

# Do the Birds and Bees Like NRV

**Biodiversity**

**Using**

**Range**

**Natural**

**Disturbance**

**Strategically = BURNDS 1 Project**

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# Outline

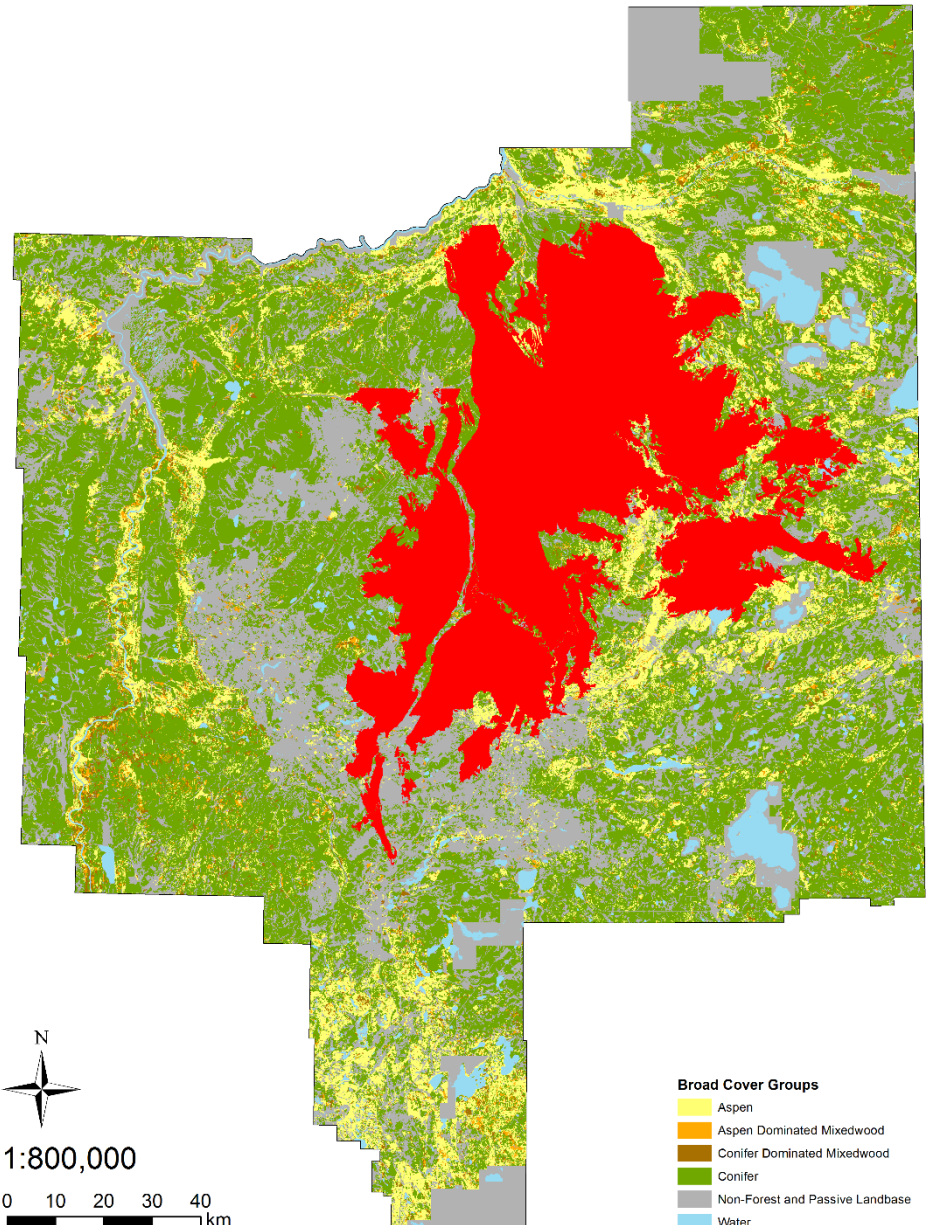
- The study area
- Approach
- Key findings
- Discussion



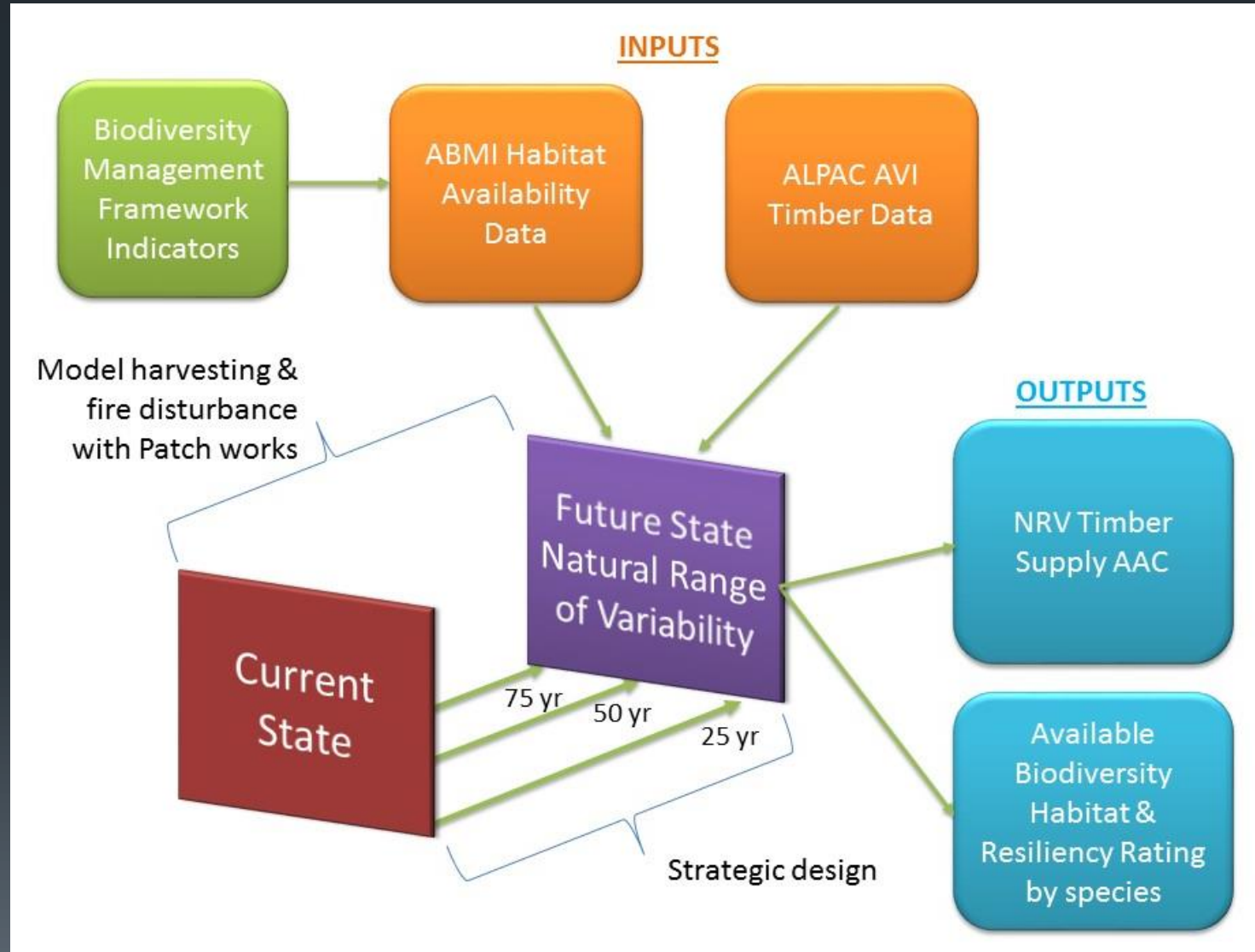
# Land base

South half of LARP  
Half of the ALPAC FMA

Land Base	Hectares	%
Active Forest	950,111	30%
Passive Forest	1,448,623	46%
Other	774,199	24%
<b>Gross Area</b>	<b>3,172,933</b>	<b>100%</b>



