Highway 40 North Demonstration Area:
An FMF Natural Disturbance Program Project

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Bandaloop Landscape-Ecosystem Services

Wildfire Prevention Group Meeting
Jan. 11, 2005, Hinton

foothills
MODEL FOREST
research growing into practice.

NDP Program Partners

- **Weldwood of Canada, Hinton Div.**
- **Jasper National Park**
- **Alberta Sustainable Resource Development**
- **Alberta Newsprint Co.**

The FMF Natural Disturbance Program: *Why?*

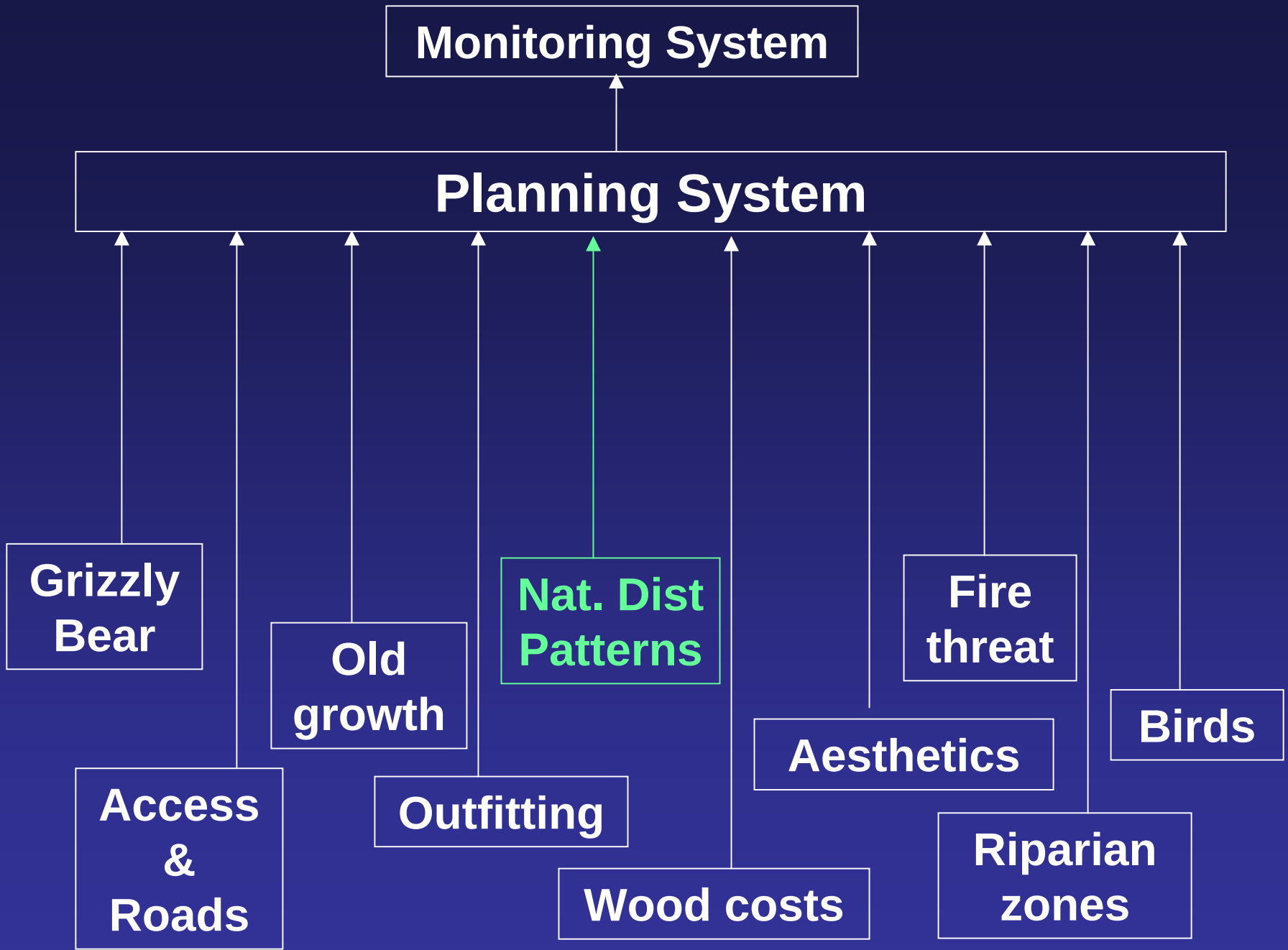
A common desire among partners to *maintain biodiversity* by adopting a strategy of emulating natural, historical patterns of disturbance.

= defining some "coarse" filters for decision-making.

Two Mgmt Strategies for Maintaining Biodiversity:

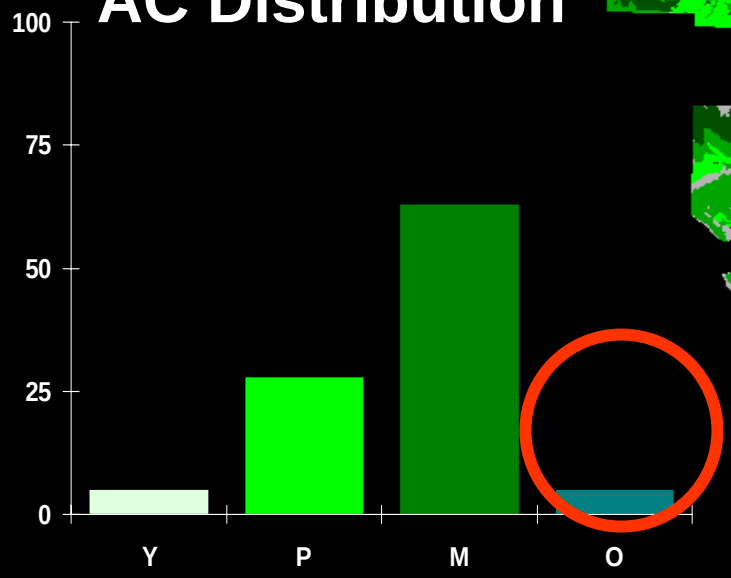
Option 1 (specific or "fine"): What are the requirements to maintain each species or value on the landscape?

Option 2 (general or "coarse"): What patterns historically maintained natural levels of all species and values?


Monitoring System
Planning System
Grizzly Bear
Access & Roads
Old growth
Outfitting
Nat. Dist Patterns
Wood costs
Aesthetics
Fire threat
Riparian zones
Birds

What we have learned about “coarse filters” so far suggests a tremendous potential for something more.

Question 1: What is an Ecologically-Defendable Old Growth Target?



