

SEVERITY OF SHORT-INTERVAL REBURN MEDIATES COMPOSITIONAL SHIFTS IN FIRE- ADAPTED MONTANE SHRUBLANDS

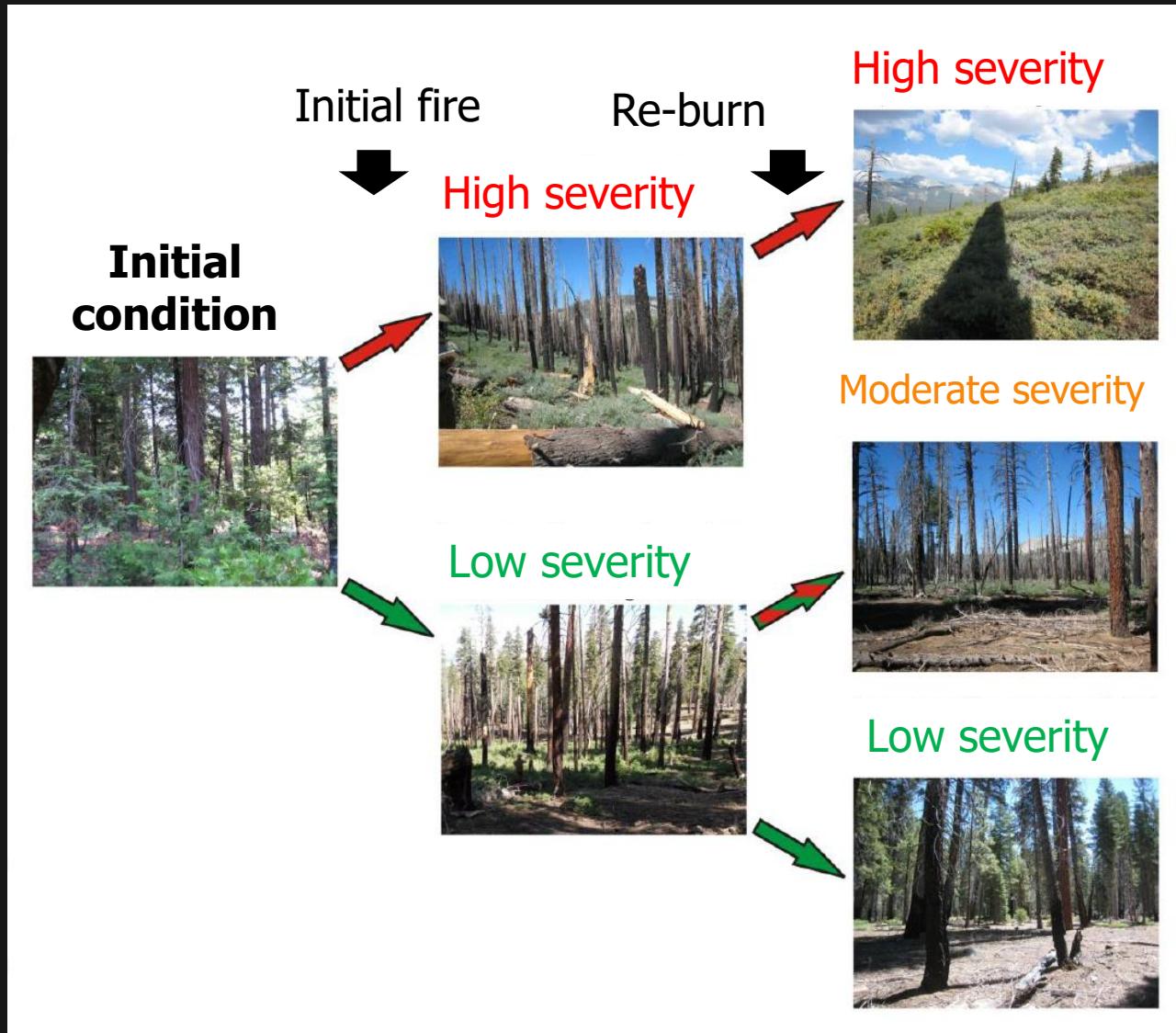


Nemens, D.G., Varner, J. M. and Kathryn R. Kidd





Alternative vegetative states



Coppoletta et al. 2015 *Ecosphere*

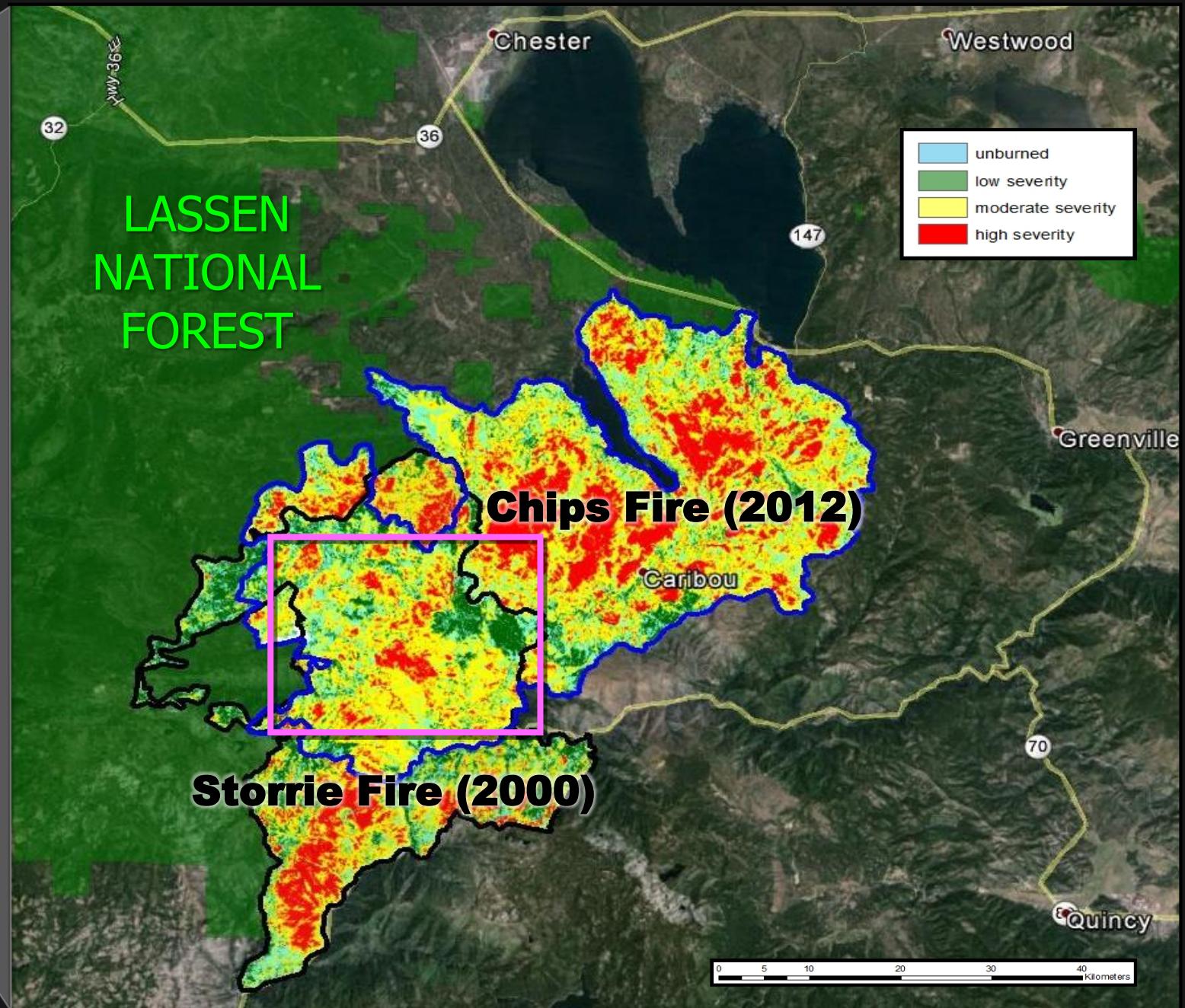
Post-fire regeneration strategies

Fire-stimulated germination



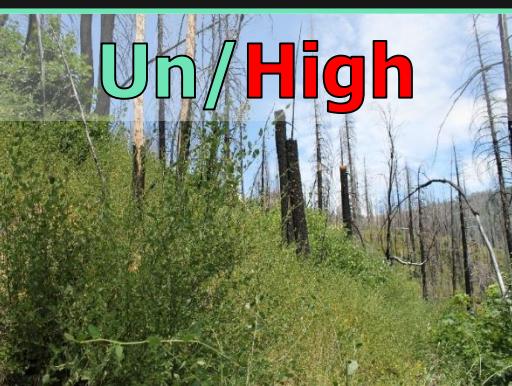
Basal sprouting





Storrie Fire - 2000

Chips Fire - 2012



Research Questions:

Were there compositional shifts in the mid-story across severity combinations?

Are some severity combinations favoring certain fire-adaptive traits?

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Douglas-fir

