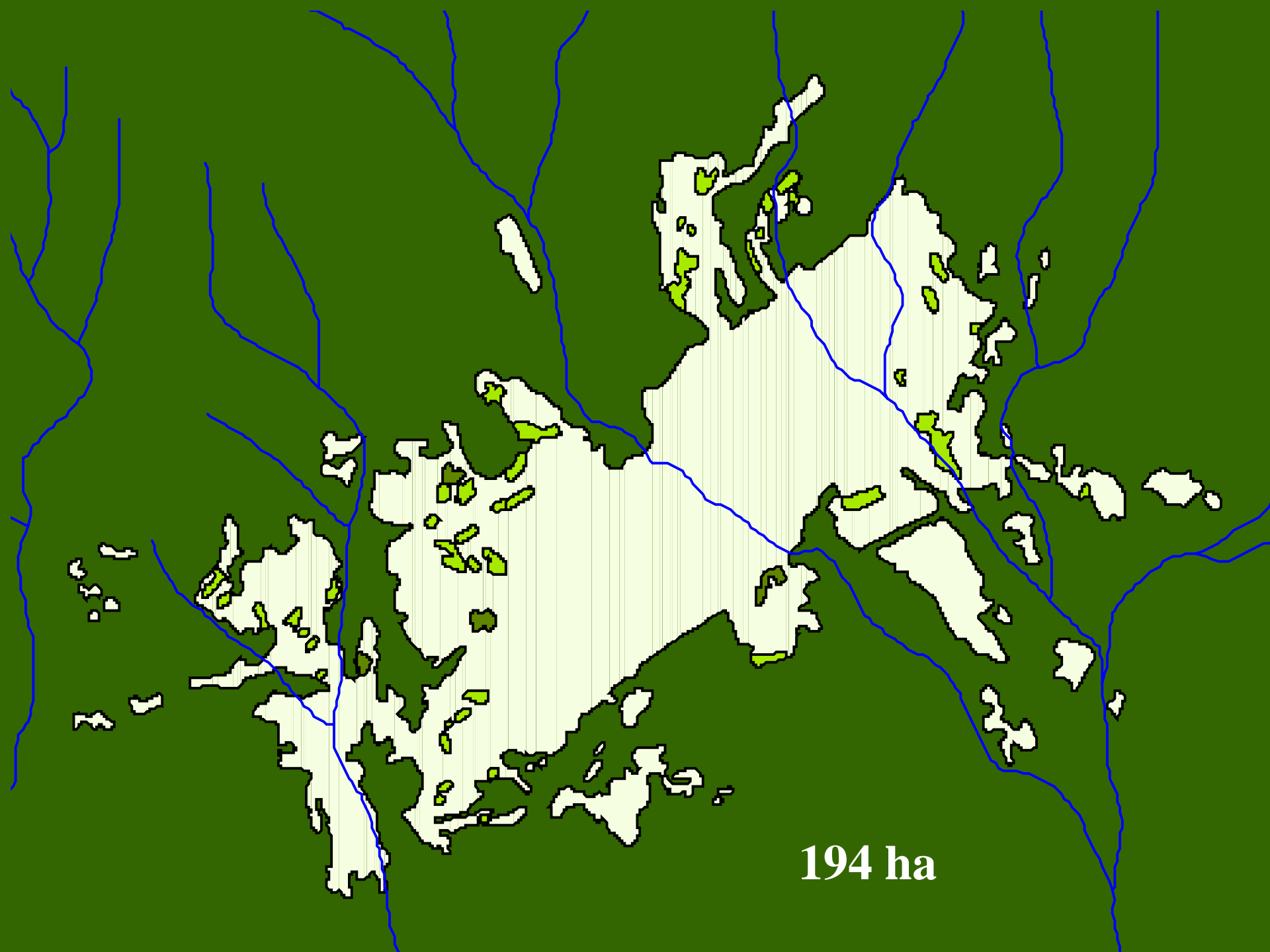


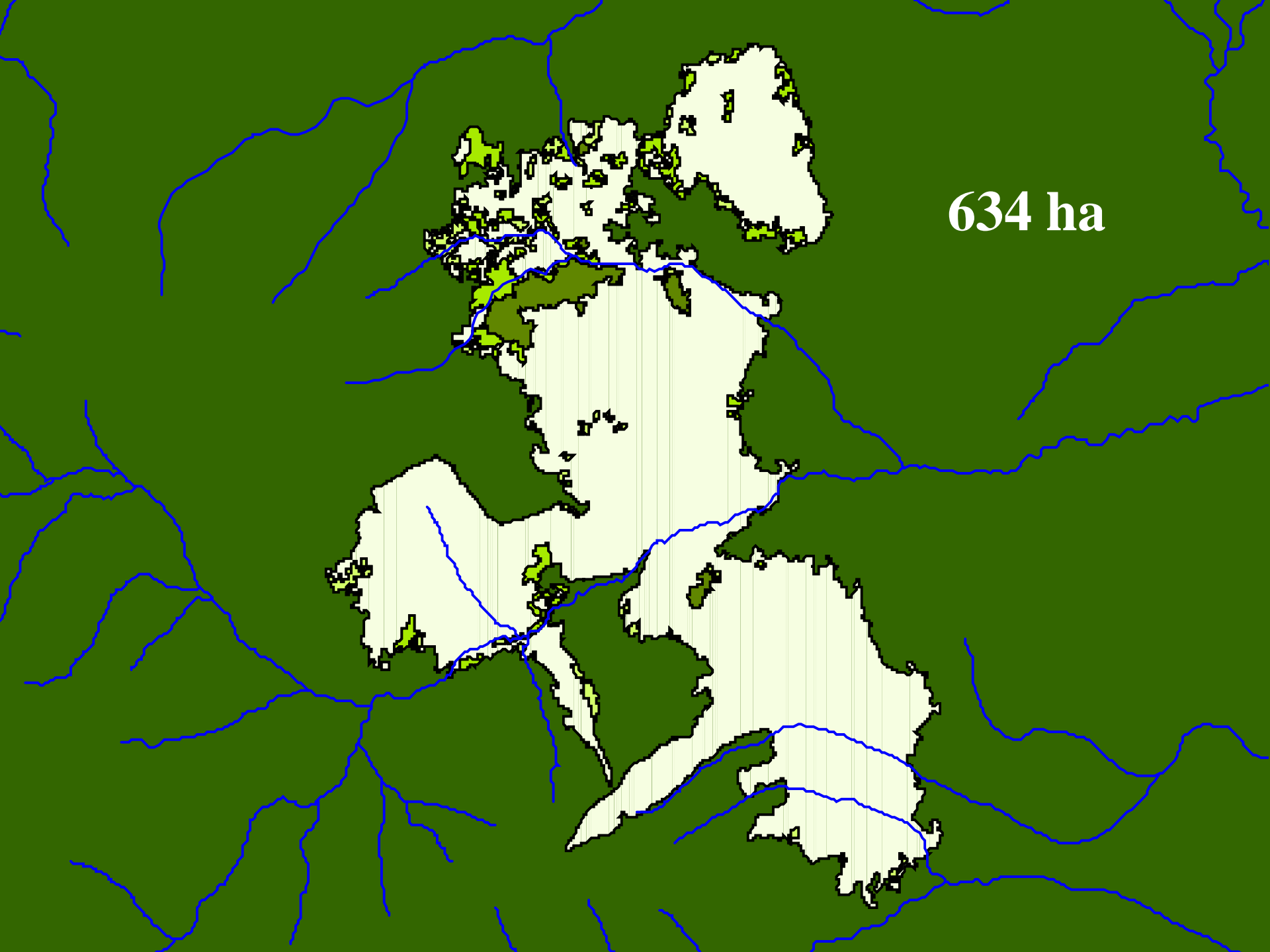
DISTURBANCE = The net area affected by any process which results in ecosystems being dramatically altered over a short period of time.

i.e., fire, insect outbreak, flooding, landslide, harvesting, wind, ice,....

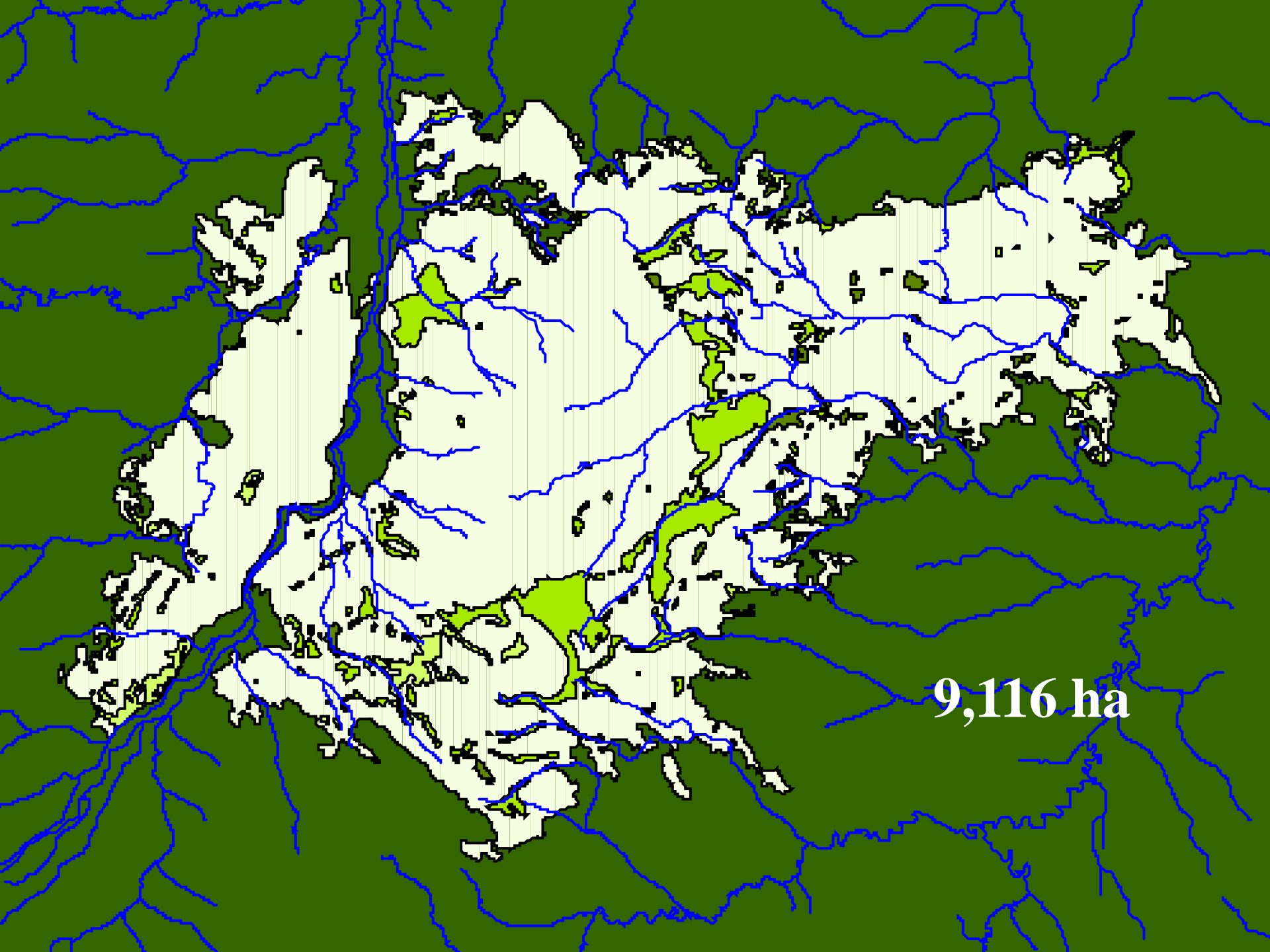
For now, our interest is limited to fire.