# BURNDS concept



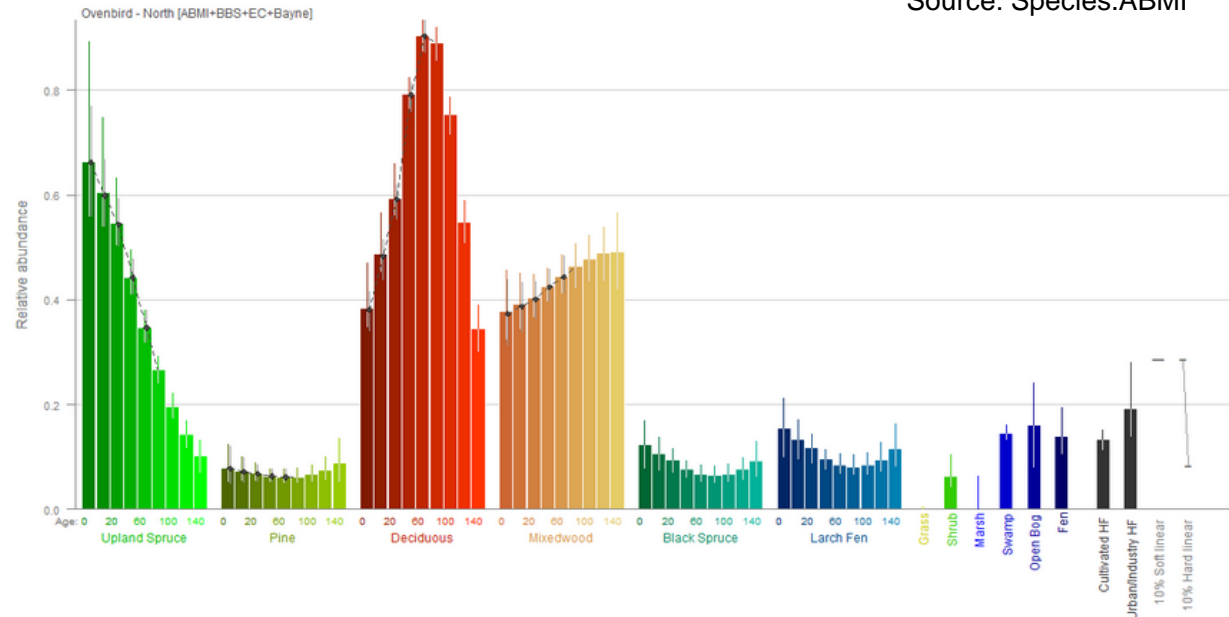
# Biodiversity indicators

- AlderFlycatcher
- BlackAndWhiteWarbler
- Ovenbird
- CanadaWarbler
- HermitThrush
- BarredOwl
- BlackthroatedGreenWarbler
- CapeMayWarbler
- WilsonsWarbler
- WesternTanager
- BrownCreeper
- PalmWarbler
- MartenFisher
- Moose

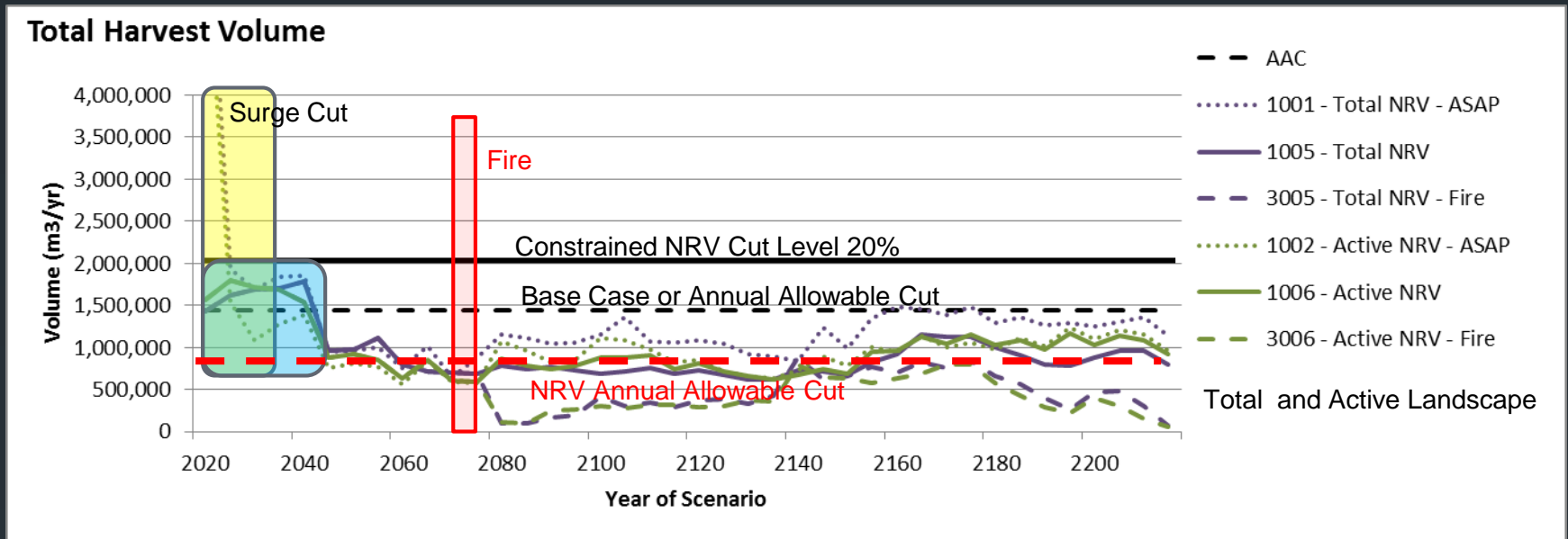
old	cape may warbler	brown creeper palm warbler	barred owl BTG warbler	ovenbird canada warbler
mid		western tanager		
young		wilsons warbler	hermit thrush	alder flycatcher b & w warbler
	Pine	spruce	mxdwd	aspen

