

Intermediate

TX

Clean logging
Slash and
debris...

Can
address

competing veg, soil



Piling of

logging
slash



Log and scatter

→ Favors decomposition ↙

→ creates microsites

→ surface fuel load



Pile Burning!



How big?
How big of
diameter
wood
in pile?

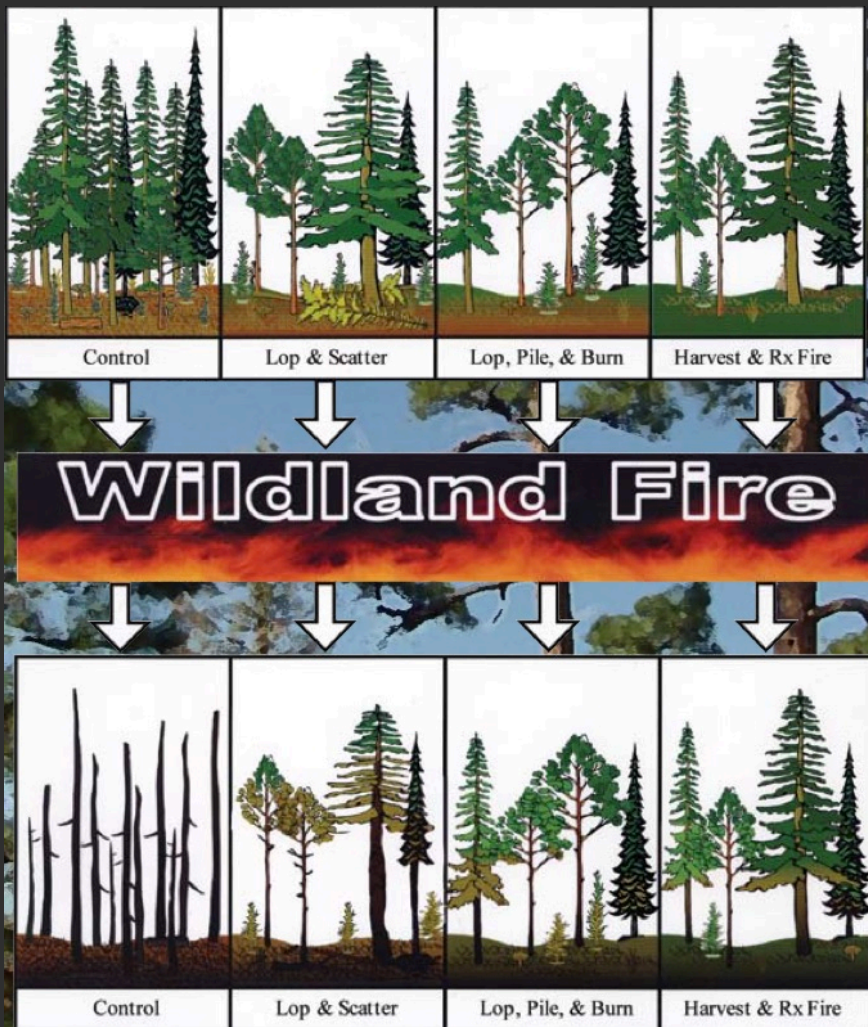
your

Goals

determine

your

actions!



Soil prep

discing

scarifing



Brush thinning?

Herbicide?