194 ha



634 ha

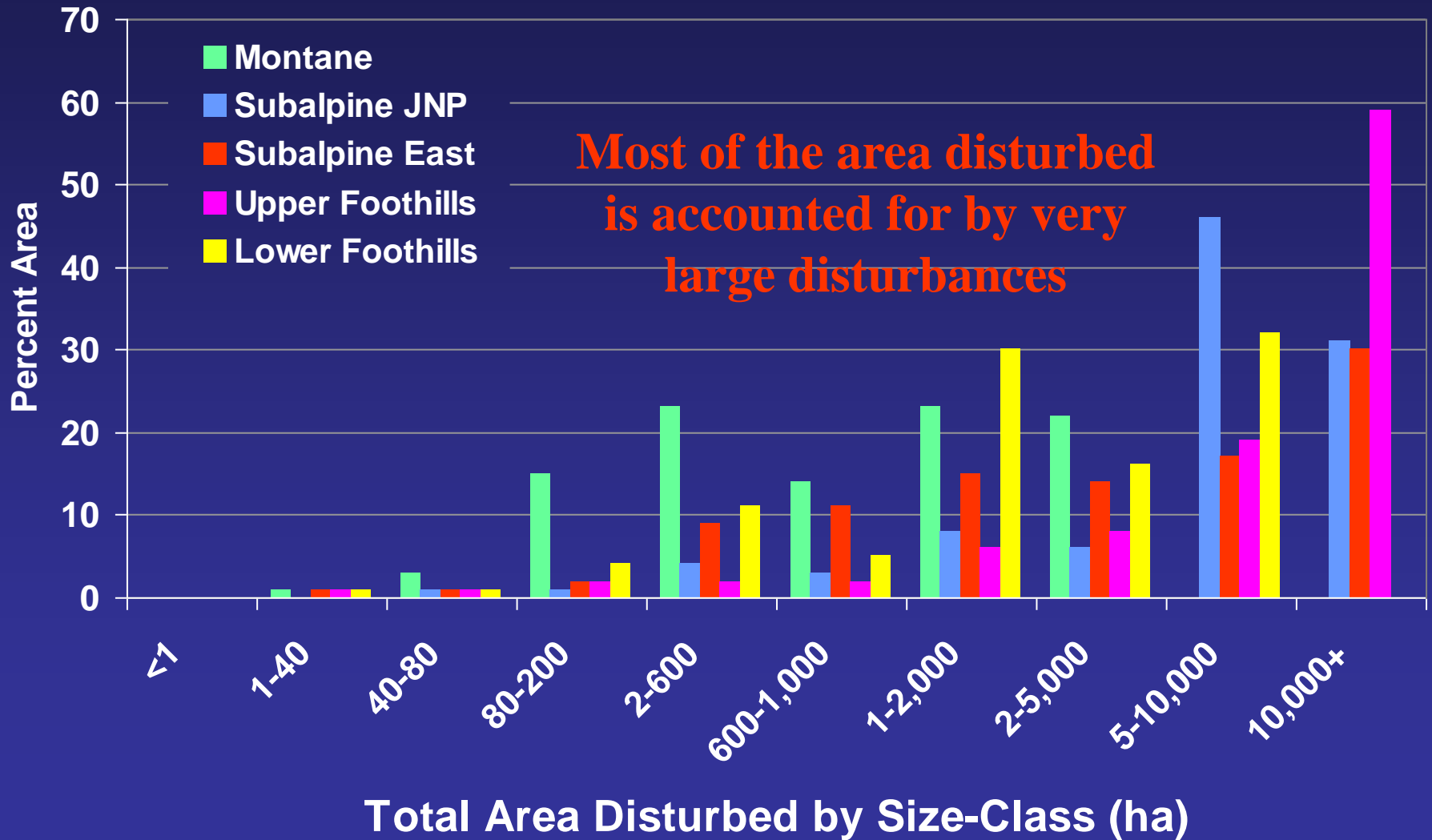


9,116 ha

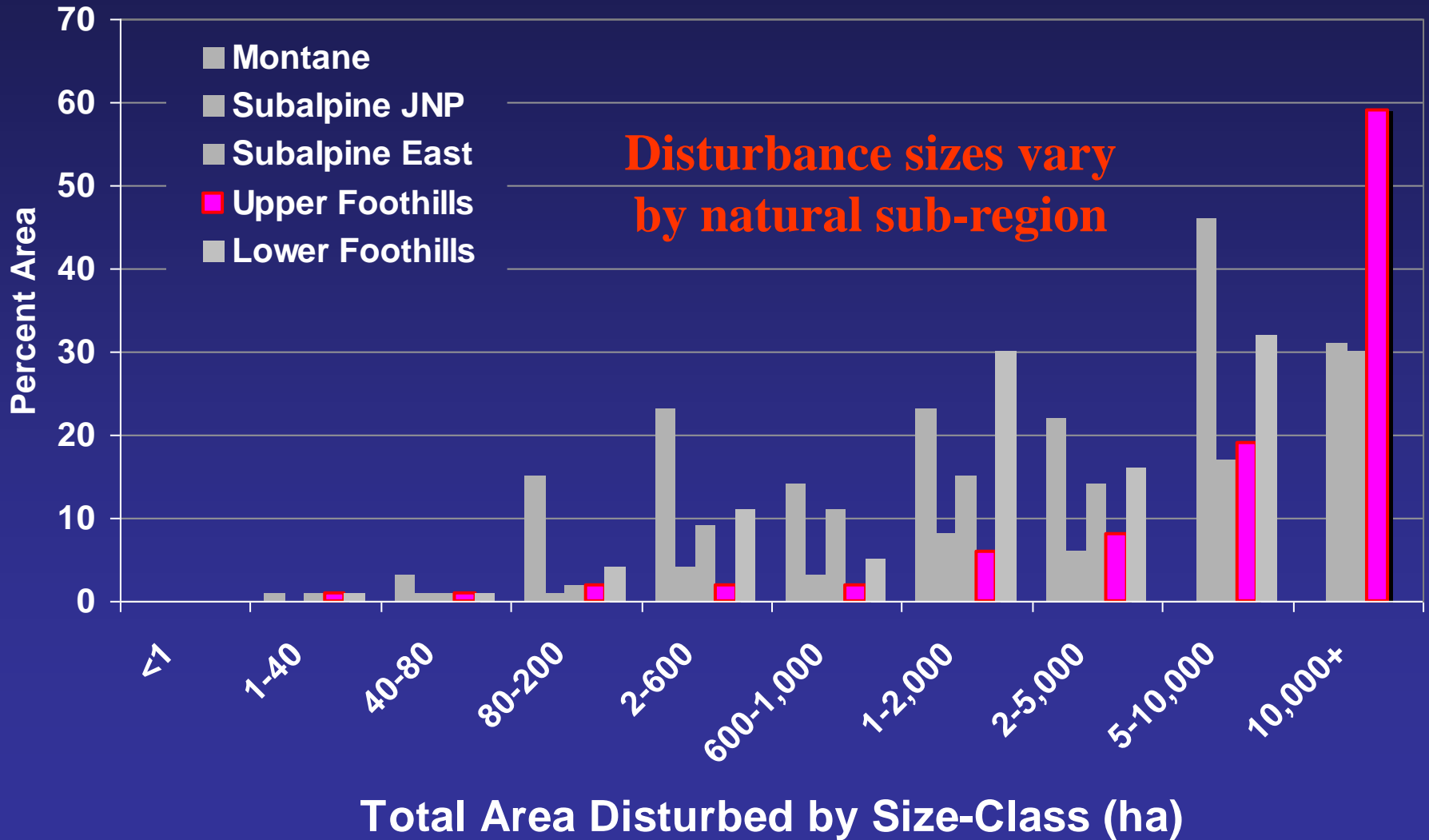
At First Glance

- **Sizes range from very small to very large**
- **One disturbance has many patches**
- **Burn boundaries are not straight**
- **Material is left over in the middle**
- **Fires burn everything and anything**

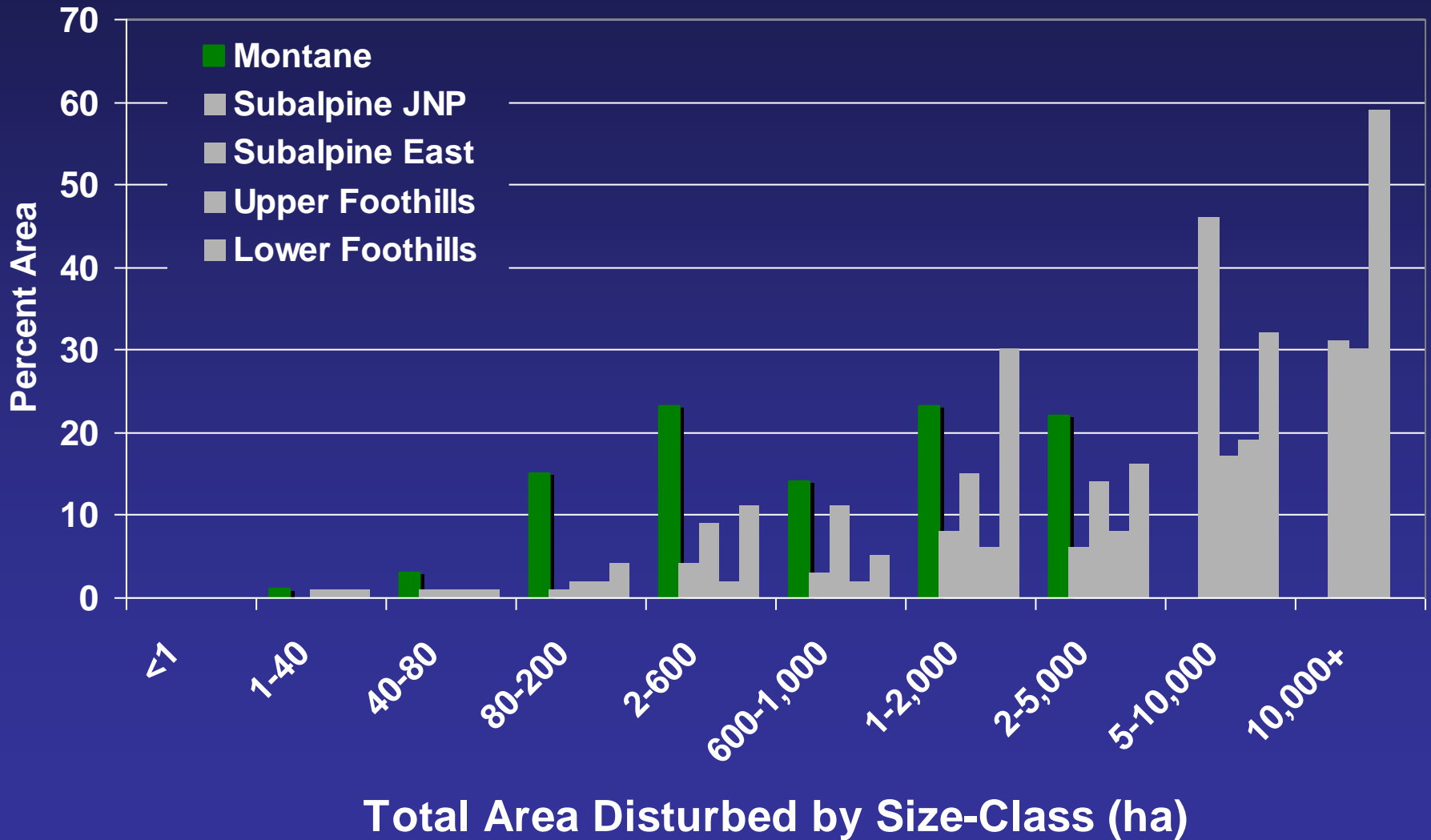
Disturbance Size Distributions on FMF Landscapes by Area



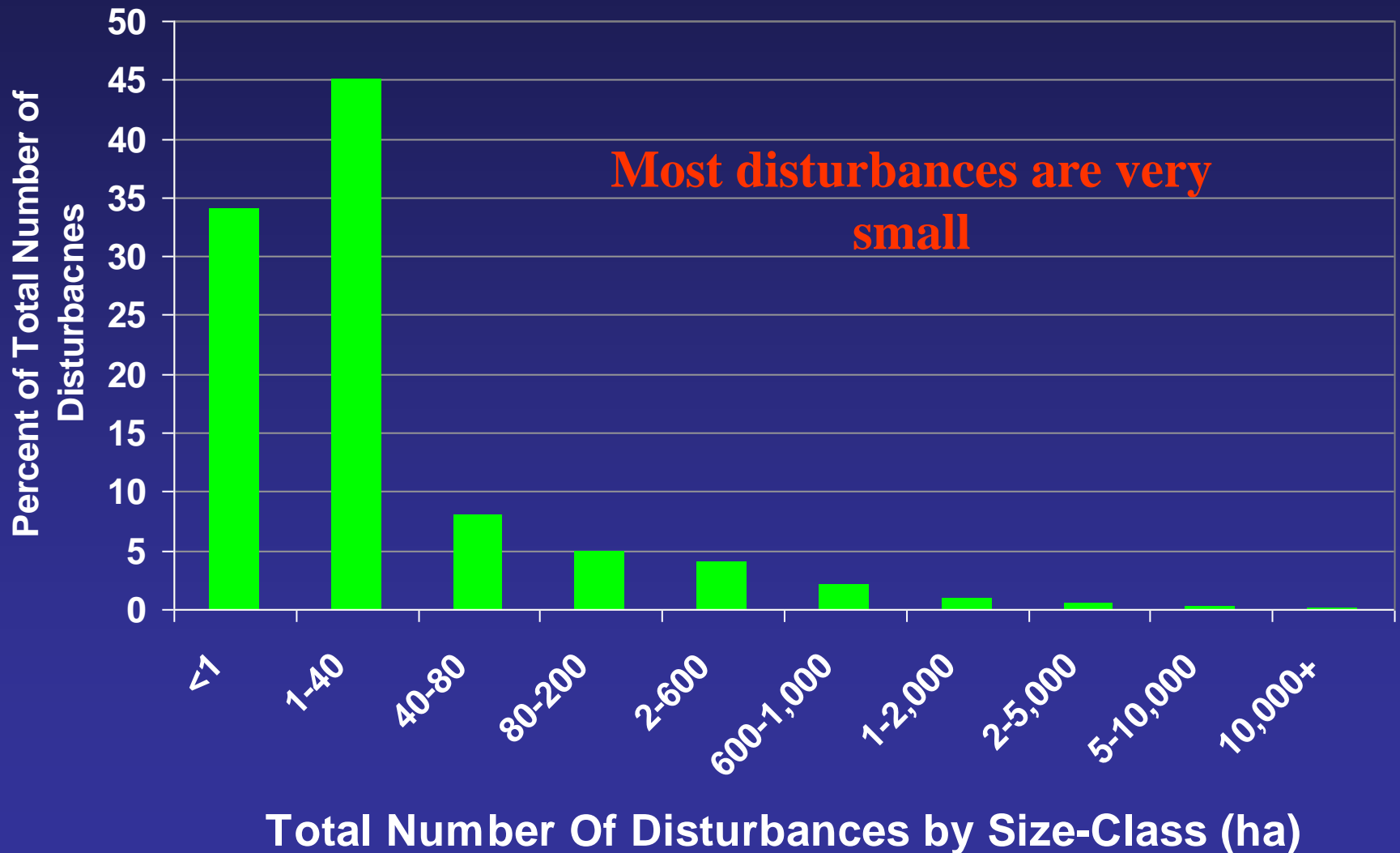
Disturbance Size Distributions on FMF Landscapes by Area