## Species–habitat associations in the Boreal and Foothills regions of Alberta

Source: Species.ABMI

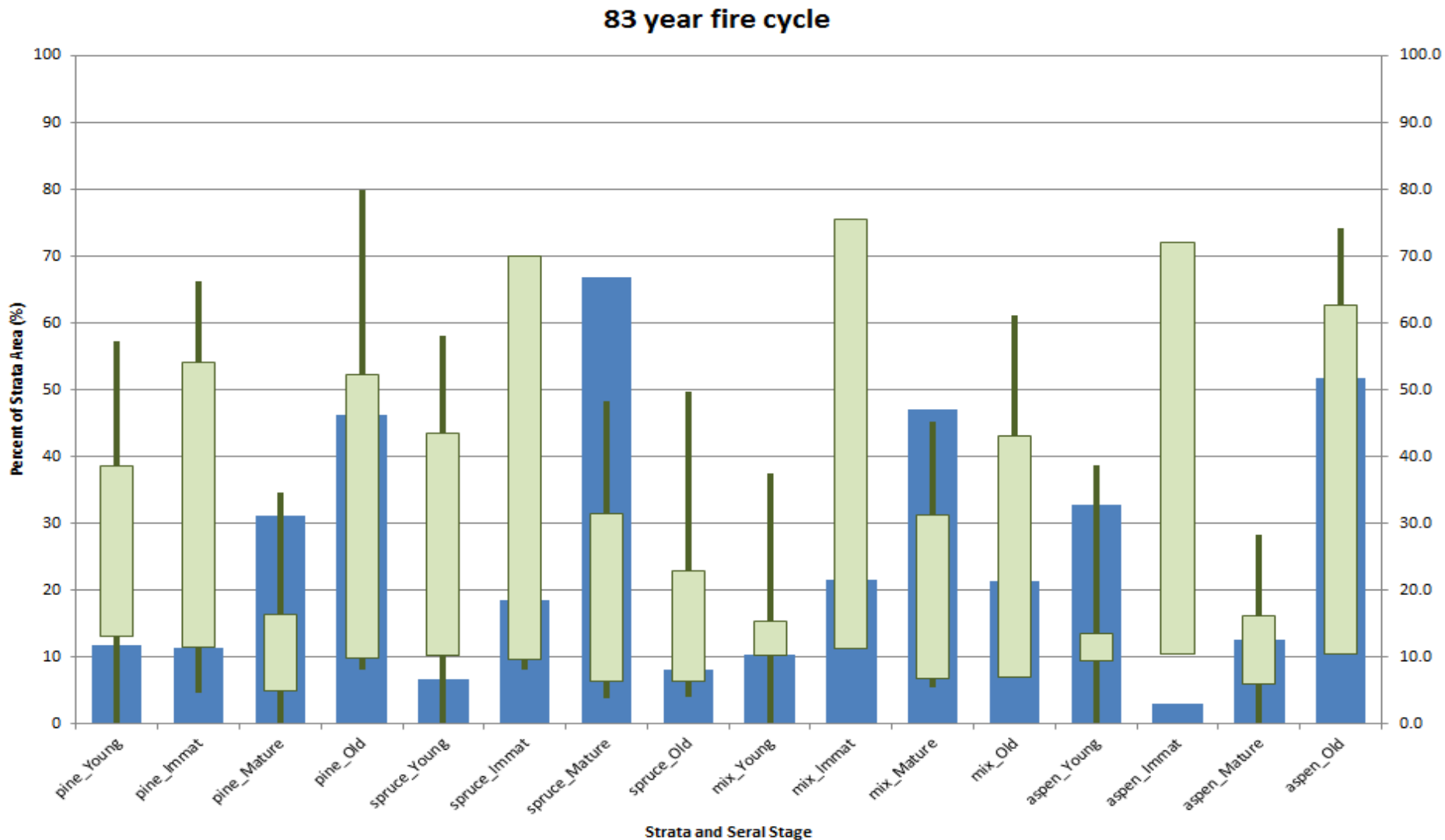


# Key Timber Supply Findings



- Unconstrained NRV scenarios surged cut landscape in 1<sup>st</sup> reporting period (10 Year s) due to the current state of this over mature forest (Yellow)
- Constrained NRV harvest to not harvest more than 20% of base case (Light Blue 20 years)
- NRV AAC was on average ~800,000 m<sup>3</sup> per year, depending upon the scenario - About 60% of base case approved sustained yield timber supply

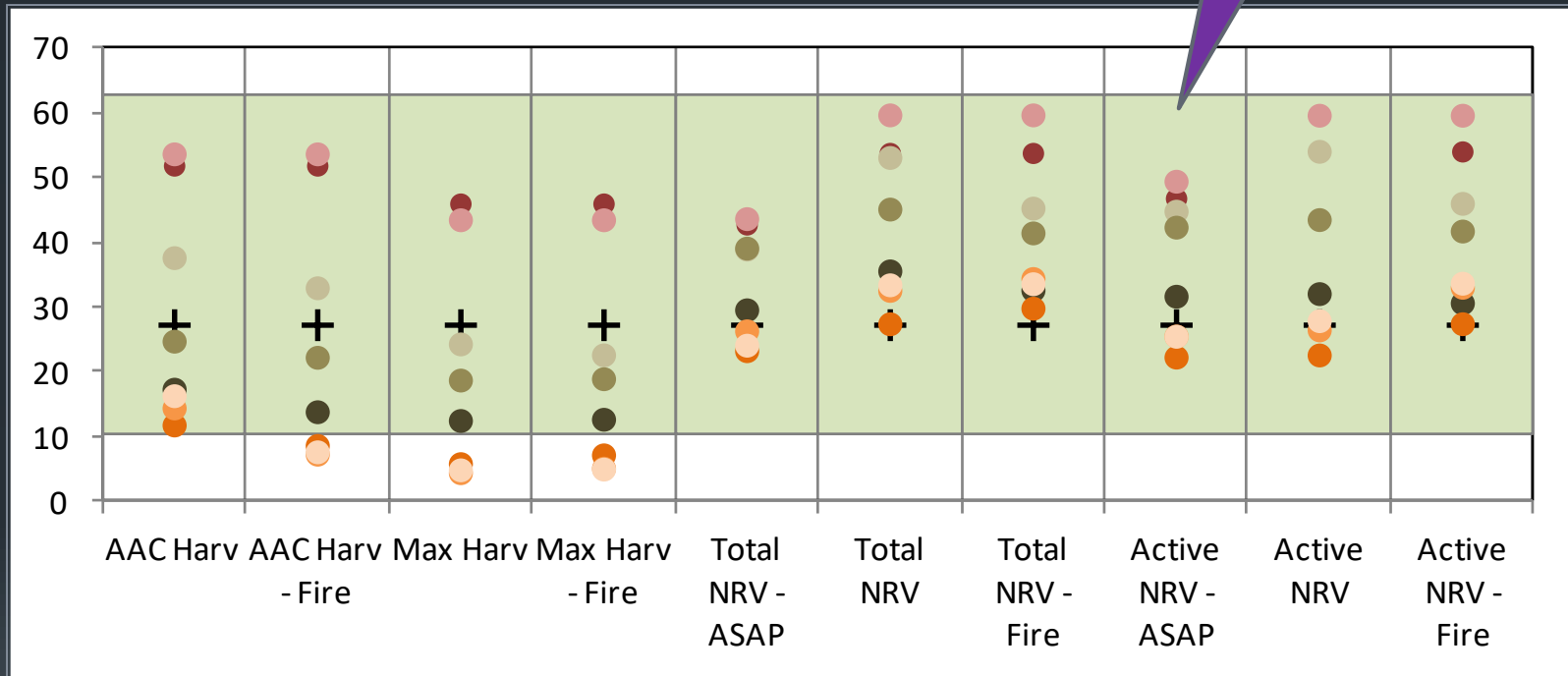
# Key NRV findings - What is a NRV forest?



