FOREST HEALTH

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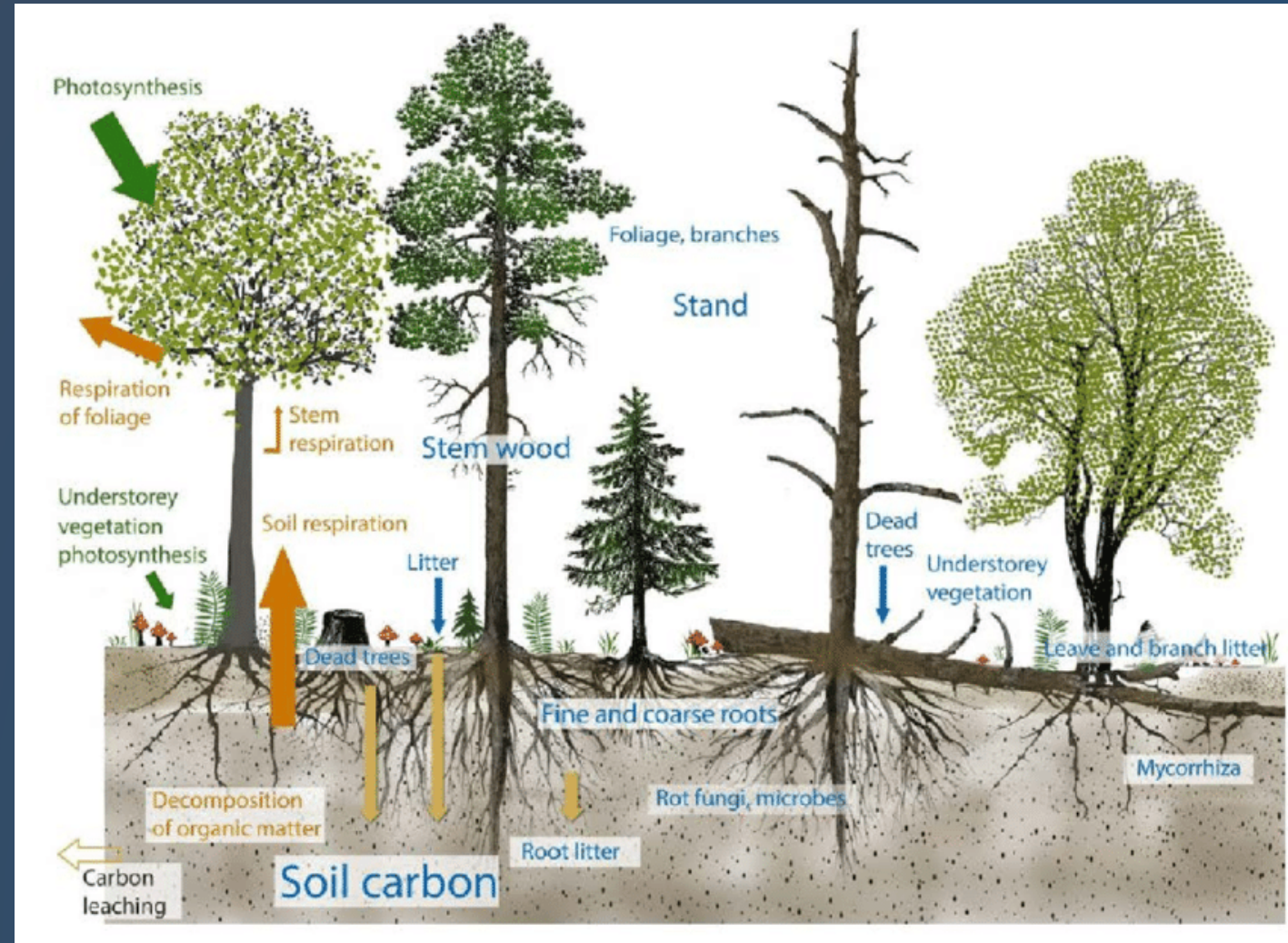
Anderson Valley Resilient Lands Symposium
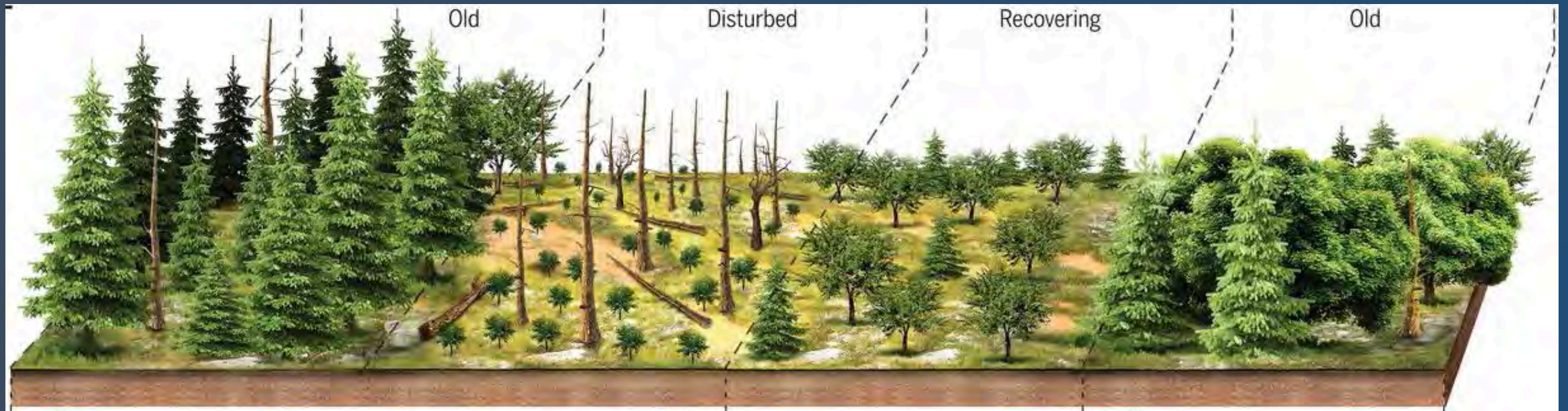October 15TH, 2022