Disturbance Size Distributions on FMF Landscapes by Area



Disturbance Size Distributions on FMF Landscapes by Numbers



At First Glance

- Sizes range from very small to very large
- One disturbance has many patches
- Burn boundaries are not straight
- Material is left over in the middle
- Fires burn everything and anything



8,886 Ha Burnt Forest

10,856 Ha Event

28 Ha Burnt Forest

38 Ha Event



Disturbance vs. Event



697 Ha Burnt Forest

1,422 Ha Event

1,163 Ha Burnt Forest

1,325 Ha Event



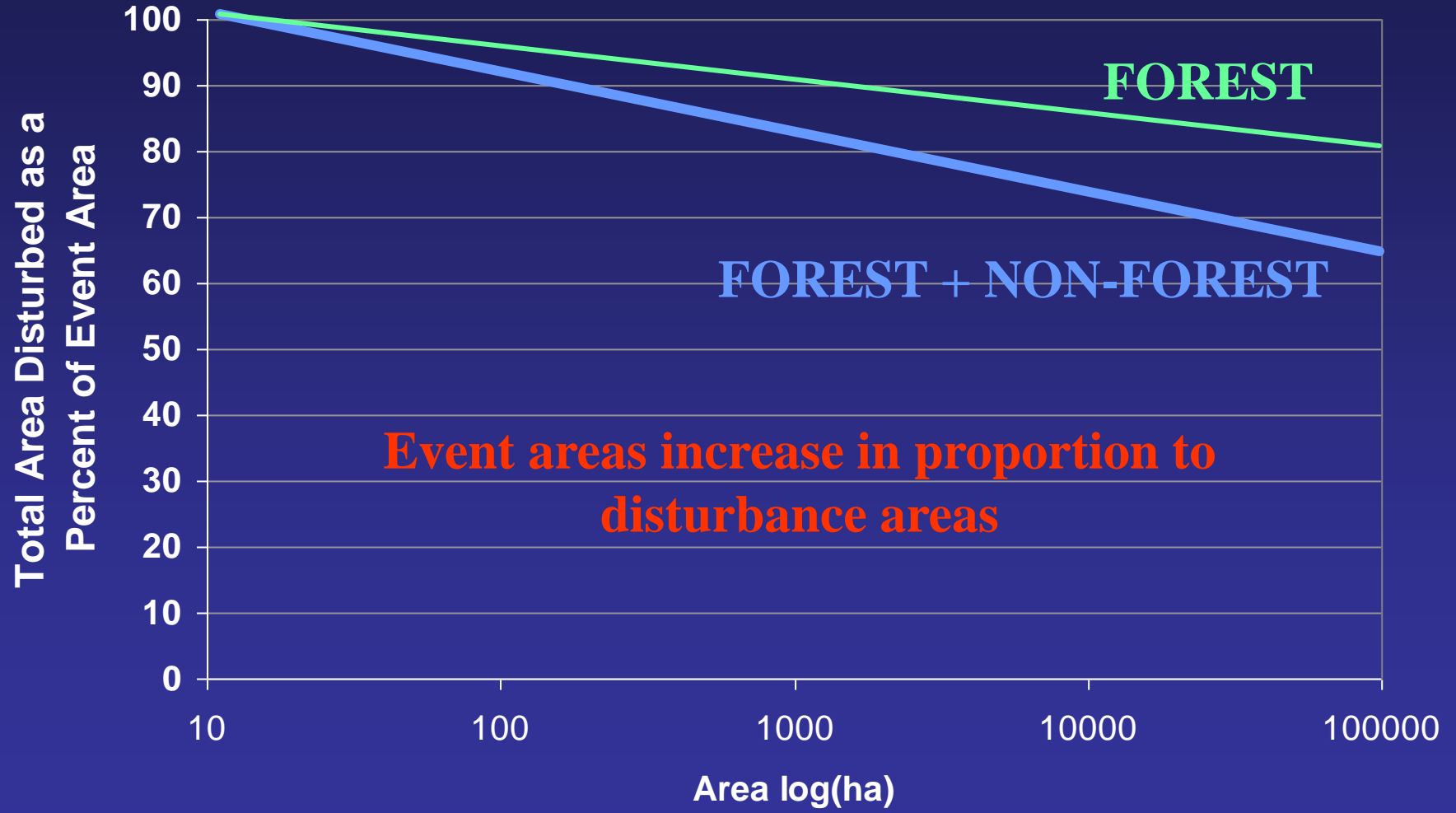
DISTURBANCE = The net area affected by any process which results in ecosystems being dramatically altered over a short period of time.

EVENT = The greater (gross) area of a disturbance (formed by a collection of forest and non-forest patches)

What did not burn in the event area?



Disturbance Event Area Relative to the Net Area Disturbed





15 Patches 28 ha



13 Patches 8,886 ha

Forested Patches Cluster to Form Disturbance Events



54 Patches 697 ha



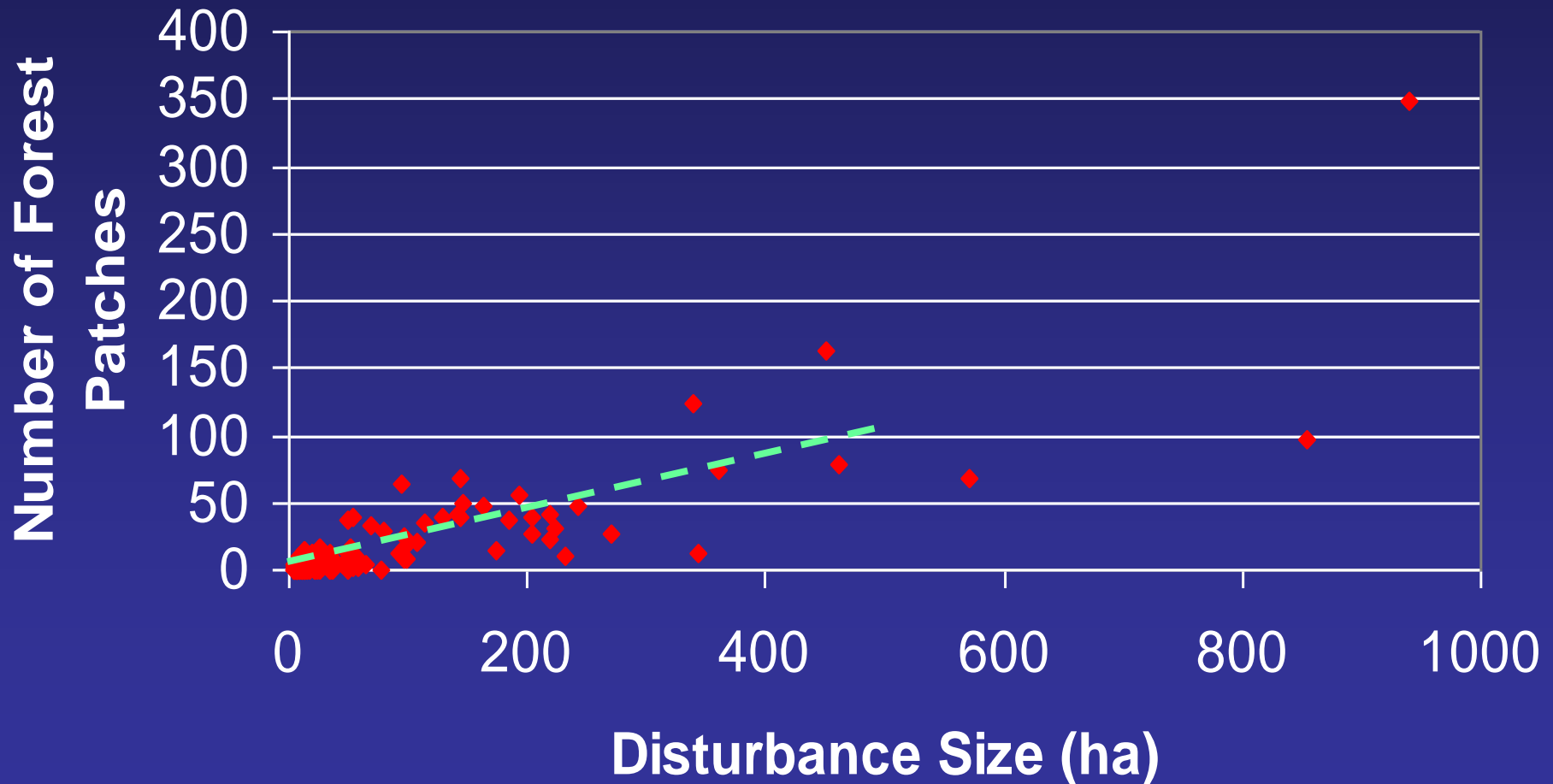
76 Patches 1,163 ha

DISTURBANCE = The net area affected by any process which results in ecosystems being dramatically altered over a short period of time.

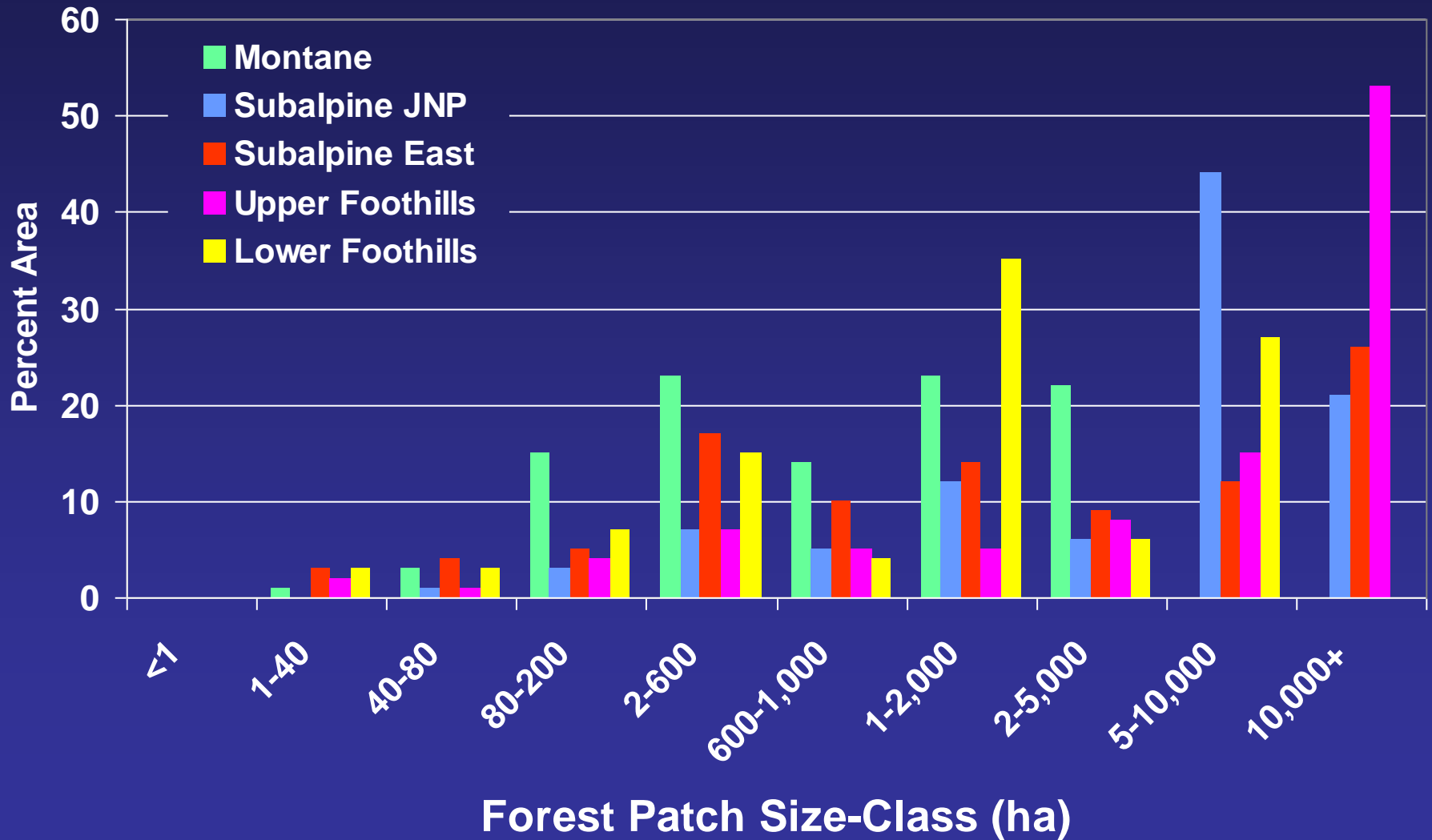
EVENT = The greater (gross) area of a disturbance (formed by a collection of forest and non-forest patches)

FOREST PATCH = The contiguous area of same-aged forest, or same type of non-forest.