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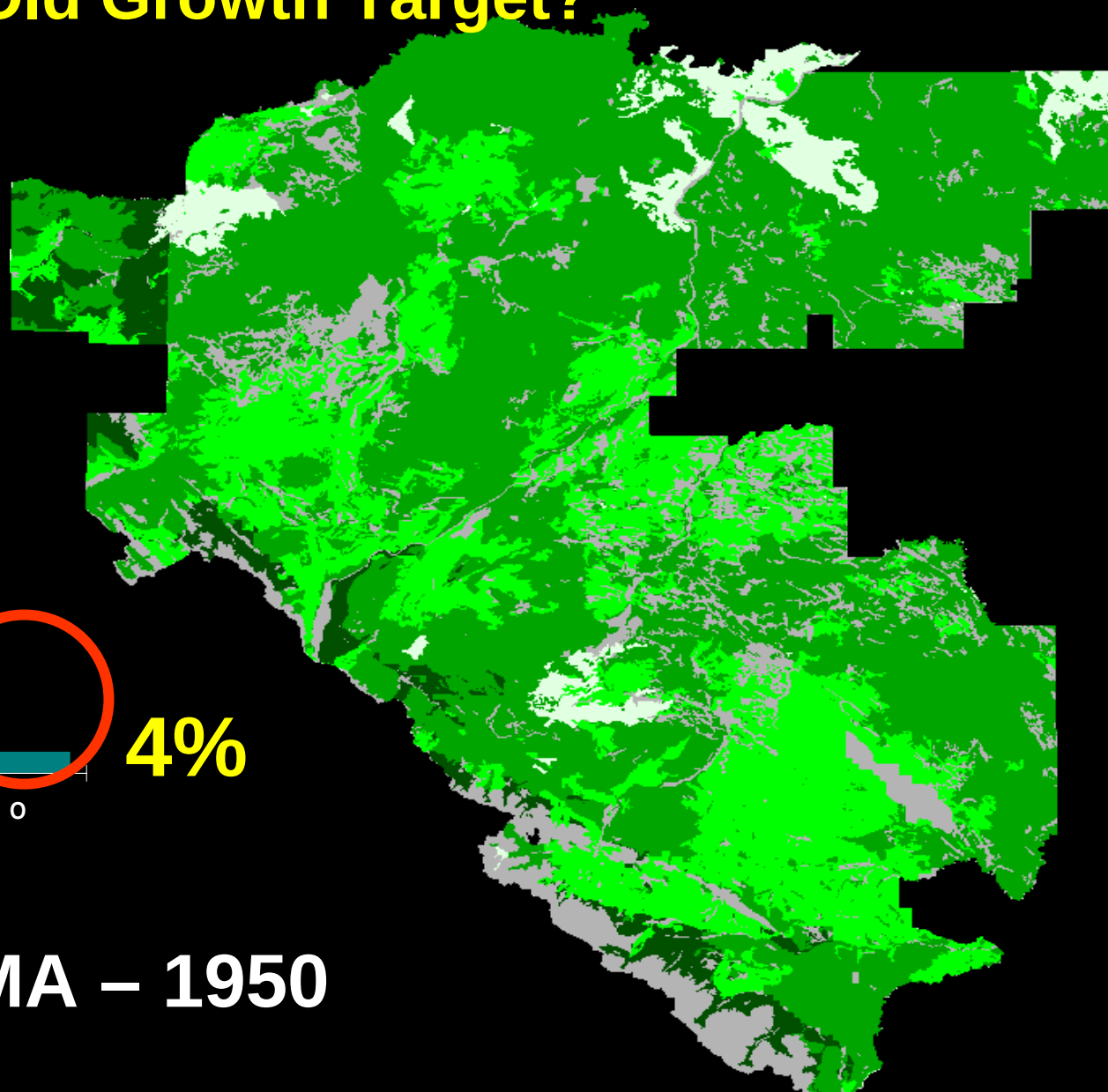
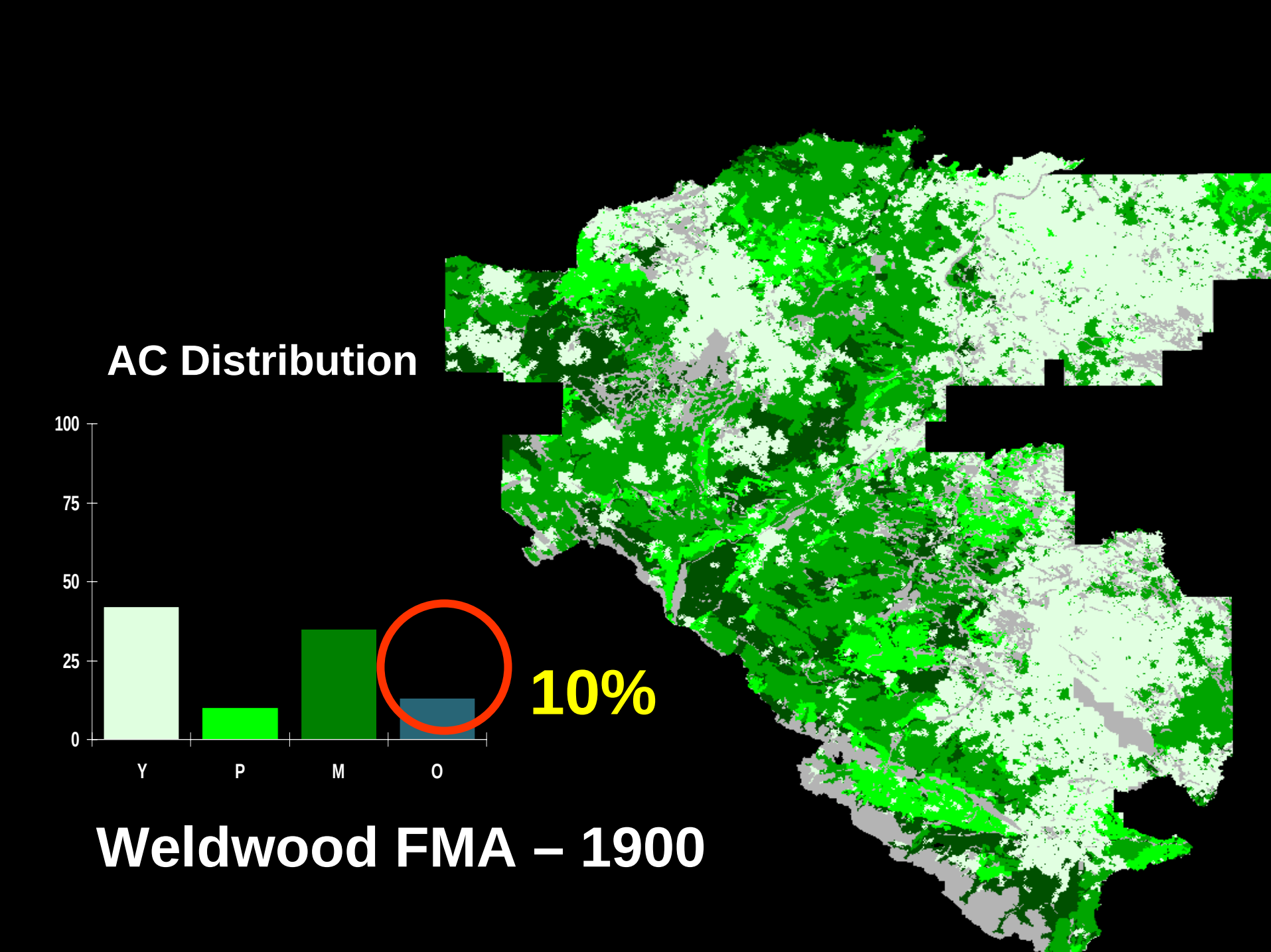


