

Biosphere - A similar life zone

→ Forests → hardwood  
↓  
→ softwood

↑  
Landscape - Collection of ecosystems in an area

↑  
Ecosystem - Community and interactions w/ abiotic

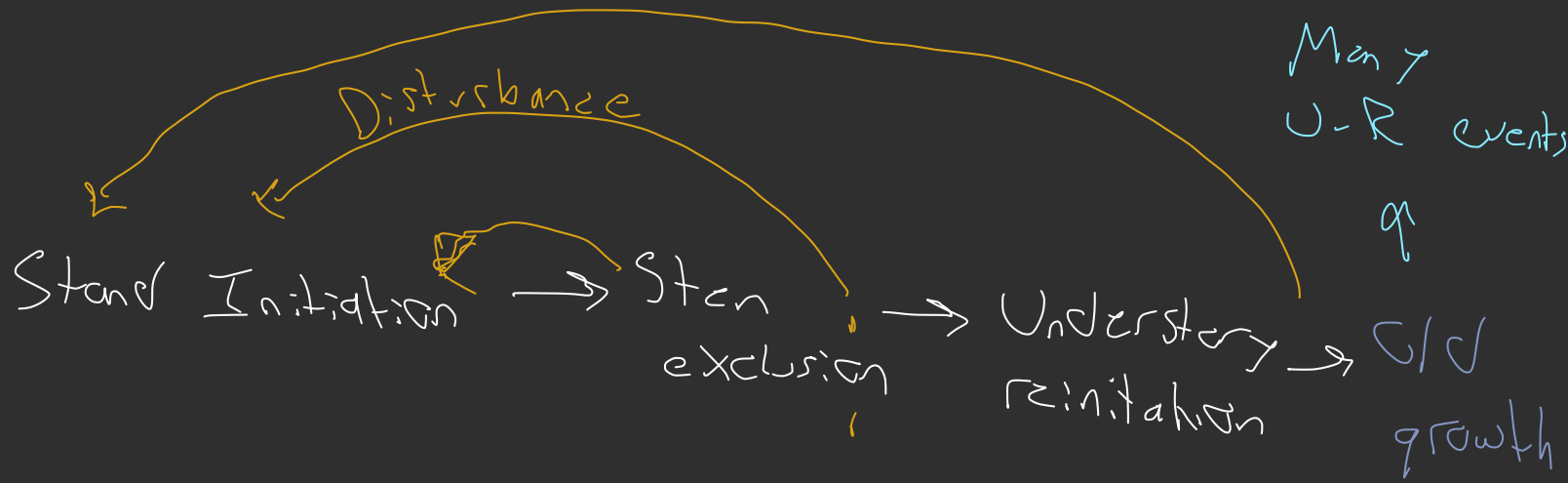
↑  
Community - Multiple populations in a given area

↑  
Population - A group of organisms of same species, ... in a given area

↑  
Finest Organism → Individual Tree

→ Forest type  
DME

— Stands are a subset of these.



A diverse amount  
and age of  
both standing and  
down dead material

↑ c/f.  
↓ 0.01%



Forest Regeneration



What does this have to do with regeneration?

- Forests evolved with disturbance.

- Disturbance creates space for  
regeneration

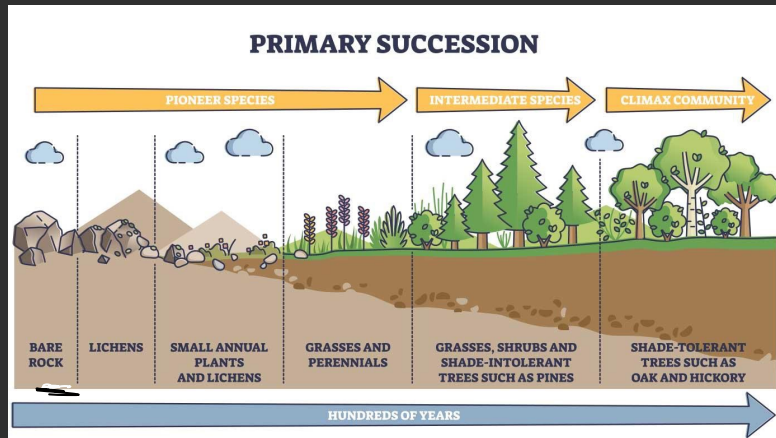
→ Disturbance = regeneration

Primary Succession

→ Succession of

plants starting

from "unvegetated" surfaces



→ Succession following "lethal disturbance"