TX on

competing

veg





Challenges to Regeneration

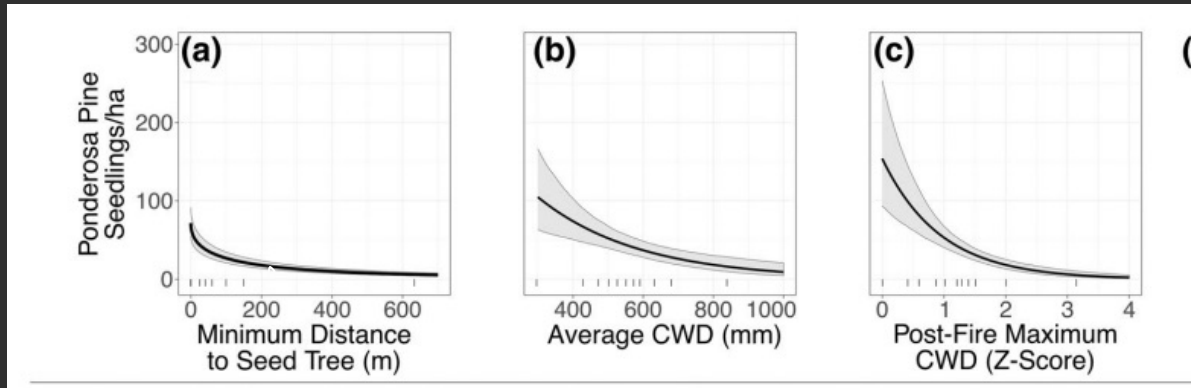


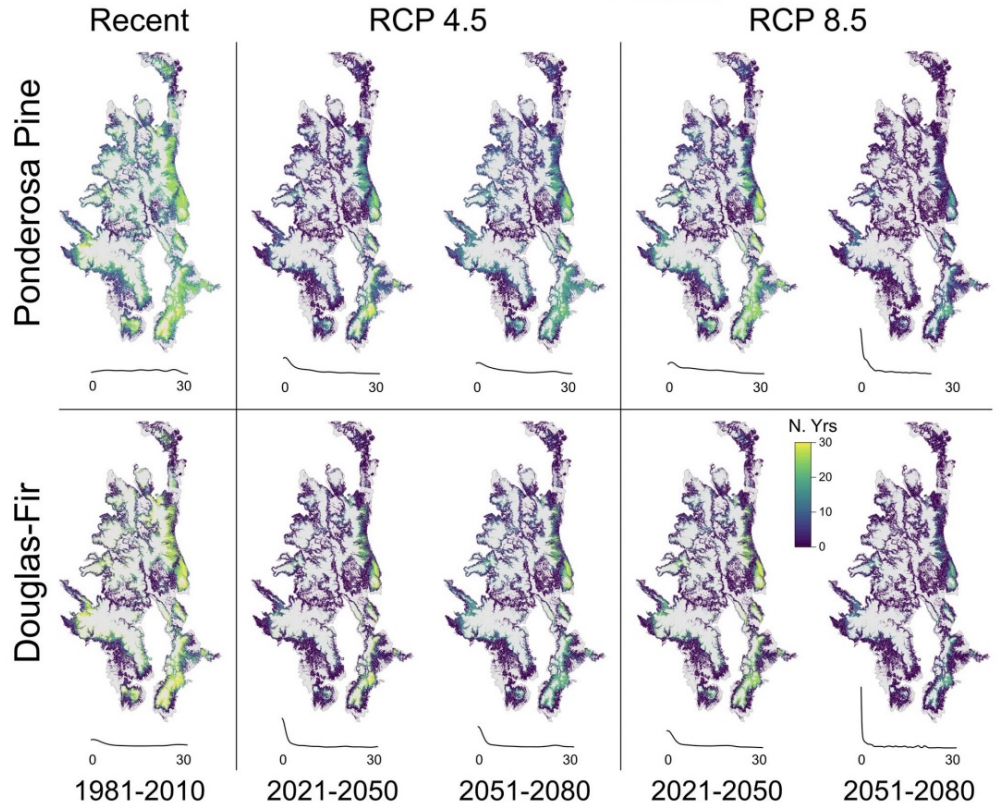
Figure 4

100m ↗

Wet Dry

CWD = Climate Water Deficit

Climate Change = Dry sites? = No regeneration



Does pro-active
work mean
we still get
regen?



??
,



D Plot EB 3-2-7 post-treatment (2019)