Weldwood FMA – 1950


AC Distribution
100
75
50
25
0
Y
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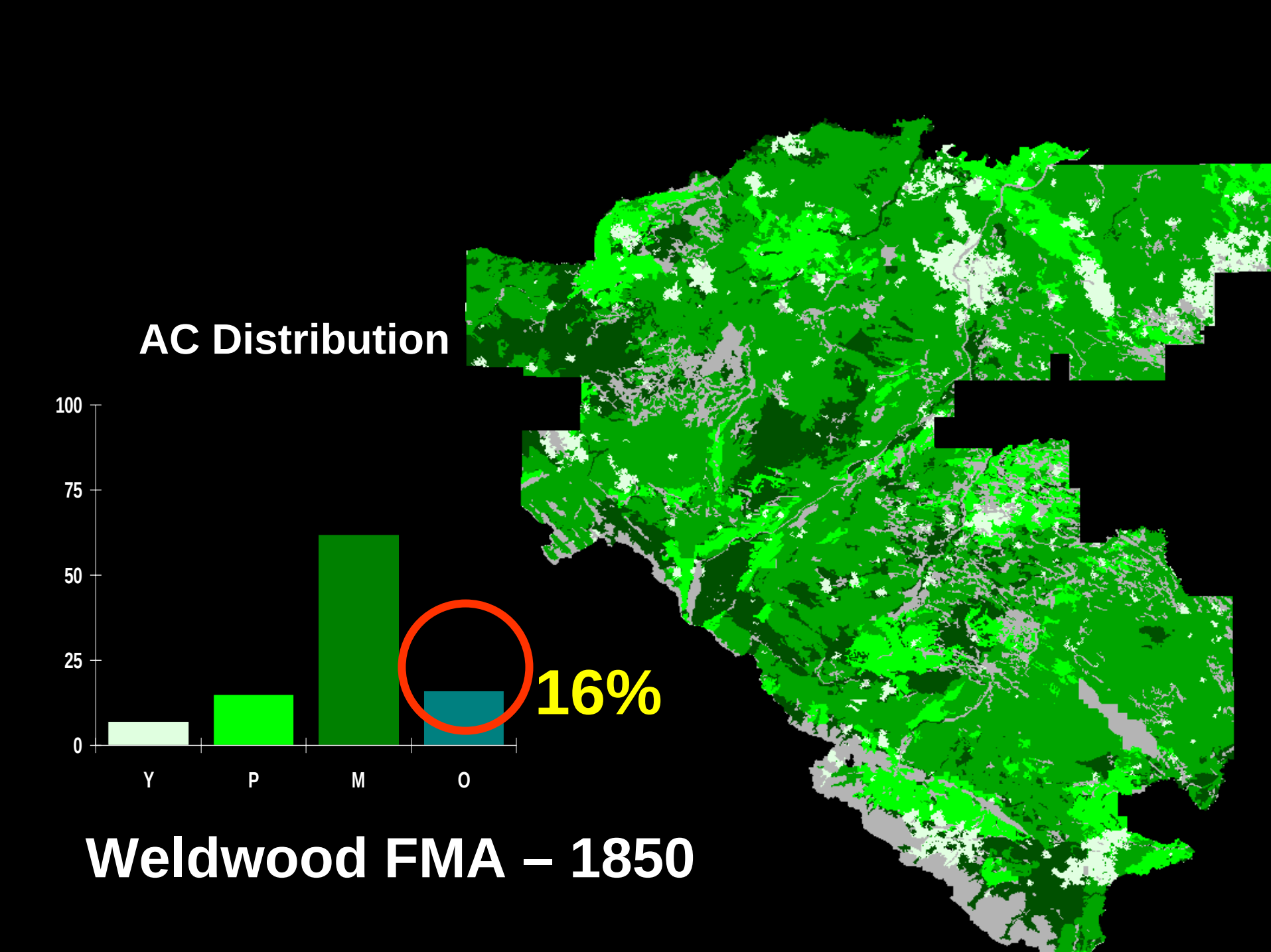
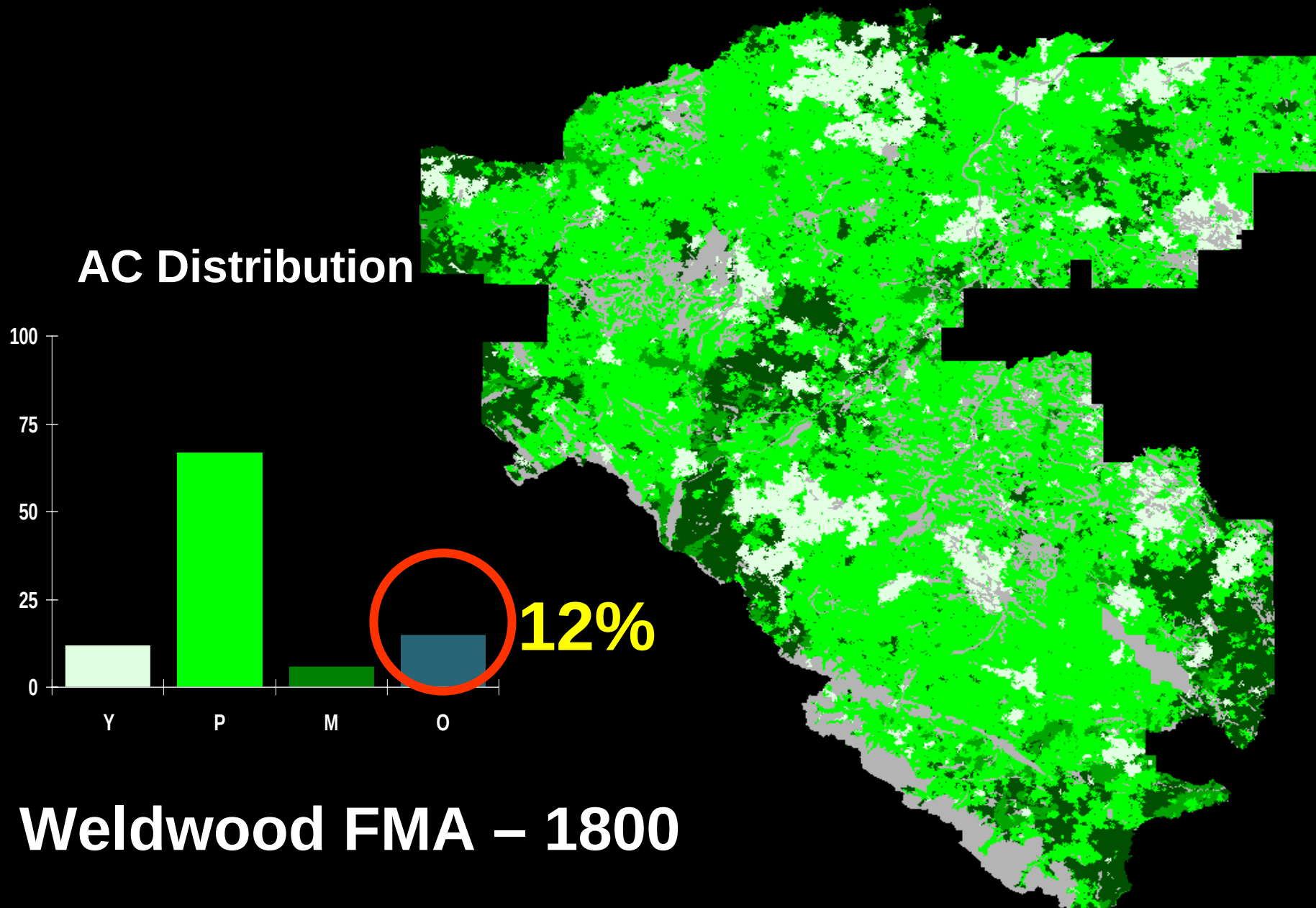
O
10%
Weldwood FMA – 1900