(*Pseudotsuga menziesii*)



Deerbrush

(*Ceanothus integerrimus*)



Seeders

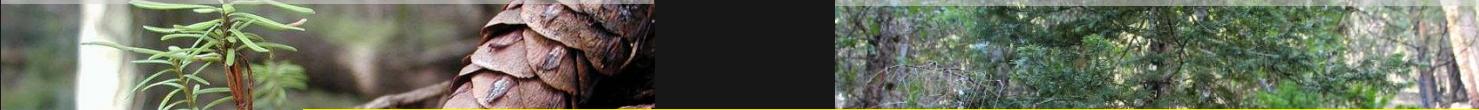
Sierra gooseberry

(*Ribes roezlii*)



White fir

(*Abies concolor*)



Seeders

Greenleaf manzanita

(*Arctostaphylos patula*)



Facultative seeder/sprouters



Snowbrush

(*Ceanothus velutinus*)



Sprouters

Ponderosa pine

(*Pinus ponderosa*)



Mountain whitethorn

(*Ceanothus cordulatus*)



California black oak

(*Quercus kelloggii*)



Indicator species analysis

Specificity/
Relative abundance

$$A_{ij} = \text{Nindividuals}_{ij}/\text{Nindividuals}_i.$$

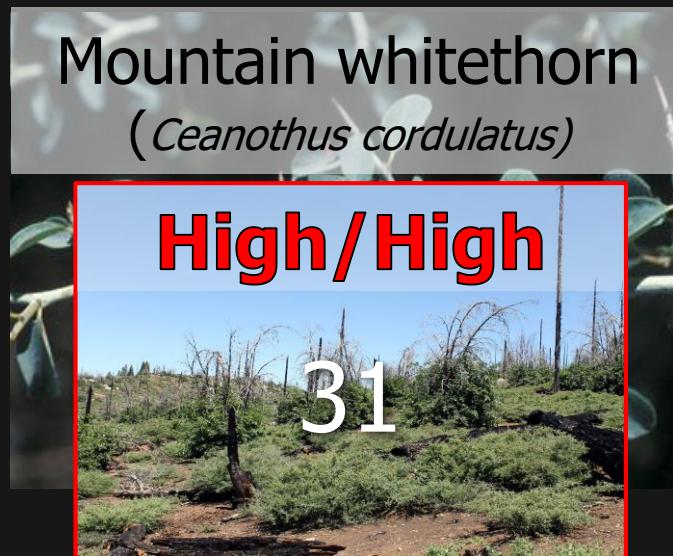
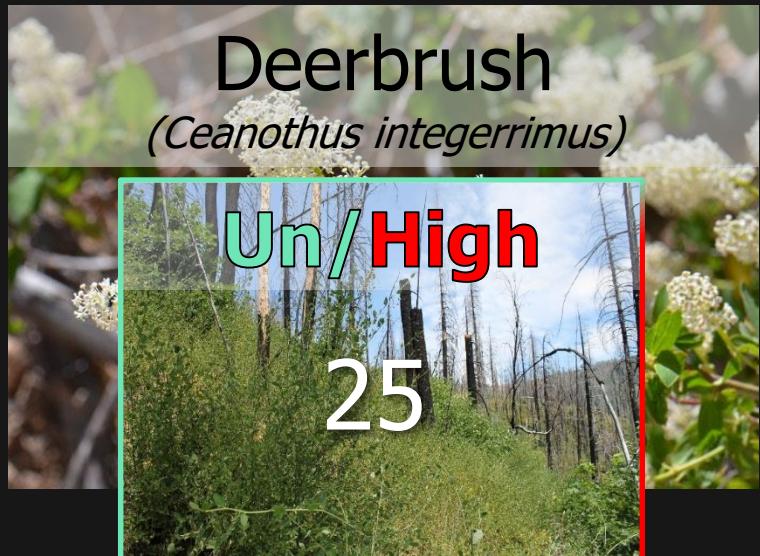
Fidelity/
Relative frequency

