Ecological site R010XB030OR
JD Loamy 12-16 PZ

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General information

Provisional. A provisional ecological site description has undergone quality control and quality assurance review. It contains a working state and transition model and enough information to identify the ecological site.

Associated sites

R010XB027OR	**JD Clayey 12-16 PZ** JD Clayey 12-16" PZ
R010XB031OR	**JD Shallow 12-16 PZ** JD Shallow 12-16 PZ
R010XB032OR	**JD Very Shallow 12-16 PZ** JD Very Shallow 12-16 PZ

Similar sites

R010XB027OR	**JD Clayey 12-16 PZ** JD Clayey 12-16" PZ (clayey soil, composition difference, lower production)
R010XB031OR	**JD Shallow 12-16 PZ** JD Shallow 12-16" PZ (shallower soil, lower production)

Table 1. Dominant plant species

Tree	Not specified
Shrub	Not specified
Herbaceous	Not specified

Physiographic features

This site occurs on rolling uplands and plateaus. Slopes range from 0 to 20 percent. Elevation varies from 2100 to 4000 feet.

Table 2. Representative physiographic features

Landforms	(1) Plateau (2) Hill
Elevation	2,100–4,000 ft
Slope	0–20%
Water table depth	60 in
Aspect	Aspect is not a significant factor

Climatic features

The annual precipitation ranges from 12 to 16 inches. The precipitation occurs as rain and snow during the months of November through March. Localized, occasionally severe, convection storms occur during the summer. The

mean annual air temperature is approximately 50 degrees F. Extreme temperatures range from 100 degrees F to -10 degrees F. Soil temperature regimes are mesic to near frigid. The frost-free period ranges from 90 to 150 days. The period of optimum plant growth is from April through mid-July.

Table 3. Representative climatic features

Frost-free period (average)	150 days
Freeze-free period (average)	0 days
Precipitation total (average)	16 in

Influencing water features

Soil features

The soils of this site are formed on colluvium and loess over basalt and tuff. They are moderately deep to deep. Typically the surface layer is a silt loam or loam over a loamy to clay loam subsoil. Depth to bedrock is 30 to 60 inches. Soil permeability is moderate. The available water holding capacity (AWC) is 5 to 8 inches. The erosion potential is moderate.

Table 4. Representative soil features

Surface texture	(1) Silt loam (2) Loam
Family particle size	(1) Clayey
Drainage class	Well drained
Permeability class	Moderate
Soil depth	30–60 in
Available water capacity (0-40in)	5–8 in

Ecological dynamics

Range in Characteristics:
Variability in plant composition and production is dependent on soil depth and texture. Bluebunch wheatgrass increases on fine textured surfaces. Thurber needlegrass and needle-and-thread increase on coarse textured surfaces. Production increases with soil depth.