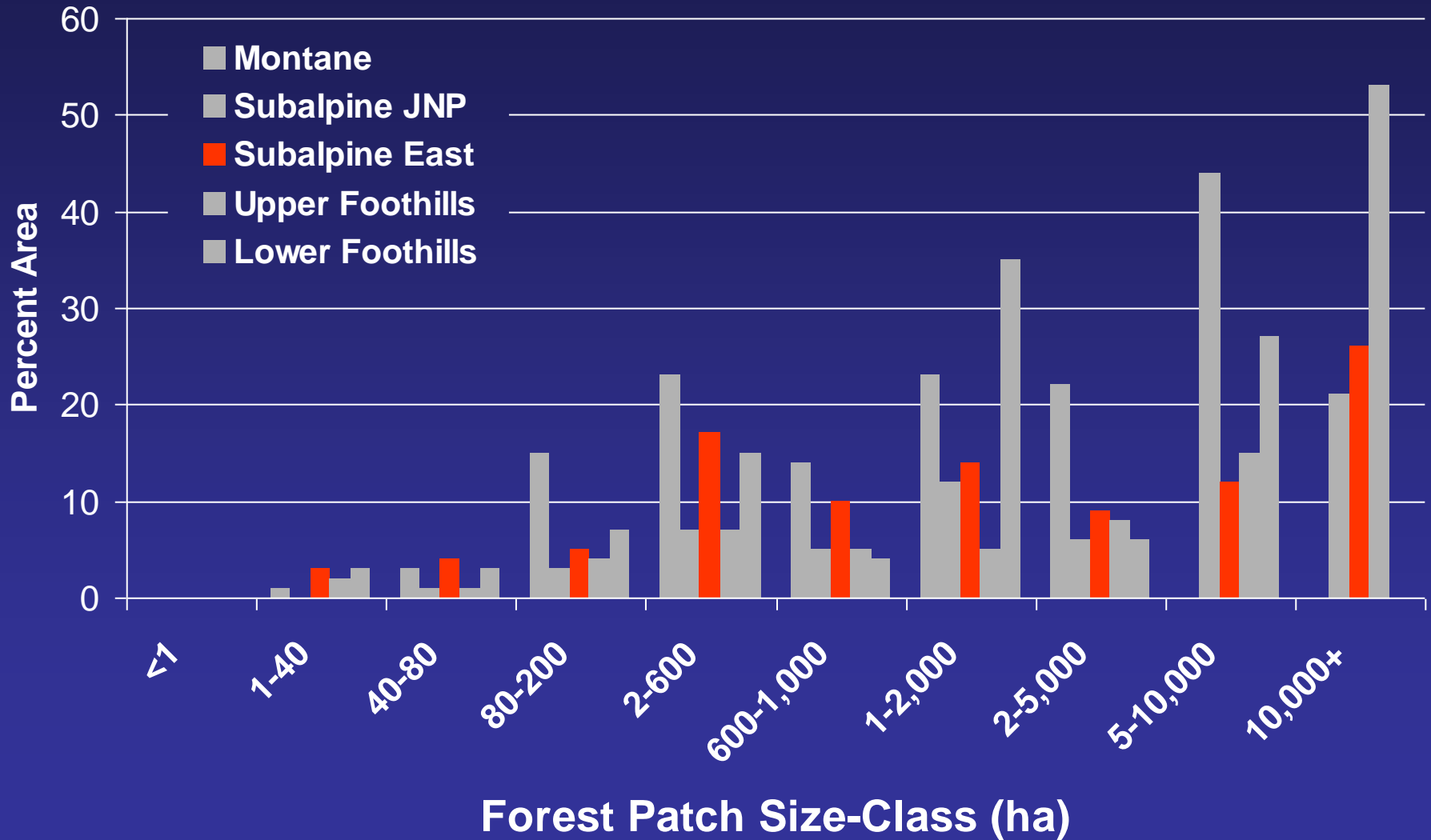
Numbers of Forest Patches per Disturbance



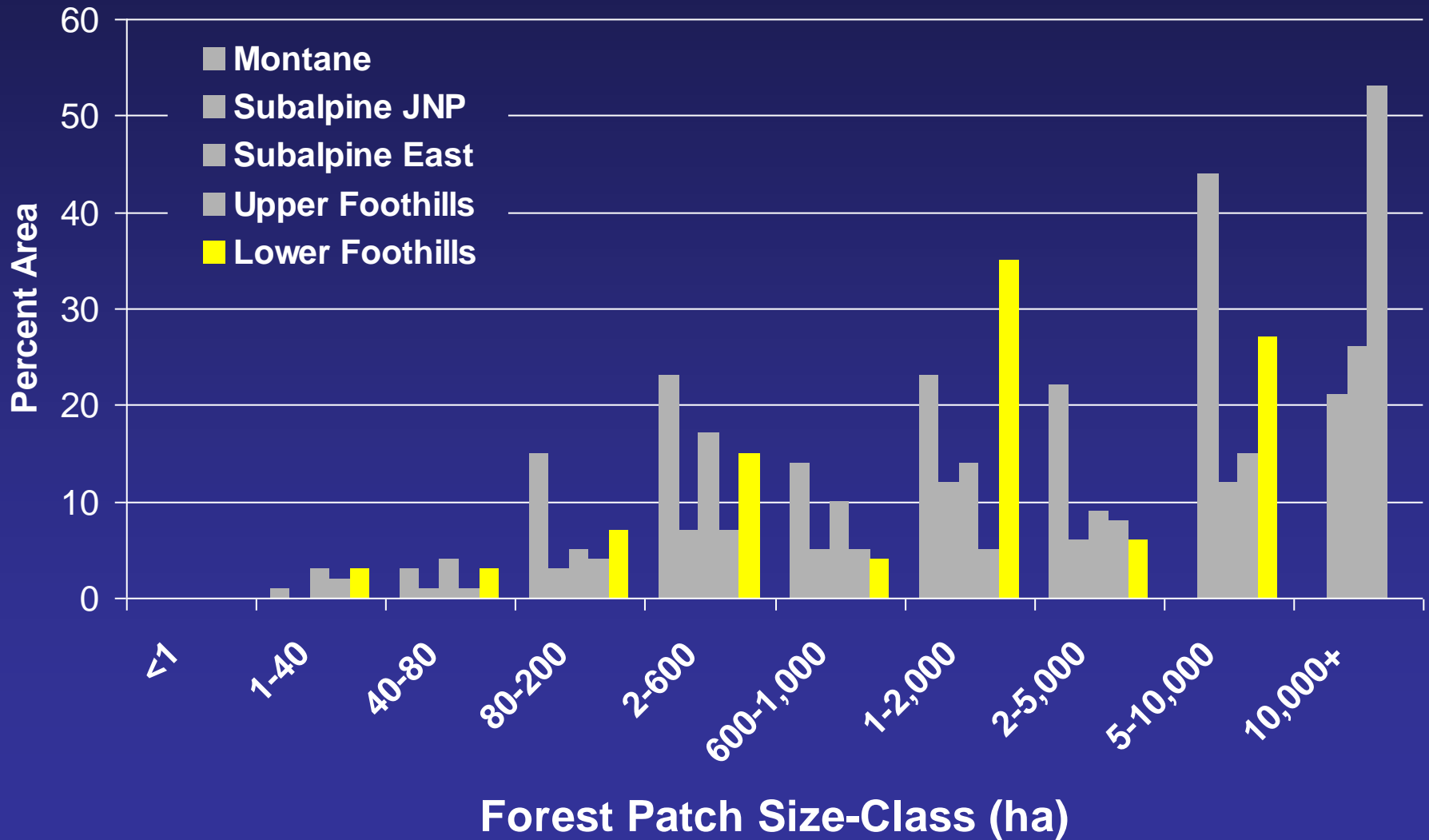
Young Forest Patch Size Distribution on FMF Landscapes



Young Forest Patch Size Distribution on FMF Landscapes



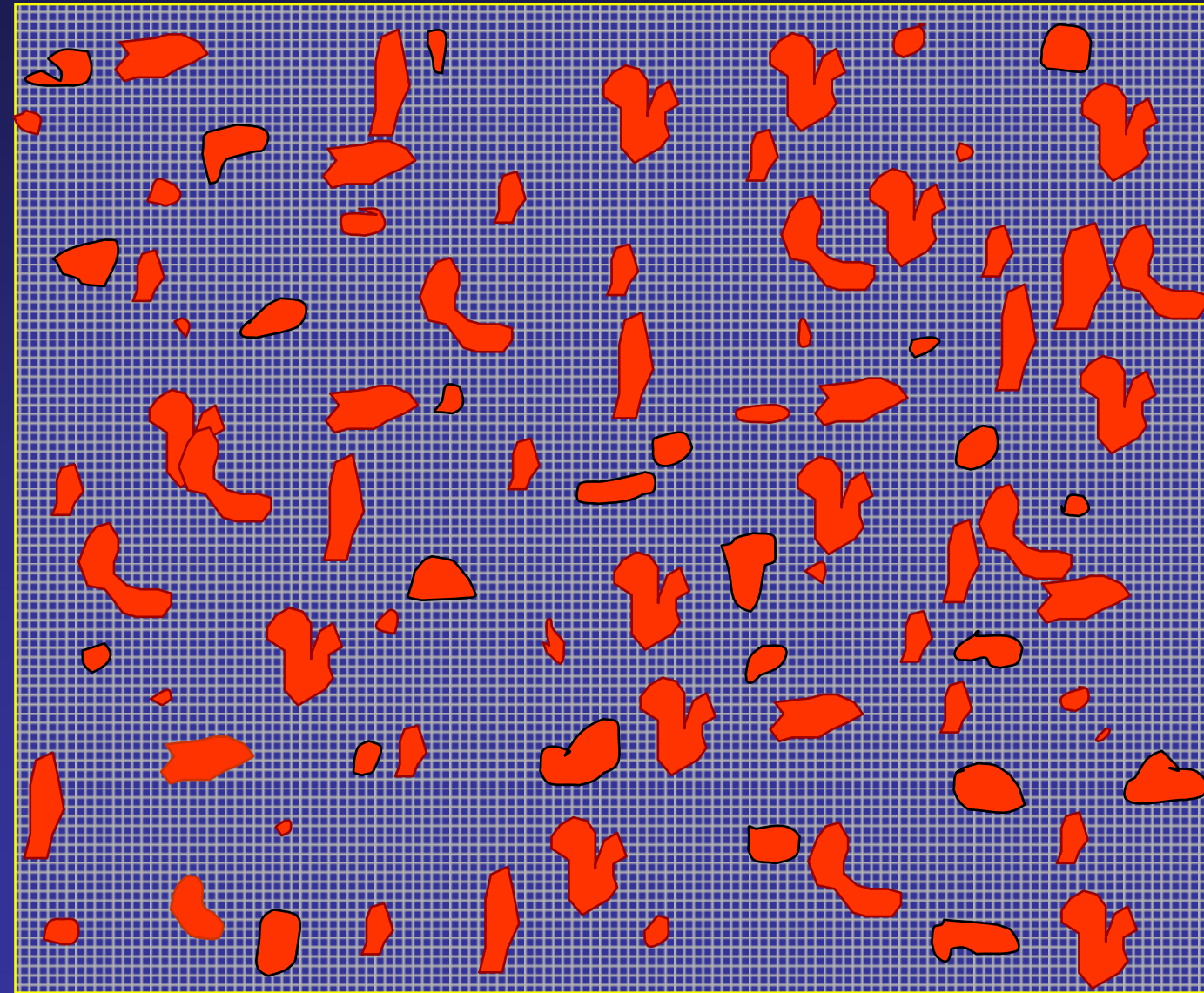
Young Forest Patch Size Distribution on FMF Landscapes