$$B_{ij} = \text{Nsites}_{ij}/\text{Nsites}_j$$

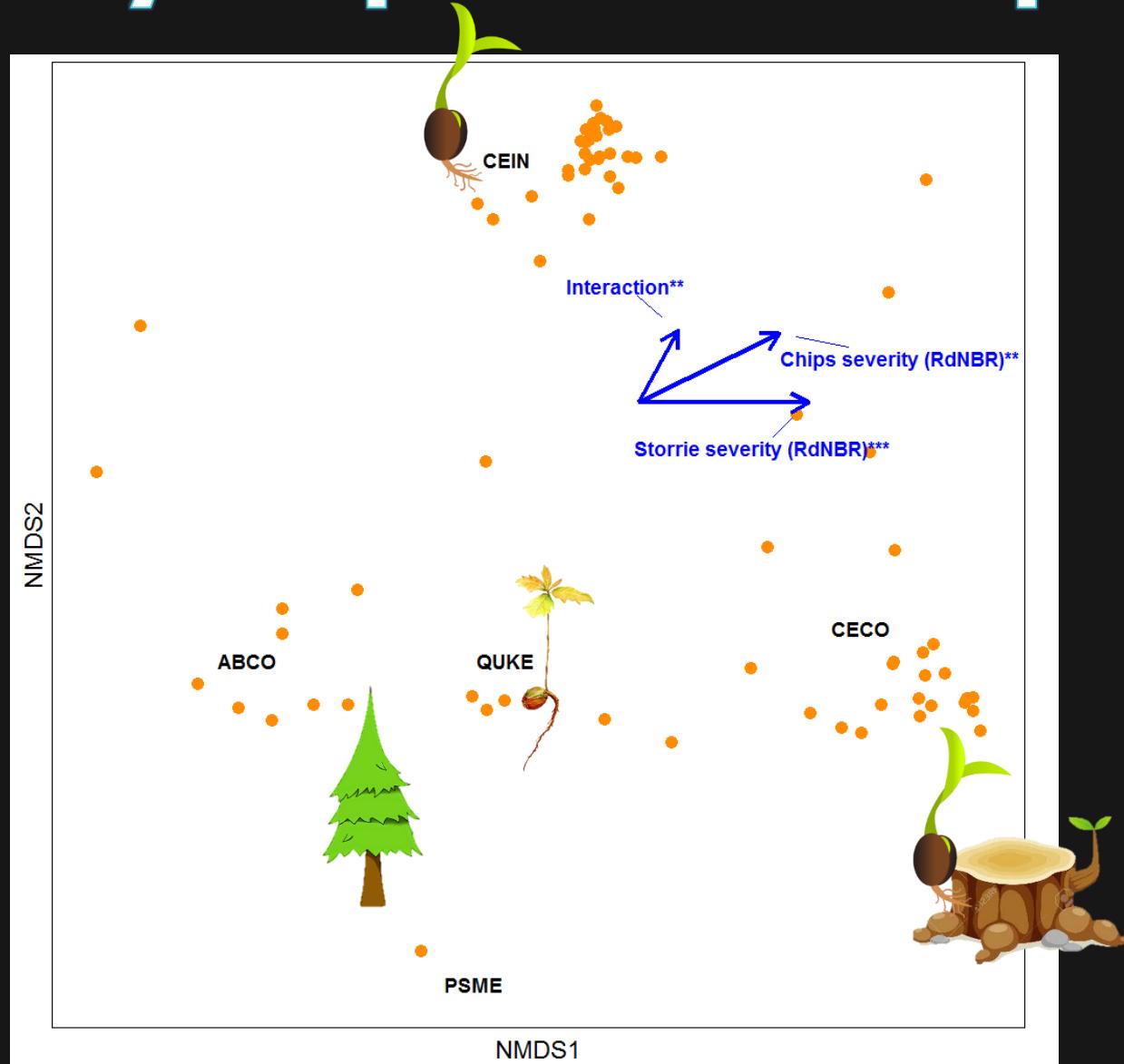
$$\text{INDVAL}_{ij} = A_{ij} \times B_{ij} \times 100,$$