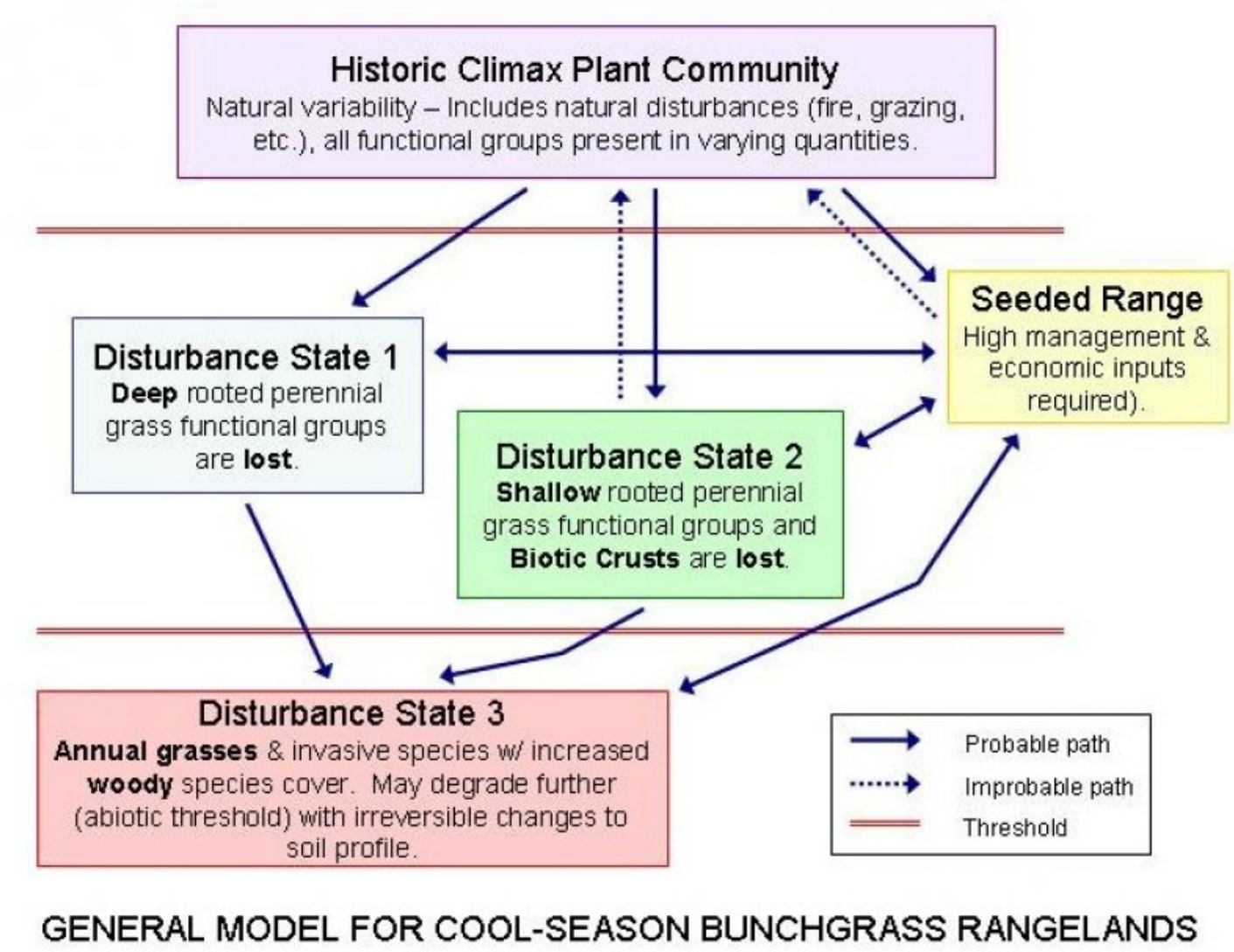
Response to Disturbance:
If the condition of the site deteriorates as a result of overgrazing, bluebunch wheatgrass, Idaho fescue, and needlegrass decrease while basin big sagebrush and western juniper increase. Cheatgrass and other annuals invade. Both basin big sagebrush and western juniper strongly increase in the absence of fire. With continued deterioration, areas of bare soil increase, soil erosion accelerates, and potential site productivity decreases.

Juniper Response:
Fine fuel reduction from improper grazing and fire suppression has led to an increase in the historical fire return interval on many western rangelands. A reduction in fire frequency on these sites leads to an increase in juniper cover, a decrease in sagebrush cover followed by a decrease in herbaceous cover and understory diversity. As juniper encroaches on north facing aspects sagebrush declines with a subsequent decrease in forbs, bluebunch wheatgrass and needlegrass. Idaho fescue becomes the primary herbaceous species occurring under the canopy of the juniper trees. Sandberg’s bluegrass increases in the plant community on lower elevation north slopes and warmer non-aspect sites while bare ground increases in the interspaces between trees. Bitterbrush is more resistant to juniper encroachment than sagebrush and maintains its presence in the community, however vigor and fitness (seed production) may be thwarted. The potential for soil erosion increases as the juniper woodland matures and the understory plant community cover declines. The combined effect of overgrazing and juniper invasion

increases the rate of decline in ecological function and the probability of crossing a threshold is high.