Wasserman et al. 2021

Seed is the start of the Reforestation Pipeline

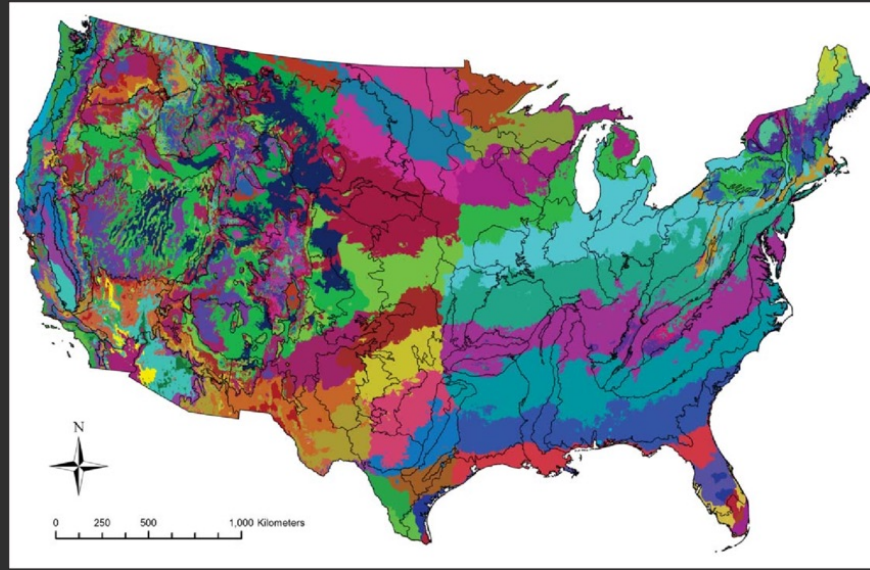


Must plant within
our seed
transfer zone

1. Climate based

→ Plant adaptation

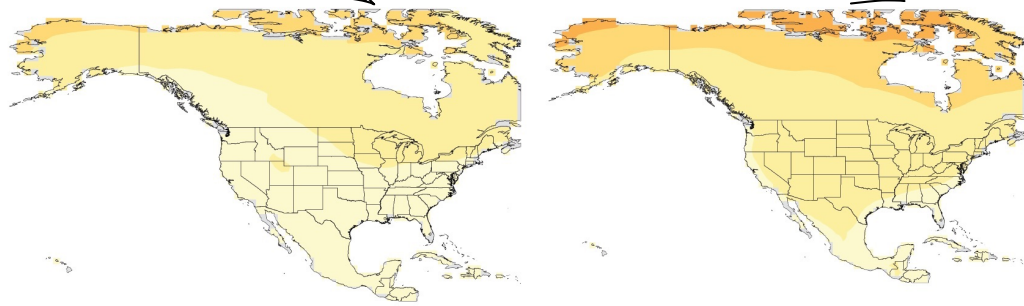
→ Reducing outbreeding depression



USDA FS Provisional Seed Transfer Zones

Projected Changes in Annual Average Temperature

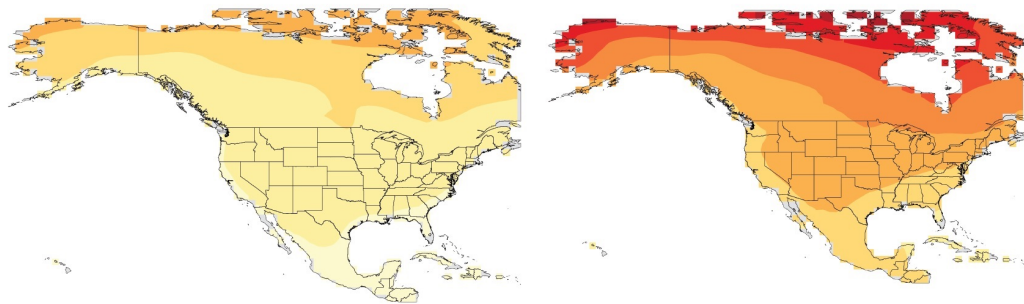
Relative Concentration Pathway
Lower Scenario (RCP4.5) Mid 21st Century Higher Scenario (RCP8.5)



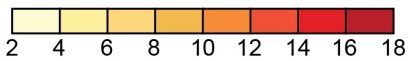
Late 21st Century

Lower Scenario (RCP4.5)

Higher Scenario (RCP8.5)



Change in Temperature (°F)



W Warmer
World!