All plants were killed



Pr. Marx

Succession  
in the "blast zone"  
of Mt St Helens  
→ 1980 eruption



Primary

Succession

- 1993 Lava flow  
of Volcan  
Arenal







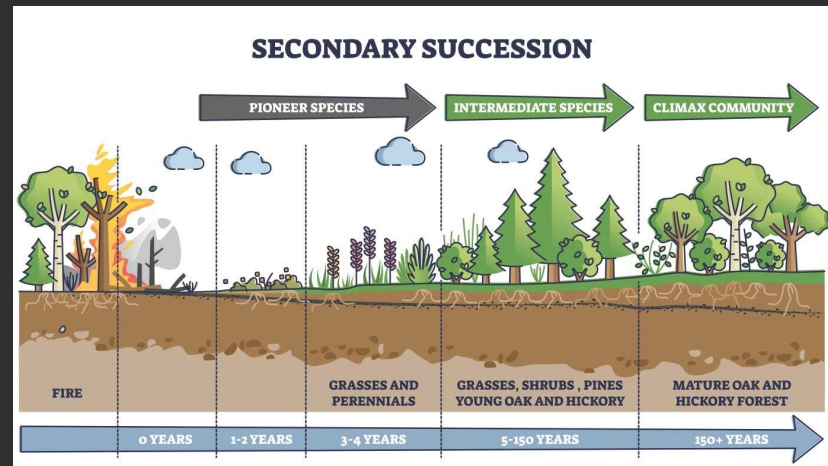
Photo: Jon White

Opportunity for primary succession

# Secondary Succession

→ Recolonization  
of plants after

a disturbance where  
plants already existed.



Sprouting  
shrubs  
re colonizing  
after fire



Release  
Mortality  
= Trees  
in understory  
are not  
impacted by  
the  
mortality