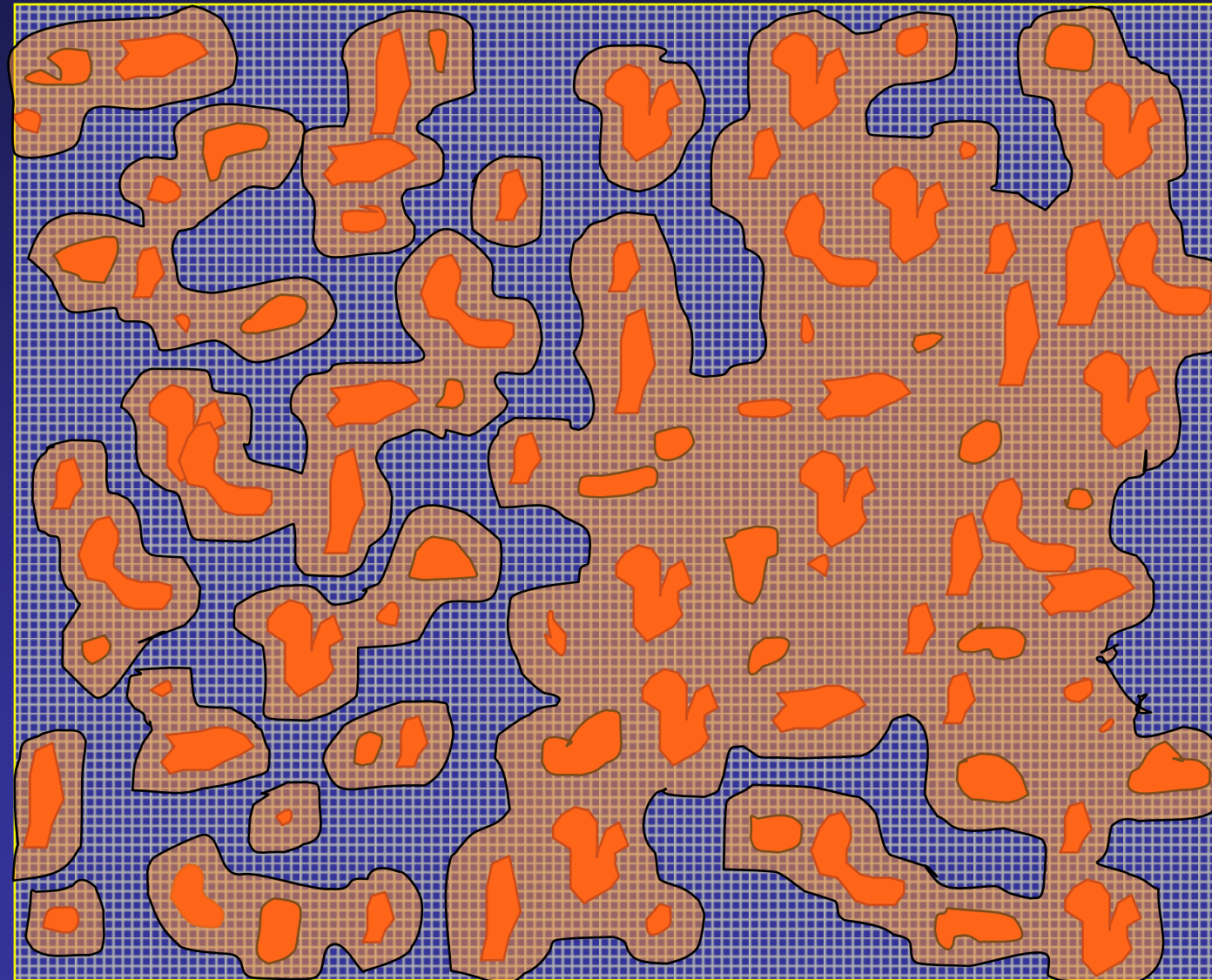
Patch Sizes, Event Sizes: An Example

Dispersed Blocks, Low Maximum Size

**15% by Area
Disturbed**



Dispersed Blocks, Low Maximum Size

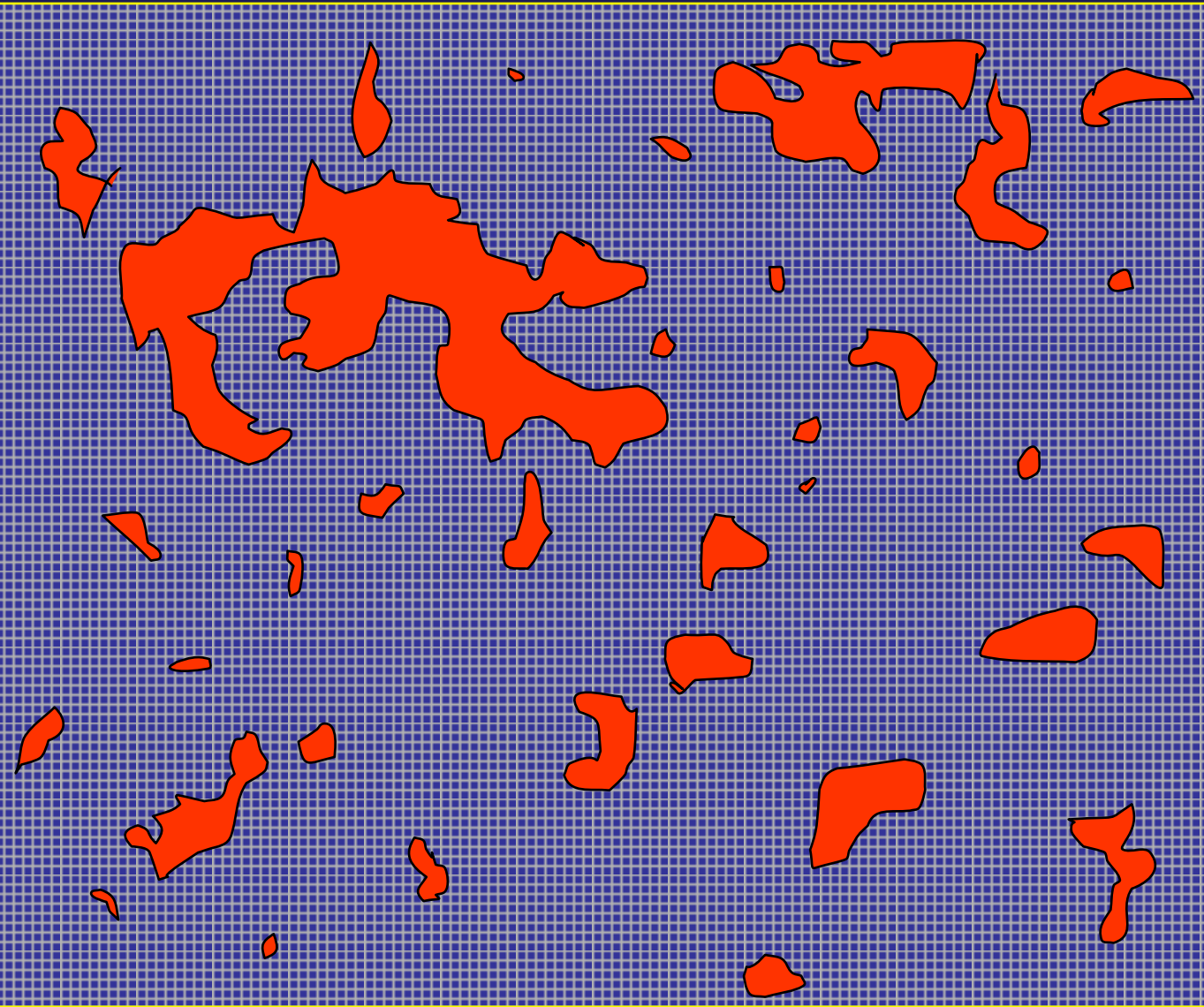


**15% by Area
Disturbed**

**25% Interior
Forest
Remaining**

Dispersed Blocks, High Maximum Size

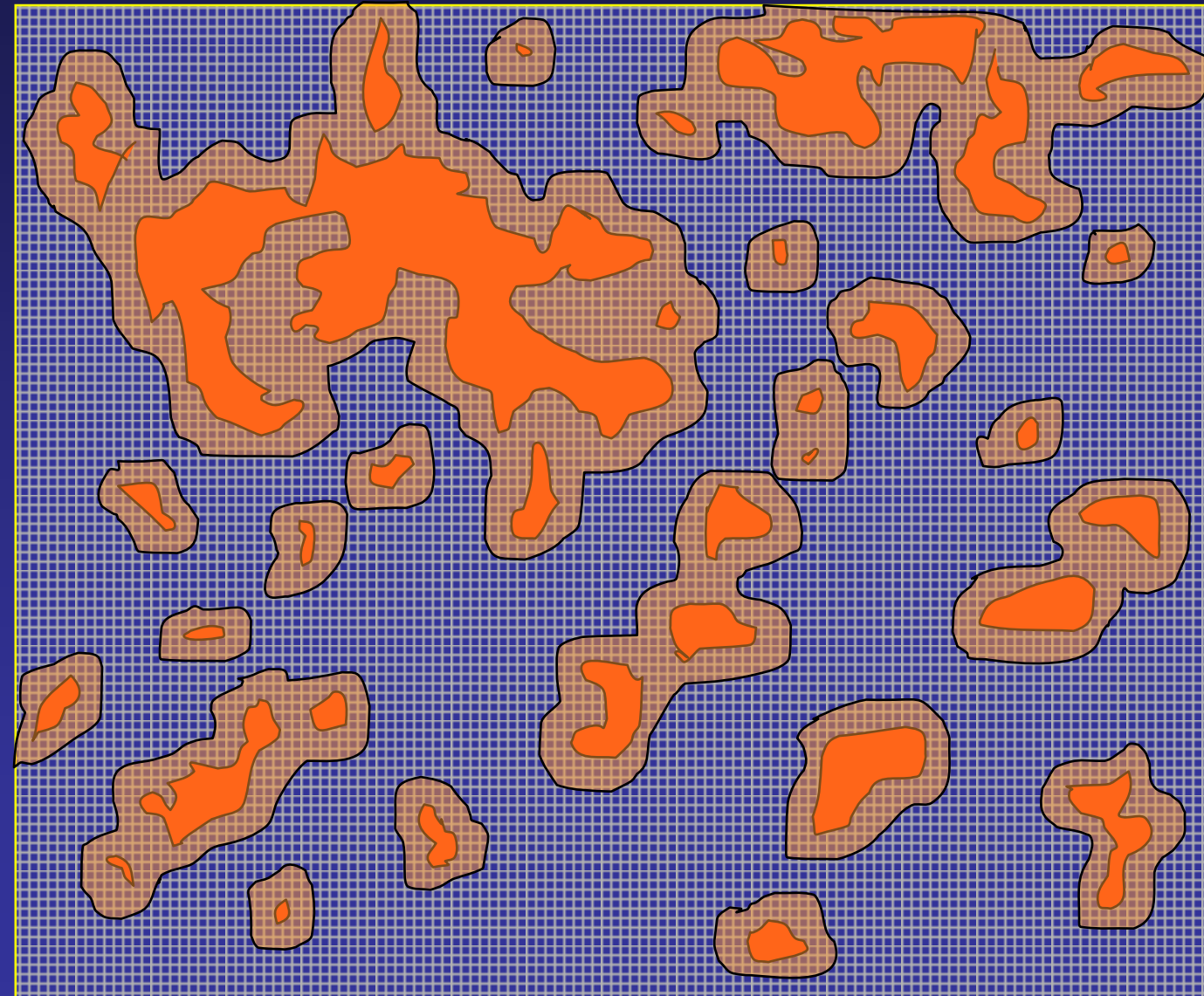
**15% by Area
Disturbed**



Dispersed Blocks, High Maximum Size

**15% by Area
Disturbed**

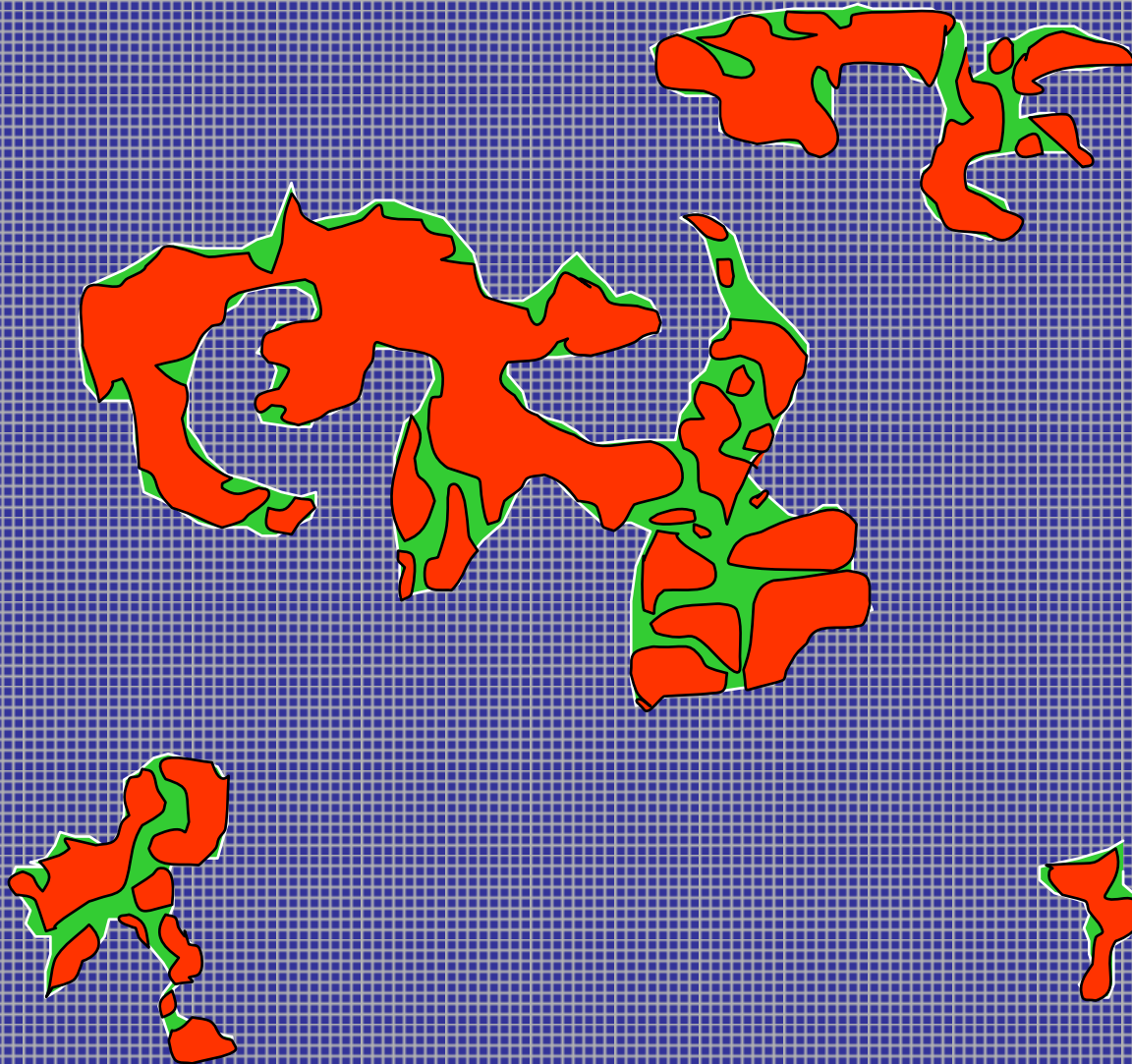
**50% Interior
Forest
Remaining**



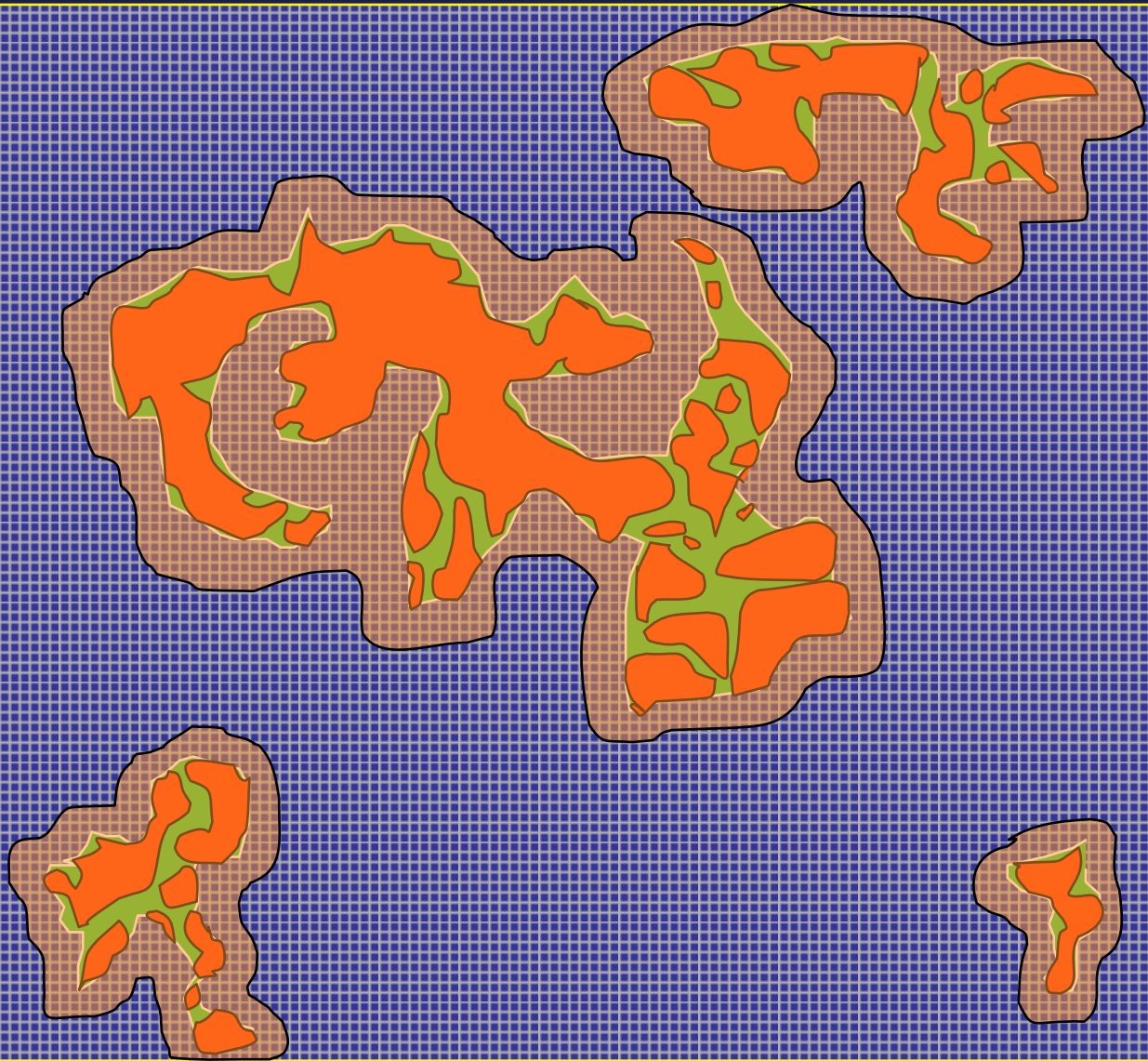
Clustered Blocks, High Maximum Size

**15% by Area
Disturbed**

**“Event” areas are
outlined in green**



Clustered Blocks, High Maximum Size

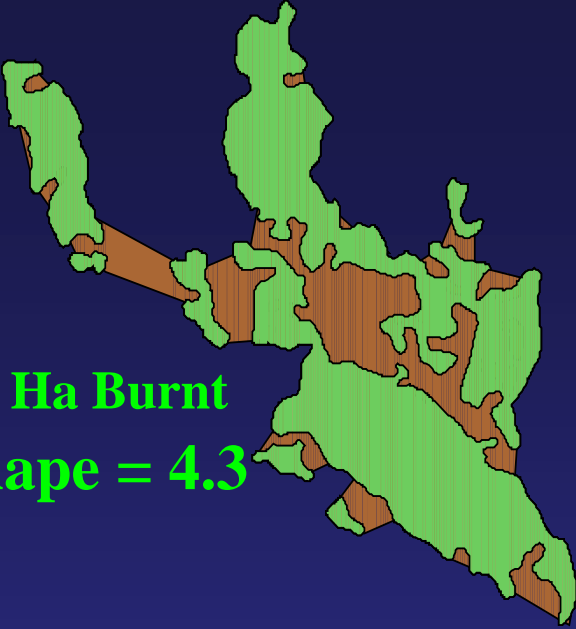


**15% by Area
Disturbed**

**65% Interior
Forest
Remaining**

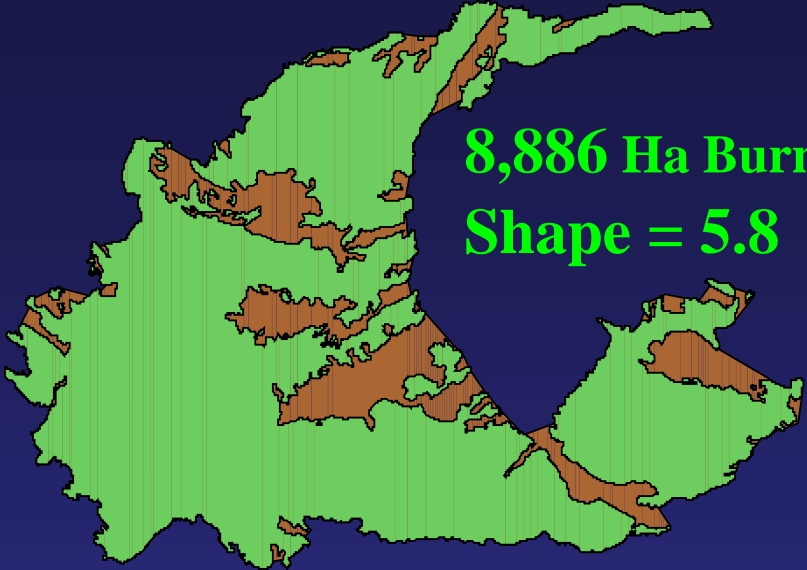
At First Glance

- Sizes range from very small to very large
- One disturbance has many patches
- **Burn boundaries are not straight**
- Material is left over in the middle (islands)
- Burns do not always respect riparian zones