Dufrêne & Legendre, 1997

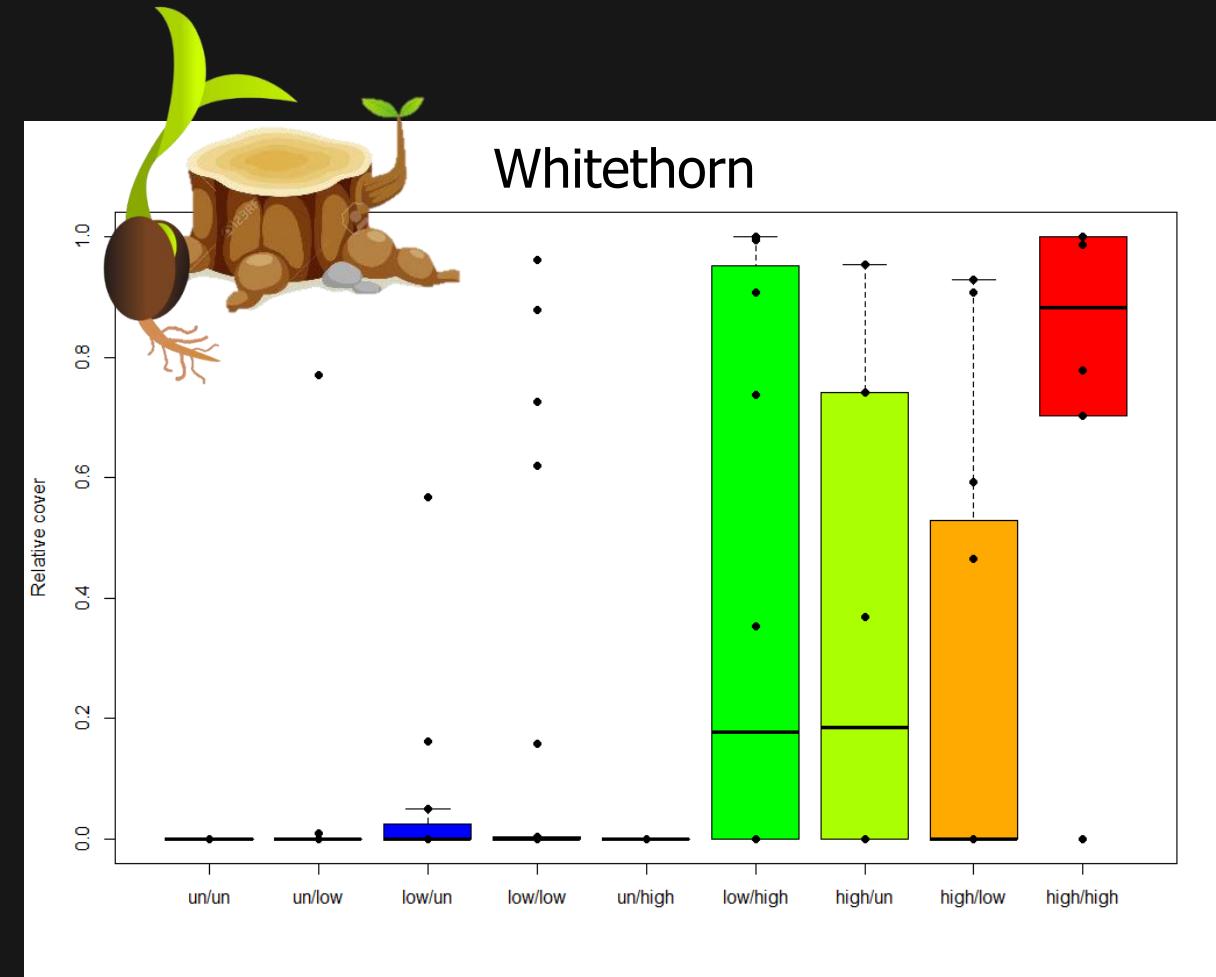
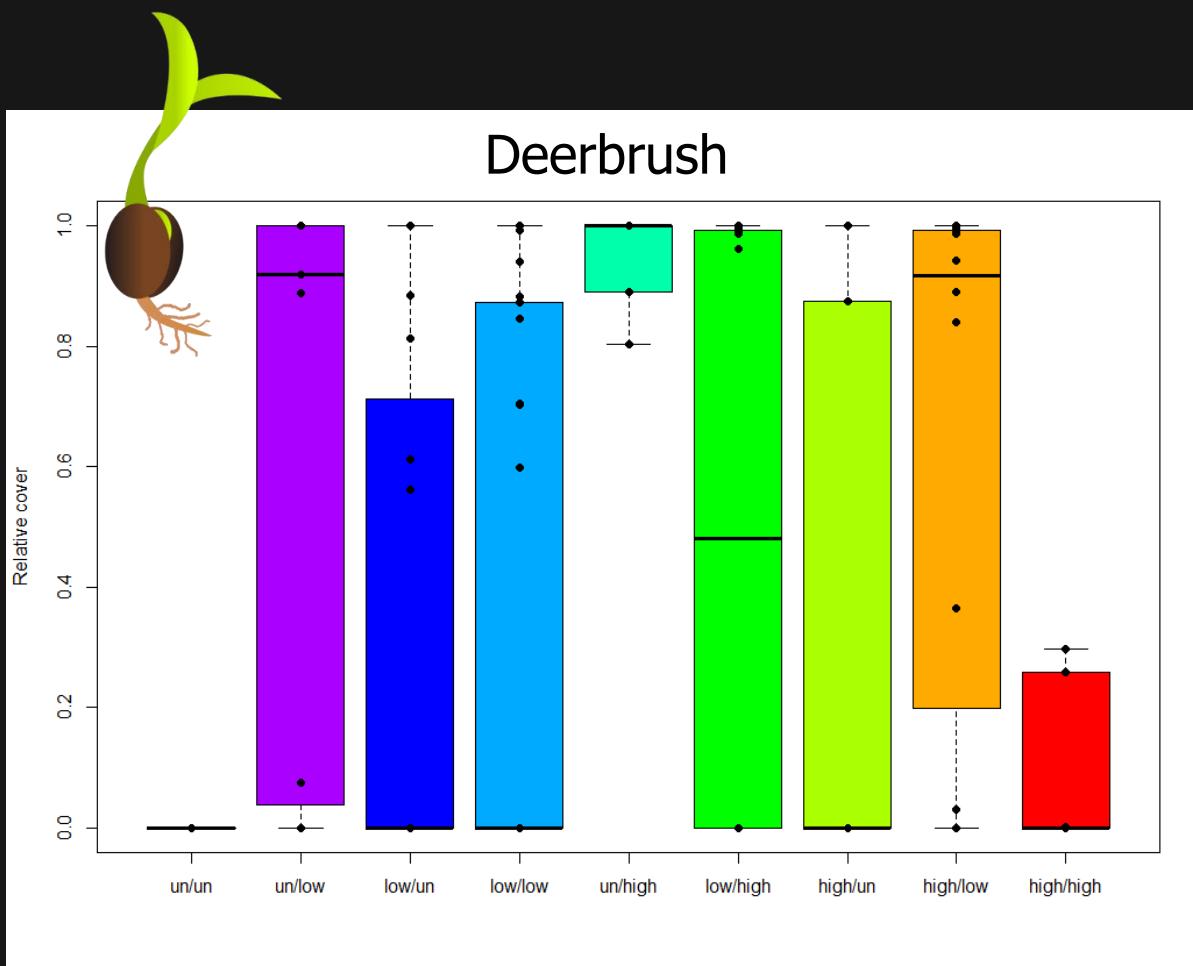
Indicator species values



