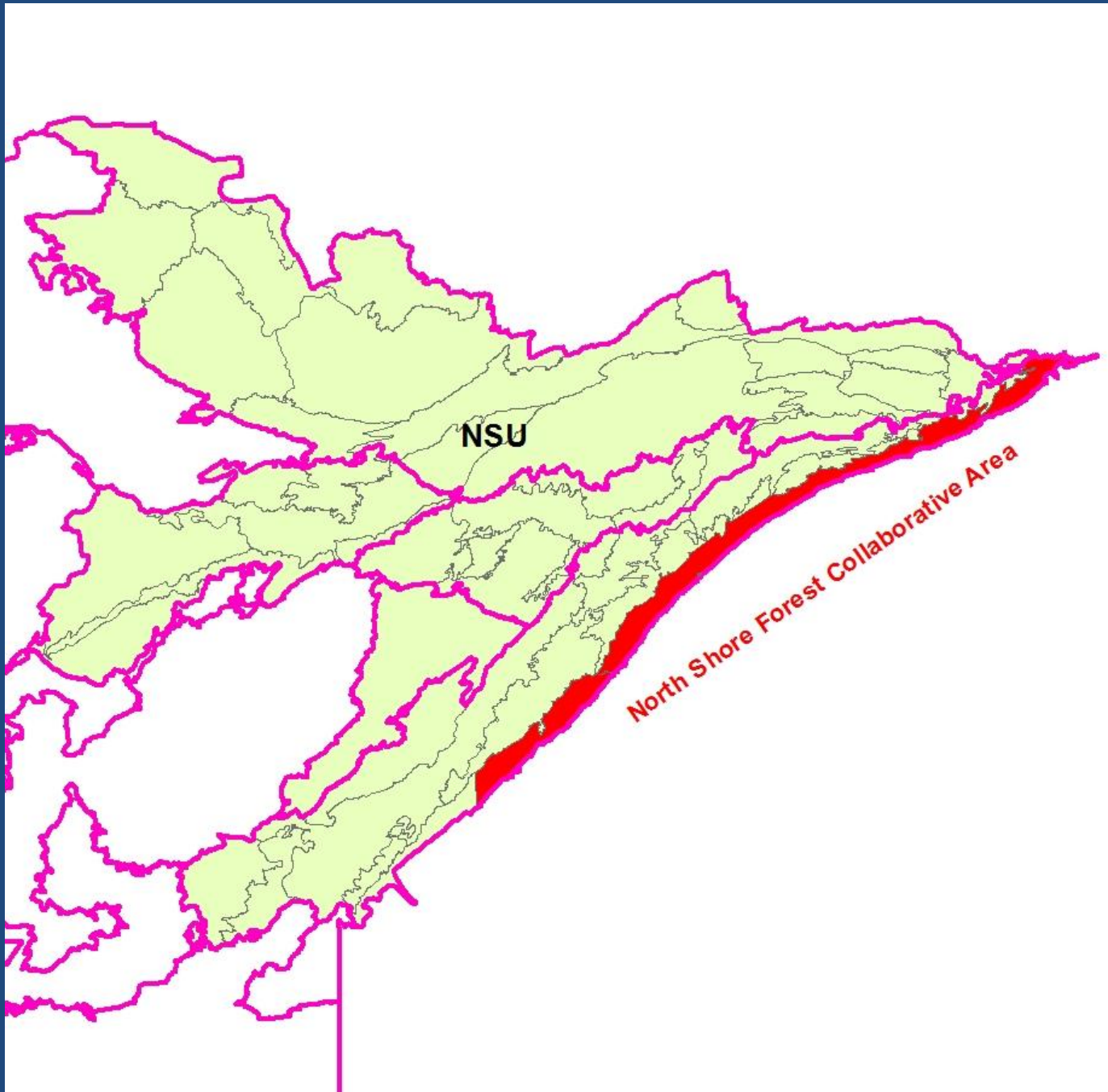

Subsections within the
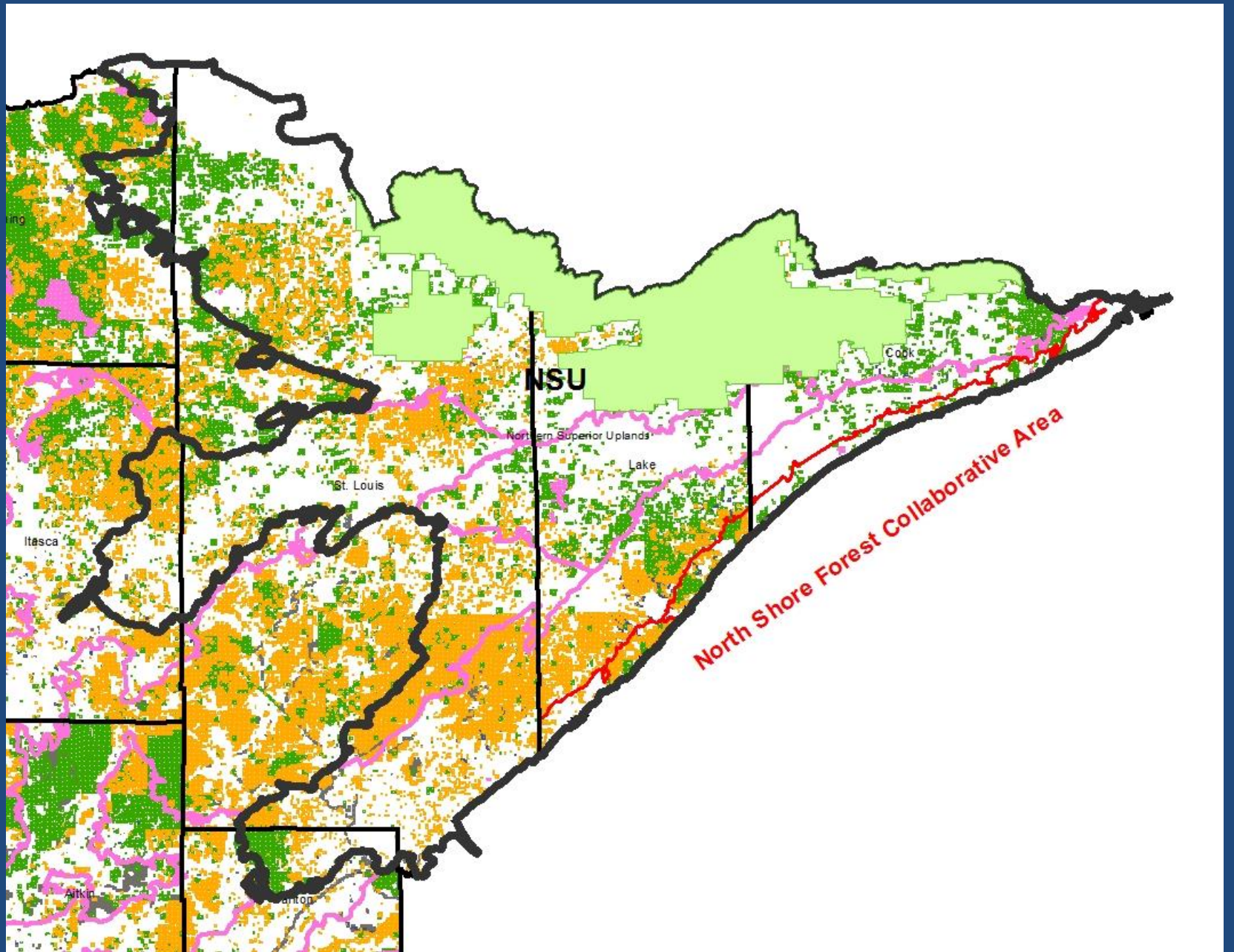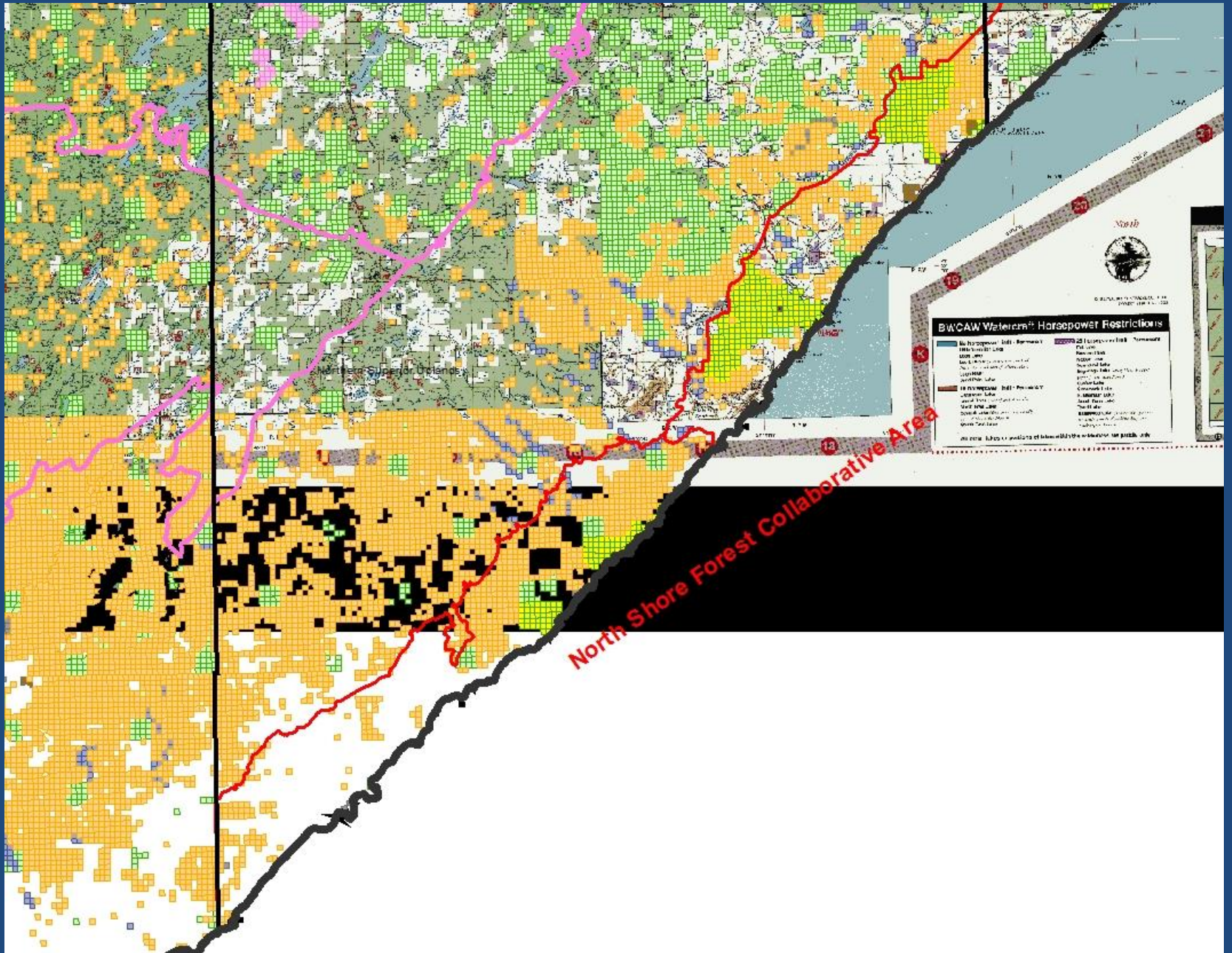Northern Superior Uplands SFRMP
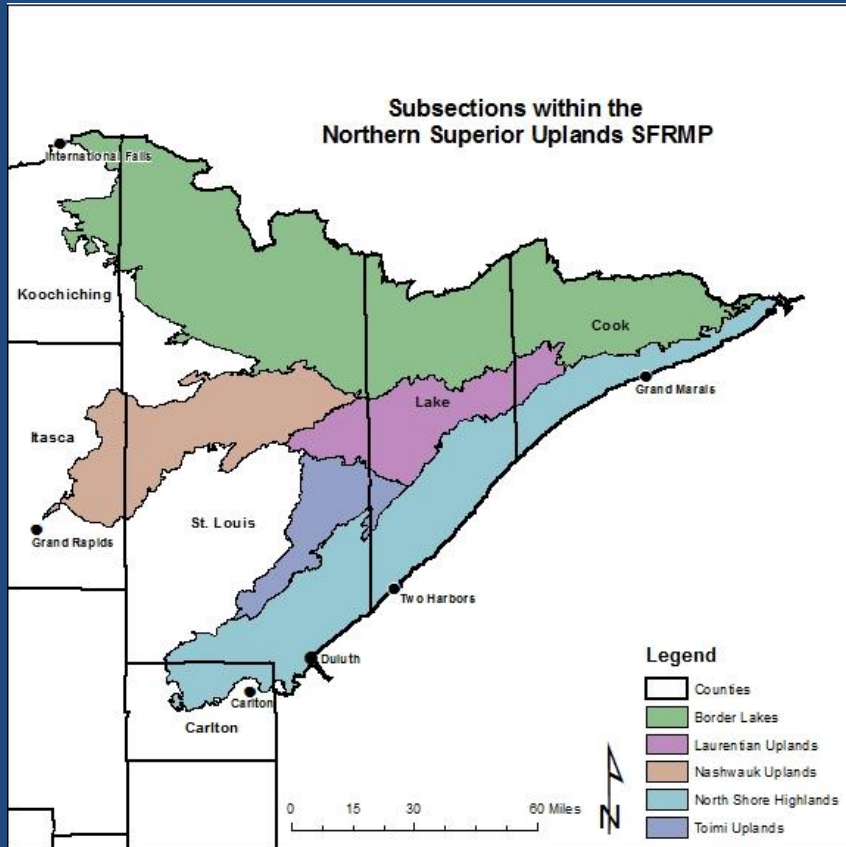
- 5 ECS Subsections
  - North Shore Highlands
  - Toimi Uplands
  - Laurentian Uplands
  - Nashwauk Uplands
  - Border Lakes
- 4 Forestry Admin Areas
- 4 Wildlife Admin Areas
- 5 Fisheries Admin Areas
- 1 DNR Region (Northeast)