# What is a NRV forest?

Deciduous Overmature Seral Stage

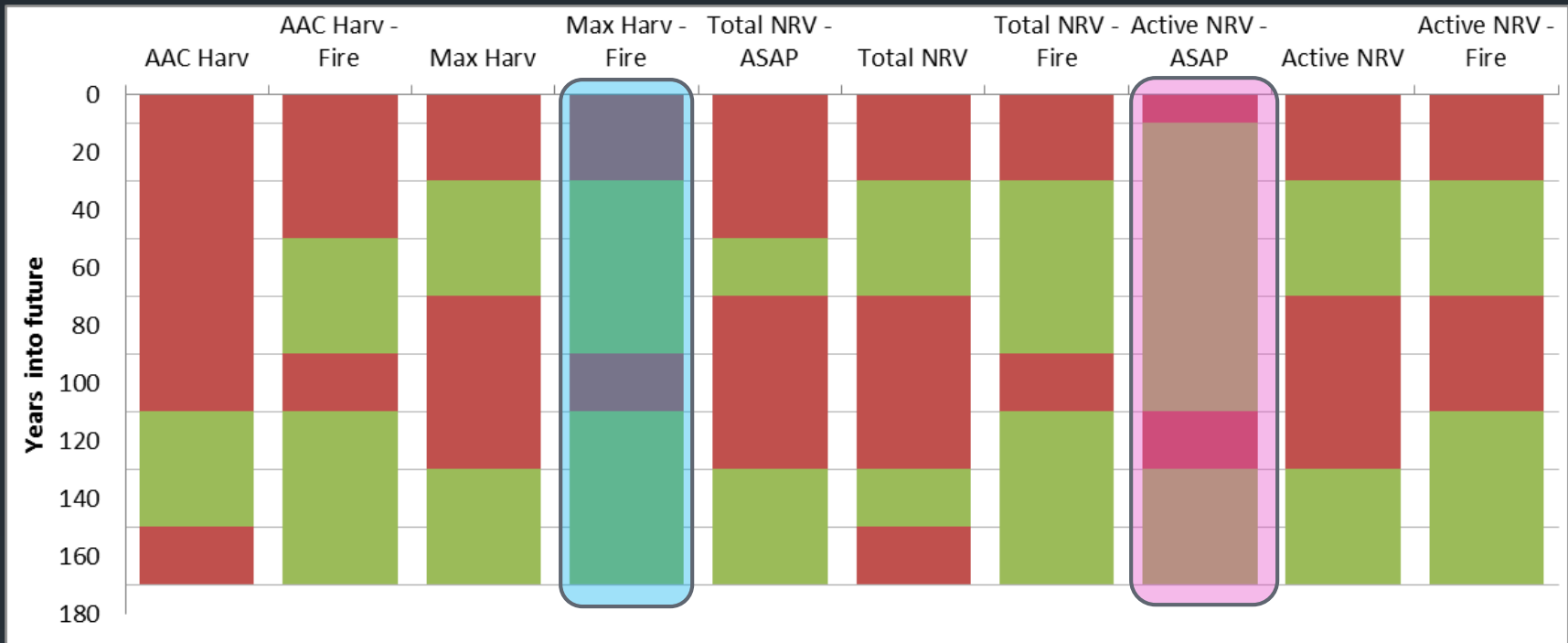
NRV  
Range



+ Current    ● Year 20    ● Year 40    ● Year 60    ● Year 80    ● Year 100    ● Year 120    ● Year 140    ● Year 160

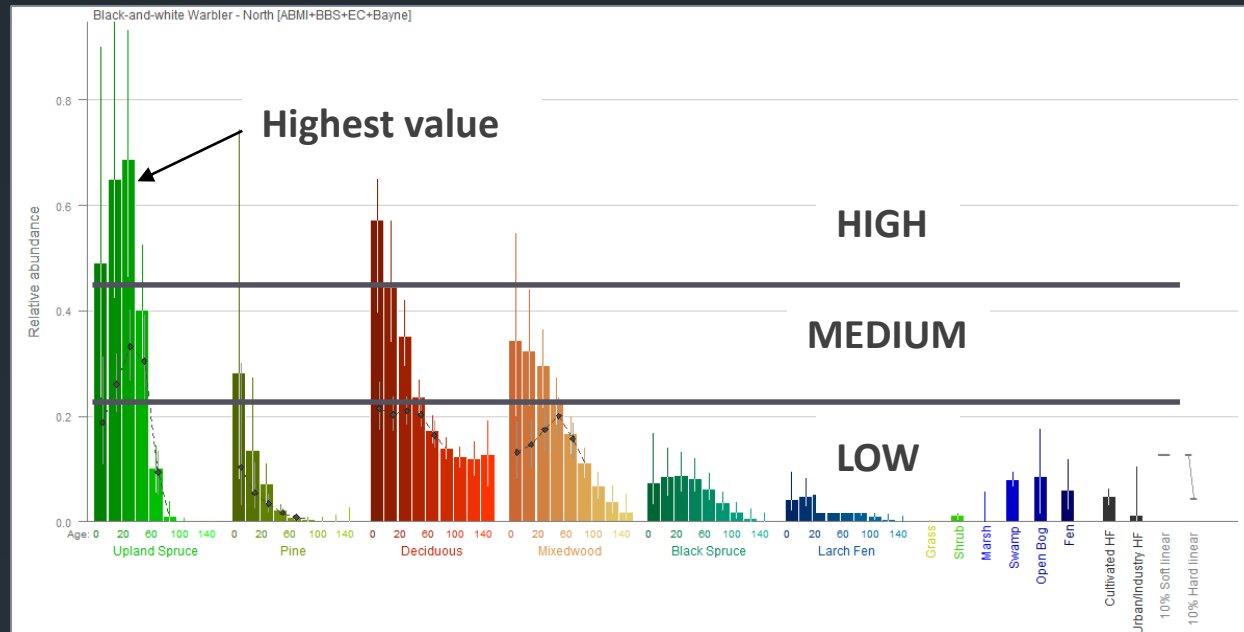


# NRV @55% by scenario



- Active NRV – ASAP } maximum NRV conditions over time on Active Landscape
- Max Harv Fire – (20%<sup>^</sup> over base case) maximum disturbances and had the forest in an NRV state the greatest amount of time on the Total Landscape (20 years to NRV)

# Key Biodiversity Findings



Black and White Warbler	Establishment	Immature	Mature	Over-mature
Deciduous	High <b>3</b>	Medium <b>2</b>	Low <b>1</b>	Low <b>1</b>
Mixed wood	Medium <b>2</b>	Medium <b>2</b>	Low <b>1</b>	Low <b>1</b>
Pine	Medium <b>2</b>	Low <b>1</b>	Low <b>1</b>	Low <b>1</b>
Upland Spruce	High <b>3</b>	Medium <b>2</b>	Low <b>1</b>	Low <b>1</b>
Black Spruce & Larch	Low <b>1</b>	Low <b>1</b>	Low <b>1</b>	Low <b>1</b>