Michael R. Painter Photography

→ Vegetation release in secondary  
Succession



Still Veg, so 2<sup>o</sup>



Still 1<sup>o</sup> because

Plowing removes everything



1<sup>o</sup> because all veg  
removed / nutrients removed

2<sup>o</sup> because there  
are remnant plants

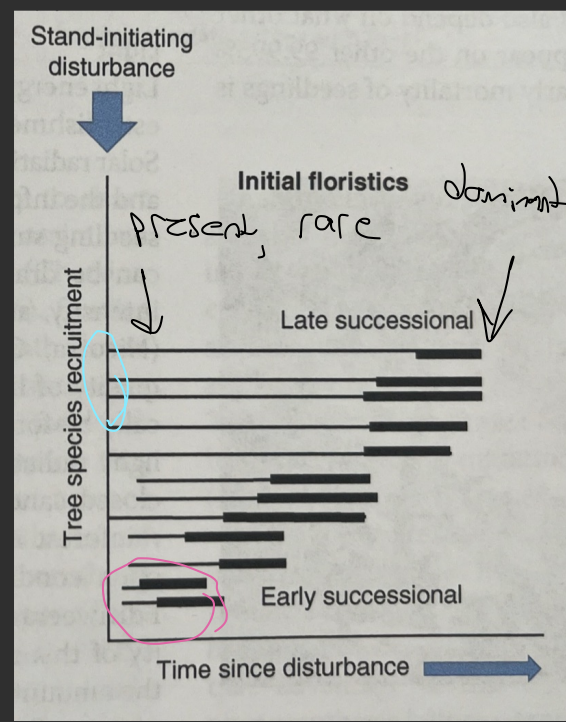


# Initial Floristics

- A data driven way to assess succession

→ Some pre-disturbance plants persist after disturbance

→ Post-disturbance is similar to pre-disturbance



Initial

Floristics

in Pecos

→ Sec

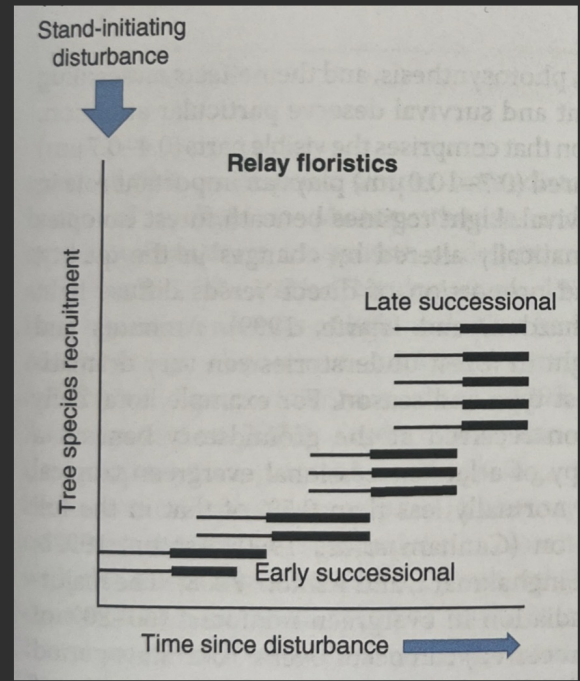
Surviving  
conifers





# Relay Floristics

→ After disturbance,  
only species that  
exists are early  
successional.

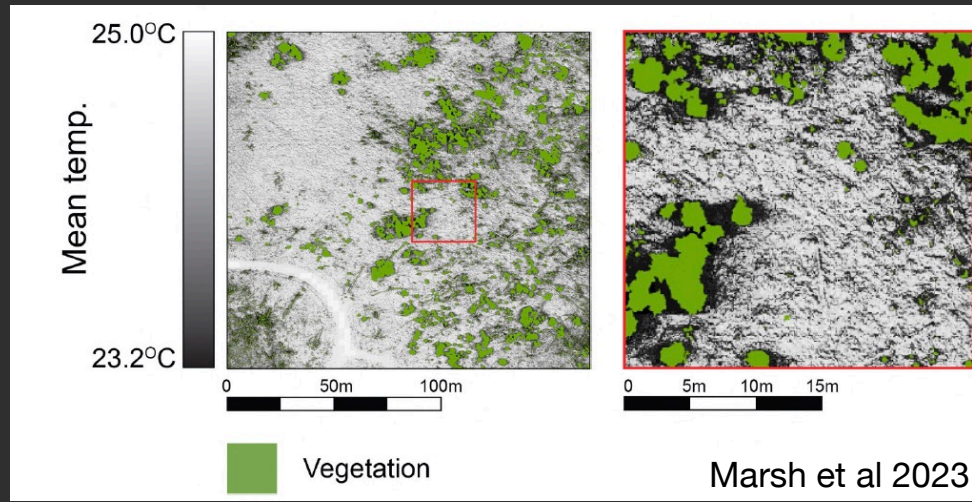


→ Field clearing, large high severity fire

→ Possible type conversion!



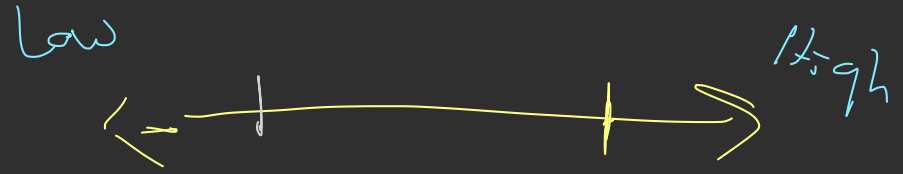
Disturbance  
creates <sup>micro-</sup>climate  
new microsites.



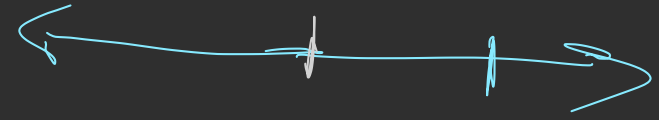
→ An area with unique climate attributes  
relative to surrounding site (i.e. in shade  
of tree).