Balancing Multiple Values and Objectives

- Stakeholder interests, statutes, and policies direct DNR to manage forestlands for multiple values, including:
  - Habitat values
  - Ecological /environmental values
  - Economic values of forest products
  - Sustainability of forest resources to support all values
- DNR balances these multiple interests by:
  - Developing forest management plans (SFRMP) that incorporate DNR policies and balance multiple objectives
  - Applying department policies and SFRMP direction in day-to-day operations (e.g., stand level management prescriptions)

Northern Superior Uplands

North Shore Forest Collaborative Area

BWCAW Watercraft Horsepower Restrictions

Cook

North Shore Forest Collaborative Area

SUPERIOR

LAKE

East Half *Superior*

	SFRMP State Timberland (acres)	
North Shore Collaborative Area	14,514	2.3%
NSU SFRMP Planning Area	626,370	

Northeast Landscape Forest Resources Plan

D:\Users\milynch\Documents\MFRC\MFRC Photo Bank\RHS H2C-2384.jpg\RHS H2C-2384.jpg

Minnesota Forest Resources Council Northeast Landscape Planning Committee
September 17, 2014
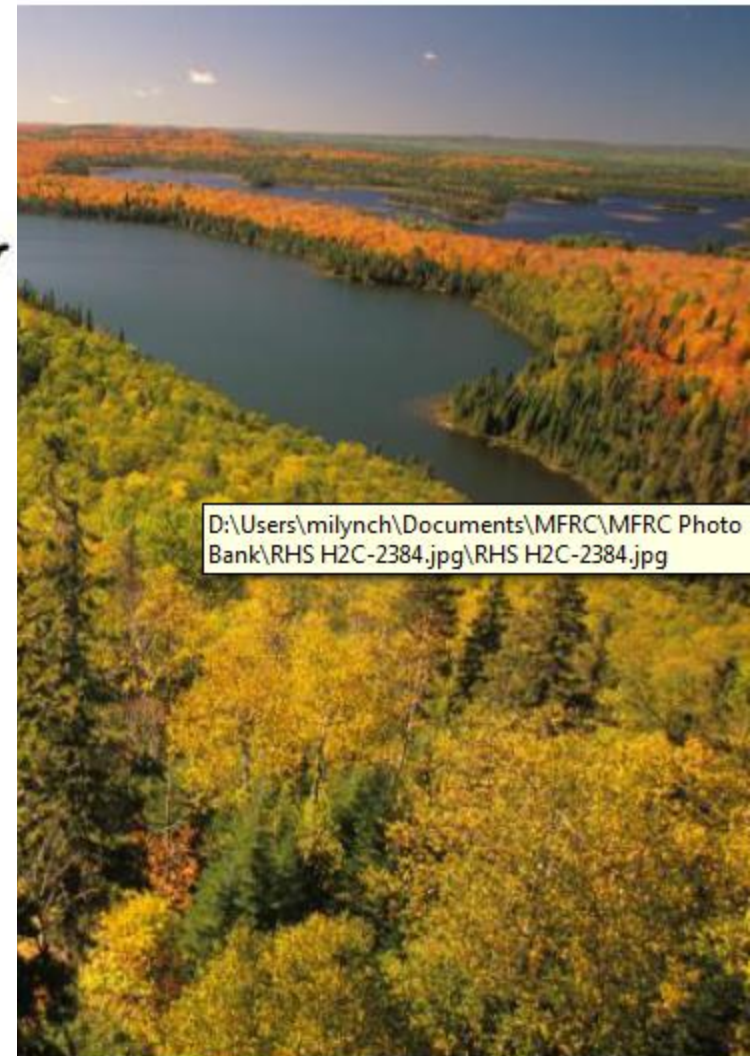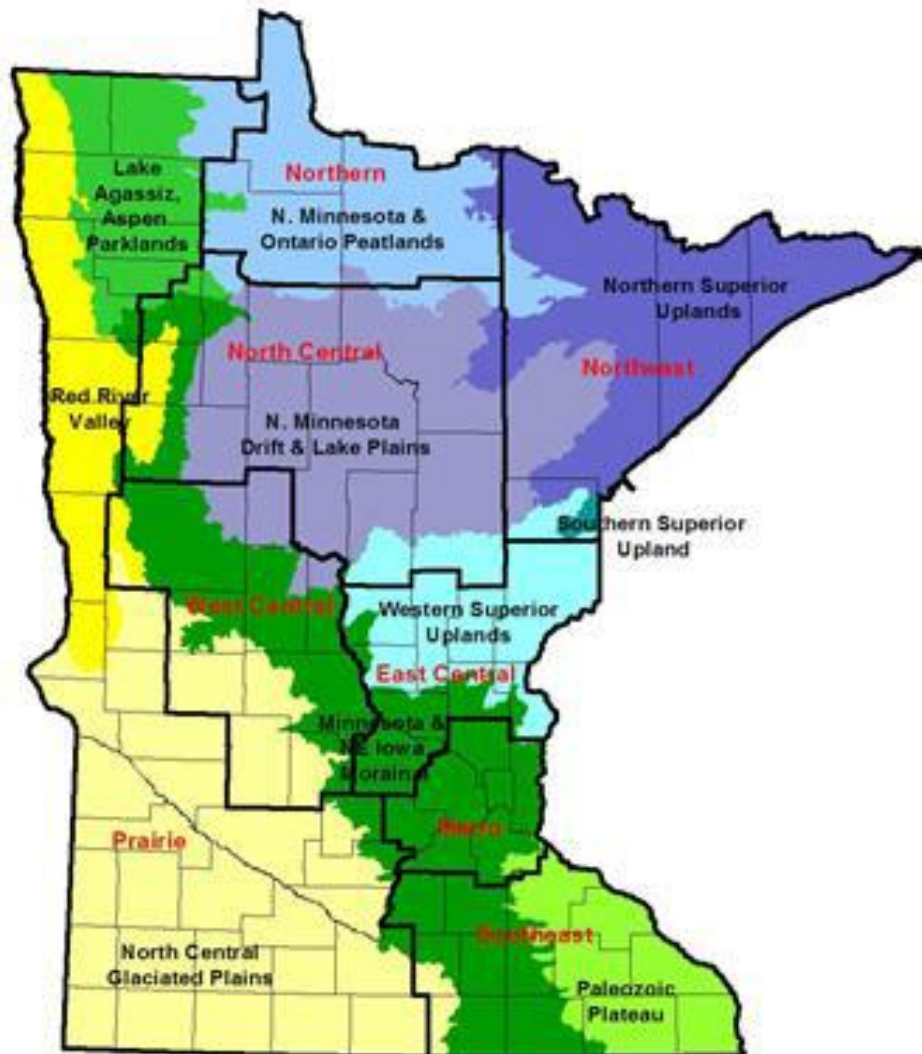
Habitat Planning for SFRMP

