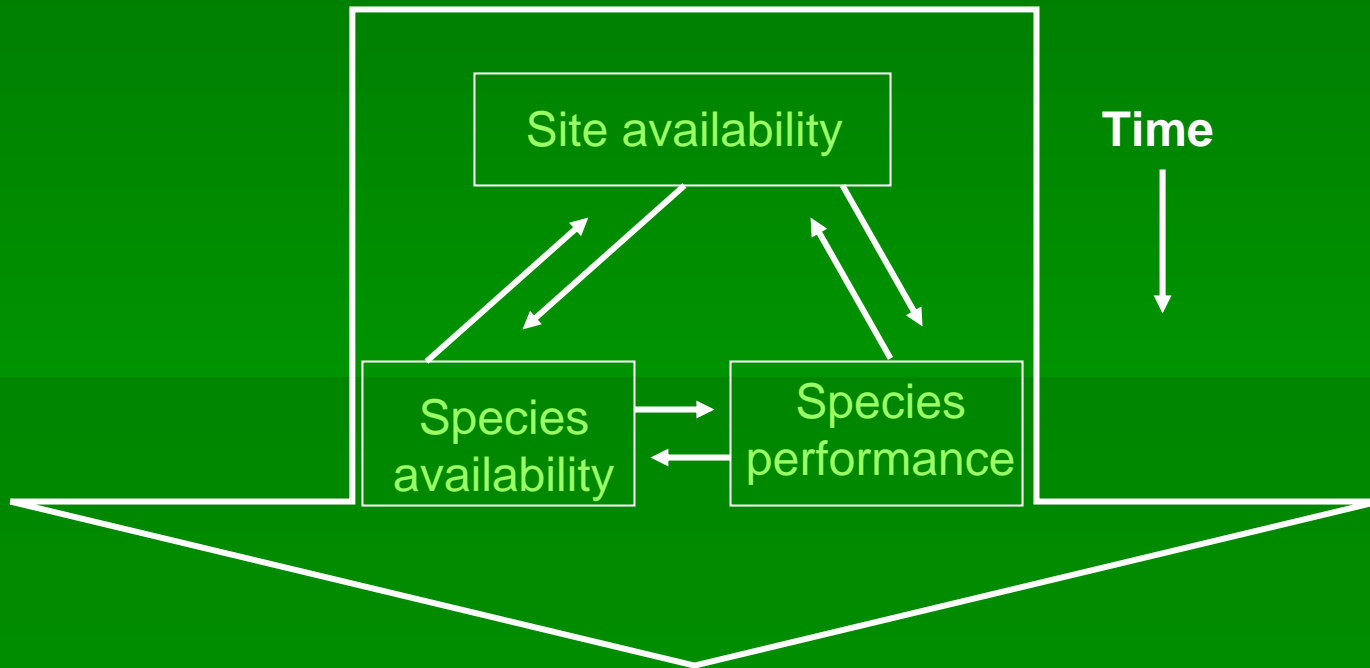


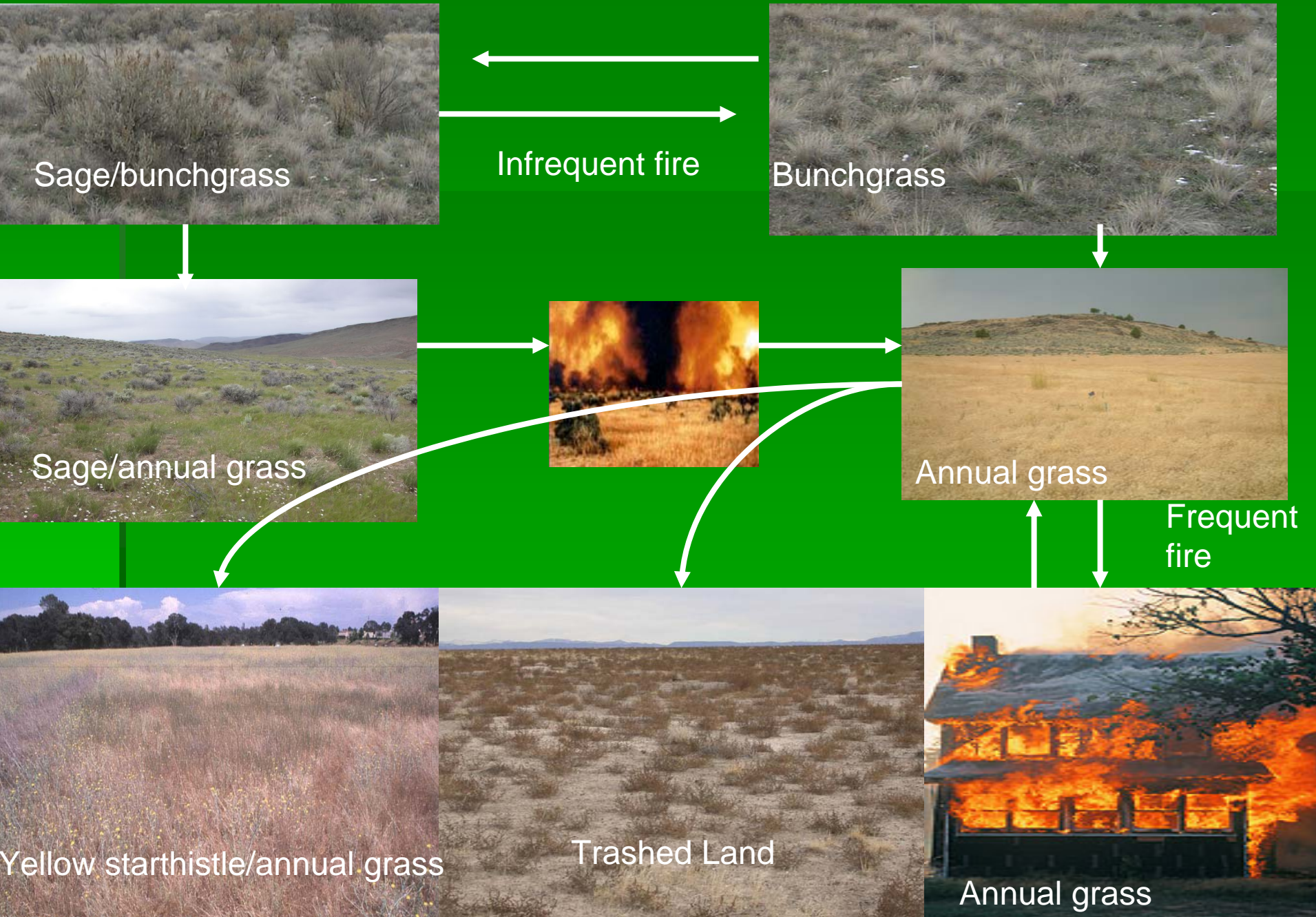
Ecological basis for restoration applications in the sagebrush ecosystem



Points

- Managing ecological mechanisms and processes that direct succession is central to rangeland restoration.
- Successional Management is a process-based ecological theory that is useful for making restoration decisions.
- Successional Management can provide a process-based predictive component for the transitions in STMs.
- ESDs can be used to inform Successional Management and future ESDs should include information necessary to use Successional Management within the context of STMs.

State and Transition Models



Ecological principles



Plant Communities Always Change



What
caused
this?



What can
we do to
cause this?