AC Distribution
100
75
50
25
0
Y
P
M
O
16%
Weldwood FMA – 1850



Weldwood FMA – 1800

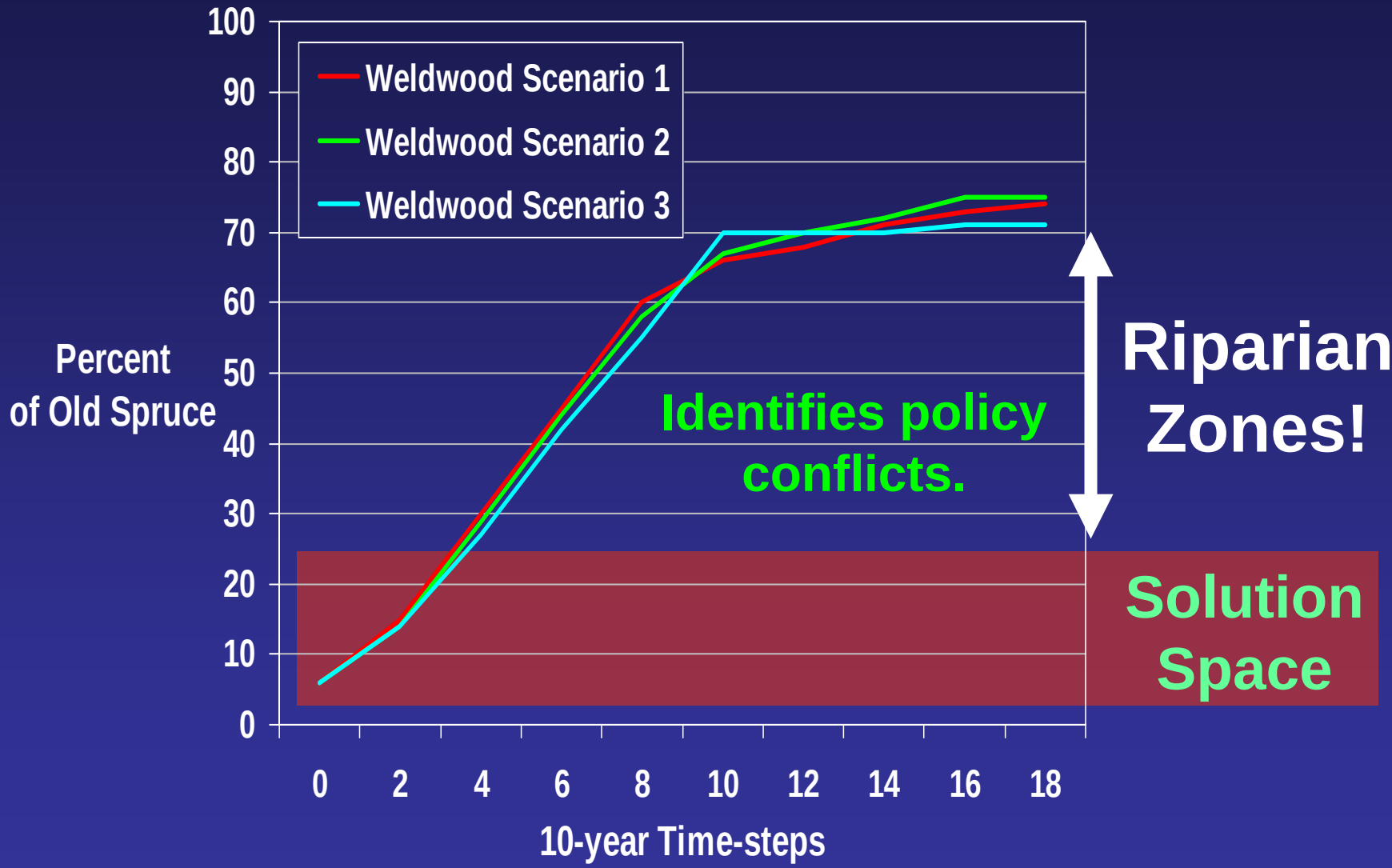
Old Forest on 500,000 ha Upper Foothills Landscapes.

	Pct. Forest > 200 yrs.	Occurred
	0%	Never
4% in 1950 →	>0-10%	62% of the time
	11-20%	19% of the time
	21-30%	9% of the time
24% in 1998 →	31-40%	6% of the time
	41-100%	6% of the time

There is no single "best" amount of old forest from an ecological point of view.

Using Natural Ranges for Long-Term Planning

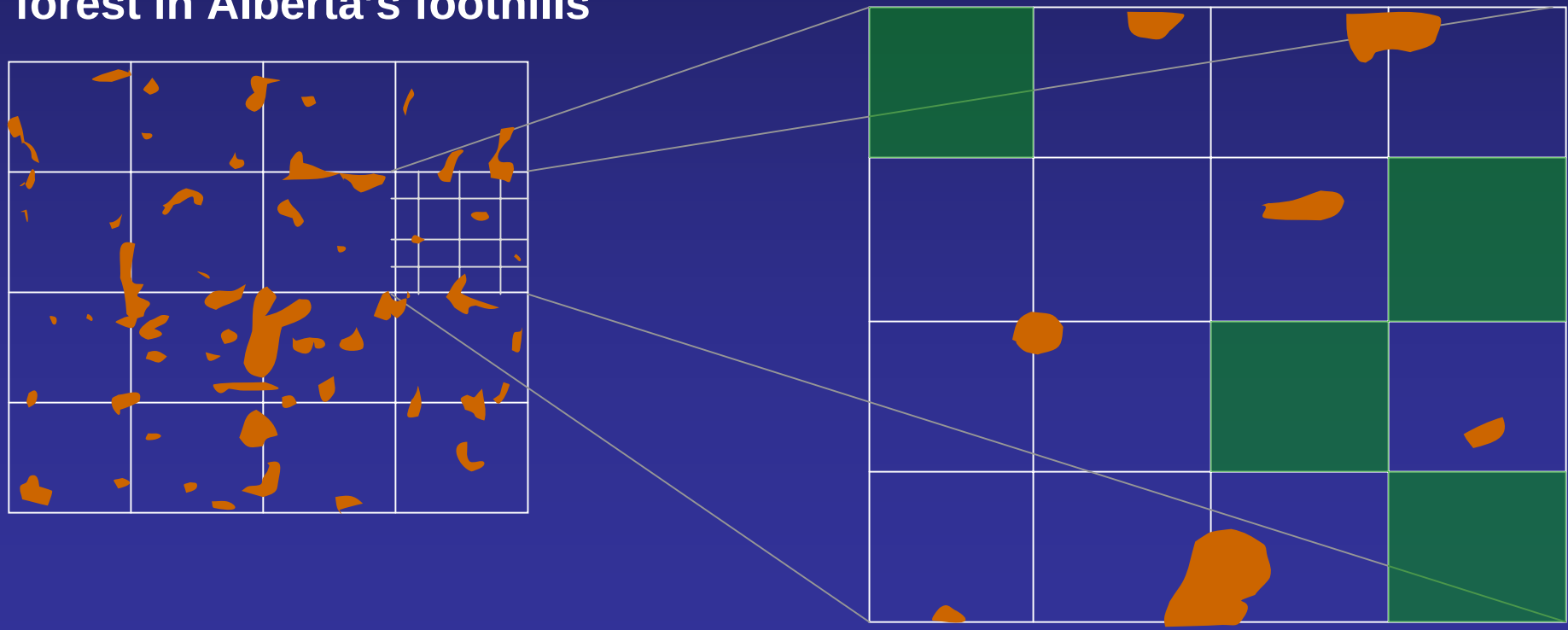
Using Natural Ranges for Long-Term Planning



What is the Right Scale for Managing Old Forest?