Section 8 Goals, Objectives and Actions …Relating to NPCs…

A. Ecological Resources

Goal 1. Promote Sustainable Forest Management.

Objective 1: Utilize Native Plant Classification Systems to Inform Management. Support the use and application of Ecological Classification System (ECS) and Native Plant Community (NPC) concepts and principles by resource managers and landowners throughout the region to ensure site appropriate native species are growing across the landscape.

Action Items:
1. Use NPC to Achieve Cover Type Goals. Use NPC information to determine which sites are best suited for conversion to another cover type.

Goal 2. Maintain, Restore, and Enhance Native Biodiversity, Including Fish & Wildlife Habitat & Populations.

Objective 1: Manage for a Mix of Forest Cover Types Approximating Native Plant Communities. Manage forests to ensure tree species are appropriate for the site and anticipated future conditions at abundances that are appropriate for the native plant community. Increase diversity of the forest to better reflect the potential tree composition per native plant community and to manage risk across the range of anticipated future conditions in northeastern Minnesota.

Action Items:
1. Identify Areas for Conversion. Using the NPC system, identify and prioritize sites for conversion to a mix of site appropriate tree species.

Objective 2: Manage for Age and Structural Diversity. Manage within- and between-stand vegetation conditions to promote a diversity of structural, spatial, and age patterns necessary for the range of native species found in northeastern Minnesota.

B. Economic Resources

Goal 1: Enhance Forest Health and Productivity.

Objective 1: Manage for a Mix of Site Appropriate Forest Cover Types. Support a diverse and robust forest-based economy by utilizing native plant community information to reflect potential tree composition and diversity across the range of anticipated future conditions. Manage for site appropriate tree species to increase stand quality, manage risk, and attain productivity goals.

Action Items:
1. Use NPC to achieve cover type goals. Use NPC information to determine which sites are best suited for conversion to another cover type.

Objective 4: Reduce Forest Mortality. Recognize the natural cycles and time horizons of natural outbreaks or disturbances and look for opportunities to collaborate on cross boundary projects to reduce forest mortality issues.

Action Items:
1. Integrate NPC information into site planning. Use NPC data to ensure site appropriate species are encouraged.

Minnesota Forest Resources Council

-------------Climate Change Considerations-----------

Section 8 Goals, Objectives and Actions
...Relating to Climate Change...

Minnesota
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A.   Ecological Resources

Goal 1. Promote Sustainable Forest Management.

Objective 5: Integrate Climate Change Planning. Integrate climate change projections into planning efforts across the region.

   Action Items:
   1.   Implement recommendations. Implement recommendations from the Forest Ecosystem Vulnerability Assessment and Synthesis (FEVAS).

C.   Social Resources

Goal 2. Encourage Sustainable Land Use.

Objective 2: Integrate Climate Change into Planning. Integrate climate change projections into land use planning efforts across the region.

   Action Items:
   1.   Implement recommendations. Implement recommendations for adaptation and resilience provided in the Forest Ecosystem Vulnerability Assessment and Synthesis (FEVAS) study and other climate change forums.

Habitat Planning for SFRMP

FUTURE CLIMATE CHANGE IMPACTS ON FORESTS

• Reduced habitat for quaking aspen, paper birch, tamarack, and black spruce.

• Increased suitable habitat for American basswood, black cherry, northern red oak, and eastern white pine.

• Many common species in northern Minnesota may decline under the hotter, drier future climate scenario.

• Lots of unknowns

Minnesota

Forest Ecosystem Vulnerability Assessment And Synthesis

General Technical Report
PRE-PUBLICATION DRAFT

DRAFT

2014
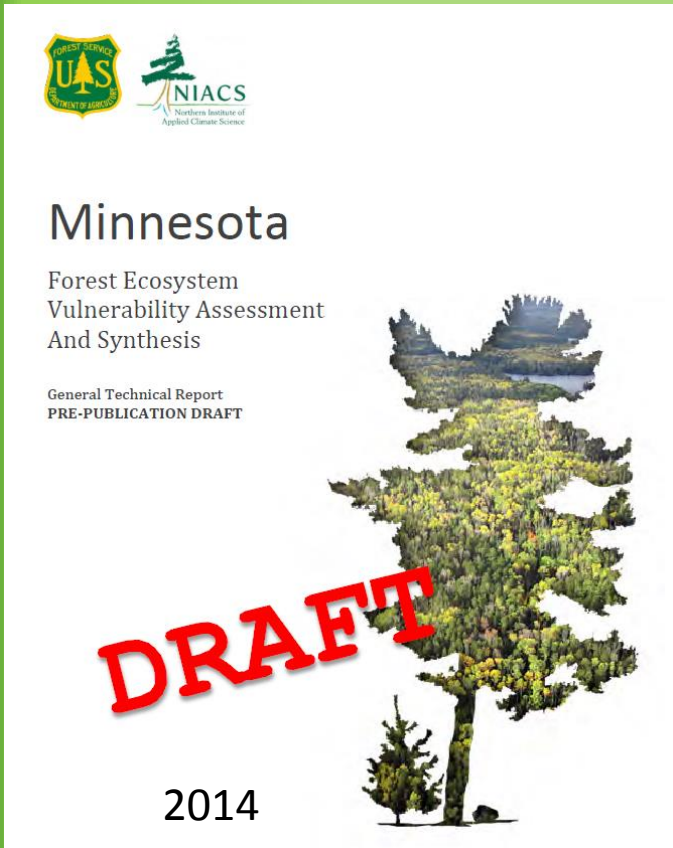
Habitat Planning for SFRMP

Developing DESIRED FUTURE CONDITIONS for NPCs

How did we get here?

➢ **Past timber harvesting**
➢ **Lack of seed source**
➢ **Fire suppression**
➢ **Deer browsing**
➢ **Invasive plants**
➢ **Effects of climate change**

North Shore Till Plain LTA

Bar chart showing percentages by species for Bearing Trees and FIA: Aspen/BG, Birch, Sugar Maple, White Pine, White Spruce, Balsam Fir, White Cedar, Tamarack, Other.

■ Bearing Trees   ■ FIA
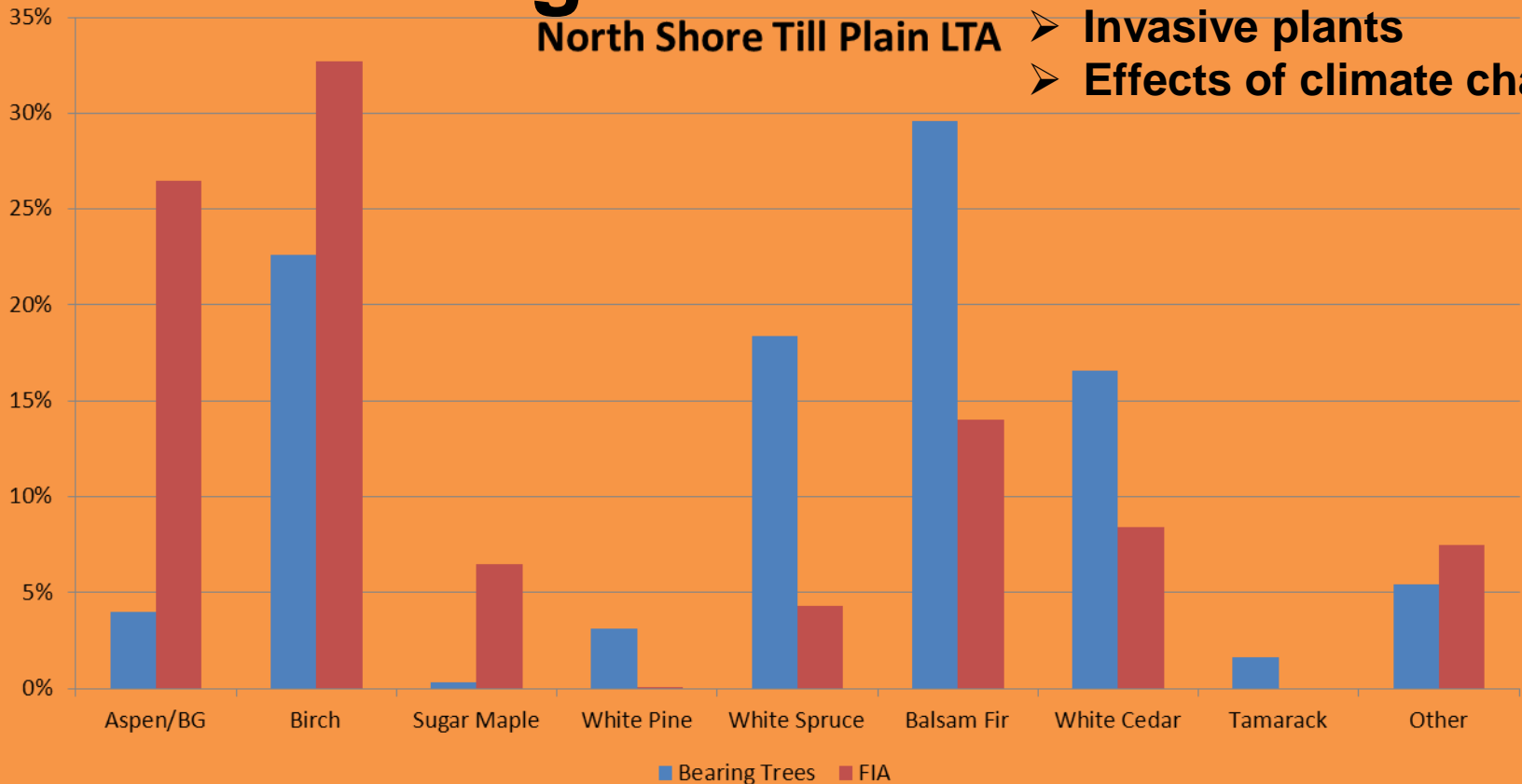
Habitat Planning for SFRMP
Developing DESIRED FUTURE CONDITIONS for NPCs