Warmer

= drier
World

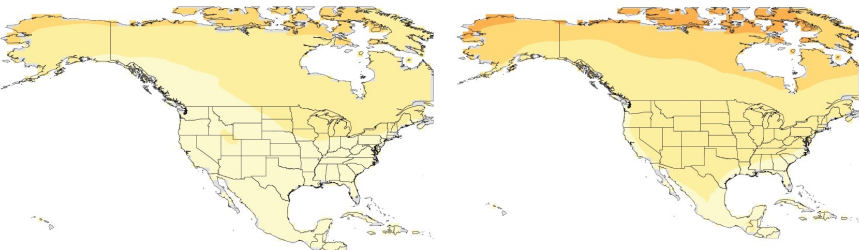
↑ evaporation

Projected Changes in Annual Average Temperature

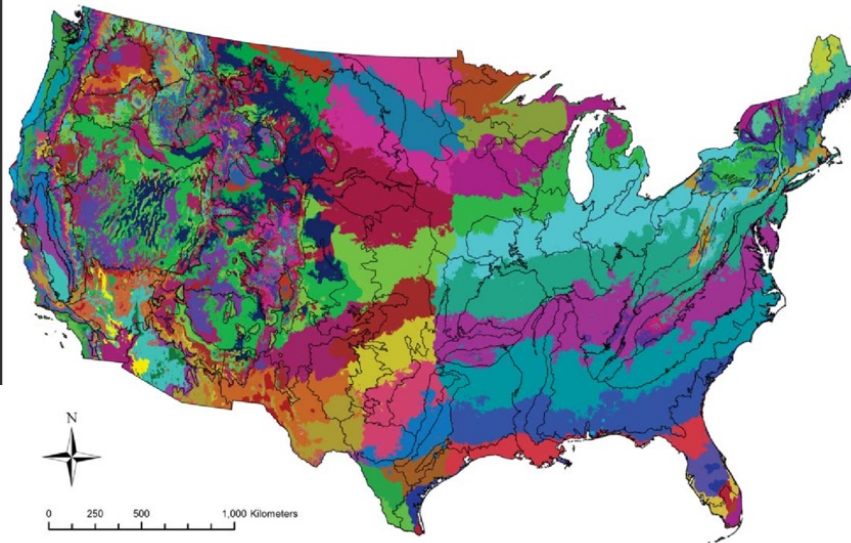
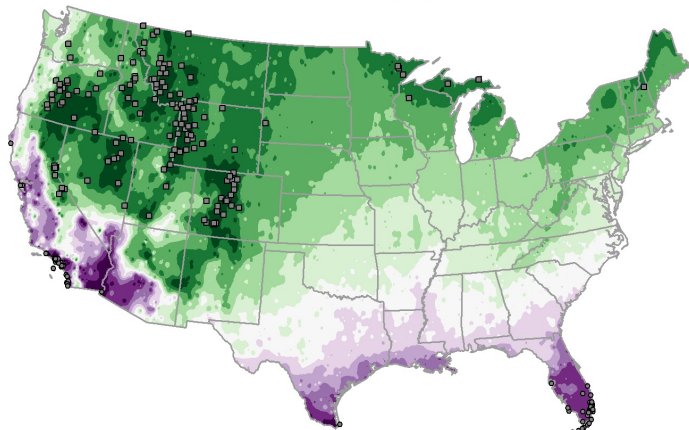
Mid 21st Century

Lower Scenario (RCP4.5)

Higher Scenario (RCP8.5)



Day of the Last Spring Freeze from the 1991-2020 U.S. Climate Normals



↑
???

STZ for CC?

● Too Warm to Compute
■ Too Cold to Compute

Before Jan 16 Jan 16-31 Feb 1-15 Feb 16-28 Mar 1-15 Mar 16-30 Apr 1-15 Apr 16-30 May 1-15 May 16-31 After May 31