Forest Health

1. Forests are dynamic

Bartlett et al., 2020

FOREST HEALTH

2. Disturbance is important

- A temporary change in environmental conditions that causes a pronounced change in an ecosystem

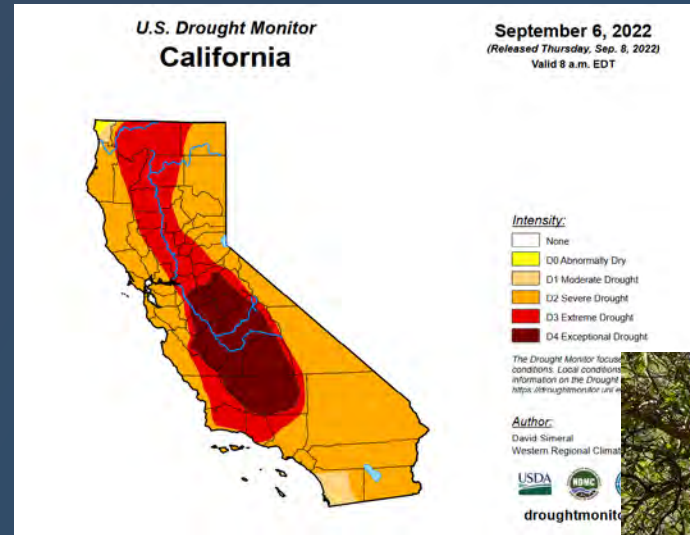McDowell et al., 2020

Forest Health
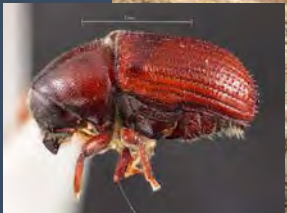
3. Dead trees are important