How do we move forward?

Our tools: forest management practices

Restoration needed		Relatively intact NPCs

DFC is to move these stands to the right , and………………… To sustain these stands

Other Plan Tools

- High Conservation Value Forests

- Old Growth/Old Forest Complexes

- Management Opportunity Areas (e.g. Small Block Habitat Areas for wildlife species that favor successional forest)

- Patches

Habitat Planning for SFRMP
----------Conversions-----------

Strategies:

a. Manage forest-related habitats toward the DFFCs through the strategies identified in issues 4, 5, and 6.

b. Use *Field Guide to the Native Plant Communities of Minnesota: The Laurentian Mixed Forest Province* in managing native plant communities.

Table 2.1 Change in Cover Type: Aspen/Birch/Balm of Gilead to Upland Conifers

Border Lakes Subsection Forest Cover Type Composition on State Lands (outside BWCAW)						
Cover Type	Present (2001)		DFFC (2011)*			DFFC (2051+)**
	Acres	%	Acres	%	Acres	
Aspen/Birch/Balm of Gilead	130,318	49%	120,300	45%	-10,000	Decrease present cover type acres by one-third.
White/Red Pine	20,645	8%	24,200	9%	3,600	Double the present cover type acres.
Jack Pine/Black Spruce Upland	24,216	9%	26,500	10%	2,300	Double the present cover type acres.
White Spruce/Balsam Fir/Upland Cedar	19,384	7%	23,500	9%	4,100	Double the present cover type acres.
Black Spruce Lowland/Tamarack/Stagnant Conifers	47,160	18%	47,160	18%	0	Maintain present cover type acres.
Ash/Lowland Hardwoods/Lowland Cedar	19,339	7%	19,339	7%	0	Maintain present cover type acres.
Northern Hardwoods	757	0%	800	0%	43	Maintain DFFC (2008) acres.
Upland Brush	2,459	1%	2,900	1%	441	Maintain DFFC (2008) acres.
Subsection Total	264,278	100%	264,699	100%	484	

2005:

Goals of SFRMP Process

- Consideration of broad resource management issues affecting **vegetation** management.

- Resulting in a sustainable forest management plan that provides:
  - Strategic forest management direction, and,
  - A 10-year list of stands that will be examined for possible timber harvest or other management

- Consider forest certification standards:
  - Forest Stewardship Council (FSC) and
  - Sustainable Forestry Initiative (SFI)

Primary SFRMP Products

SFRMPs identify both:

1. <u>Strategic forest management directions</u> such as:
   - General Direction Statements (GDS)
   - Strategies,
   - Desired Future Conditions (DFC), and

2. <u>A 10-year list of stands</u> that:
   - Will be field visited during plan implementation
   - Provides the best opportunity to implement the plan's strategic direction through timber harvest or other management.

SFRMP Stakeholder Involvement

Stakeholders, and the public, are invited to become involved in the SFRMP process through 3 webinars:

1. Webinar 1: Background and Introduction to SFRMPs;

    - *Can be viewed on line at:*

      http://www.dnr.state.mn.us/forestry/subsection/active.html

2. Webinar 2: Alternative Harvest Scenarios

    - *Can be viewed on line at:*

      http://www.dnr.state.mn.us/forestry/subsection/active.html

3. Webinar 3: Review of the Draft SFRMP

Webinar 2
Review of Alternative Harvest Scenarios

- The DNR developed 4 harvest scenarios to explore the implications and trade-offs associated with different planning decisions

- This webinar describes these scenarios and their projected associated outcomes

Role of Harvest Schedule Modeling in SFRMP

- Informs planning decisions by providing a way to examine:
  - The implications of different planning decisions through the use of timber harvest scenarios
  - The relative sensitivity of projected outcomes to different planning decisions
- Optimizes the selection of the 10-year stand exam list by incorporating goals and criteria identified in the plan.

Modeling Parameters Varied in the Harvest Scenarios

- The modeling parameters that we are varying across the 4 scenarios are:
  - **Even-flow**
  - **Lowland Conifer Old Growth (LCOG)**
  - **Cover type conversion**
  - **Additional older forest**
- These are the modeling parameters with the greatest potential effect on model outcomes and for which DNR will make decisions prior to the final stand selection model run
- DNR is not seeking input on other model parameters that are constant across the scenarios.

# Modeling Parameters Held Constant in All Scenarios

DNR is not seeking input on established "constant" modeling parameters, such as:

- Established normal rotation ages

- Thinning regimes for forest types that are typically thinned or managed as uneven-aged types (e.g., red pine, northern hardwoods)

- Applying a standard "3% discount rate" to estimate the current value of projected future timber revenues.

Even Flow

- **Even Flow** describes the variability in estimated timber harvest over time compared to a long-term average.

- Range of Even Flow values explored in the 4 scenarios:

  - Tight - 5% variation in harvest volume over time (overall and for each forest type). Produces more consistent harvest volumes decade to decade.

  - Moderate - 20% variation in harvest volume over time (overall and for each forest type)

  - Relaxed – 40% variation in harvest volume over time (overall and for each forest type). Produces more variable harvest volumes decade to decade.

- See next slide for an example.

Even Flow Example
Moderate Level (20%)
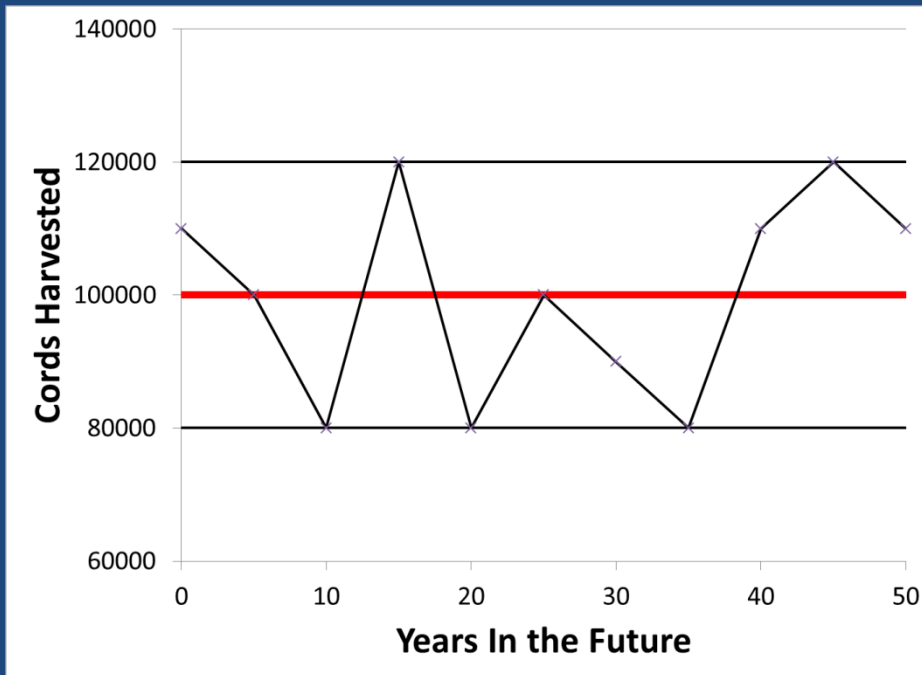
model allows variation up 20%

projected long-term running average

model allows variation down 20%

Lowland Conifer Old Growth (LCOG)

- LCOG describes the amount of productive (non-stagnant) black spruce lowland and tamarack forest types "reserved" from being selected by the model

- Intended to represent possible levels of LCOG designation

- Range of values explored in the scenarios:

  - 1.5% reserved, equivalent to the approximate amount of old growth forest designated on upland forest types.

  - 5% reserved, a rough mid-point between the lower and higher amounts

  - 10% reserved, the statewide average of productive lowland conifer forest types that have been temporarily reserved as Ecologically Important Lowland Conifer pending completion of LCOG designations.

Cover Type Conversions

- Cover type conversions describe the amount of assumed or desired change from one forest type to another

- Range of values explored in the 4 scenarios:

  - No Change - assumes no change from current mix of forest types on DNR lands in the landscape.

  - Original SFRMP - continues conversion goals established in previous SFRMPs

    - For the NSU, the model reduces the aspen and birch types by 5% each decade, with corresponding increases in jack pine, white pine, red pine, balsam fir, white spruce, and upland white cedar.