28 Ha Burnt
Shape = 4.3

This map shows a landmass with a small, elongated burnt area (brown) on the left side. The rest of the landmass is green. The burnt area is relatively compact and follows the general shape of the landmass's left edge.



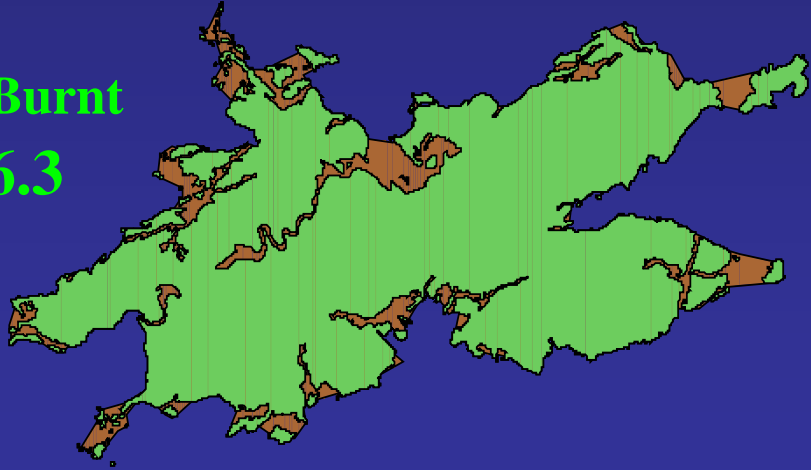
8,886 Ha Burnt
Shape = 5.8

This map shows a landmass with a large, irregular burnt area (brown) covering a significant portion of the central and right-hand side. The burnt area is highly fragmented and follows the complex coastline of the landmass.



697 Ha Burnt
Shape = 11.1

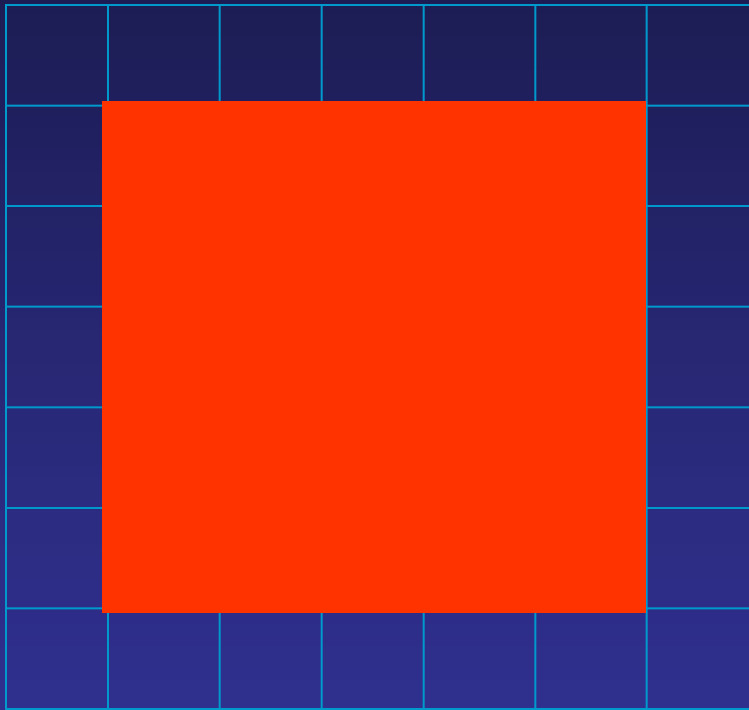
This map shows a landmass with a large, elongated burnt area (brown) running along the left and bottom edges. The burnt area is highly irregular and follows the complex coastline of the landmass.



1,163 Ha Burnt
Shape = 6.3

This map shows a landmass with a large, irregular burnt area (brown) covering a significant portion of the central and right-hand side. The burnt area is highly fragmented and follows the complex coastline of the landmass.