All regenerating trees need

Light



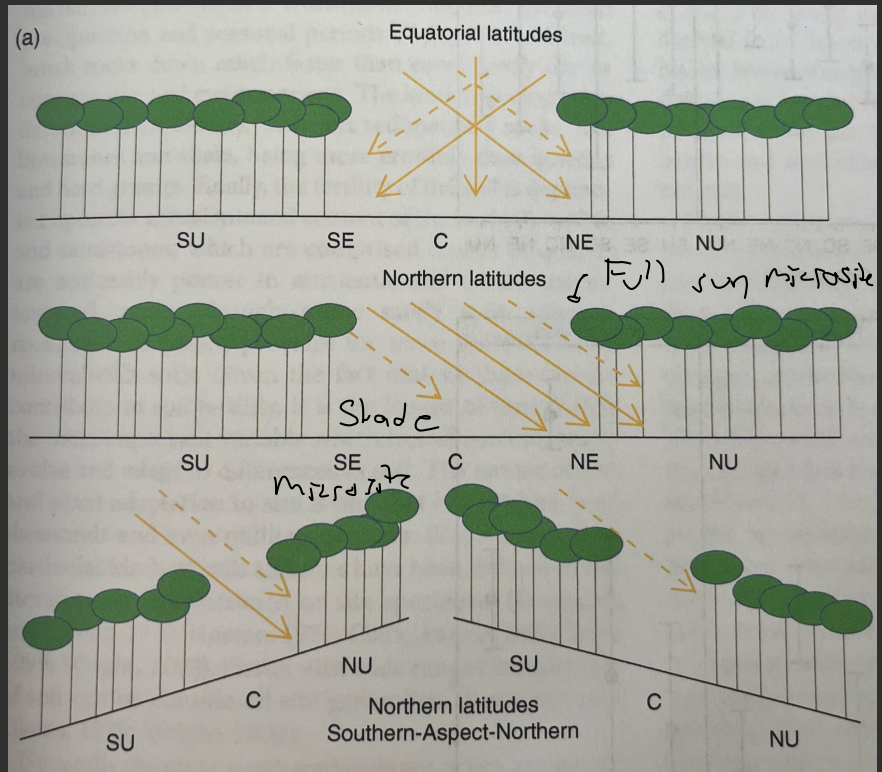
Water



Nutrients



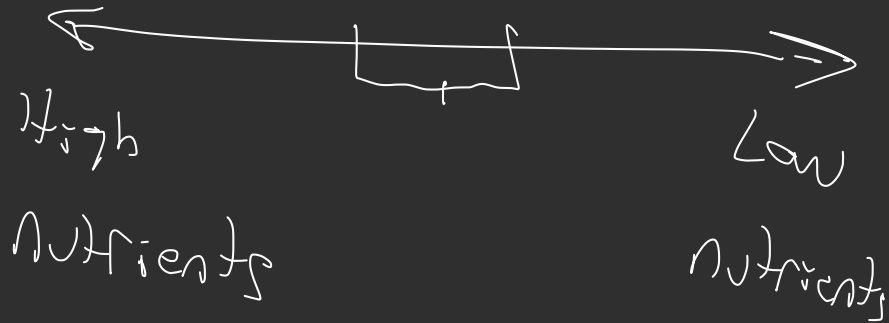
Light varies  
with position  
relative to  
sun



# Soils and nutrients



Molisols Alfisols Spodosols Oxisols

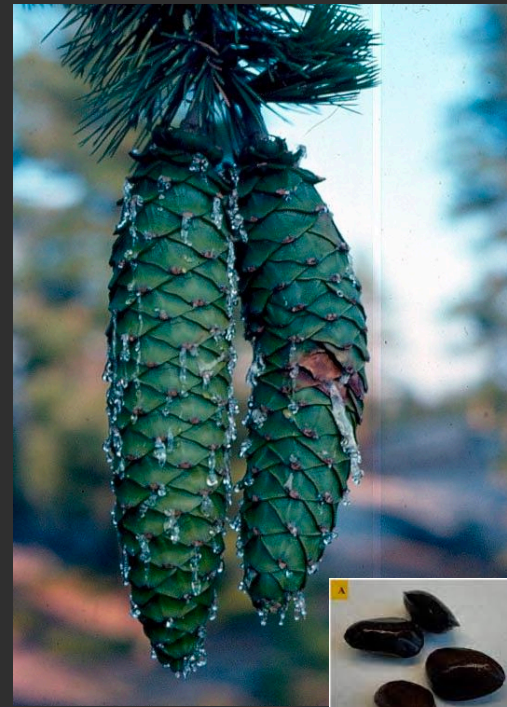
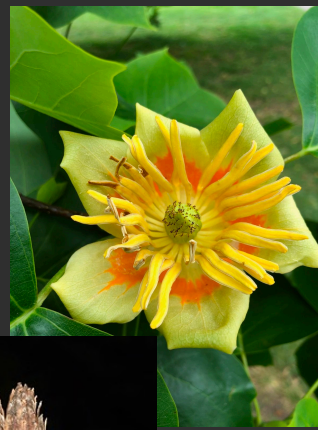


Making baby trees...

Step 1:

Seed Production

—  
—  
Via Pollination



*Liriodendron tulipifera* & *Pinus lambertiana*

Angiosperm

- Produce fruit

- Animals; wind

Gymnosperm

- Cones and seeds

- Wind

Pollen dispersal =



Favorable Site

- deep soils; wet

Seed production is  
intensive!