Severity-dependent response

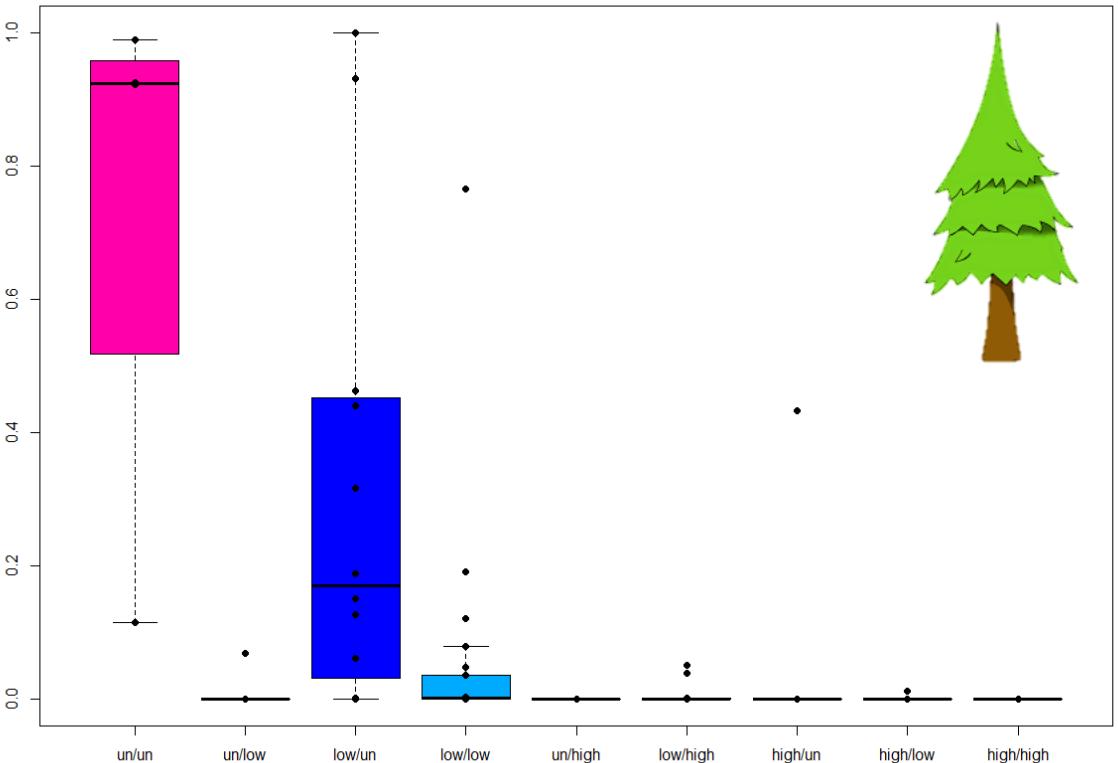


Shrubs

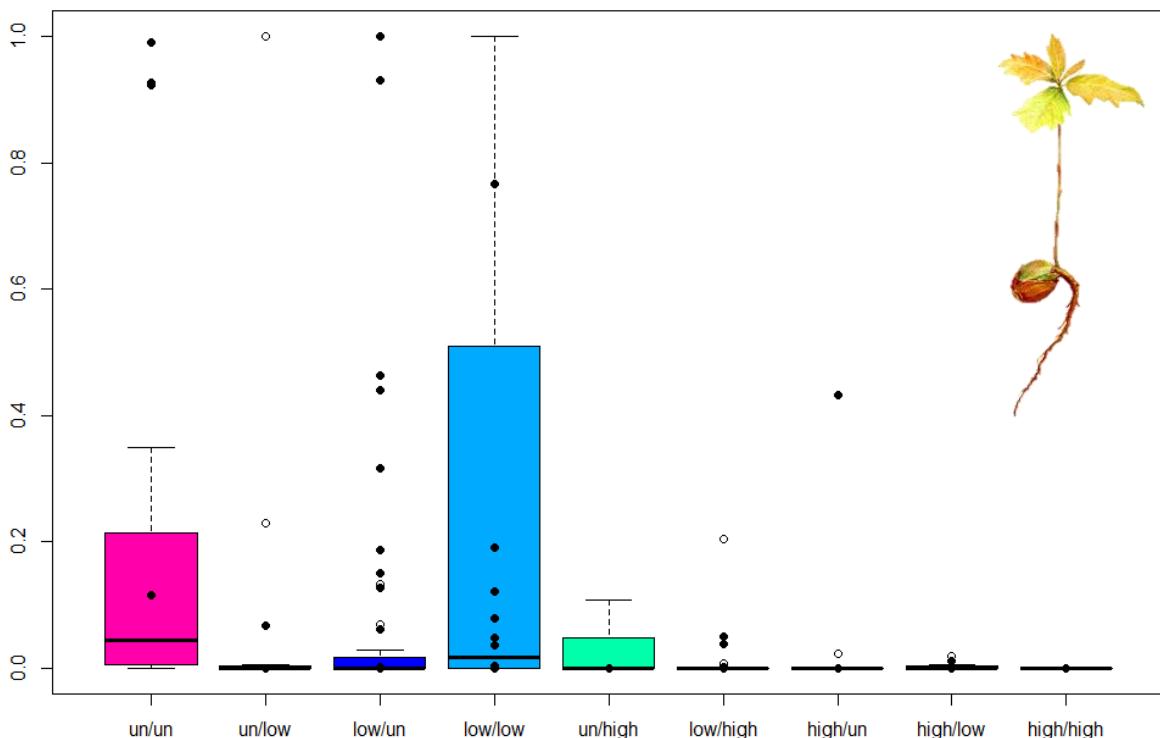


Trees

Conifers



Black oak



Implications:

Type shift – self-reinforcing
Regeneration strategies
Interval dependence?
Future fire behavior?