Simplest Shape = A Square or Circle

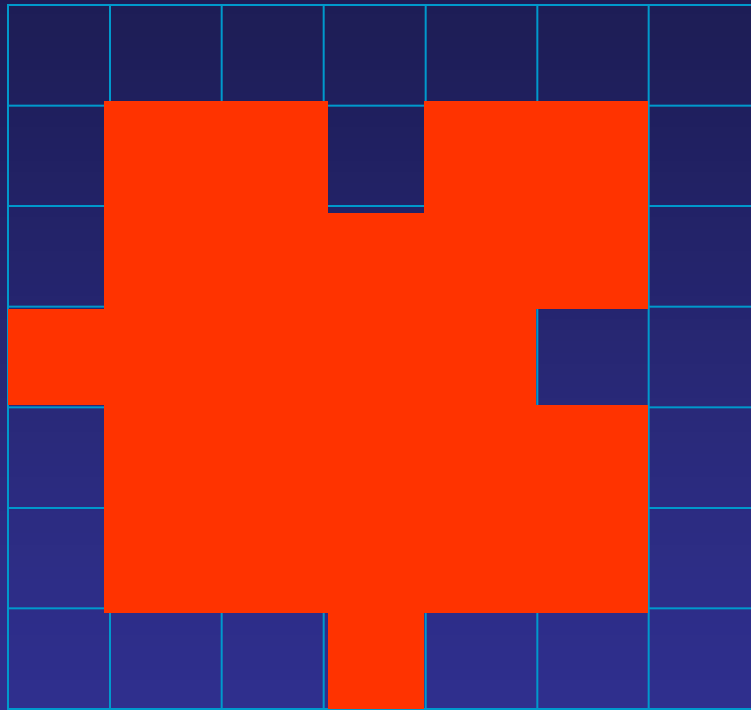


Patch = 25 squares

Shape = 1.0

**Rectangle Area Required
= 25 squares**

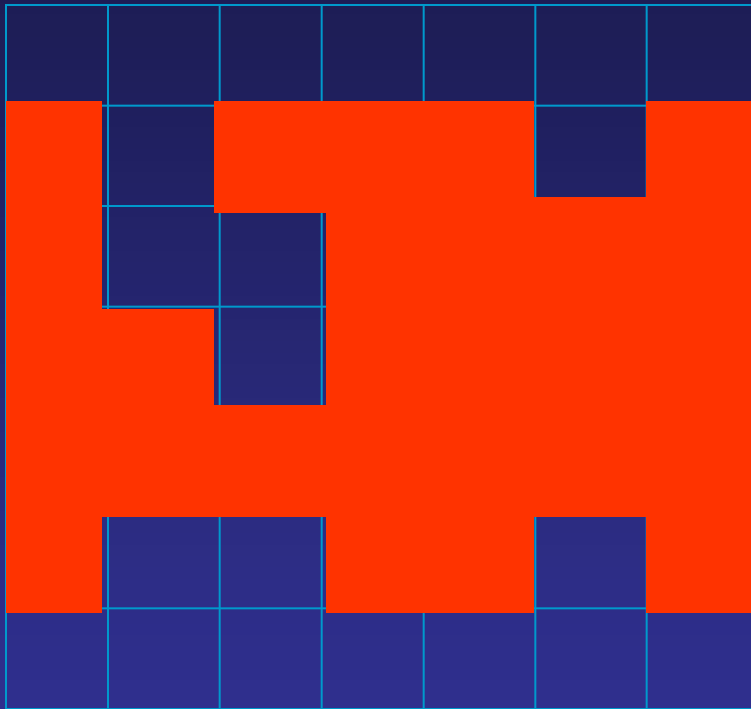
As shape increases, so does the gross area (Event) required



Patch = 25 squares

Shape = 1.4

**Rectangle Area Required
= 36 squares**

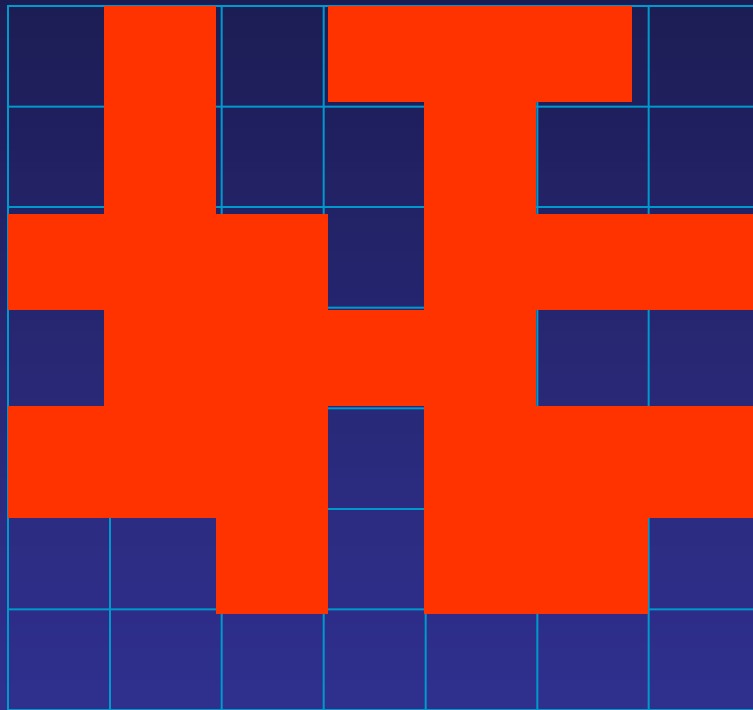


Patch = 25 squares

Shape = 1.9

**Rectangle Area Required
= 35 squares**

Limit of shape complexity at this resolution

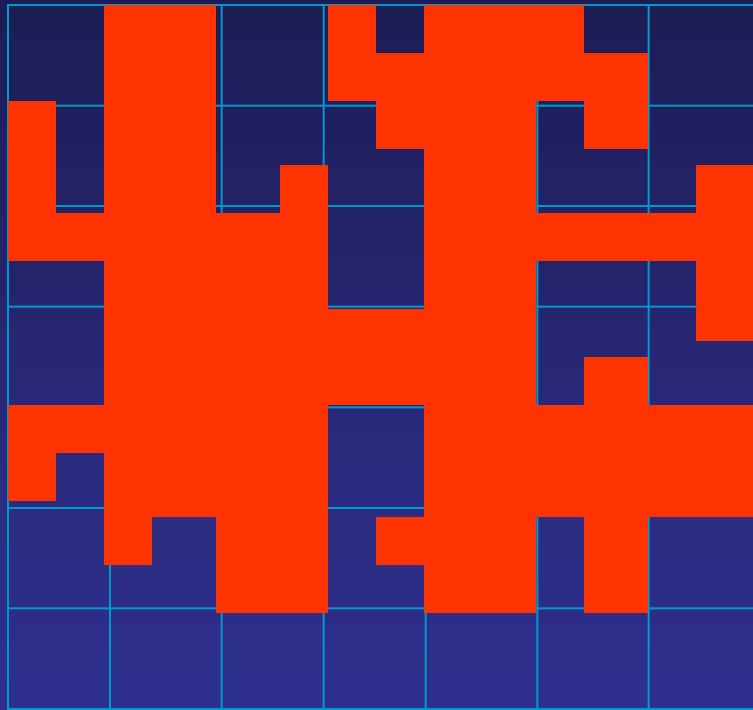


Patch = 25 squares

Shape = 2.3

Rectangle Area Required
= 42 squares

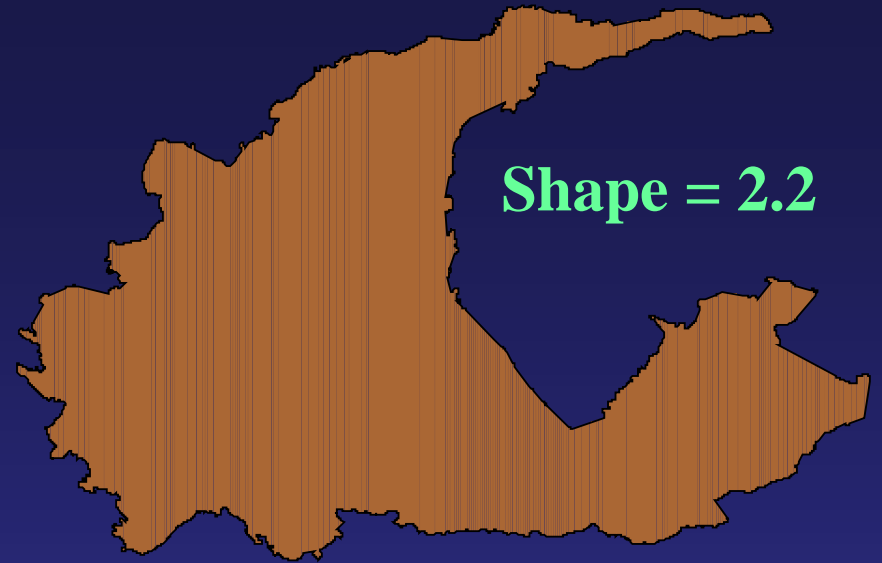
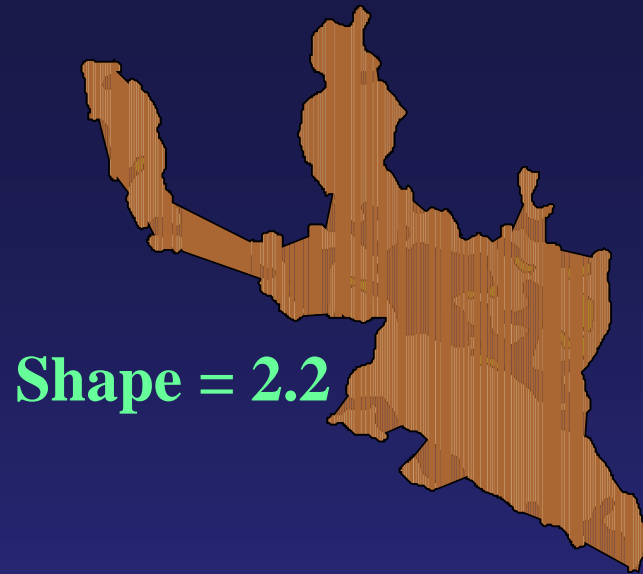
By increasing resolution, shape increases



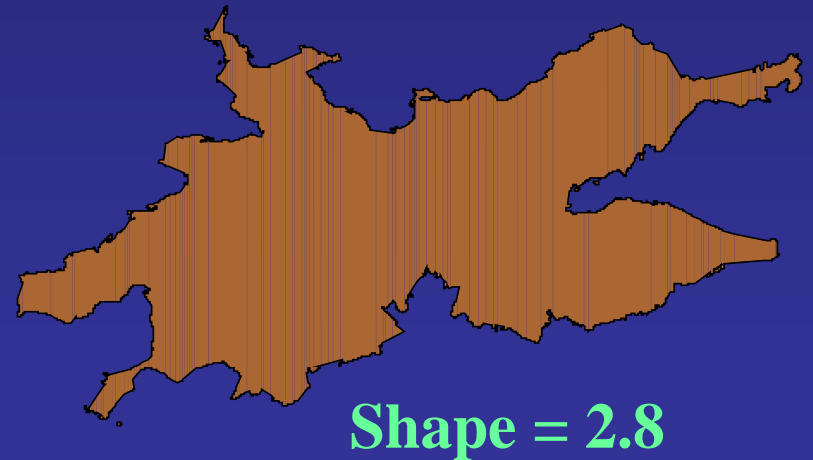
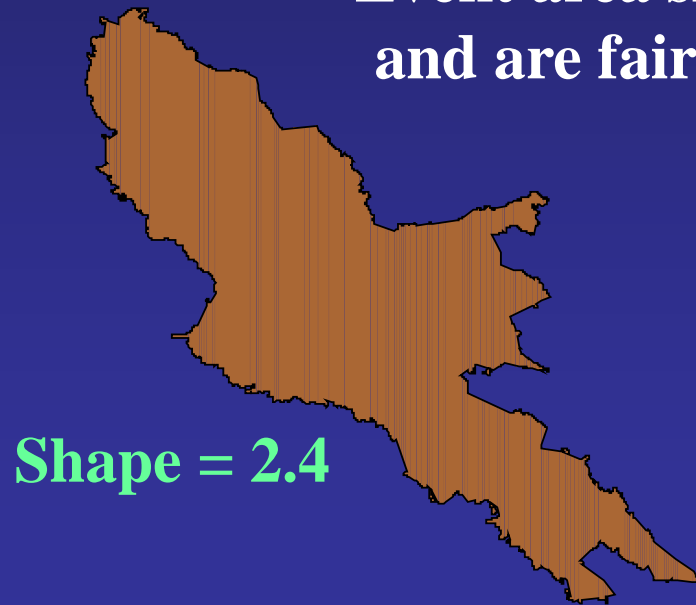
Patch = 25 squares

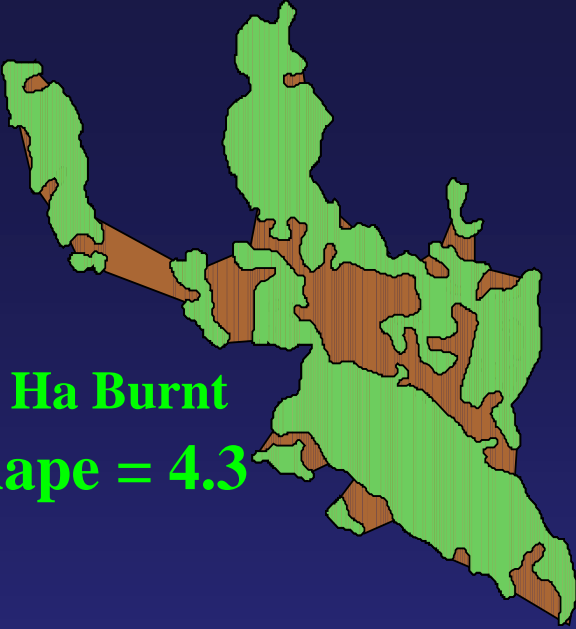
Shape = 3.2

Rectangle Area Required
= 42 squares



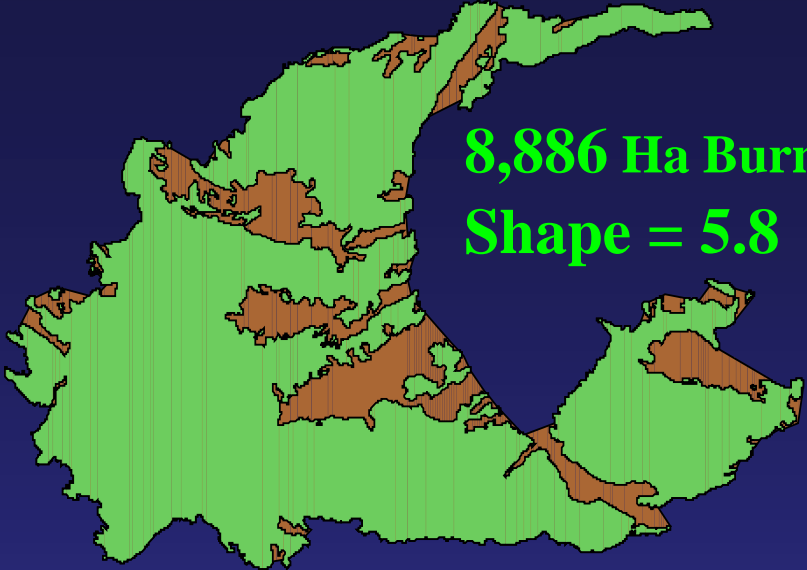
Event area shapes are not that complex,
and are fairly constant with event size.