1.16 for  
scenario  
1001

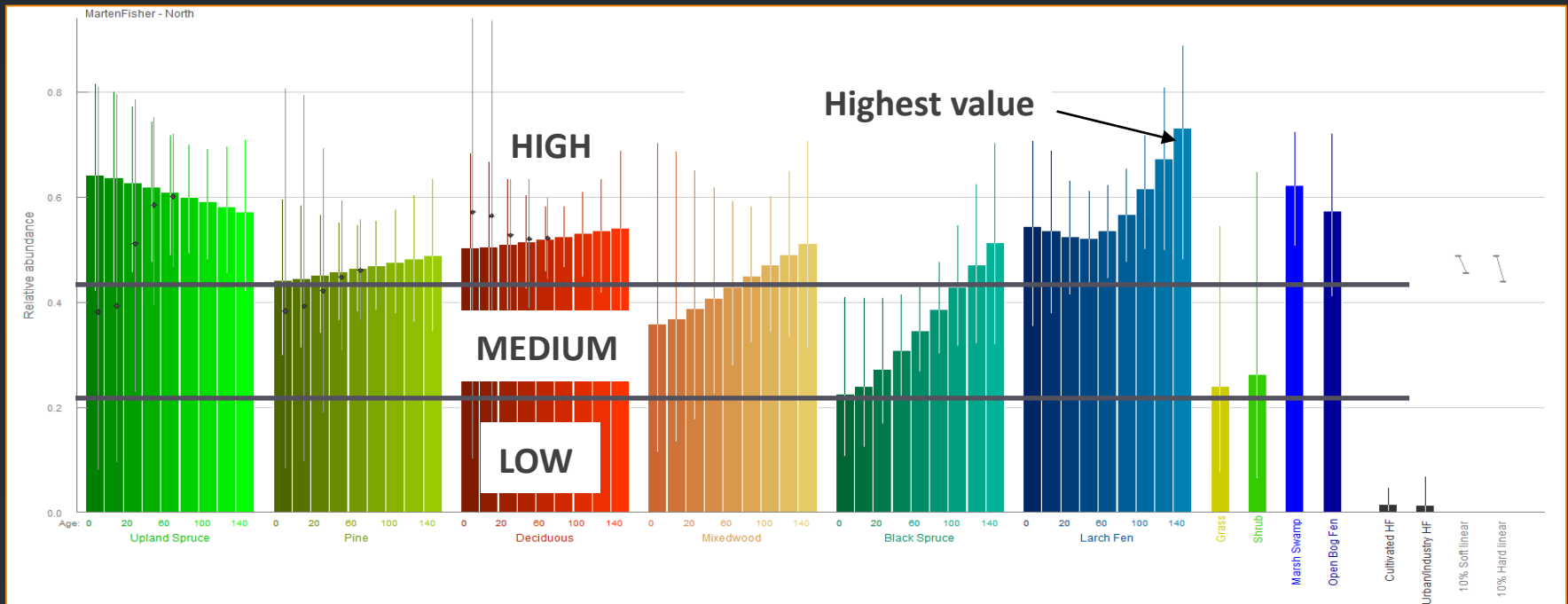
# Resiliency rating from highest to lowest

	1001	3003	3004	1005	3005	1003
	Habitat	Habitat	Habitat	Habitat	Habitat	Habitat
Species	Score	Score	Score	Score	Score	Score
Martin-Fisher	2.80	2.79	2.79	2.81	2.81	2.80
Wilsons Warbler	2.19	2.18	2.17	2.21	2.20	2.20
Moose	2.15	2.15	2.14	2.16	2.17	2.15
Palm Warbler	1.83	1.86	1.86	1.81	1.84	1.82
Barred Owl	1.69	1.74	1.77	1.48	1.66	1.68
Hermit Thrush	1.69	1.75	1.77	1.64	1.69	1.67
Alder Fly Catcher	1.48	1.52	1.54	1.44	1.48	1.46
Cape May Warbler	1.41	1.44	1.45	1.40	1.43	1.41
Oven Bird	1.35	1.35	1.36	1.33	1.32	1.35
Black Throated Green Warbler	1.22	1.21	1.18	1.27	1.28	1.22
Brown Creeper	1.22	1.19	1.18	1.27	1.28	1.21
Black-and-White Warbler	1.16	1.11	1.18	1.13	1.12	1.15
Western Tanager	1.15	1.15	1.13	1.19	1.19	1.16
Canada Warbler	1.08	1.06	1.04	1.11	1.11	1.07

Resiliency ratings = habitat availability rating by cover type & seral type

i.e. Canada Warbler listed in the BMF as a rare species

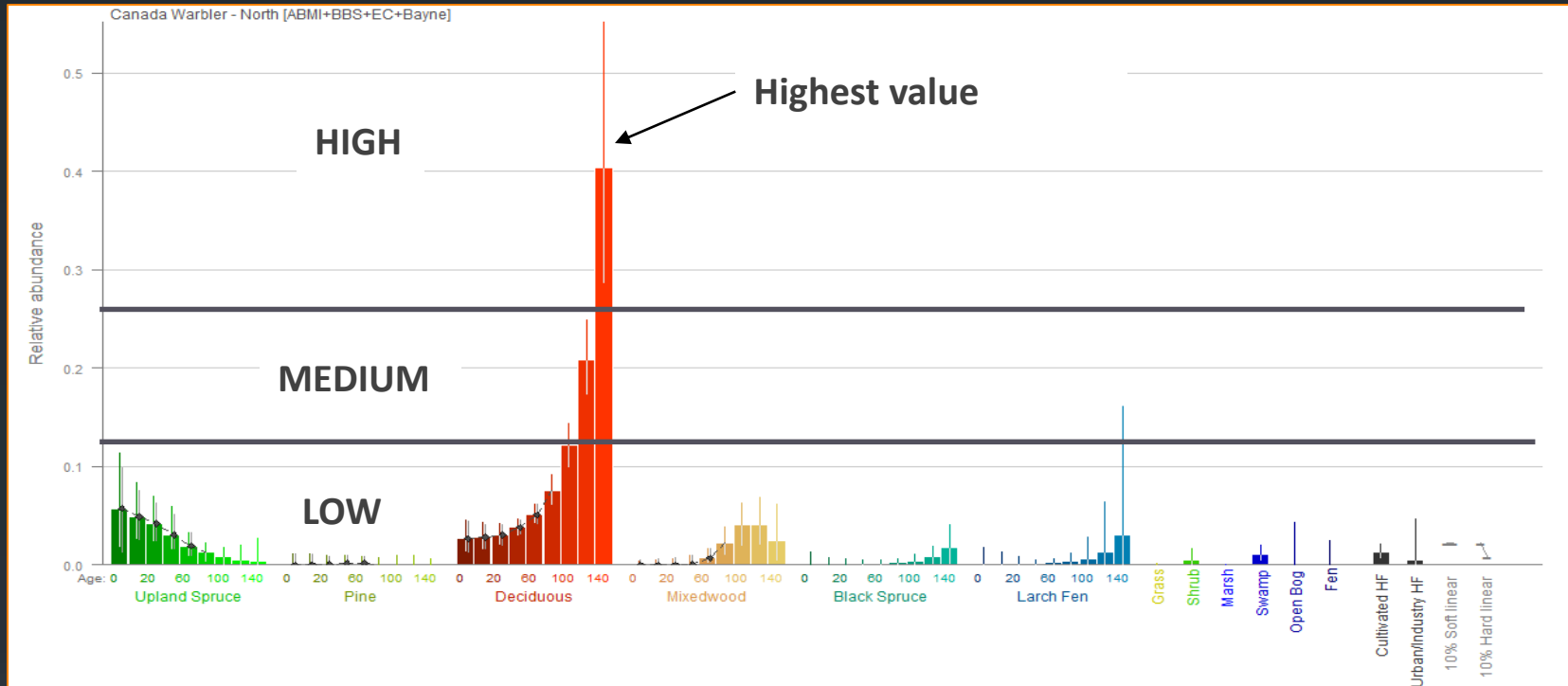
# High resiliency rating example



Martin	Establishment	Immature	Mature	Over-mature
Deciduous	High	High	High	High
Mixed wood	Medium	Medium	Medium	High
Pine	Medium	Medium	Medium	High
Upland Spruce	High	High	High	High
Black Spruce & Larch	High	High	High	High