Treatment Response:
This site responds positively to juniper removal if soil erosion is not significant. Seeding may be necessary if there are less than 1-2 bunchgrass plants per meter square in the understory. Forbs may also need to be seeded if adult plants are no longer present in the understory.

State and transition model



GENERAL MODEL FOR COOL-SEASON BUNCHGRASS RANGELANDS

State 1
Historic Climax Plant Community

Community 1.1
Historic Climax Plant Community

The potential native plant community is dominated by bluebunch wheatgrass. Idaho fescue, Thurber needlegrass, and needle-and-thread are common. Basin big sagebrush and minor amounts of other shrubs are present. Juniper is sporadic. The potential vegetative composition is approximately 90 percent grasses, 5 percent forbs, and 5 percent shrubs. Approximate ground cover is 60-70 percent (basal and crown).

Table 5. Annual production by plant type

Plant Type	Low (Lb/Acre)	Representative Value (Lb/Acre)	High (Lb/Acre)
Grass/Grasslike	1408	1704	2000
Forb	64	168	272
Shrub/Vine	32	88	144
Tree	16	24	32
Total	**1520**	**1984**	**2448**

Additional community tables

Table 6. Community 1.1 plant community composition

Group	Common Name	Symbol	Scientific Name	Annual Production (Lb/Acre)	Foliar Cover (%)
Grass/Grasslike					
1	**Perennial, deep-rooted, dominant**			1120–1280	
	bluebunch wheatgrass	PSSP6	*Pseudoroegneria spicata*	1120–1280	–
2	**Perennial, deep-rooted, sub-dominant**			240–560	
	Idaho fescue	FEID	*Festuca idahoensis*	80–240	–
	needle and thread	HECO26	*Hesperostipa comata*	80–160	–
	Thurber's needlegrass	ACTH7	*Achnatherum thurberianum*	80–160	–
5	**Other perennial grasses, all**			48–160	
	squirreltail	ELEL5	*Elymus elymoides*	0–40	–
	prairie Junegrass	KOMA	*Koeleria macrantha*	0–40	–
	basin wildrye	LECI4	*Leymus cinereus*	0–40	–
	Sandberg bluegrass	POSE	*Poa secunda*	0–40	–
Forb					
7	**Perennial, all, dominant**			48–144	
	milkvetch	ASTRA	*Astragalus*	16–48	–
	arrowleaf balsamroot	BASA3	*Balsamorhiza sagittata*	16–48	–
	lupine	LUPIN	*Lupinus*	16–48	–
9	**Other perennial forbs, all**			16–128	
	common yarrow	ACMI2	*Achillea millefolium*	0–18	–
	agoseris	AGOSE	*Agoseris*	0–18	–
	fleabane	ERIGE2	*Erigeron*	0–18	–
	buckwheat	ERIOG	*Eriogonum*	0–18	–
	desertparsley	LOMAT	*Lomatium*	0–18	–
	grasswidow	OLSYN	*Olsynium*	0–18	–
	phlox	PHLOX	*Phlox*	0–18	–
Shrub/Vine					
11	**Perennial, evergreen, dominant**			16–48	
	basin big sagebrush	ARTRT	*Artemisia tridentata ssp. tridentata*	16–48	–
15	**Other perennial shrubs, all**			16–96	
	Saskatoon serviceberry	AMAL2	*Amelanchier alnifolia*	0–19	–
	rubber rabbitbrush	ERNA10	*Ericameria nauseosa*	0–19	–
	green rabbitbrush	ERTE18	*Ericameria teretifolia*	0–19	–
	broom snakeweed	GUSA2	*Gutierrezia sarothrae*	0–19	–
	antelope bitterbrush	PUTR2	*Purshia tridentata*	0–19	–
Tree					
16	**Perennial, evergreen, dominant**			16–32	
	ponderosa pine	PIPO	*Pinus ponderosa*	16–32	–

Animal community

Livestock Grazing:

This site is suited to spring, summer, and fall use by cattle, sheep, and horses under a planned grazing system. The key species is bluebunch wheatgrass. Bluebunch wheatgrass can be damaged if heavily grazed during periods of

flowering and seed formation when root reserves and soil moisture is low. Use in the spring should be postponed until the soils are firm enough to prevent trampling damage and soil compaction.