Acknowledgements



Thank you!

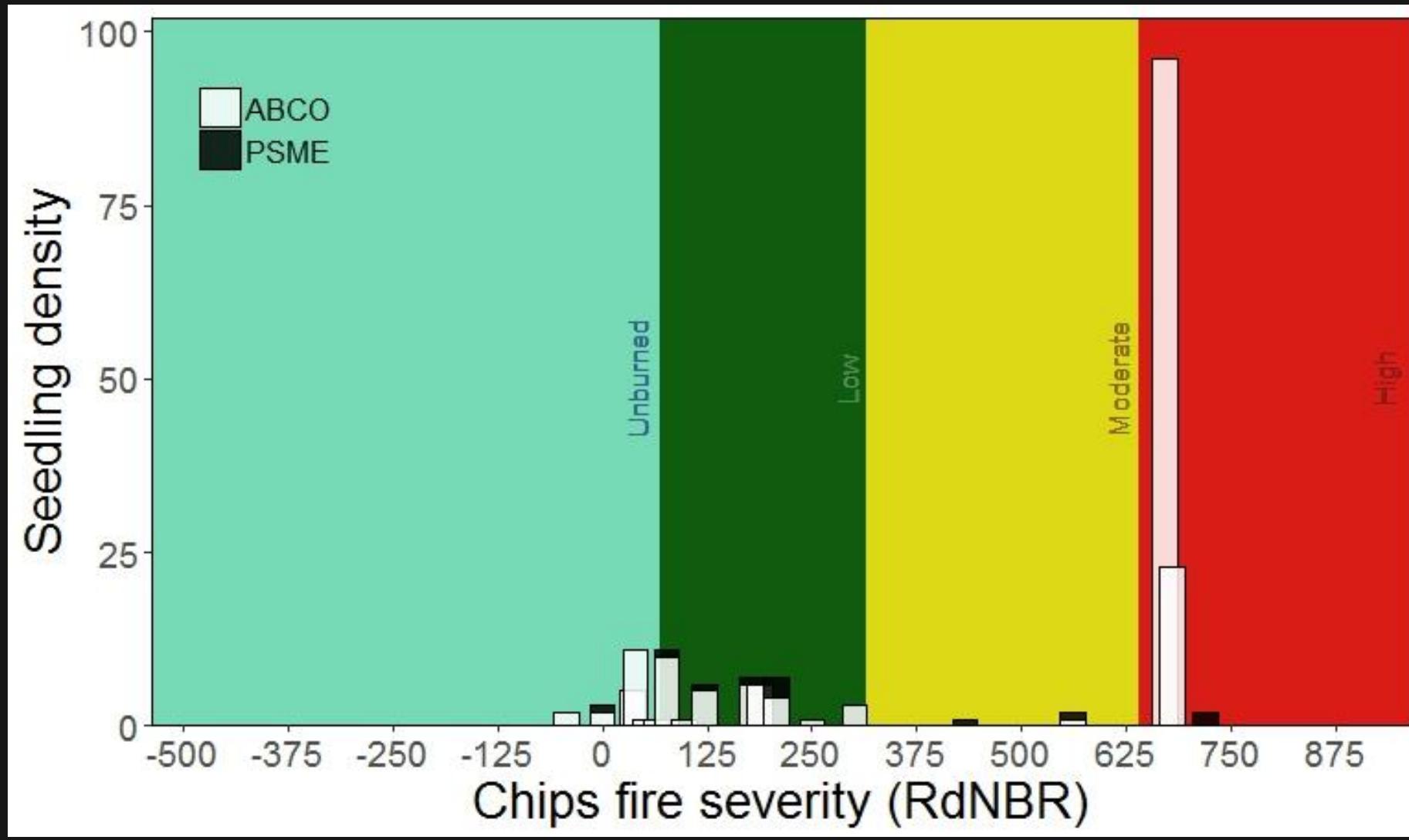


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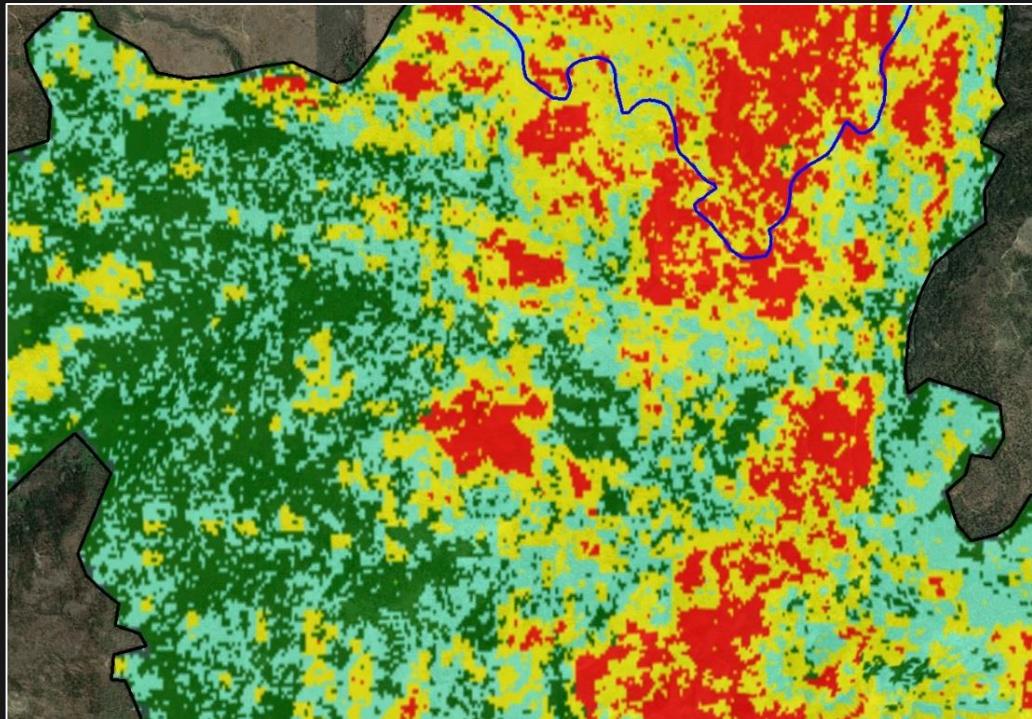
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Seattle, WA
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Seedling density