Unfavorable Site

- Rocky; dry

resource





After seed  
production;  
we disperse  
seed!




Clark's nutcracker



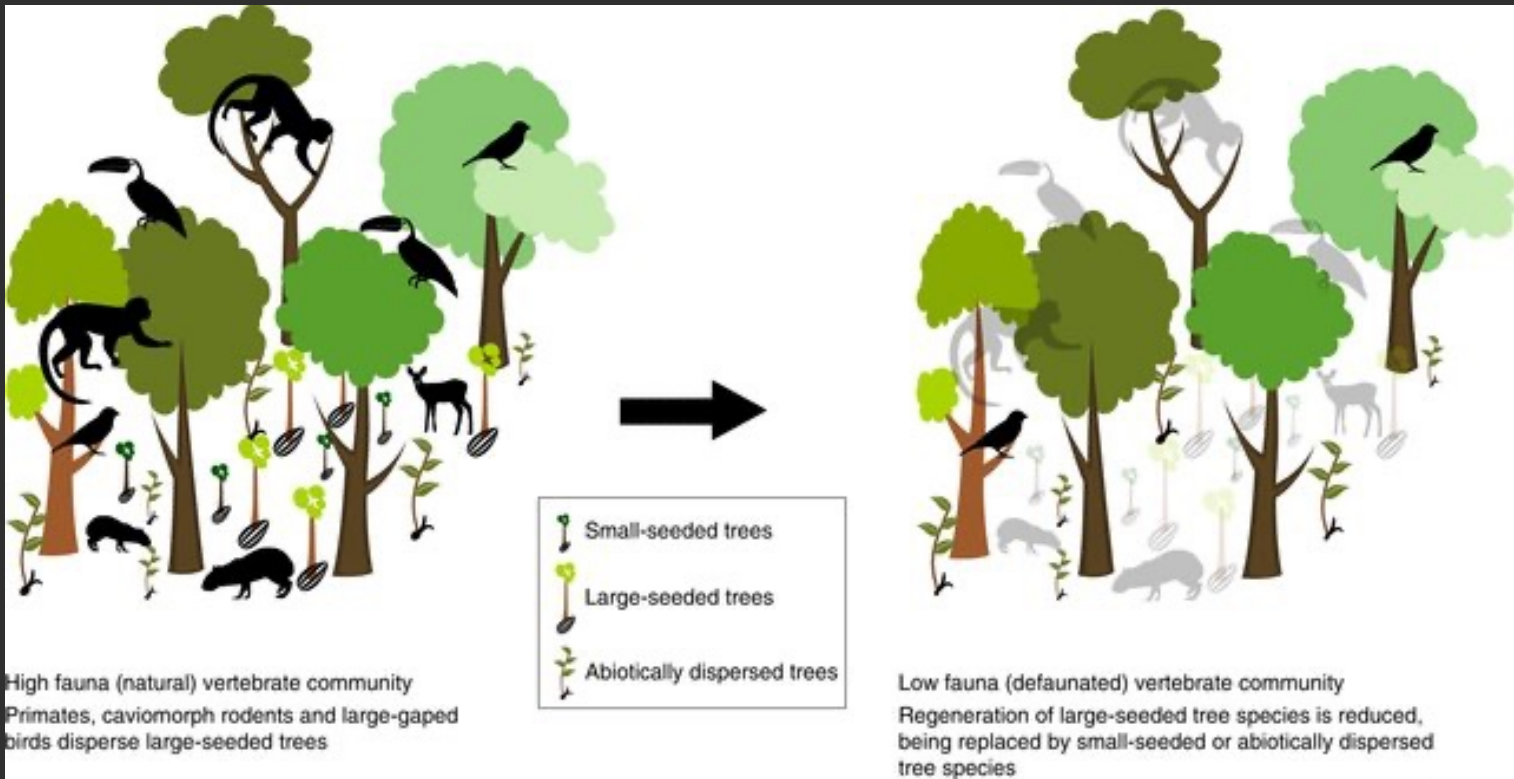
Quetzal with Avocado

↑  
= Gravity!  
- Water: ↙  
other disturbance



Wind

↗  
Animal Dispersal



↑ In intact fauna  
 higher  
 seed dispersal / diversity

↑ Hunted fauna  
 lower seed dispersal  
 → diversity