500,000 ha landscapes never run out of “old” forest in Alberta’s foothills

30,000 ha landscapes run out of “old” forest 16% of the time in Alberta’s foothills



Original Question:

- An ecologically defendable old growth target.

Answers:

-Ecologically defendable answers = ranges.

- A flexible *"solution space"* that allows for fire, market & planning risks & uncertainties.

- Scale is important!

- Indication that some existing policies are in conflict.

- Measurable, meaningful indicators + a baseline (LLI)

Question 2: What is an Ecologically-Defendable Way of Leaving Residual Islands?

Island Remnant Mortality

Of 5,117 Islands in our Database:

- **10-30% survived the fire intact.**
- **50-75%% were partially affected by the fire.**
- **5-20% were heavily affected by the fire.**

Island Remnant Sizes

5,117 Islands in the entire sample dataset

4,225 islands	***<1 ha (83%)***
466 islands	**1-2 ha**
350 islands	**2-10 ha**
67 islands	**10-100 ha**
4 islands	**> 100 ha**

Island Remnant Types

"Island"

"Corridor"

"Peninsula"

"Bay"

"*Islands*" account for 5-20% of fires.

"*Residuals*" account for 10-50% of fires.

Original Question:

- How to leave island remnants.

Answers:

- A better question (residuals vs islands)

- Ecologically defendable residual ranges.

- PLUS a lot more “patterns” than we imagined (sizes, types, spatial preference…)

- Another new dimension to “old growth”.

Disturbance frequency

Seral-stage percentages

Old growth spatio-temporal tendencies

Disturbance types / severity

Disturbance event sizes

Patch size and shape distribution

Event mosaics

Area of island remnants

Numbers of island remnants

Island remnant locations

Dead & live standing individuals

Mineral soil exposure

Biomass loads

Soil nutrients

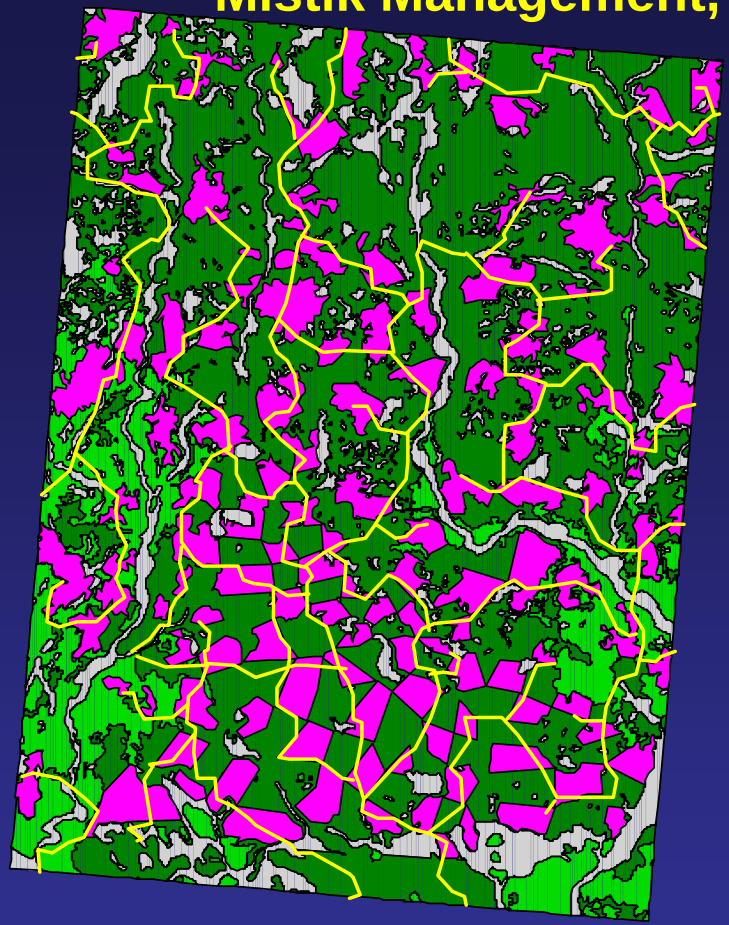
...and there are LOTS of natural patterns!

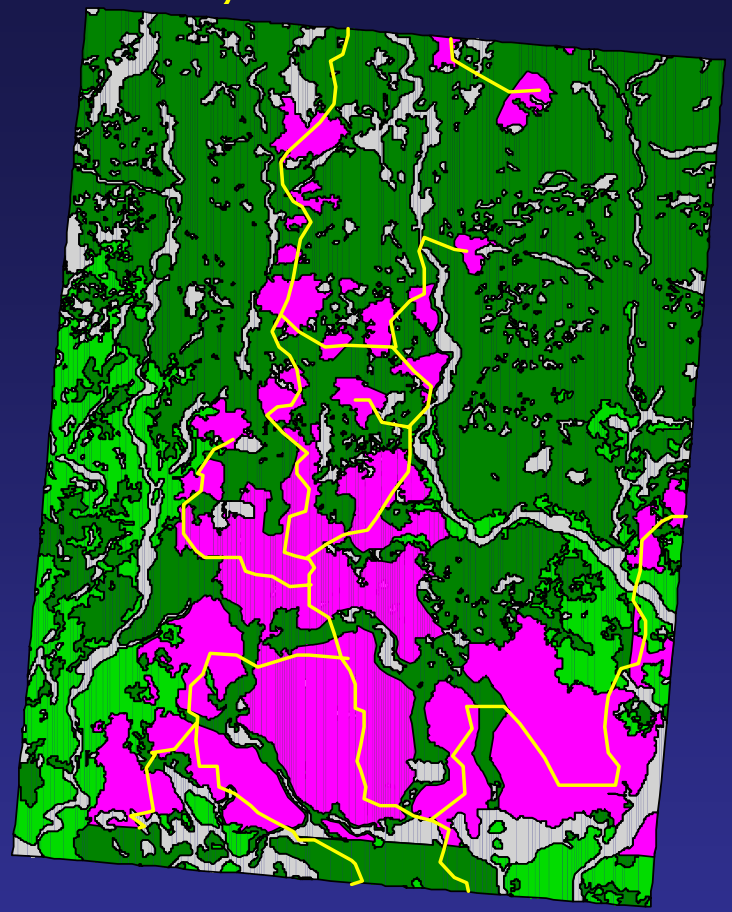
Sounds good... so far.

But what about some applications?

The Mistohay Experiment:

Mistik Management, Meadow Lake, Saskatchewan





Traditional Plan

2,680 ha in 129 blocks.
Patch size = 3 – 65 ha.
Disturbance edge = 326 km.
122 km of roads.
Total time for operations = 15 years.

Actual "Natural" Plan

2,678 ha in 31 blocks.
Patch size = 1 – 1,104 ha.
Disturbance edge = 167 km.
50 km of road (now at 5)
Total time for operations = 18 months.

Original Question:

- What are some of the operational realities of using natural patterns?

Answers:

- A large number of win-win habitat situations.

- Widespread public support.

-Delivered wood and road cost savings were substantial.

- Conflicts with rules and regulations identified.

- Consistent with landscape fire threat and access goals.