Franklin et al., 2008

DISTURBANCE
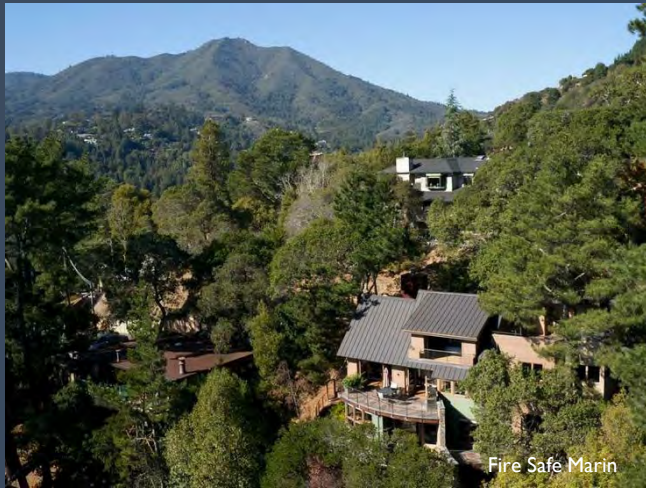
- Abiotic
  - Weather
    - Earthquakes, tornadoes, floods, snow, ice, mudslides
  - Climate
  - Drought
  - Fire
  - Asteroids

Leonid Kulik

DISTURBANCE

Fire Safe Marin

Wildfire Today

- Biotic
  - Anthropogenic
    - Historical land management practices
    - Changes in land use (WUI)
    - Fire Suppression
    - Climate Change
  - Animals
  - Insects and diseases

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Fire adapted ecosystems

- Mediterranean climate

- Frequent fire return intervals
  - More frequent with Native American burning

- Fire is a common disturbance

- Has shaped how flora and fauna have adapted

Fire History in California

Table 5
California forest types and areas from Barbour and Major (1988) and estimates of fire return intervals and annual areas burned before the influences of Euro-American settlement

Vegetation type	Area (ha)	Crown burned (%)	Period between fires (years)		Hectares burned per year	
			MFRI	HFRI	MFRI	HFRI
Spruce/cedar/hemlock	2004	75	100	250	20	8
Cedar/hem./Douglas-fir	806278	30	20	110	40314	7330
Mixed conifer	5522626	5	8	30	690334	226134
Redwood	928102	0	10	30	92810	30937
Red fir	761598	50	15	50	50760	15226
Lodgepole/subalpine	860378	7.5	25	60	34415	14340
Pine-cypress	49290	80	20	50	2465	986
Ponderosa/shrub	678043	5	5	12	135609	56504
Great basin pine	19636	2.5	7	20	2805	982
Juniper-pinyon	985407	5	30	100	32847	6854
Juniper steppe	363867	5	40	120	9097	3032
Calif. mixed evergreen	1359693	5	10	30	135969	45323
Total					1227445	457658

MFRI—median fire return interval and HFRI—high fire return interval.

Table 6
California woodland, shrubland, and grassland vegetation types and areas from Barbour and Major (1988) and estimates of fire return intervals and annual areas burned before the influences of Euro-American settlement

Vegetation type	Area (ha)	Period between fires (years)		Hectares burned per year	
		MFRI	HFRI	MFRI	HFRI
Chaparral	3400234	30	70	113341	48575
Montane chaparral	229220	30	50	7641	4584
Coastal sagebrush	989414	20	40	49470	24735
Coastal sagebrush/California oakwoods	256470	5	20	51294	12874
California oakwoods	3821807	3	8	1273936	477726
Great basin sagebrush	740838	20	60	37026	12343
Fescue-oatgrass	351484	3	8	117161	43936
California steppe	5288897	3	8	1762966	661112
Tule marshes	743764	5	15	148753	49584
Alpine meadows	298948	50	100	5979	2989
Sagebrush steppe	1298380	30	70	43279	18548
Total				3610848	1356956

MFRI—median fire return interval and HFRI—high fire return interval.

Stephens et al., 2007

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Poor forest health

M. Mayeda
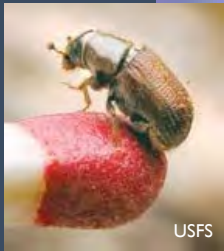
Landscape Scale Tree Mortality

USFS

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Extreme wildfire behavior

FOREST STEWARDSHIP

- Improve vigor of trees

- Reduce fuel loading

- Create resiliency to insects, diseases, wildfire, climate change, etc.

M. Mayeda

R. Campbell, Save the Redwoods League

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Prescribed Fire

- The use of fire under predetermined conditions to achieve specific objectives

- Tool for wildfire hazard reduction, ecosystem restoration, vegetation management, habitat enhancement, cultural resources, etc.

THANK YOU

Questions?

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UCCE Mendocino Forestry
(http://cemendocino.ucanr.edu/Forestry/)

UC ANR Forestry (http://ucanr.edu/sites/forestry/)