28 Ha Burnt
Shape = 4.3


This map shows a region with a small, relatively simple burnt area (brown) located in the central-western part. The surrounding area is green. The burnt area has a smooth, somewhat rectangular shape.



8,886 Ha Burnt
Shape = 5.8

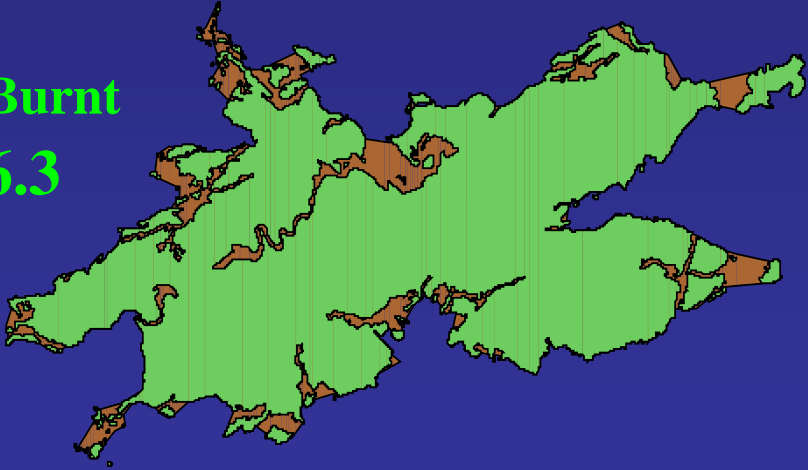
This map shows a large, highly irregular burnt area (brown) covering a significant portion of the region. The burnt area has a very complex, jagged boundary with many small inlets and protrusions. The surrounding area is green.

On the other hand, disturbance shapes
are highly complex.



697 Ha Burnt
Shape = 11.1

This map shows a large, highly irregular burnt area (brown) covering a significant portion of the region. The burnt area has a very complex, jagged boundary with many small inlets and protrusions. The surrounding area is green.



1,163 Ha Burnt
Shape = 6.3

This map shows a large, highly irregular burnt area (brown) covering a significant portion of the region. The burnt area has a very complex, jagged boundary with many small inlets and protrusions. The surrounding area is green.

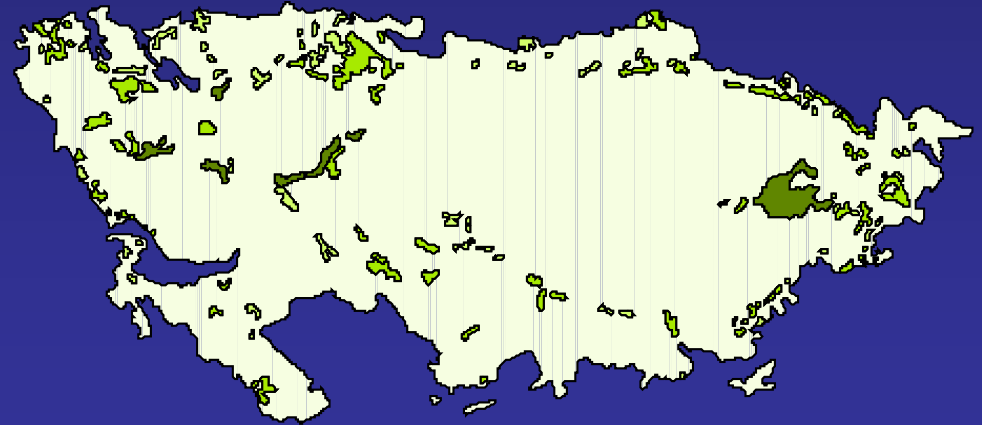
At First Glance

- Sizes range from very small to very large
- One disturbance has many patches
- Burn boundaries are not straight
- Material is left over in the middle (islands)
- Burns do not always respect riparian zones

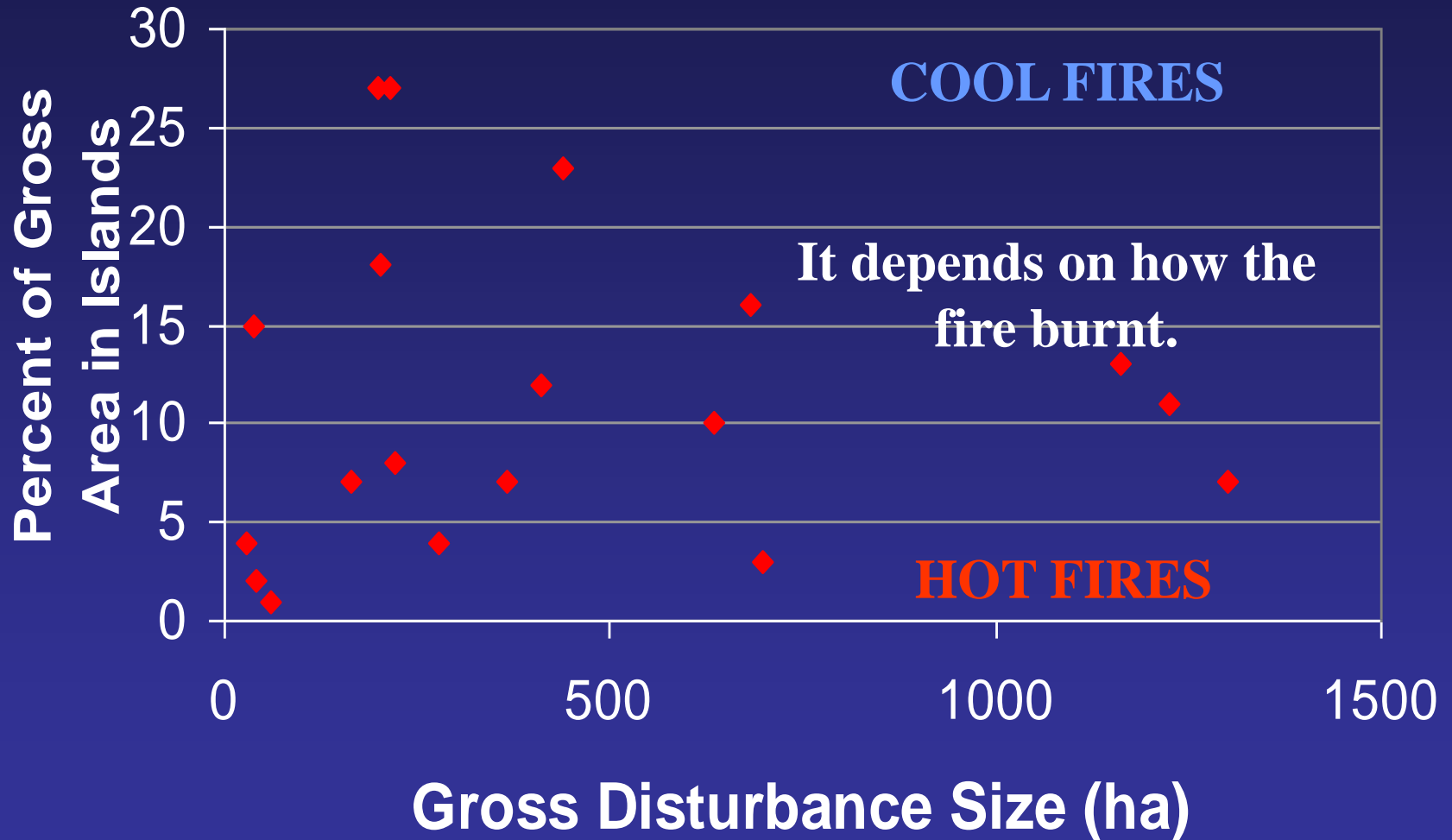
**There may be a lot of
leftover material...**



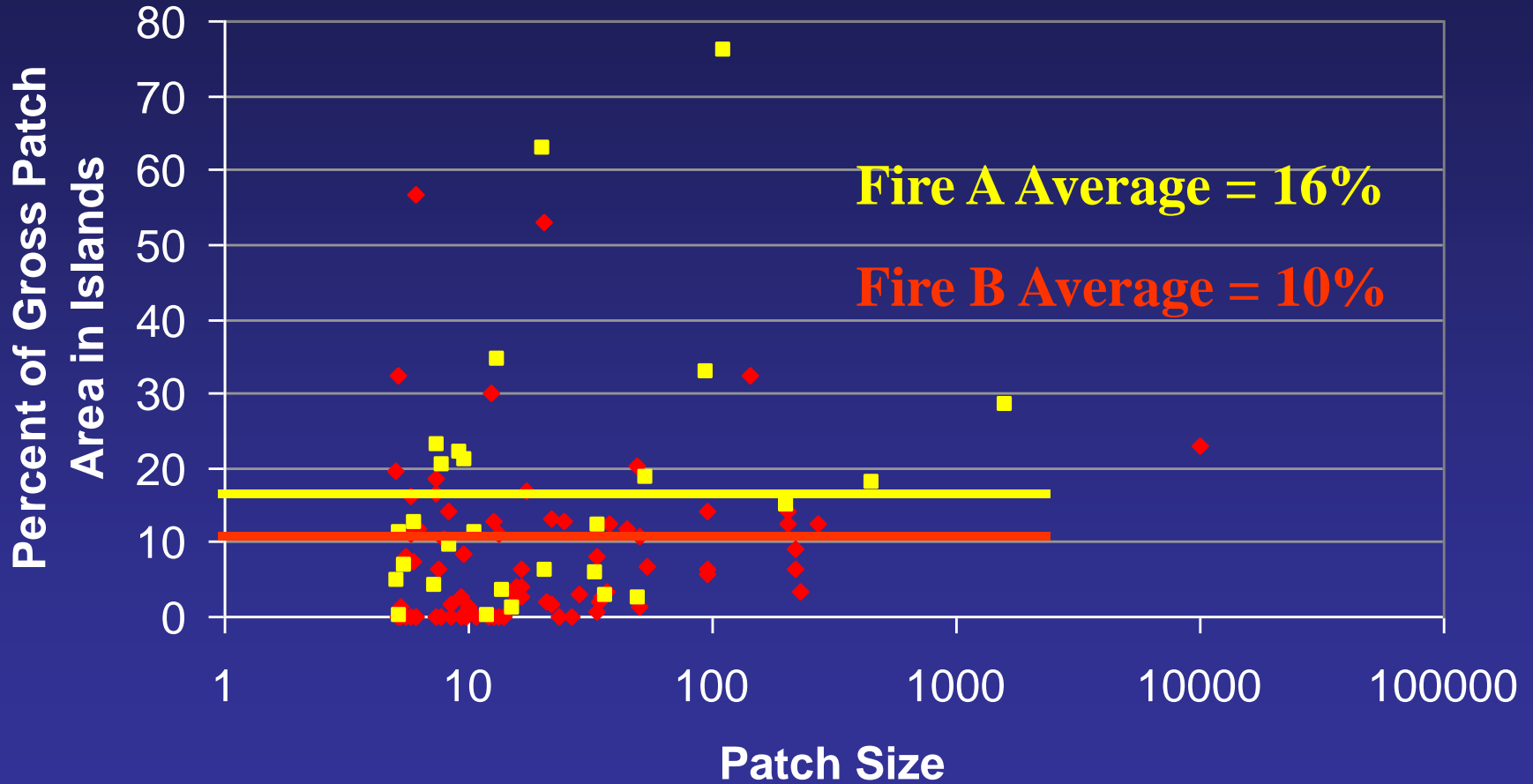
... or very little.



Total Area Left Within the Disturbance



Remnant Fire Material by Patch for 2 Disturbances



Unburnt Material Summary

- **Occurs at several scales**
- **Varies between fires, consistent within fires (relates to burn intensity & resident time)**
- **Not discussed further in this workshop**

At First Glance

- Sizes range from very small to very large
- One disturbance has many patches
- Burn boundaries are not straight
- Material is left over in the middle
- Burns do not always respect riparian zones, non-forested zones, or non-merchantable forests.

Pattern Demonstration

- Berland 21 operating area of Weldwood FMA
- About 8,400 ha
- Planned, first pass cut
- Experimental Area