What we Expected:

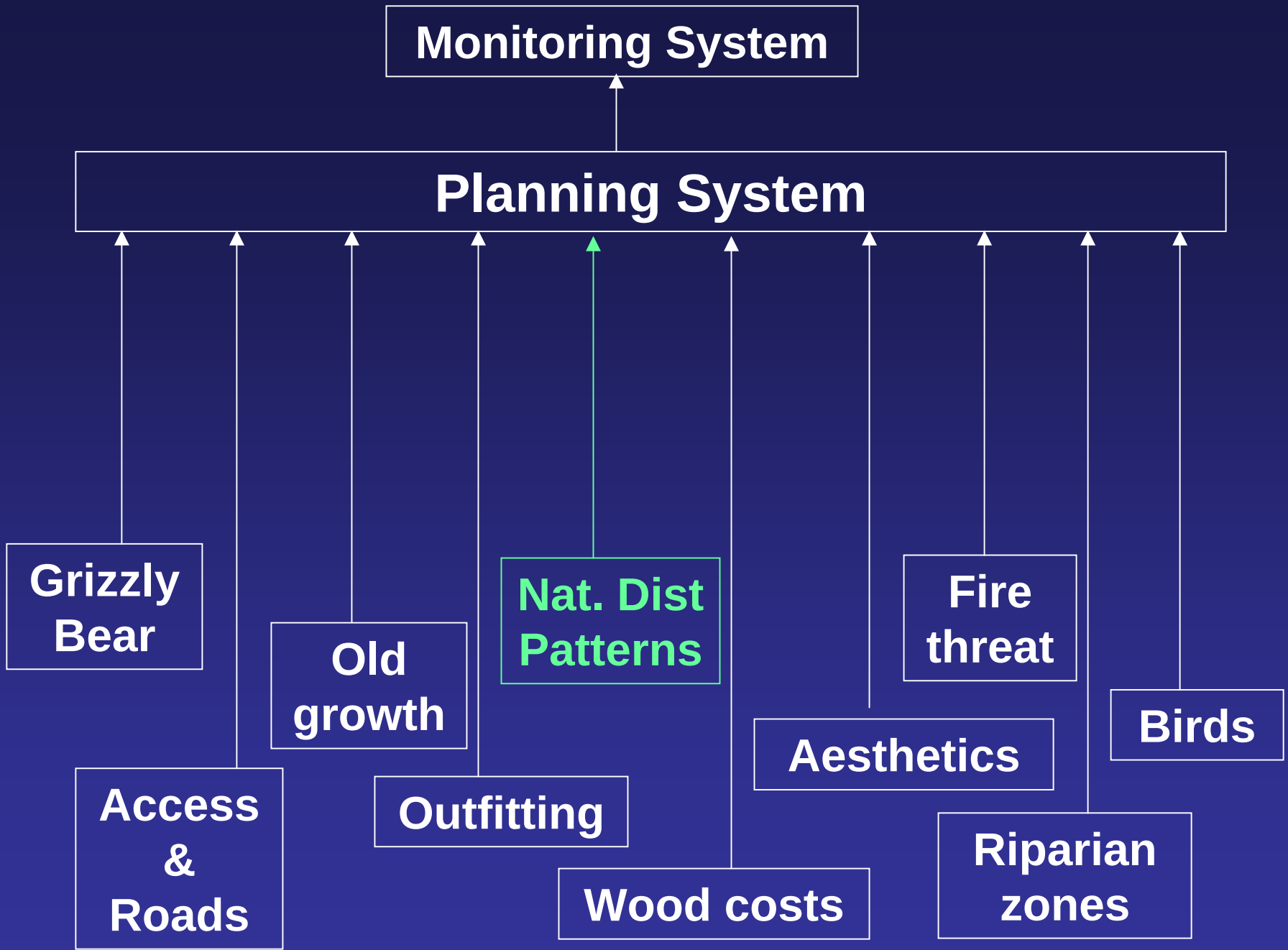
Tools to enhance achievement of Ecosystem Management through existing planning, monitoring, and policy frameworks.

(ie. Coarse Filters)

What we Got:

Tools...

...and a powerful conceptual foundation that has the *potential* to provide a *framework* for Ecosystem Management.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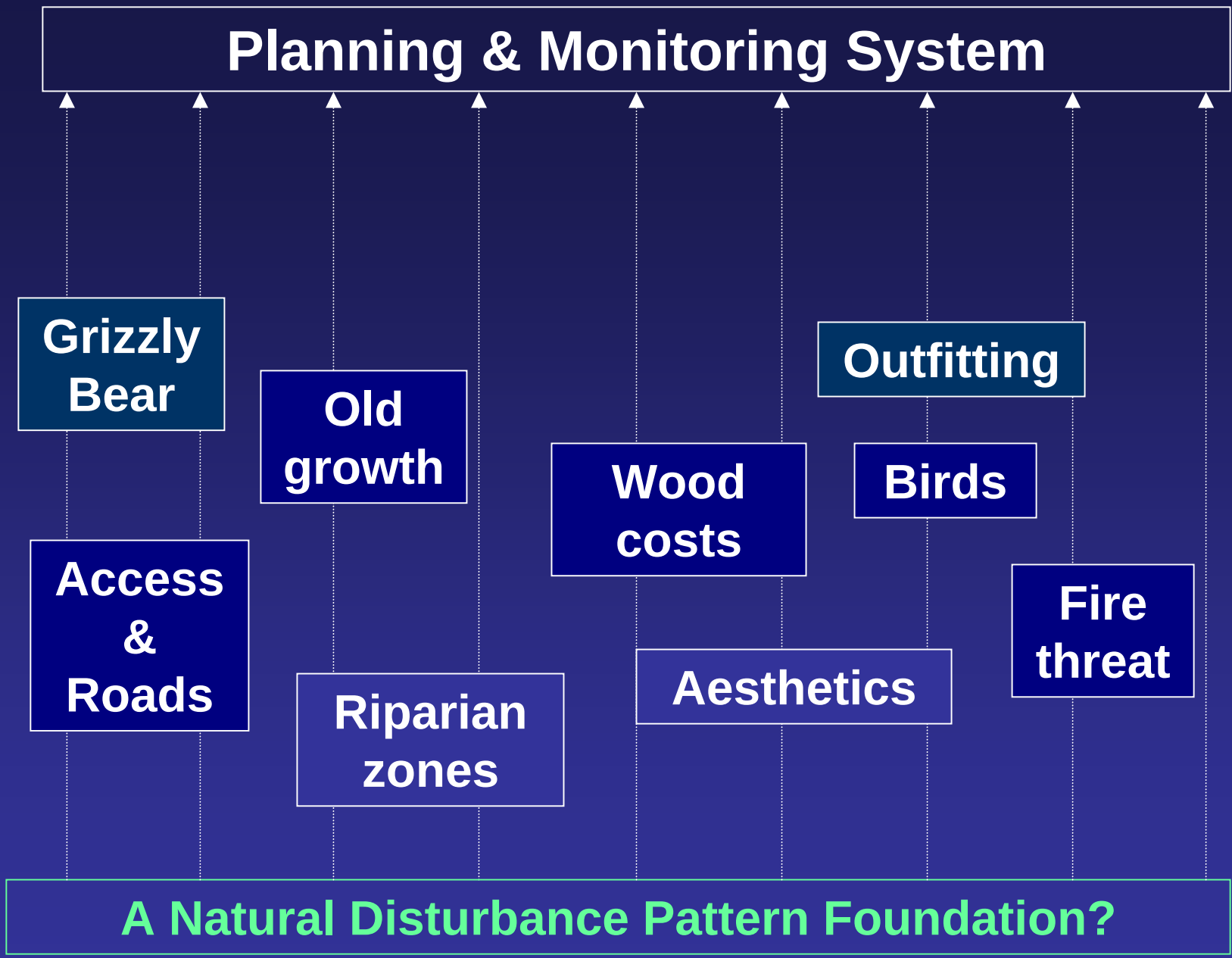
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A Natural Disturbance Pattern Foundation?