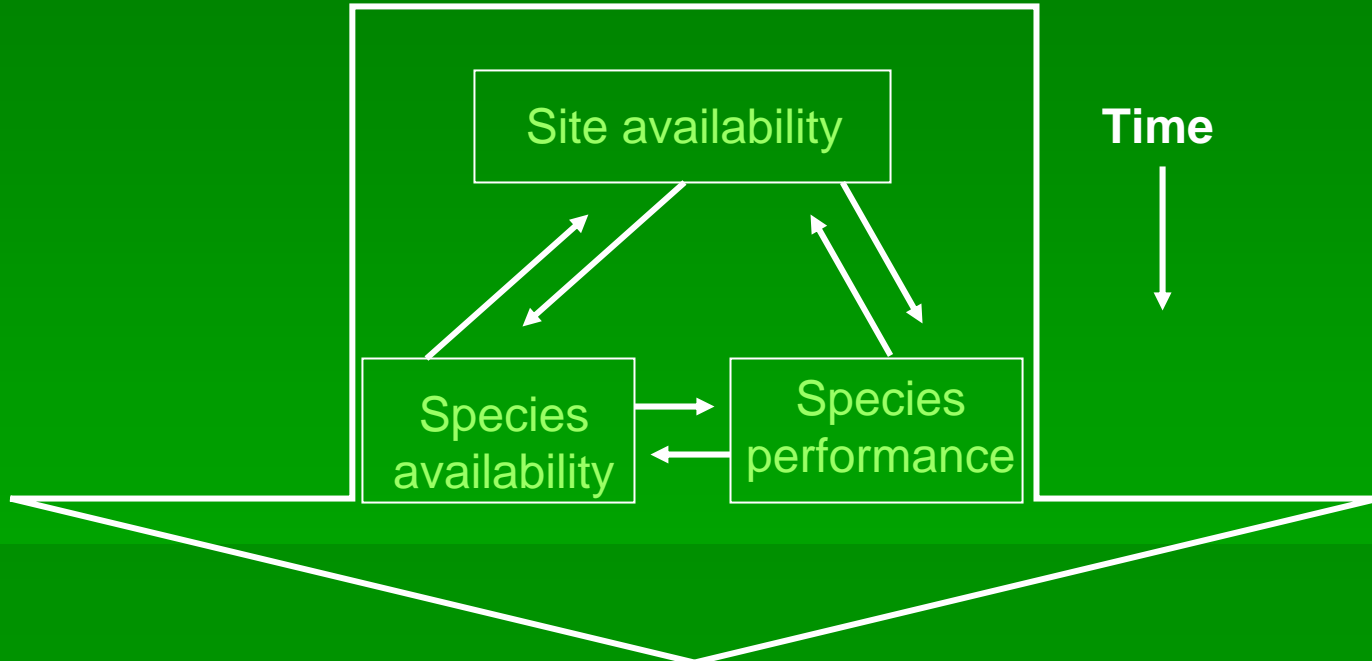
Malheur Wildlife Refuge



Use Rodeo or alter water regime?

Managing Causes

Using our understanding of the mechanisms and processes that drive plant communities dynamics to direct its trajectory



Ecological Theory Useful for Restoration

Plant Community
Undesired State

Site
availability

Species
availability

Species
performance

Plant Community
Desired State

Disturbance

Colonization

Multiple

size
severity
time intervals
patchiness
predisturbance
history

dispersal
mechanisms
landscape
features
land use
disturbance
interval
species life
history

soil
topography
climate
site history
microbes
litter retention
germination
requirements
assimilation rates
growth rates
genetic
differentiation
reproduction
timing