2.80  
scenario  
1001

# Resiliency rating

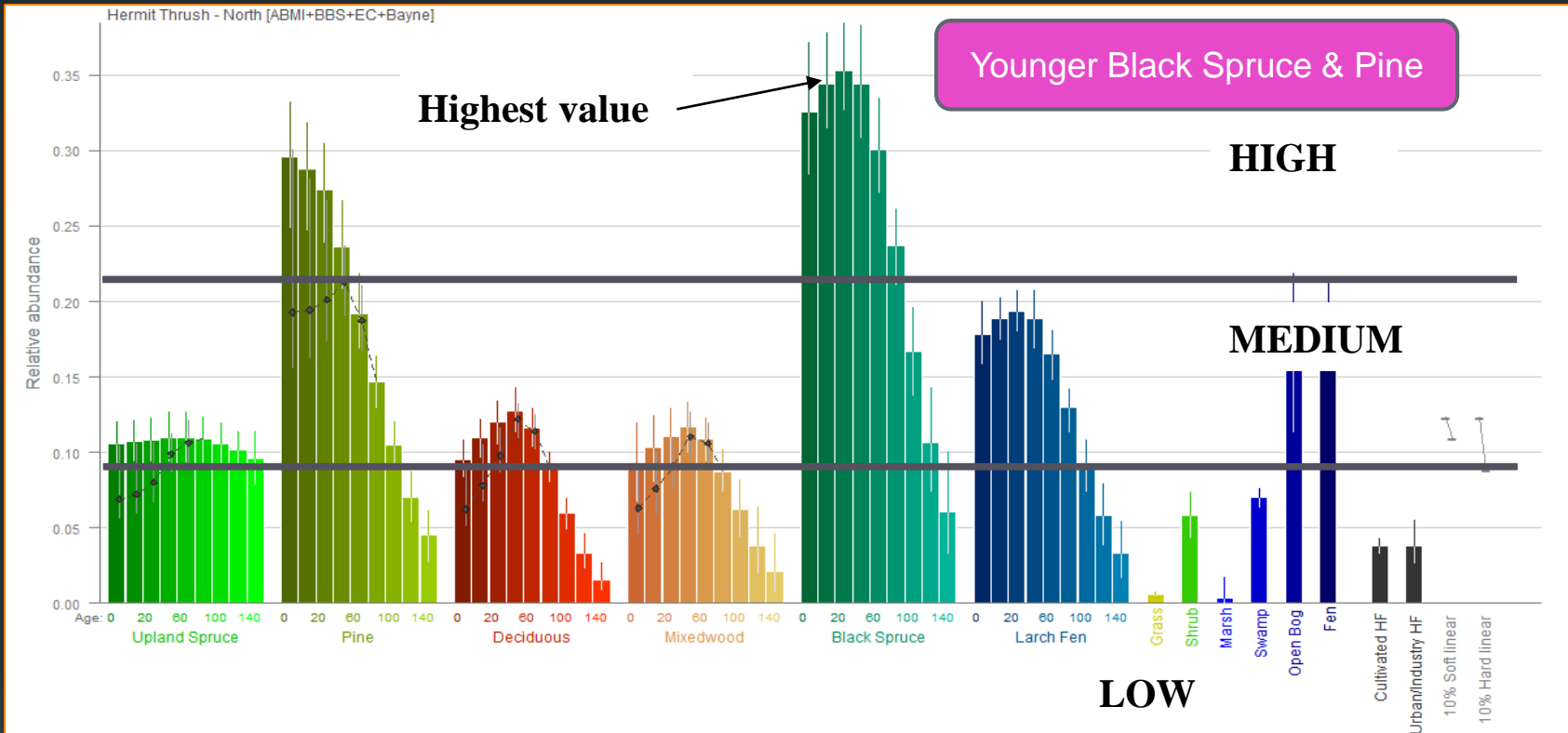


Canada Warbler	Establishment	Immature	Mature	Over-mature
Deciduous	Low	Low	Low	High
Mixed wood	Low	Low	Low	Low
Pine	Low	Low	Low	Low
Upland Spruce	Low	Low	Low	Low
Black Spruce & Larch	Low	Low	Low	Low

1.08  
scenario  
1001



# Hermit Thrush



Hermit Thrush	Establishment	Immature	Mature	Over-mature
Deciduous	Low 1	Medium 2	Low 1	Low 1
Mixed wood	Low 1	Medium 2	Low 1	Low 1
Pine	High 3	High 3	Medium 2	Low 1
Upland Spruce	Low 1	Low 1	Low 1	Low 1
Black Spruce & Larch	High 3	High 3	High 3	Low 1

1.69 for scenario 1001

# LEARND Calculator

## Landscape Evaluation Applied Range Natural Disturbance

Species	Seral Stage	Factor
Deciduous	Establishment	1.00
Deciduous	Immature	1.00
Deciduous	Mature	1.00
Deciduous	Overmature	1.00
Mixedwood	Establishment	1.00
Mixedwood	Immature	1.00
Mixedwood	Mature	1.00
Mixedwood	Overmature	1.00
Pine	Establishment	1.00
Pine	Immature	1.00
Pine	Mature	1.00
Pine	Overmature	1.00
White Spruce	Establishment	1.00
White Spruce	Immature	1.00
White Spruce	Mature	1.00
White Spruce	Overmature	1.00
Black Spruce Larch	Establishment	1.00
Black Spruce Larch	Immature	1.00
Black Spruce Larch	Mature	1.00
Black Spruce Larch	Overmature	1.00

Species	Seral Stage	Factor
Deciduous	Establishment	1.00
Deciduous	Immature	1.00
Deciduous	Mature	1.00
Deciduous	Overmature	1.00
Mixedwood	Establishment	1.00
Mixedwood	Immature	1.00
Mixedwood	Mature	1.00
Mixedwood	Overmature	1.00
Pine	Establishment	1.00
Pine	Immature	1.00
Pine	Mature	1.00
Pine	Overmature	0.70
White Spruce	Establishment	1.00
White Spruce	Immature	1.00
White Spruce	Mature	1.00
White Spruce	Overmature	1.00
Black Spruce Larch	Establishment	1.00
Black Spruce Larch	Immature	1.00
Black Spruce Larch	Mature	1.00
Black Spruce Larch	Overmature	0.70

By reducing amount of a seral stage, calculator automatically adjusts other seral stages for strata, which in turn affects all the other bird/mammal species too