Can natural patterns be integrated into tactical and operational reality?

How does it fit with existing monitoring and compliance systems?

How well does a "natural-based" plan achieve other SFM goals and objectives?

Can such a plan simplify and focus the planning process? Are there policies / rules that obstruct it?

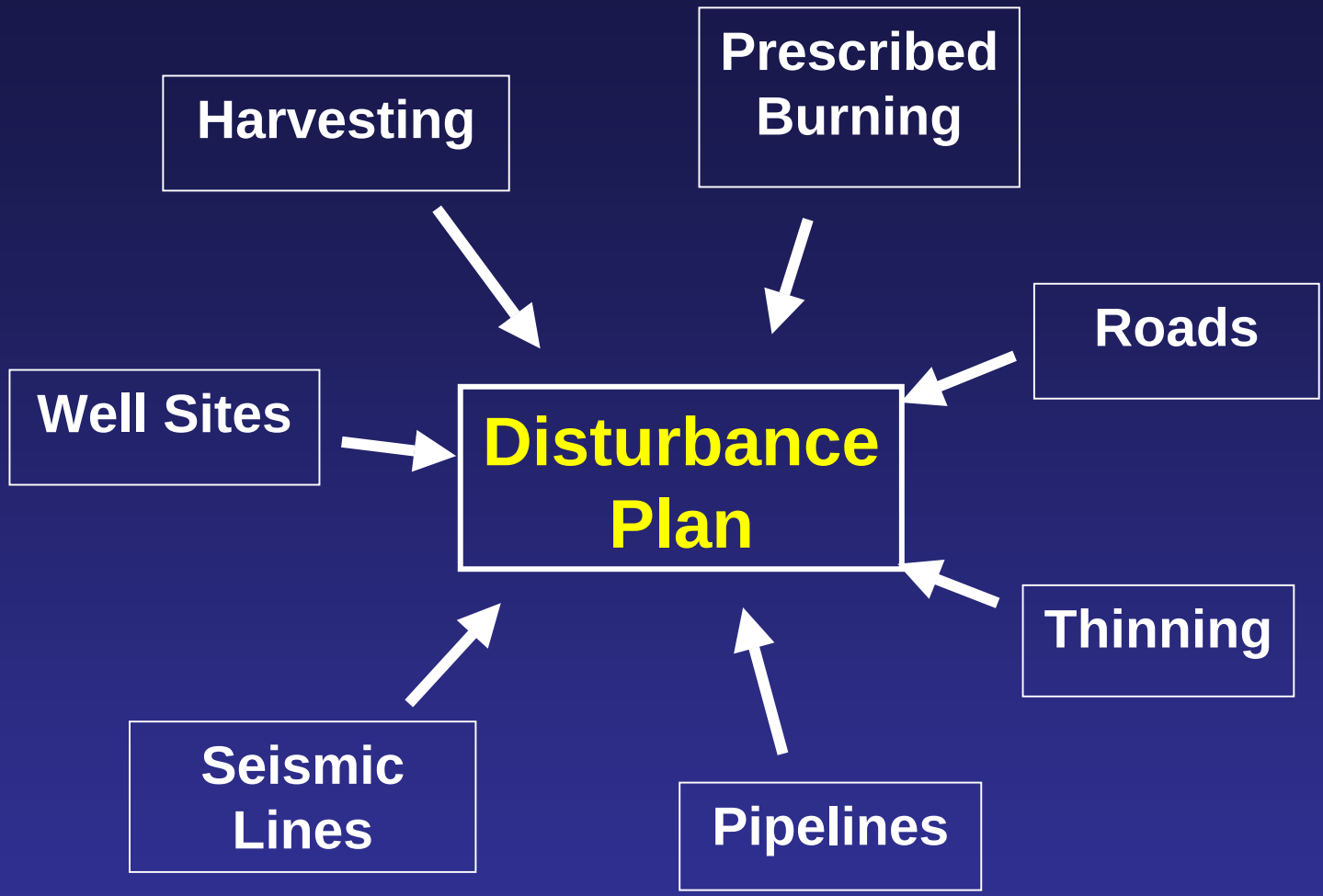
Let's Try it.

Use every available piece of NRV knowledge as the *foundation* for a single disturbance plan, but work within the existing planning systems, with existing DFMP objectives.

Three main goals:

1) **Road test NRV tools, identify gaps.**
2) **Evaluate NRV as an overarching concept for planning – all planning.**
3) **Build a common understanding.**

Learn together, objectively, critically, and in full view.