  - Climate Change Response - conversion goals that represent a possible response to climate change effects over the 50-year projection period

    - For NSU, the model assumes decreases in jack pine, black spruce, balsam fir, and white spruce, with corresponding gains in aspen, birch and red/white pine (in the first decade) and gains in northern hardwoods, red pine, white pine and oak in subsequent decades.

Additional Older Forest

- Describes the amount of forest over normal rotation age that the model maintains on DNR lands, based on an <u>all-ownership</u> assessment of current forest age-class distributions.

- Applies to forest types managed primarily with even-aged management (aspen, birch, red pine, jack pine, black spruce, tamarack).

- Range of values explored in the 4 scenarios:

  - No additional – the model does not try to maintain any older forest on DNR lands included in the plan

  - Some – the model tries to maintain roughly 5%-7% older forest on DNR lands for certain forest types on certain subsections.

  - More – the model tries to maintain roughly 10-15% older forest on DNR lands for certain forest types on certain subsections.

The Mix of Parameters in the 4 Harvest Scenarios

Parameter	Scenario A	Scenario B	Scenario C	Scenario D
Even Flow	Tight 5%	Moderate 20%	Relaxed 40%	Relaxed 40%
LCOG	10%	5%	10%	1.5%
Cover type change	Climate Change Response	Original SFRMP	Original SFRMP	No Change
Add'l Older Forest (if needed for certain forest types)	More	Some	More	No Additional

Projected Outcomes

Each scenario is evaluated against four projected outcomes:

1. Projected harvested volume in cords
   - The estimated amount of timber available to harvest.
     - Timber volume is a measurable target specified in DNR's 2015-2025 Strategic Conservation Agenda.

2. Projected stumpage revenue from harvested cords
   - Stumpage revenue (timber sales revenue) means gross revenue from timber.
     - DNR contributes net revenue as part of its responsibility to the Permanent School Trust Fund (Trust).
     - Timber sales revenue provides funding to the DNR.
     - Timber sales revenue supports local and state economies.

Projected Outcomes (cont.)

3. Projected acreage of older forest
   - Older forest refers to forest <u>over normal rotation age.</u>
   - Only forest types managed primarily as "even-aged."
   - Older forests provide larger diameter products, habitat and aesthetic values.

4. Projected acreage of younger forest
   - Younger forest age varies by forest type but generally refers to forest <u>0 to 30 years of age.</u>
   - Only forest types managed primarily as "even-aged."
   - Younger forest offers habitat values and provides for future industry needs.

Projected Outcomes are for <u>Relative</u> Comparison

- Numerous factors potentially affect actual outcomes
  - Data accuracy (e.g., inventory, yield tables)
  - Generalized modeling assumptions
  - Actual 10-year stand selection and adjustments (e.g., for specific spatial considerations)
  - How spatial components of the model are applied
  - Site-level considerations
- Outcomes assume all stands selected by the model will be harvested
  - Historical evidence shows that roughly 25-30% of selected stands do not result in a timber harvest.

Projected Outcomes Are for DNR SFRMP Lands

- Outcomes do not reflect other forests on the landscape, including:
  - Forests on non-DNR lands (i.e., federal, county, private)
  - DNR forests within State Parks, Scientific and Natural Areas, and the Boundary Waters Canoe Area Wilderness.
  - Formally designated DNR Old Growth
  - Other forest types managed primarily by selective harvesting (e.g., northern hardwoods, white pine, lowland hardwoods).

Outcomes are Projected Out 50 Years

- The modeling scenarios project outcomes 50 years into the future.

- Scenario parameters are held constant over the 50-year projection period.

- Allows evaluation of the potential long-term implications of current planning decisions.

- SFRMPs are revisited every 10-years to reassess actual conditions and reconsider plan direction.