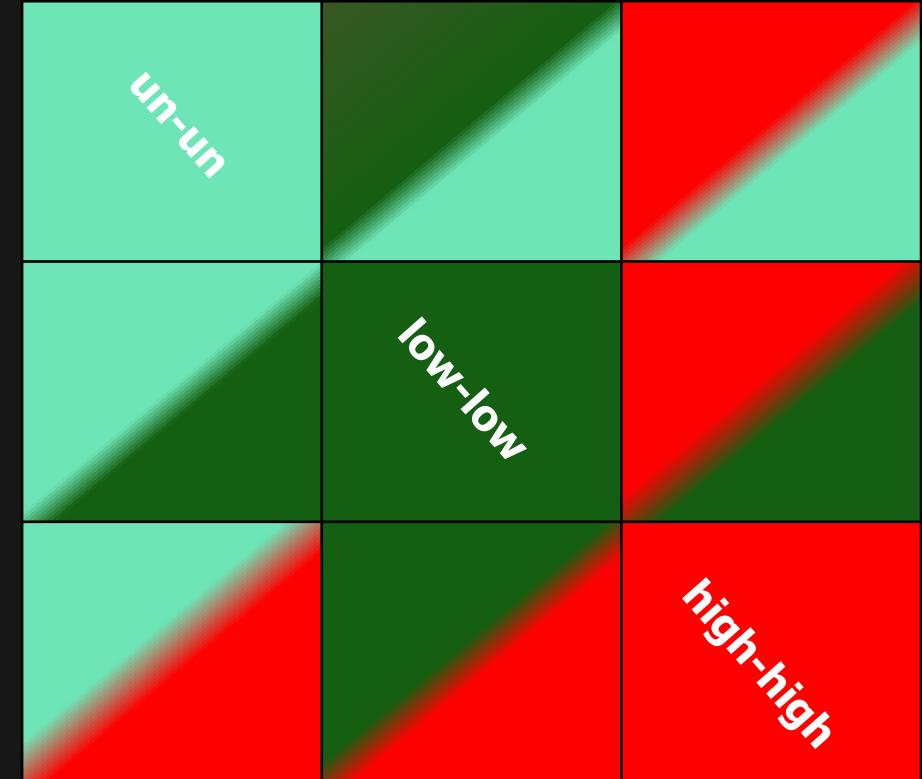


Design

STORRIE FIRE
2000



CHIPS FIRE
2012



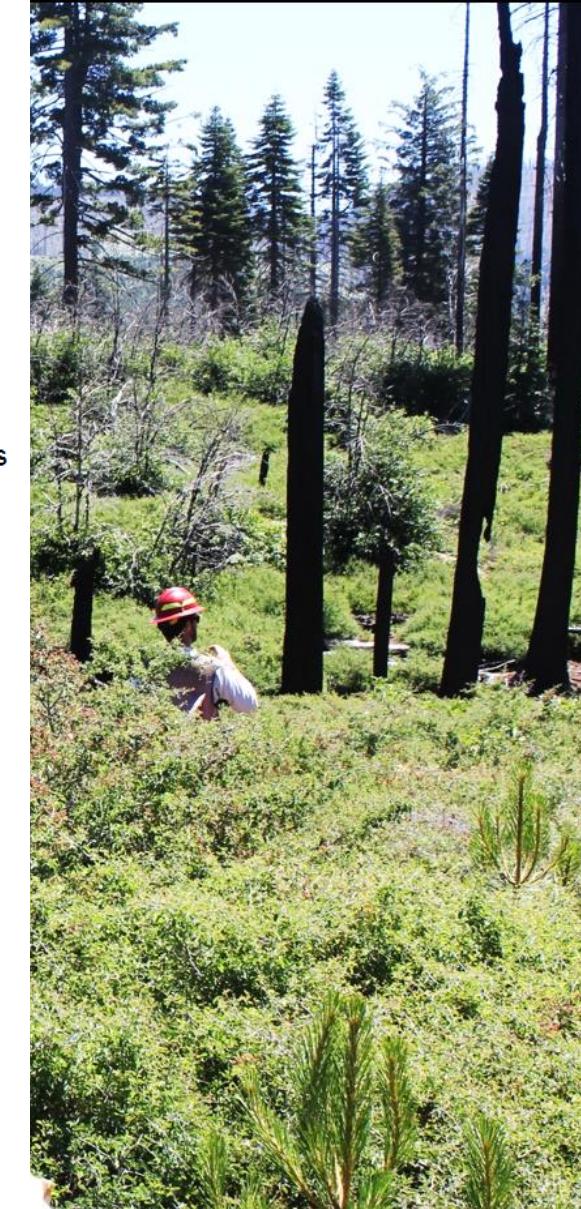
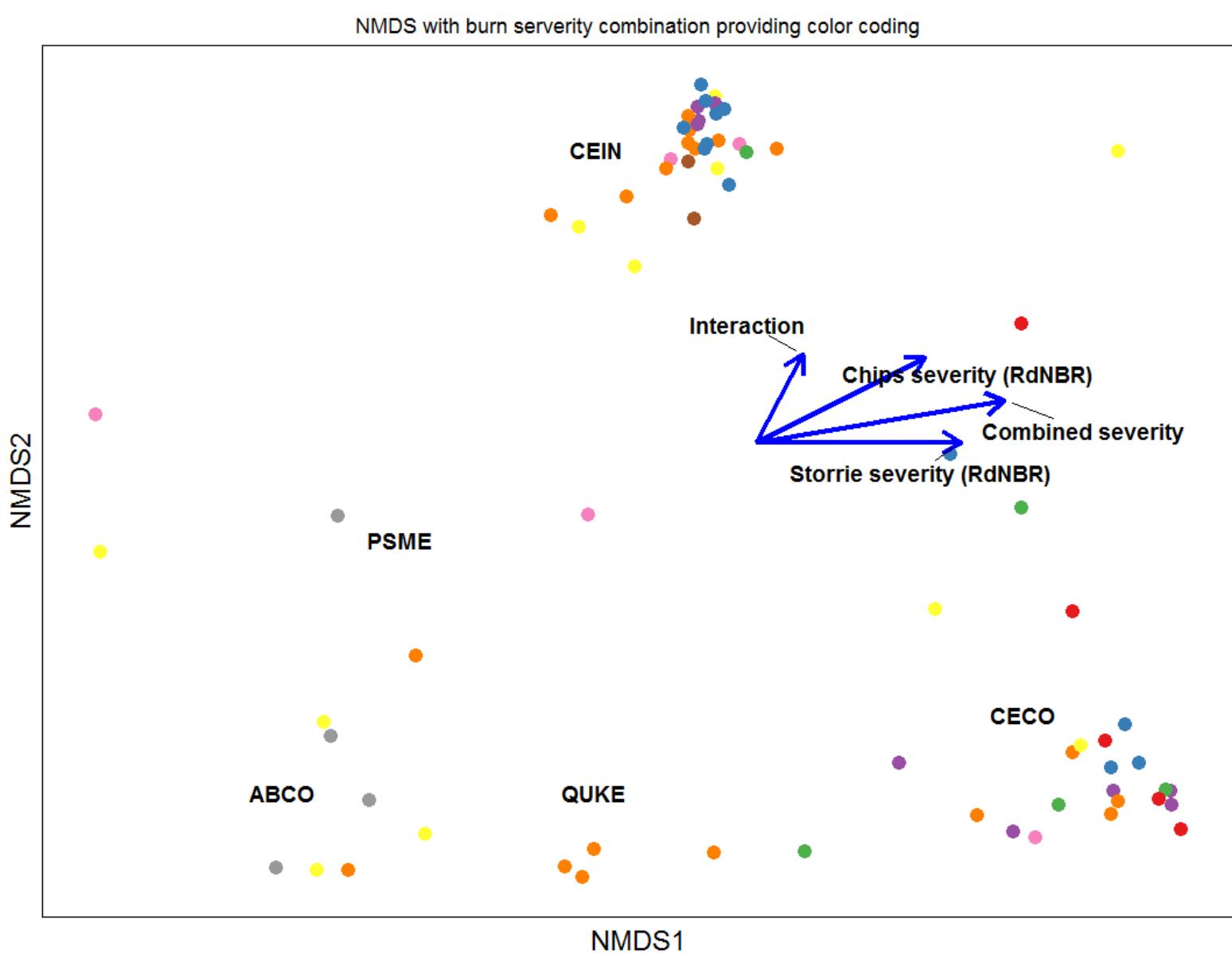
-500