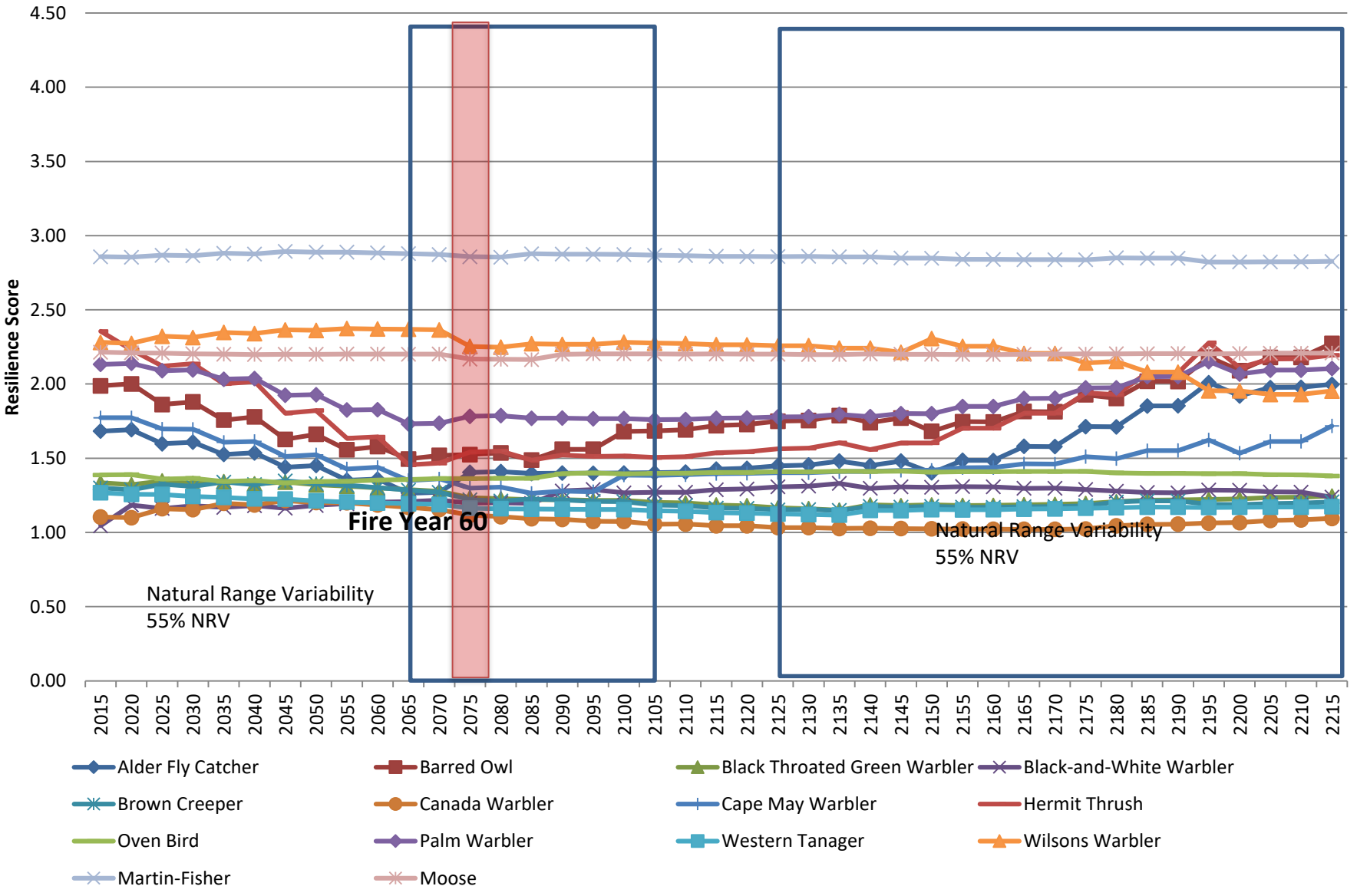
# LEARND Calculator Outputs

## Calculator Outputs by Species and Scenario

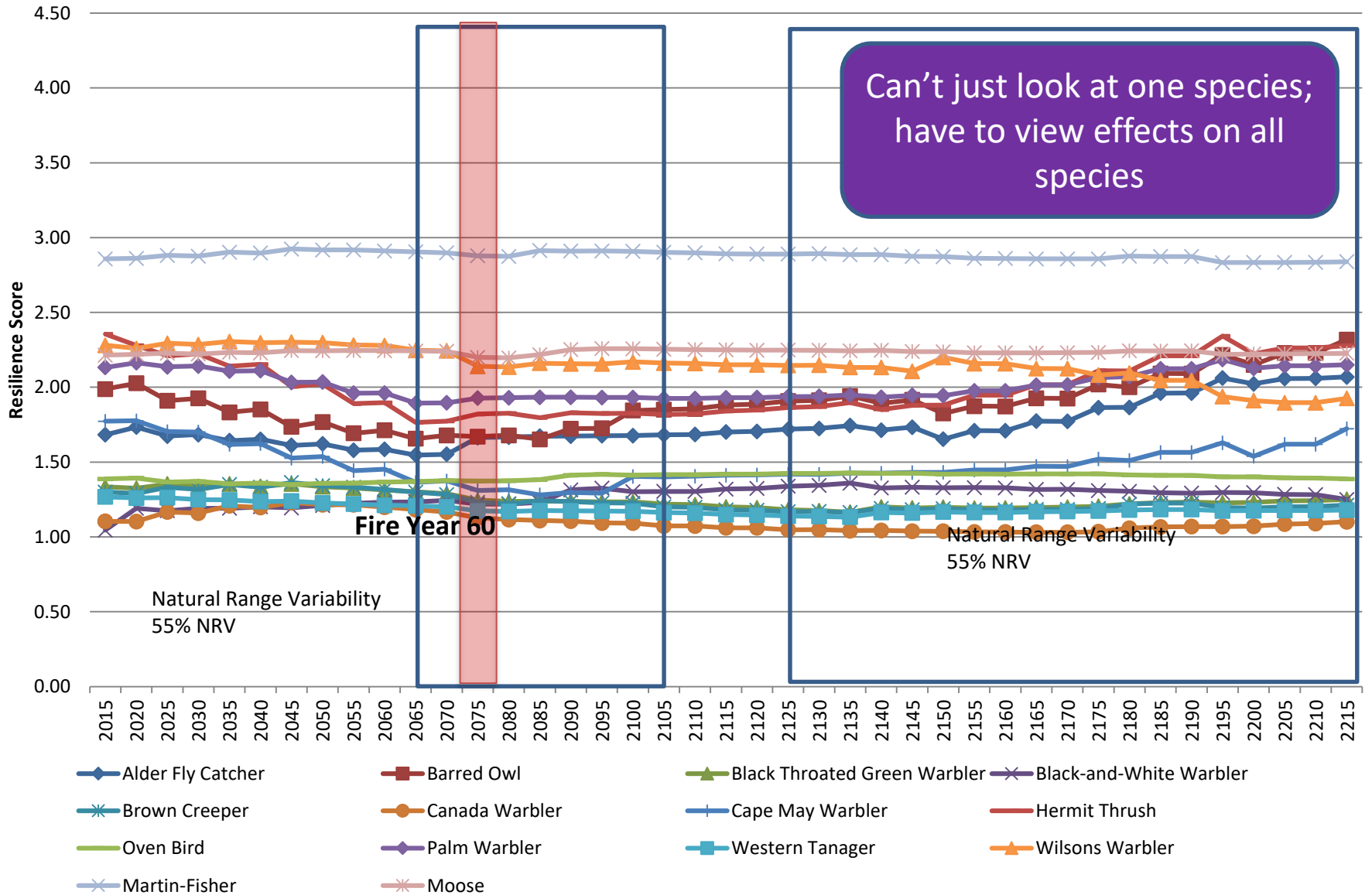
	Resiliency Results for Calculator											
	1001		3003		3004		1005		3005		1003	
	Habitat	Average	Habitat	Average	Habitat	Average	Habitat	Average	Habitat	Average	Habitat	Average
Species	Score	Percent	Score	Percent	Score	Percent	Score	Percent	Score	Percent	Score	Percent
Alder Fly Catcher	1.40	-14.67	1.52	-7.62	1.54	-6.41	1.44	-12.25	1.48	-9.87	1.46	-10.95
Barred Owl	1.66	-14.67	1.74	-10.11	1.77	-8.70	1.63	-12.97	1.66	-14.31	1.68	-13.01
Black Throated Green Warbler	1.23	-5.40	1.21	-7.36	1.18	-9.67	1.27	-2.72	1.28	-1.89	1.22	-6.01
Black-and-White Warbler	1.29	22.39	1.22	19.43	1.18	12.47	1.13	7.06	1.12	6.00	1.15	8.81
Brown Creeper	1.23	-2.84	1.19	-5.86	1.18	-25.42	1.27	-0.27	1.28	0.46	1.21	-4.35
Canada Warbler	1.09	1.35	1.06	-1.47	1.04	-3.29	1.11	2.72	1.11	3.10	1.07	-0.69
Cape May Warbler	1.48	14.41	1.44	16.61	1.45	16.42	1.40	18.94	1.43	17.19	1.41	18.12
Hermit Thrush	1.61	-30.08	1.75	-24.01	1.77	-23.14	1.64	-28.70	1.69	-25.94	1.67	-26.81
Oven Bird	1.47	8.59	1.35	-0.11	1.36	0.51	1.33	-1.96	1.32	-2.23	1.35	-0.48
Palm Warbler	1.75	-15.86	1.86	-10.78	1.86	-10.57	1.81	-12.81	1.84	-11.27	1.82	-12.25
Western Tanager	1.16	-5.83	1.15	-7.29	1.13	-8.91	1.19	-4.19	1.19	-3.49	1.16	-6.17
Wilson's Warbler	2.21	-0.71	2.18	-2.29	2.17	-2.58	2.21	-0.84	2.20	-1.06	2.20	-1.22
Martin-Fisher	2.84	1.63	2.79	-0.01	2.79	-0.18	2.81	0.66	2.81	0.77	2.80	0.18
Moose	2.23	3.34	2.15	-0.63	2.14	-0.98	2.16	0.13	2.17	0.16	2.15	-0.37
	1.62	-4.80	1.61	-5.34	1.61	-7.38	1.60	-6.08	1.61	-5.48	1.60	-6.53