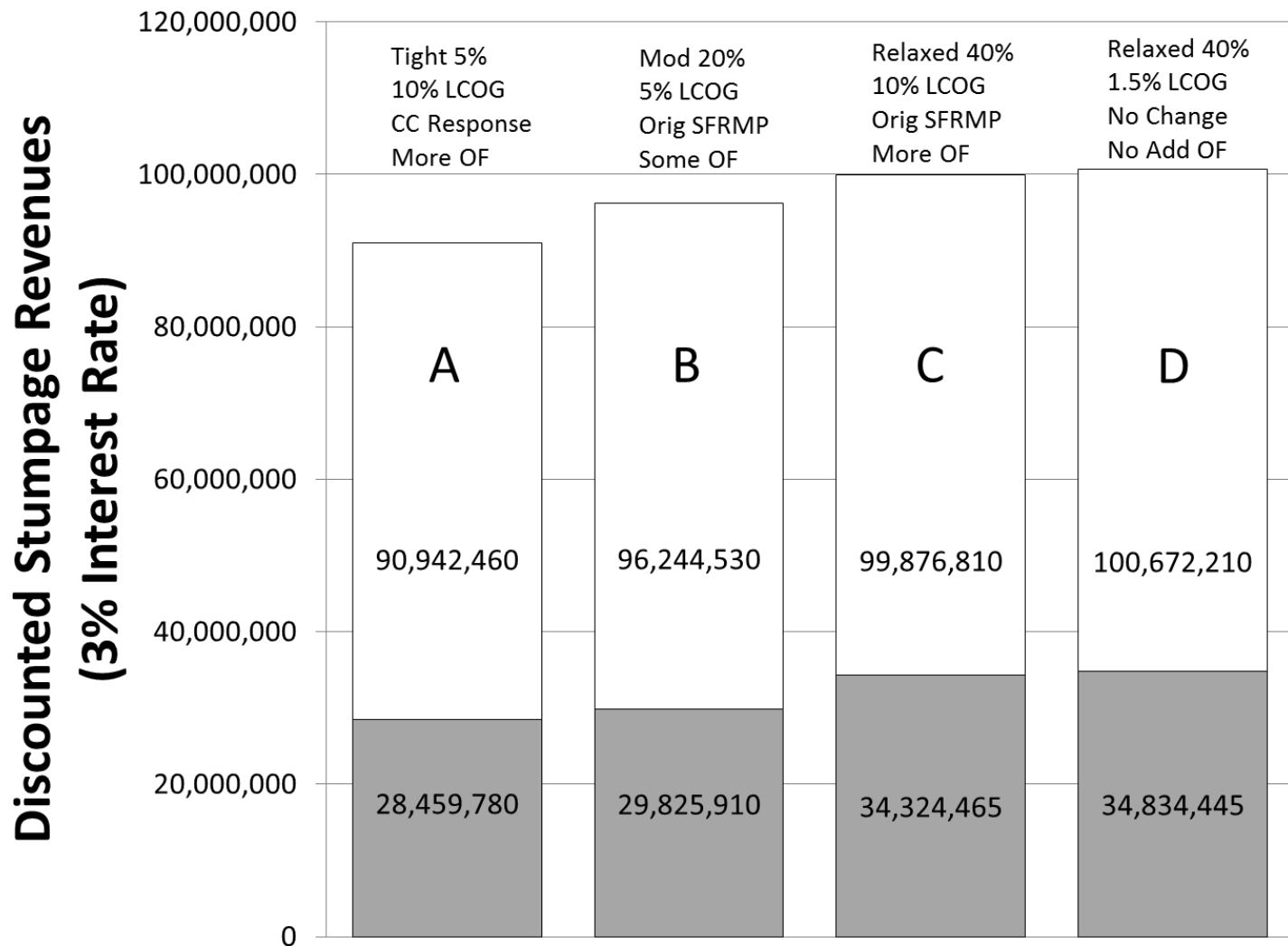# Scenario Modeling Outcomes for NSU:
Modeled Volume Available - All Species
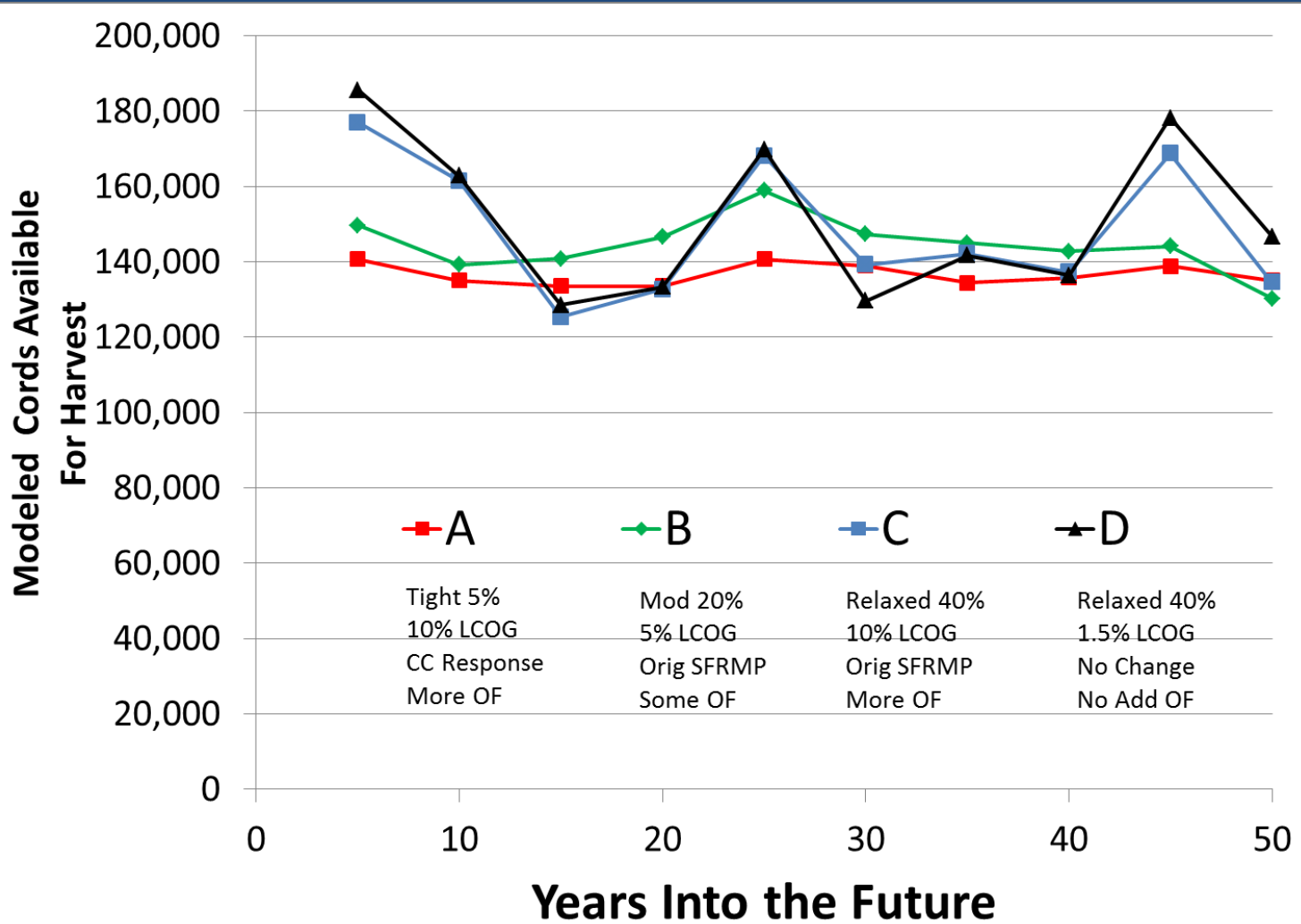
Example of Specific Tree Species: Modeled Volume of Aspen
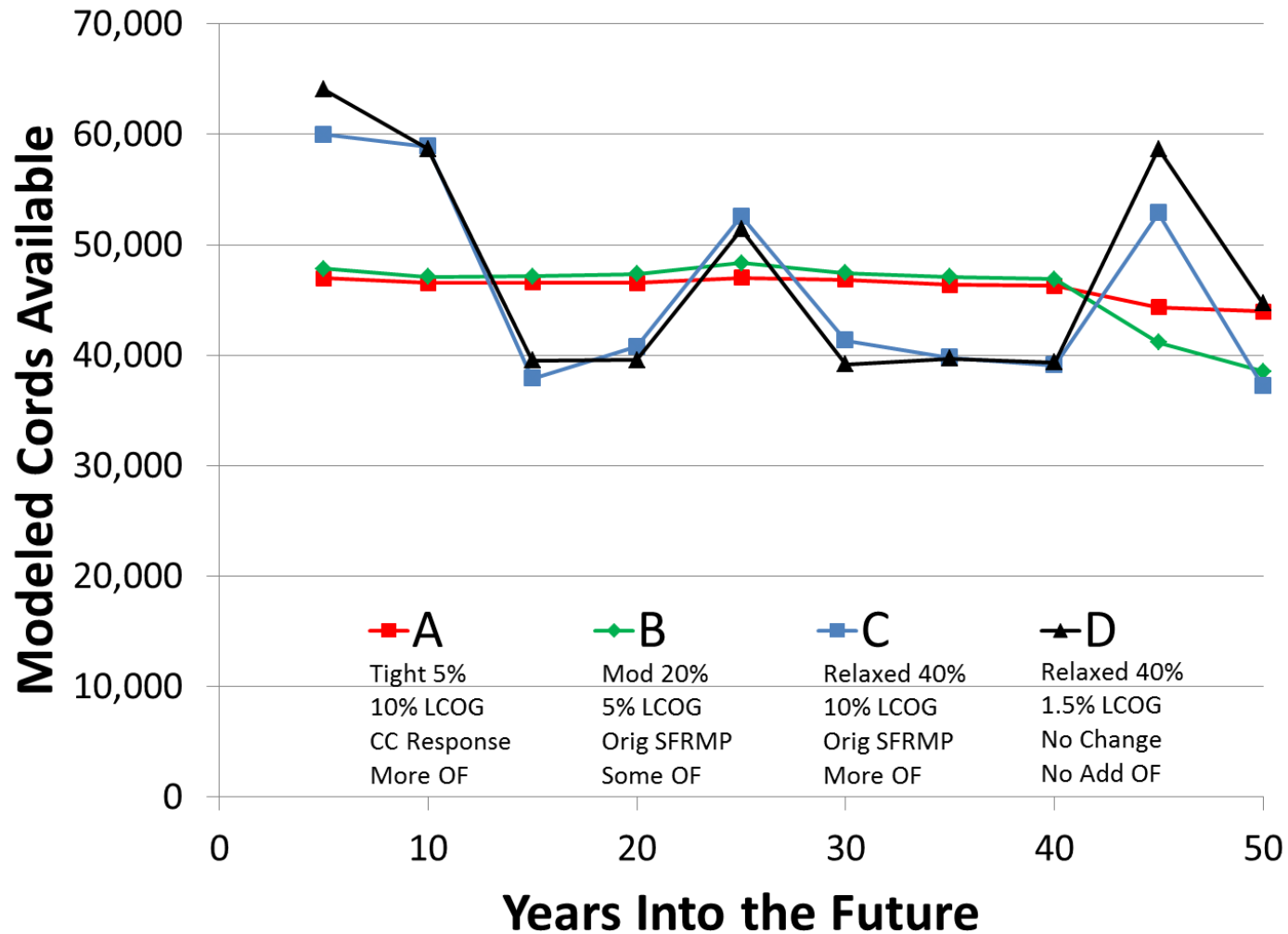
Example of Specific Tree Species: Modeled Volume of Lowland Black Spruce
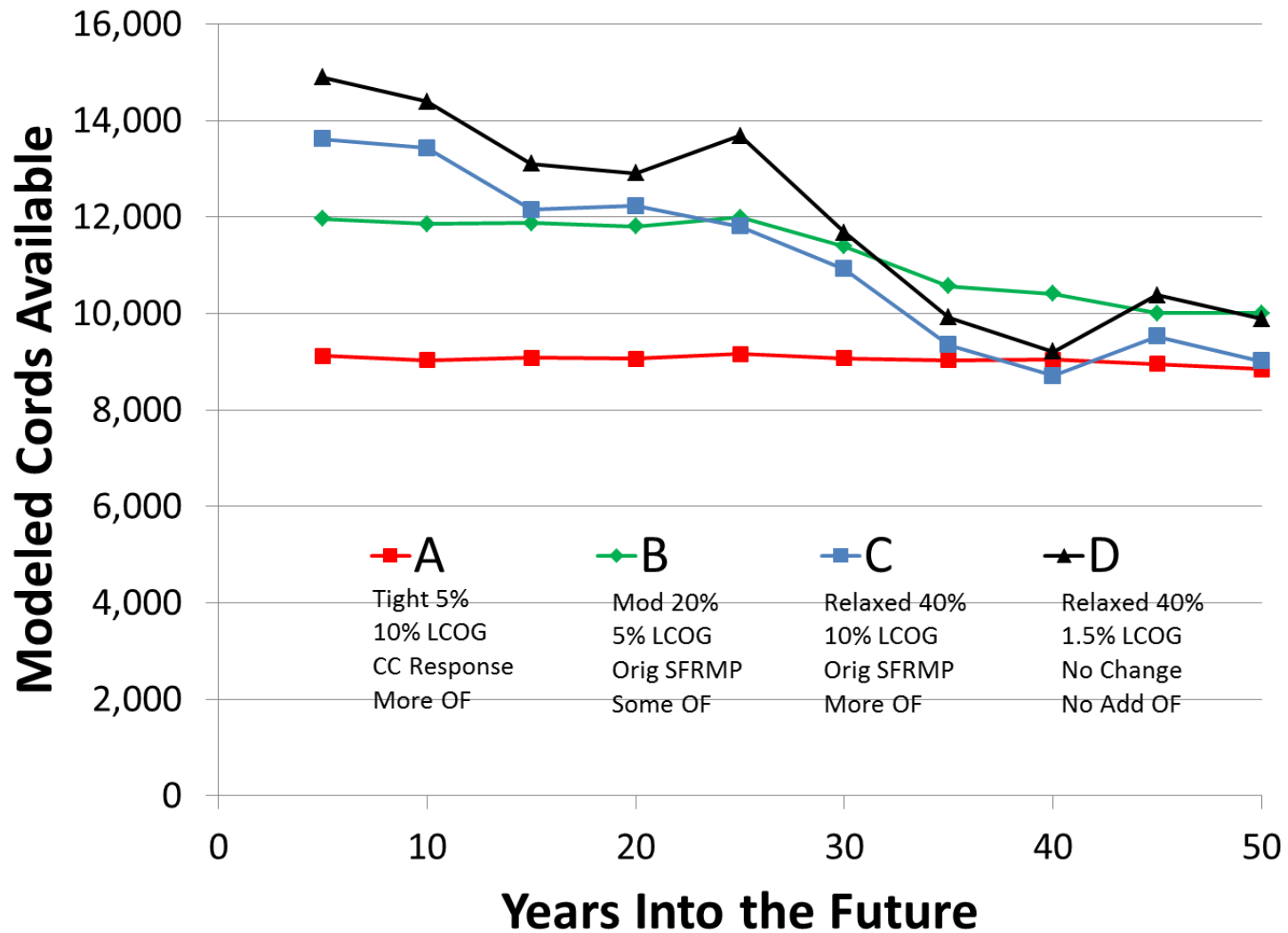
Scenario Model Outcomes for NSU:
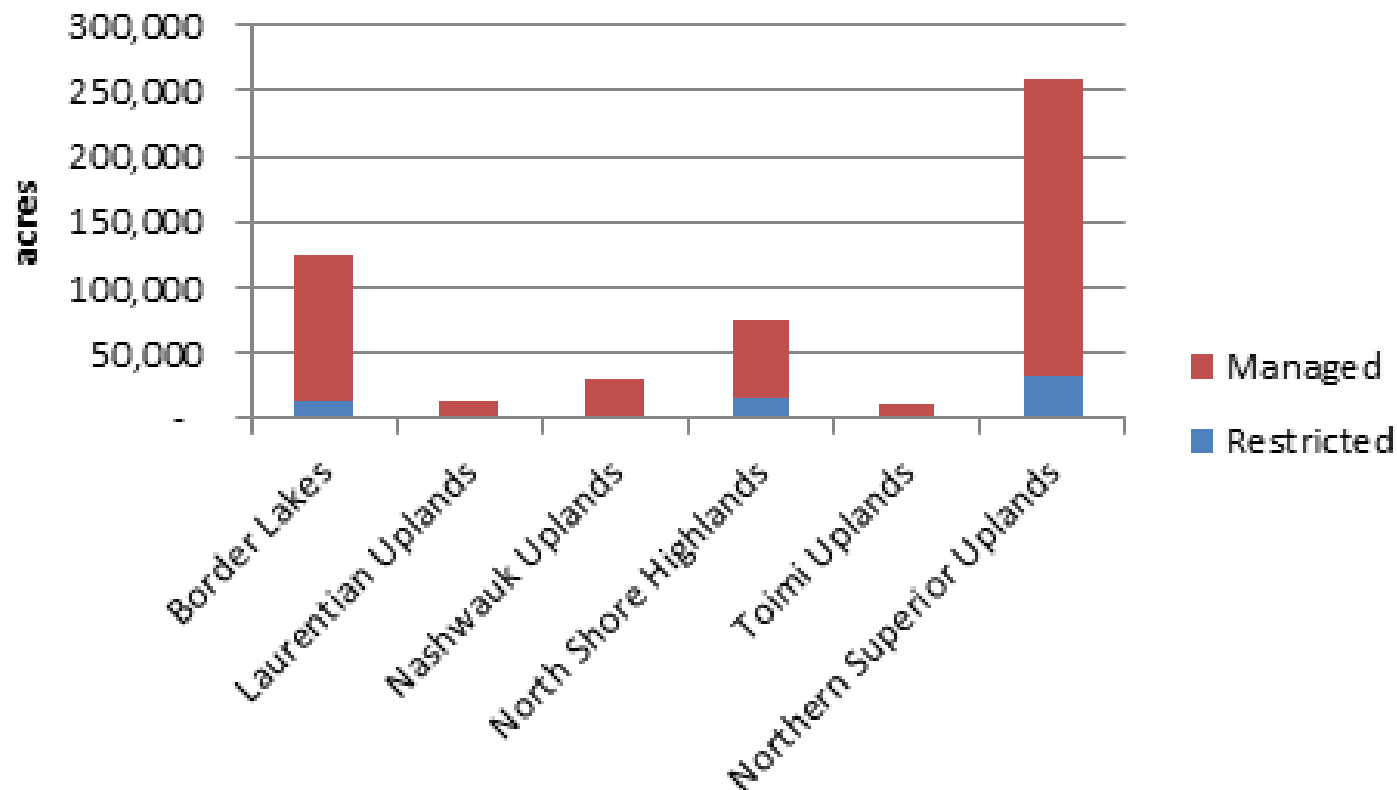# Projected Stumpage Revenue in 10 & 50 Years