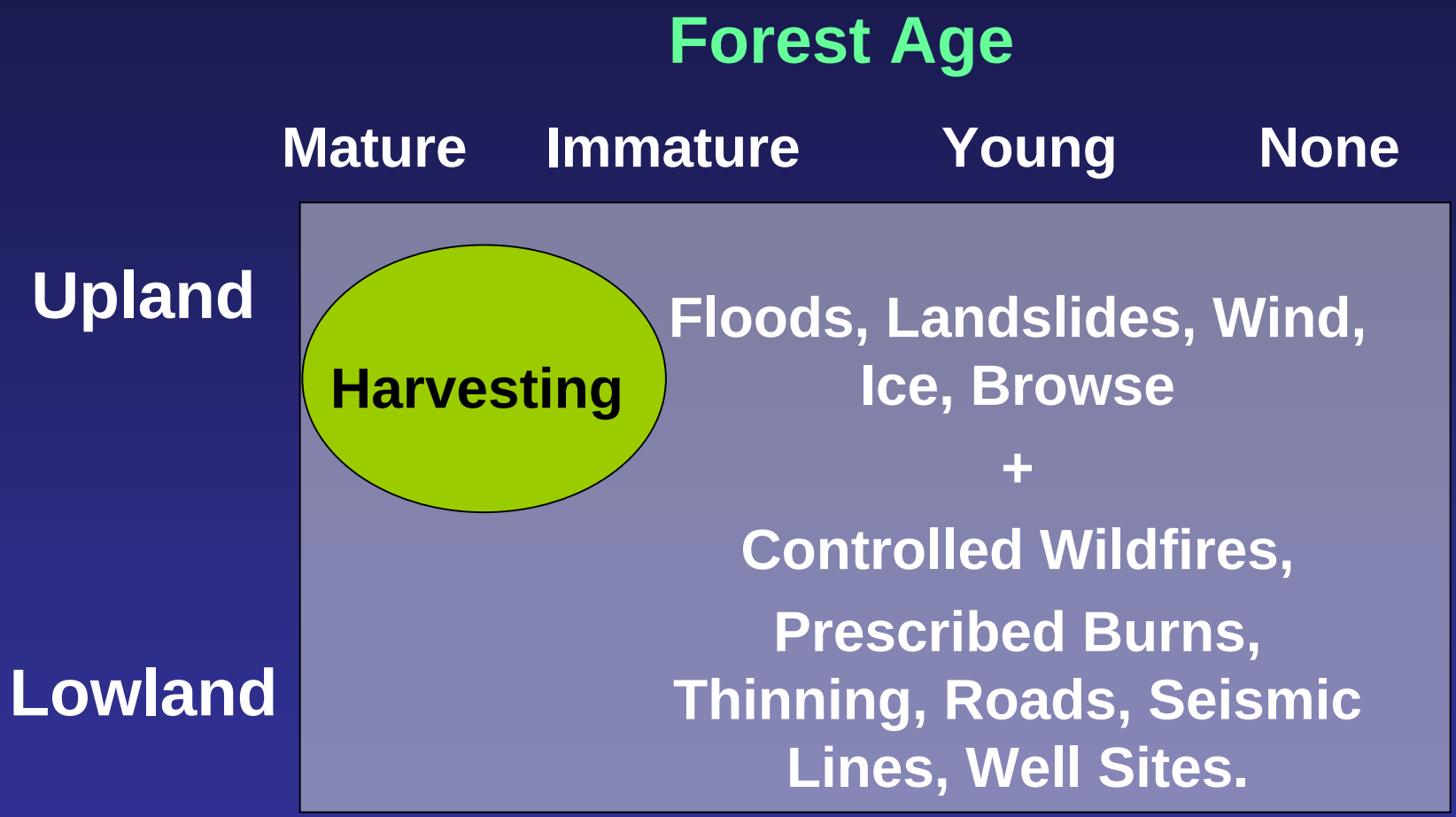

Harvesting
Prescribed Burning
Roads
Well Sites
Disturbance Plan
Thinning
Seismic Lines
Pipelines

Historical Disturbance Activities

Forest Age

	Mature	Immature	Young	None
Upland	**Wildfires**, Floods, Landslides, Wind, Ice, Browse …			
Lowland				

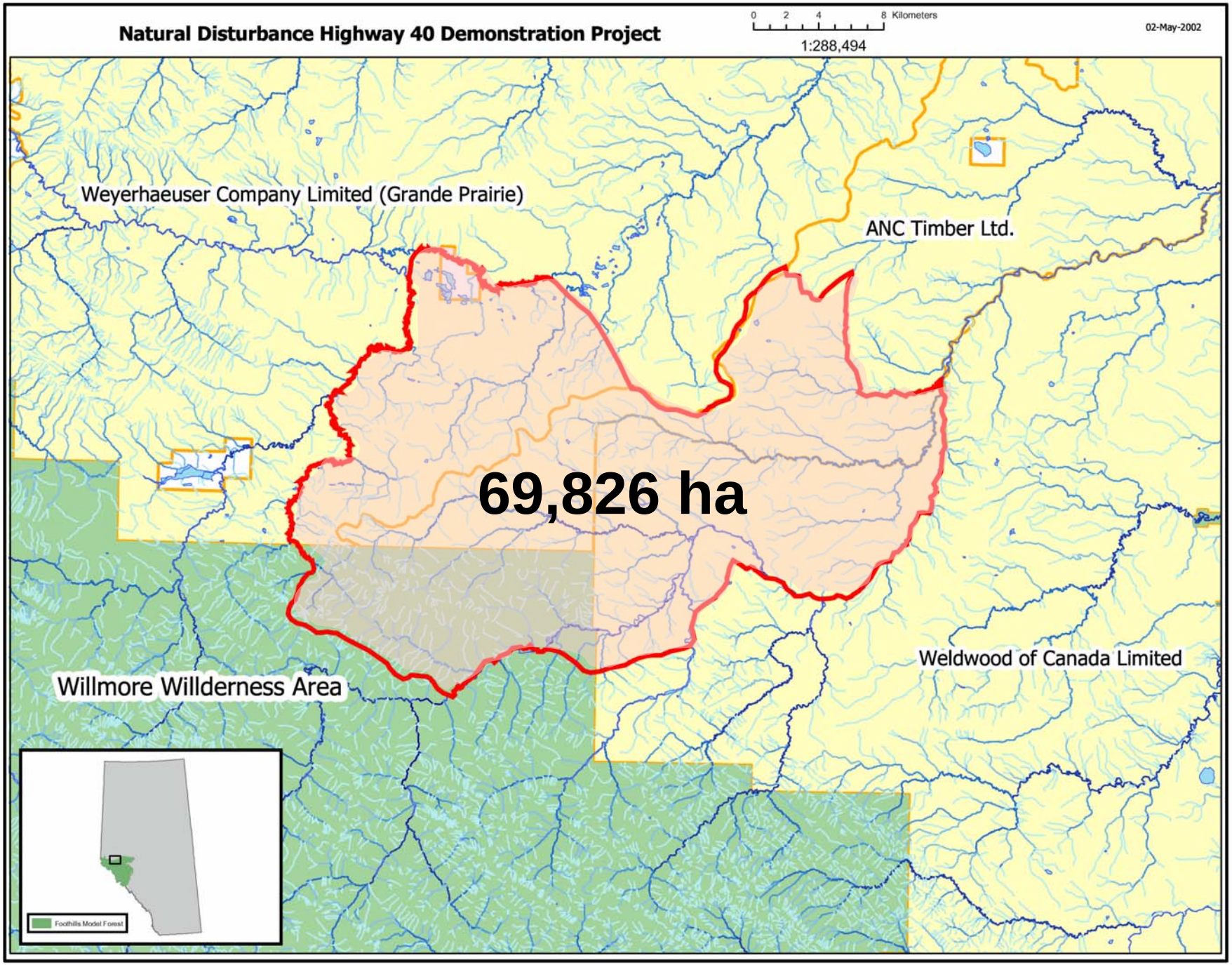
Current Disturbance Activities



Where?

Criteria (Ideally):

1) **Large enough to be substantial, but not so large that it is beyond an operational plan.**
2) **Across jurisdictional boundaries (spreads out risk, test of “one window” system, and respect of natural boundaries).**
3) **A high number of potentially conflicting values. A “problem area”.**
4) **Highly visible and easily accessible to the public.**
5) **Relatively natural.**
6) **Forestry & other operations pending.**


Natural Disturbance Highway 40 Demonstration Project
0 2 4 8 Kilometers
1:288,494
02-May-2002
Weyerhaeuser Company Limited (Grande Prairie)
ANC Timber Ltd.
69,826 ha
Weldwood of Canada Limited
Willmore Willderness Area
Foothills Model Forest

What IS it Exactly?

- Testing a *method* of (***disturbance***) planning.

- Outcomes:

    1) A plan - which ***may*** not be any different than a more traditional plan(s). As much about time as it is space.

    2) An evaluation of the process.

A Model

With Which To Learn.

Core Planning Team

- Morris Archibald, Weldwood (planner)
- Peter Winther, ANC (planner)
- Laura Graham (planner - Willmore)
- Rob Mueller / Bill Tinge, SRD (regulator)
- David Andison, Bandaloop (NRV expertise)
- Sherra Quintilio, SRD (fire expertise)

Extended Planning Team

- Kate Smith, SRD (representing E8)
- Kirby Smith, SRD F&W
- Brad Herald, CAPP
- Brad Lloyd, Alberta Energy

Where Are We Now?

-~3,100 ha planned for harvesting in first decade.

- Cluster activities in time and space.

- 3 options – 1 by the end of Jan.

Where Are We Now?

-Involving 7 gas companies with existing leases.

- Gearing up for caribou and grizz monitoring.

- Commitment / resources to burn from SRD, but there are many challenges ahead.