herbivory,
competition
allelopathy
resource availability



Initial Plant
Community

Designed
Disturbance

Controlled
Colonization

Controlled
Species
Performance

Final Plant
Community



Herbicide

Burning

Grazing

Biological
control

Drill Seed

Island
Seeding

Grazing

Biological
control

Repeated
Spring
Grazing

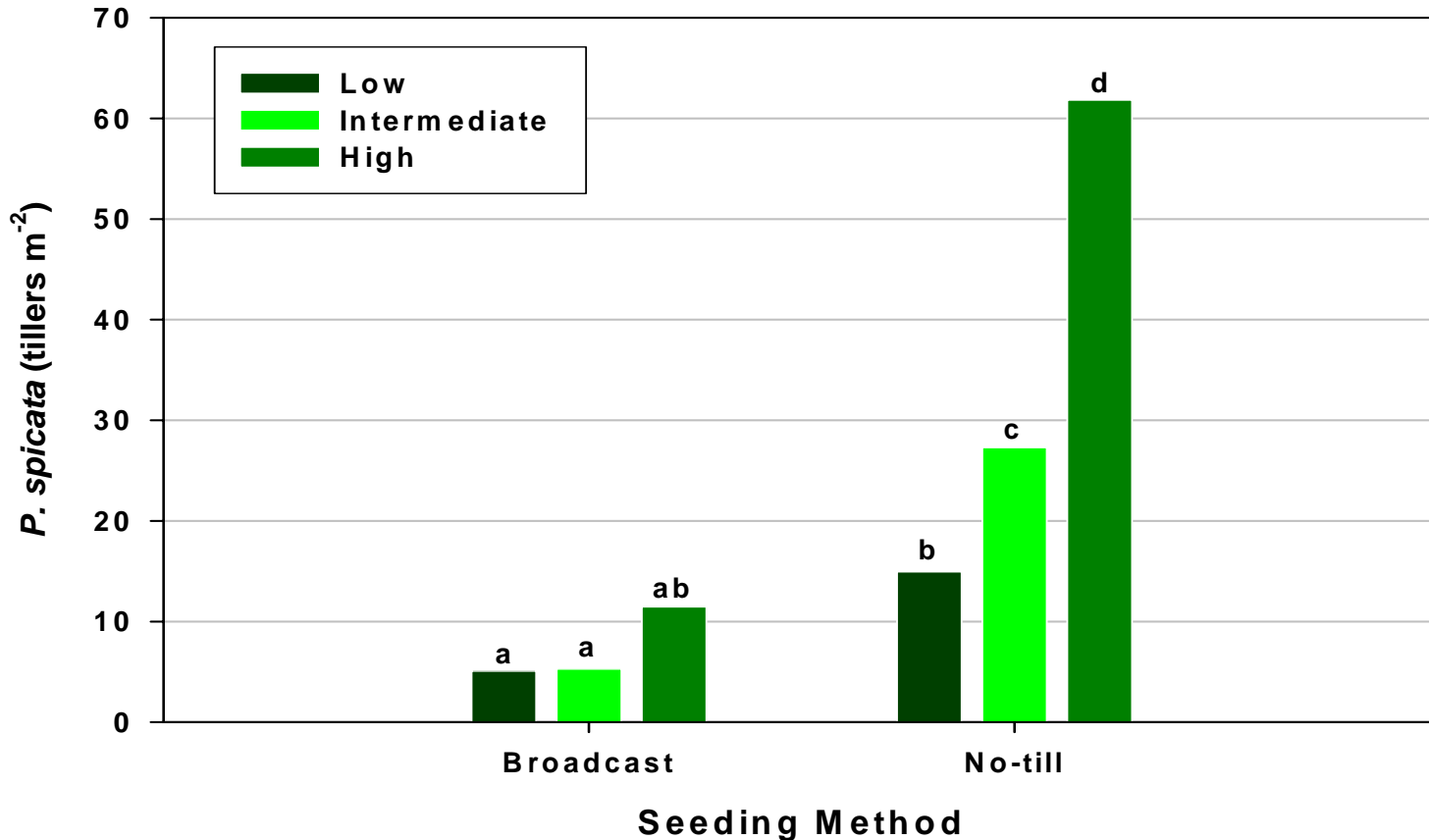
Reduce soil
Fertility

Fertilization

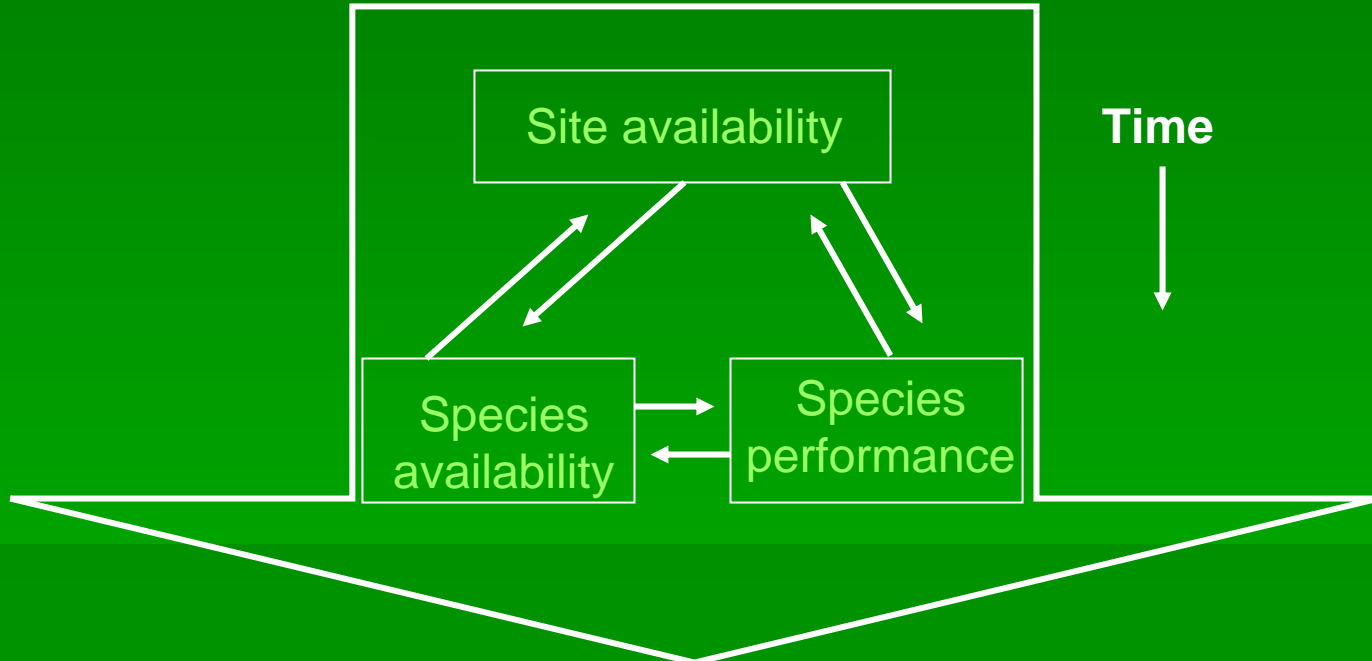
Mowing

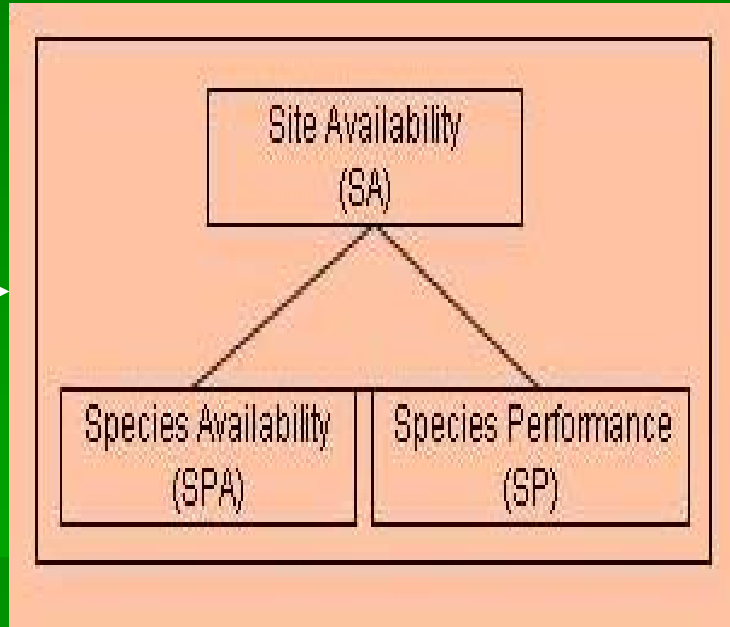


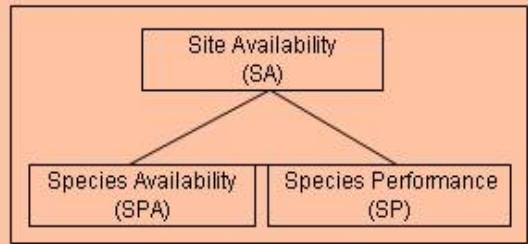
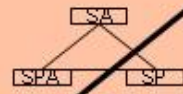
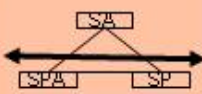
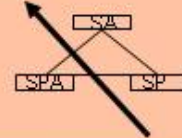
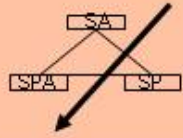
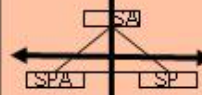
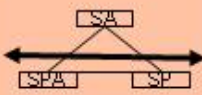
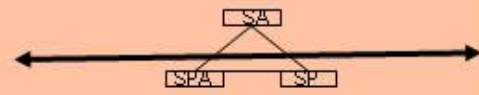
Integrating colonization with disturbance



Sheley et al. 2006. Potential for successional theory to guide restoration of invasive-plant-dominated rangeland. *Ecological Monographs* 76:365-379







Ecological Site Description



ESD	ESI Forestland	ESI Rangeland	
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Access