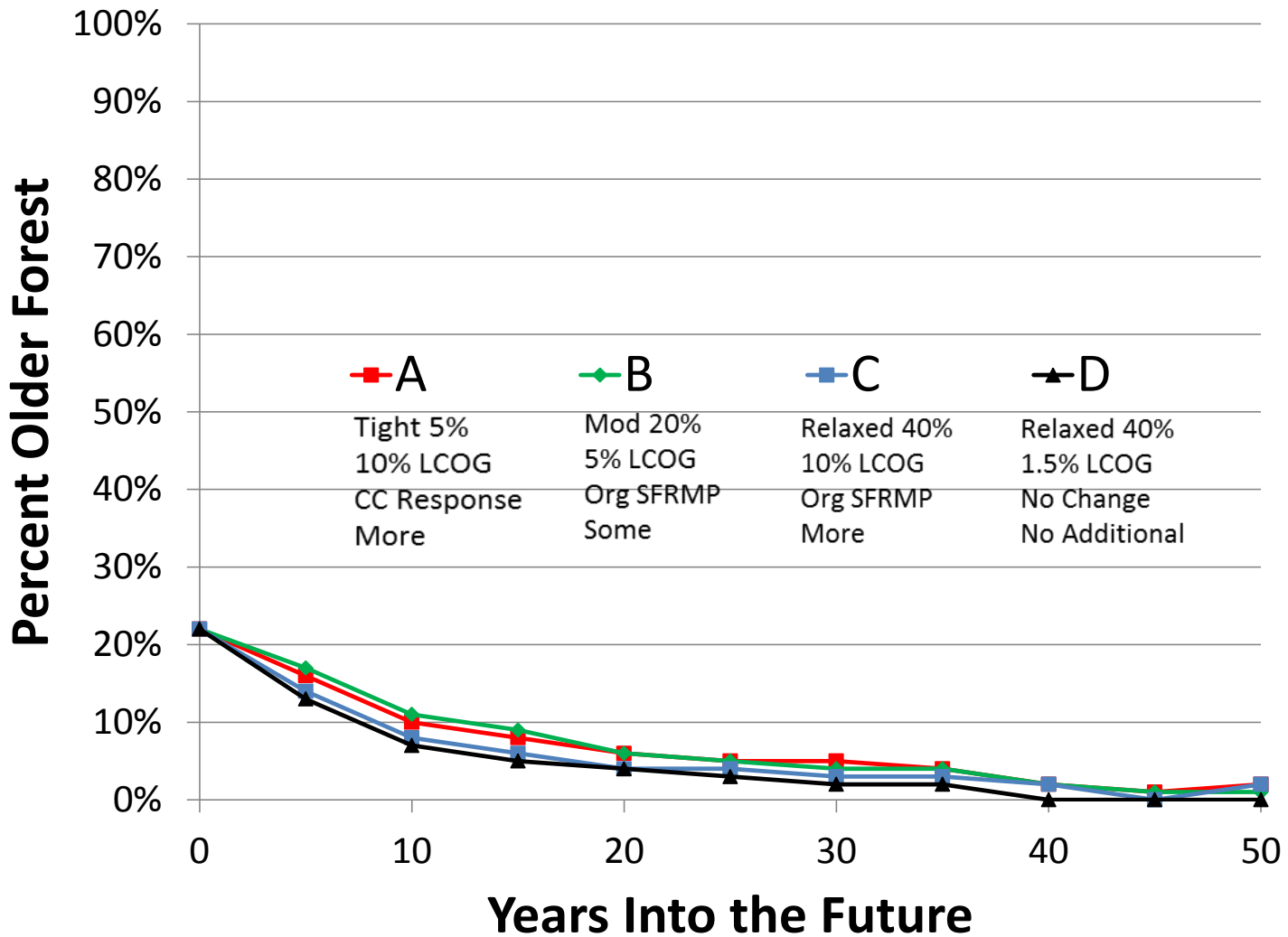Scenario Model Outcomes for NSU: Projected Older Forest % for Upland Conifers
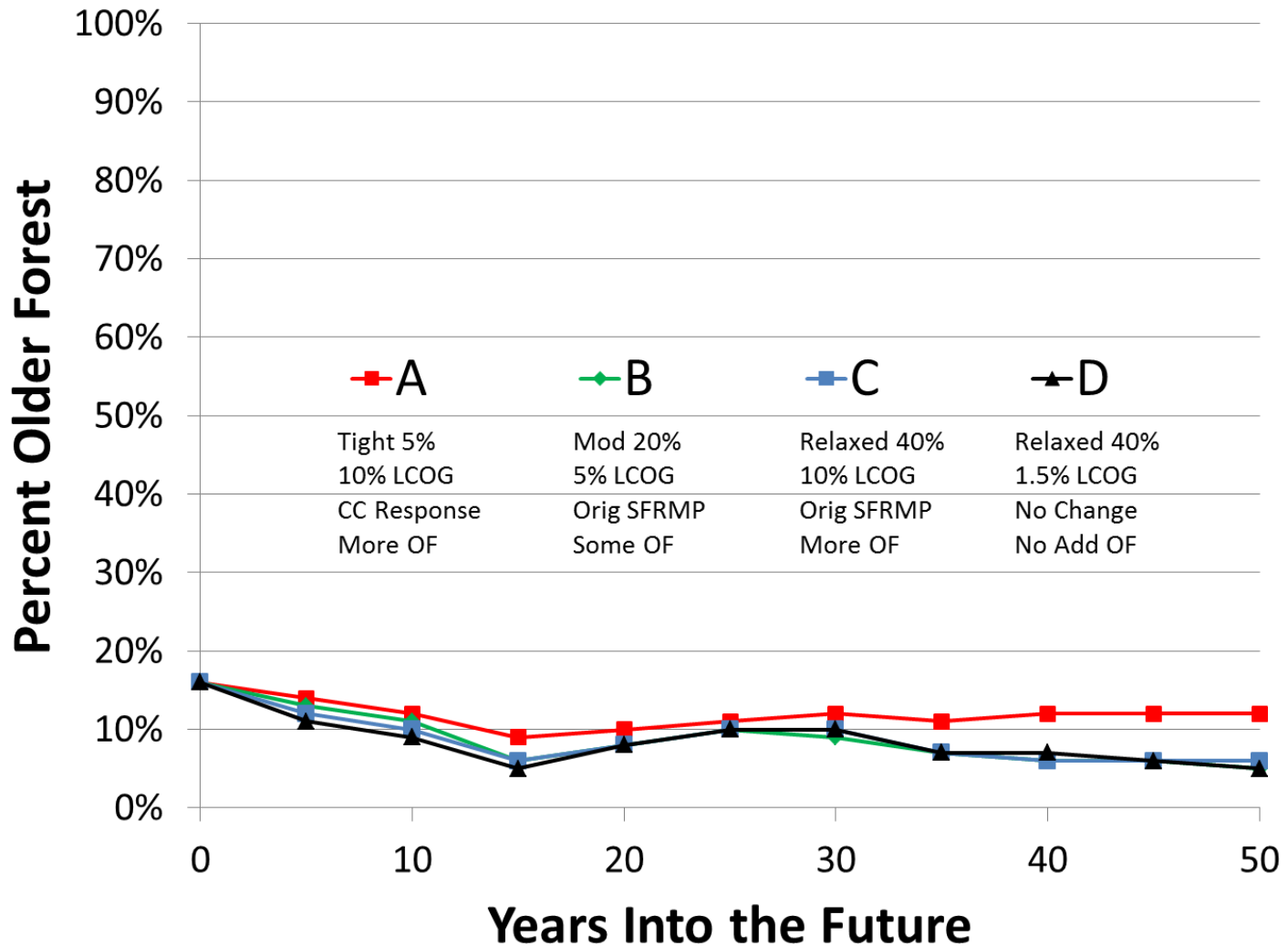
Managed Lands and Reserved Lands Upland Hardwood Types
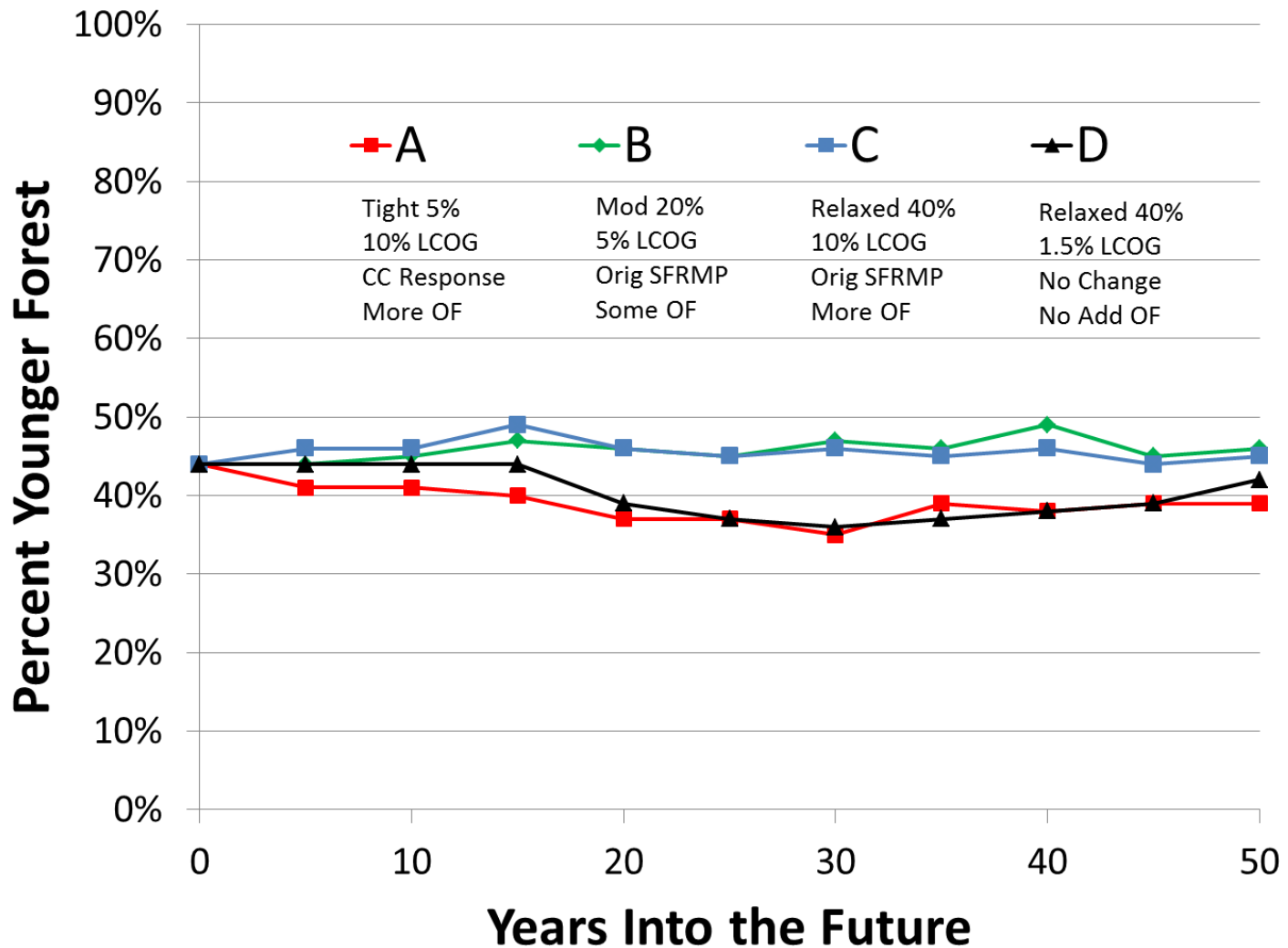