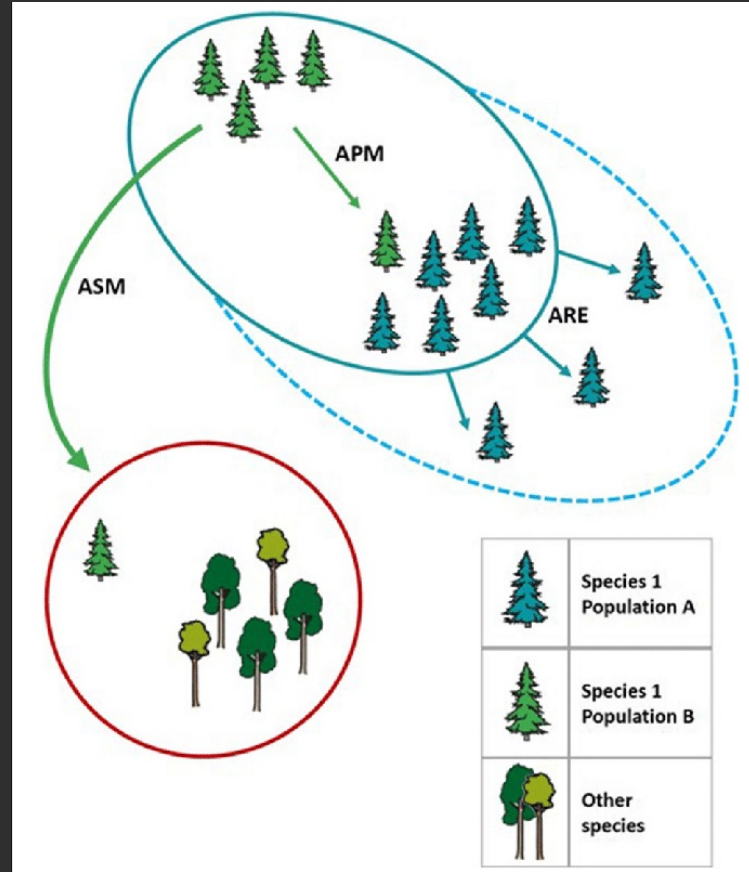
Assisted Migration!

APM = Assisted population migration,

Dry population → wet site?

ARE = Assisted Range Expansion

ASM = Assisted Species Migration.



Watch out!

Tending

→ Grow the stand to achieve our goals.

1. Timber production

2. Fuels

→ Thinning

Thin from below

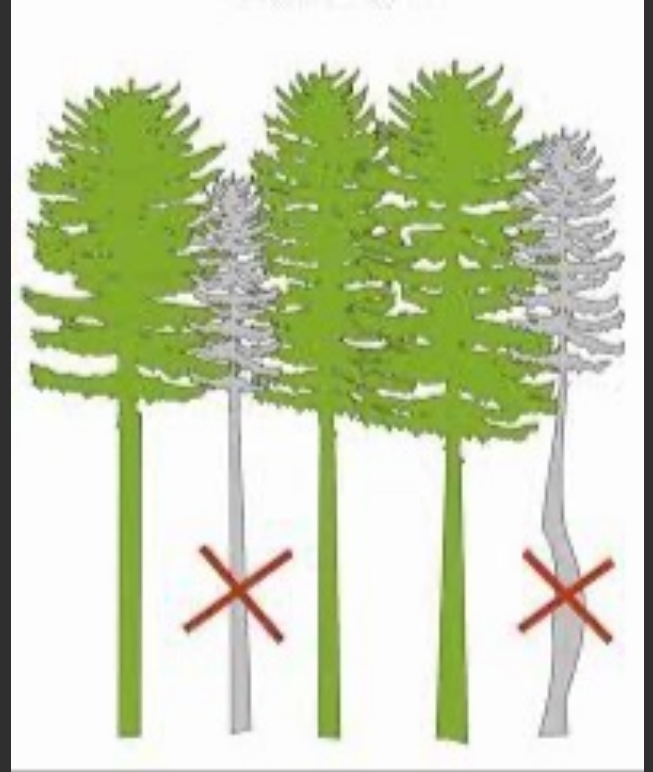
→ ~~Preventing~~ competition

Thin from above

- Release (shellwood)

Not a harvest cut!

→ Defects are removed.



Other funding ...

→ Removal of brush

→ Herbicides for competition

→ Pest management

→ Fire?

How do we do the work. . . .

Removal of trees.

→ Cut, skid, deck

→ Cut-to-length

Feller Bunchers...
The Cut.

Skids →



← Tires

Grappe -

Skid

Define

skid trails,



Del.mf



Mastikator



CTL
/ Forwarder



Least soil disturbance

Brush rake
C1

Slash management



Chainsaws are awesome!

Leñero



Rio de las Trampas

Forest Management Project





Pyrosilviculture