[Reports Selection Screen](#)

Selections

General

[Graphic Features](#)

[Map Features](#)

[Water Features](#)

[Soil Features](#)

[Plant Communities](#)

[Soil Interpretations](#)

[Mapping Information](#)

[Health Reference Sheet](#)

[Complete Report](#)

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UNITED STATES DEPARTMENT OF AGRICULTURE NATURAL RESOURCES CONSERVATION SERVICE

ECOLOGICAL SITE DESCRIPTION

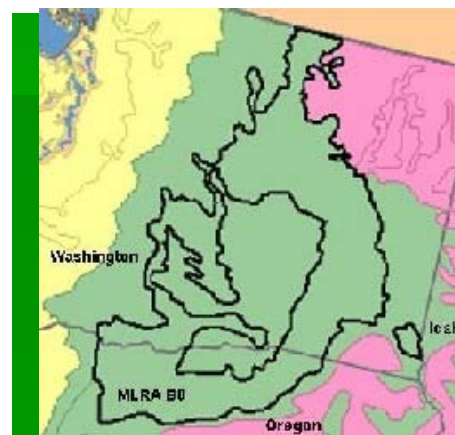
ECOLOGICAL SITE CHARACTERISTICS

Site Type: Rangeland

Site Name: LOAMY 12-14 PZ

Site ID: R008XY1200R

Major Land Resource Area: 008 - Columbia Plateau



Summary

Managing ecological mechanisms and processes that direct succession is central to rangeland restoration.

Successional Management is a process-based ecological theory that is useful for making restoration decisions.

Successional Management can provide a process-based predictive component for the transitions in STMs.

ESDs can be used to inform Successional Management and future ESDs should include information necessary to use Successional Management within the context of STMs.