Upland Deciduous Cover Types
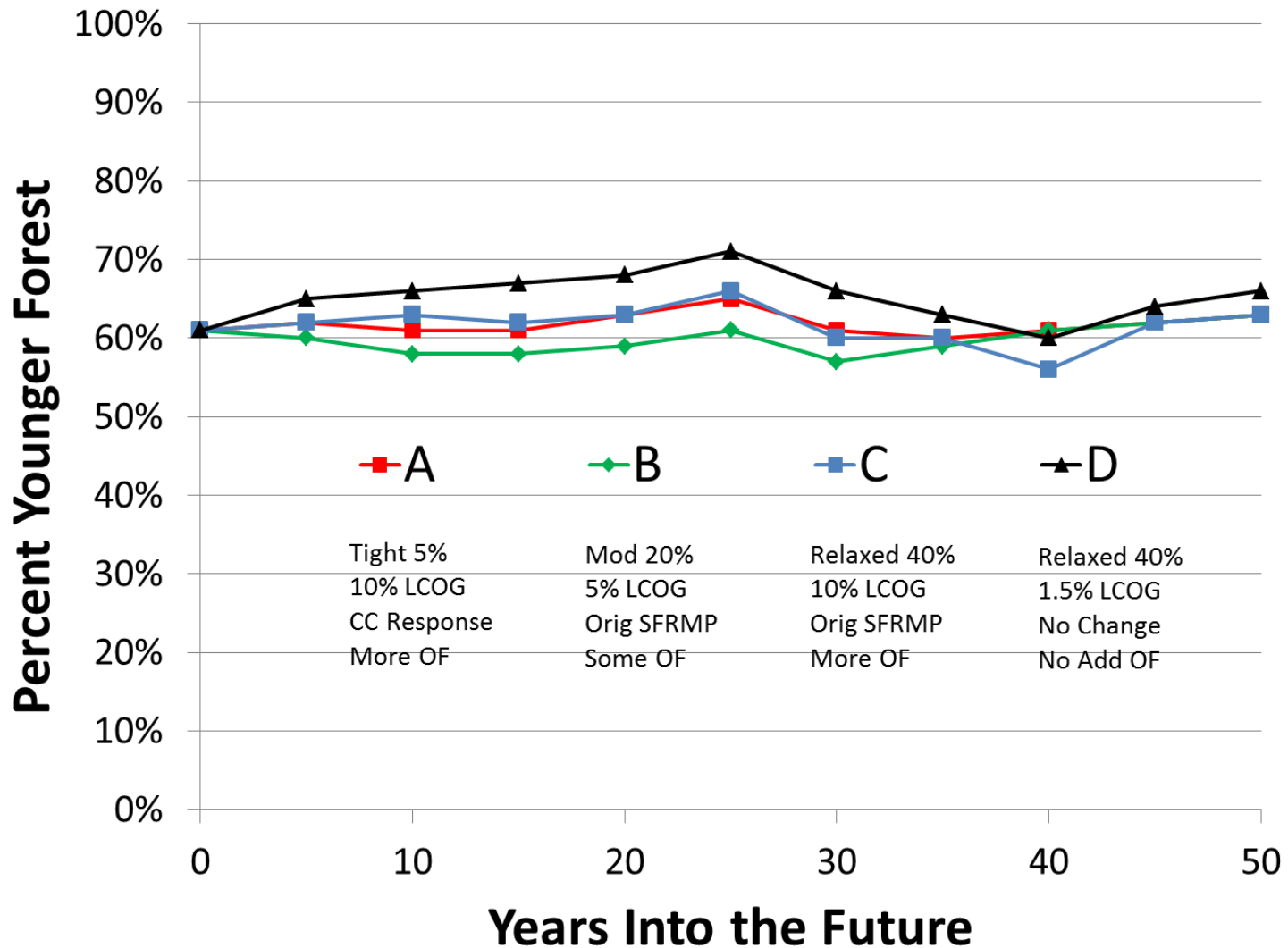### (NSU all Subsections: 13% restricted acres, range 1-20%)

Scenario Model Outcomes for NSU:
Projected Older Forest % for Upland Hardwoods

Scenario Model Outcomes for NSU: Projected Young Forest % for Upland Conifers

Scenario Model Outcomes for NSU: Projected Young Forest % for Upland Hardwoods

SFRMP Contact

Minnesota DNR thanks you for your time and interest in the SFRMP process!

For questions on the NSU SFRMP and modeling scenarios contact:

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