Changing the amount of available habitat for one species can negatively affect a number of other species.

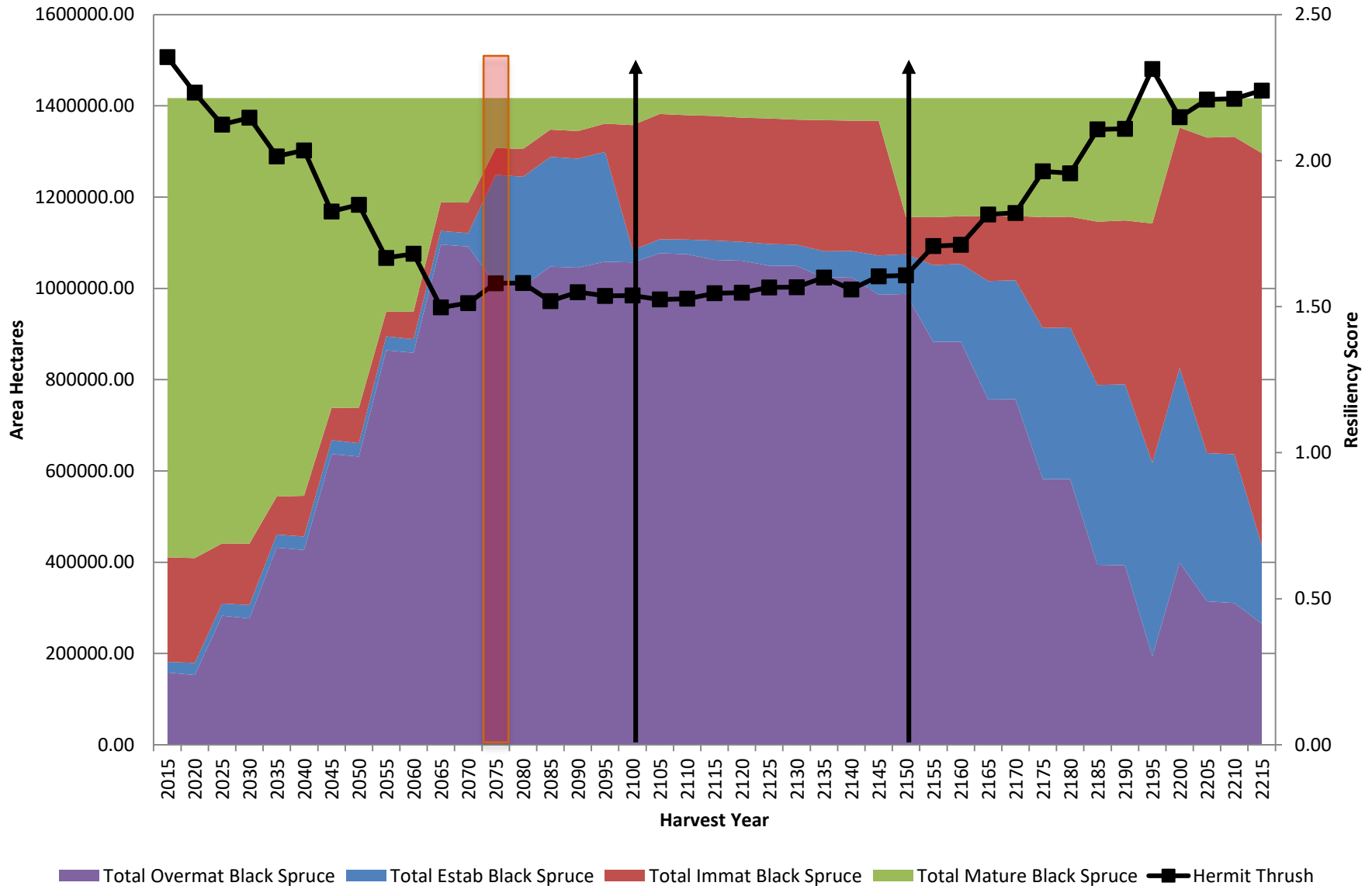
# Scenario 3003 AAC Harvest Fire on Total Forest Landscape Resilience Scores Weighted by Covertype and Seral Stage



# Scenario 3003 AAC Harvest Fire on Total Forest Landscape Resilience Scores Weighted by Covertypes and Seral Stage



# Scenario 3004 Max Harvest with Fire at 60 Years on the Total Forest Landbase Seral Stage Distribution for Black Spruce



# Conclusion

Do the birds and the bees like NRV?



I am thinking that they do

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EBFM focuses on levels of biological organization which encompass the essential structure, processes, functions and interactions among organisms and their environment.

Biodiversity Management Framework

Long term ecosystem health and resiliency are sustained with consideration of Natural Disturbance Patterns and Processes.