RdNBR

1100



Montane chaparral

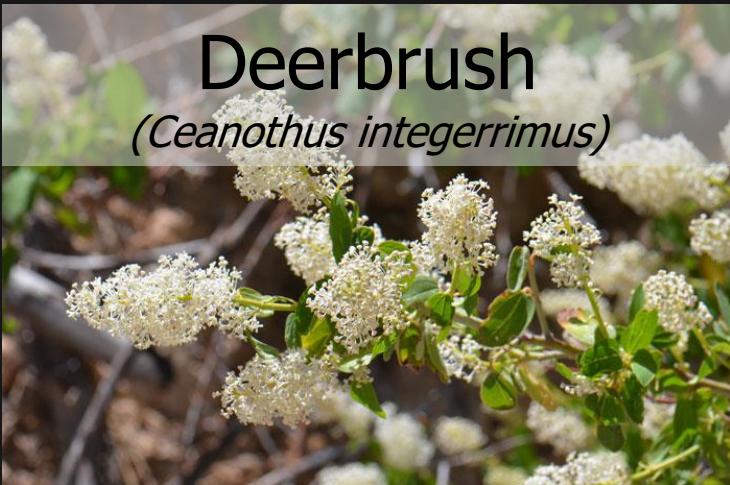




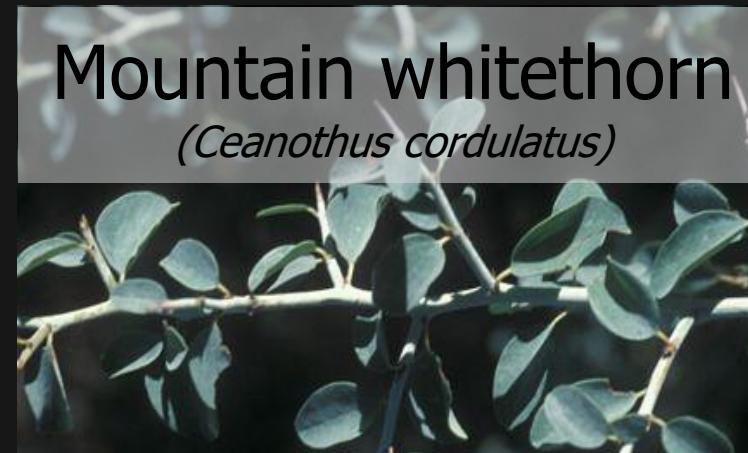
Group		#sps.	1		Ind	value
		A	B	stat	p.value	
CECO	0.3661	0.8333	0.552	0.02	*	31
Group		#sps.	1			
		A	B	stat	p.value	
QUKE	0.4800	0.6364	0.553	0.04	*	31
Group		#sps.	1			
		A	B	stat	p.value	
CEIN	0.2462	1.0000	0.496	0.01	**	25
Group		#sps.	2			
		A	B	stat	p.value	
ABCO	0.6038	0.7500	0.673	0.02	*	45
PSME	0.8943	0.5000	0.669	0.01	**	44



Obligate seeders



Deerbrush
(*Ceanothus integerrimus*)



Mountain whitethorn
(*Ceanothus cordulatus*)



Greenleaf mazanita
(*Arctostaphylos patula*)

Obligate sprouters



Sierra gooseberry
(*Ribes roezlii*)



Snowbrush
(*Ceanothus velutinus*)



California black oak
(*Quercus kelloggii*)

**Facultative sprouter/seeders:
Severity-dependent fire
response**