Native Wildlife Associated with the Potential Climax Community:

Mule deer
elk
upland birds

When the ecological condition is high, this site provides food and cover for deer, elk, other mammals, and upland birds. It is an important wintering area for deer and elk.

Threatened and Endangered Animals:

Listed endangered species (1993), which may occur on this site include the peregrine falcon. Listed threatened species is the bald eagle.

Hydrological functions

The soils of this site have high water holding capacities providing late season water for plant growth. The hydrologic cover condition is good when the ecological condition is high.

Other information

When in poor condition this site has high potential for range seeding because it is moderately deep to deep, non-stony, not droughty, and occurs on gentle slopes.

Contributors

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Rangeland health reference sheet

Interpreting Indicators of Rangeland Health is a qualitative assessment protocol used to determine ecosystem condition based on benchmark characteristics described in the Reference Sheet. A suite of 17 (or more) indicators are typically considered in an assessment. The ecological site(s) representative of an assessment location must be known prior to applying the protocol and must be verified based on soils and climate. Current plant community cannot be used to identify the ecological site.

Author(s)/participant(s)	Jeff Repp and Bruce Frannsen
Contact for lead author	State Rangeland Management Specialist for NRCS - Oregon
Date	08/06/2012
Approved by	Bob Gillaspy
Approval date	
Composition (Indicators 10 and 12) based on	Annual Production

Indicators

1. **Number and extent of rills:** None, moderate sheet & rill erosion hazard

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2. **Presence of water flow patterns:** None

3. **Number and height of erosional pedestals or terracettes:** None

4. **Bare ground from Ecological Site Description or other studies (rock, litter, lichen, moss, plant canopy are not bare ground):** 5-10%

5. **Number of gullies and erosion associated with gullies:** None

6. **Extent of wind scoured, blowouts and/or depositional areas:** None, slight wind erosion hazard

7. **Amount of litter movement (describe size and distance expected to travel):** Fine - limited movement

8. **Soil surface (top few mm) resistance to erosion (stability values are averages - most sites will show a range of values):** Significantly resistant to erosion: aggregate stability = 4-6

9. **Soil surface structure and SOM content (include type of structure and A-horizon color and thickness):** Moderately deep to deep, well drained silt loams and loams: moderate OM (2-4%)

10. **Effect of community phase composition (relative proportion of different functional groups) and spatial distribution on infiltration and runoff:** Moderate ground cover (60-70%) and gentle slopes (0-20%) effectively limit rainfall impact and overland flow

11. **Presence and thickness of compaction layer (usually none; describe soil profile features which may be mistaken for compaction on this site):** None

12. **Functional/Structural Groups (list in order of descending dominance by above-ground annual-production or live foliar cover using symbols: >>, >, = to indicate much greater than, greater than, and equal to):**

    Dominant: Bluebunch wheatgrass > Idaho fescue > other grasses > shrubs > forbs

    Sub-dominant:

    Other:

    Additional:

13. **Amount of plant mortality and decadence (include which functional groups are expected to show mortality or decadence):** Normal decadence and mortality expected

14. **Average percent litter cover (%) and depth (in):**

15. **Expected annual annual-production (this is TOTAL above-ground annual-production, not just forage annual-production):** Favorable: 2000, Normal: 1600, Unfavorable: 1200 lbs/acre/year at high RSI (HCPC)

16. **Potential invasive (including noxious) species (native and non-native). List species which BOTH characterize degraded states and have the potential to become a dominant or co-dominant species on the ecological site if their future establishment and growth is not actively controlled by management interventions. Species that become dominant for only one to several years (e.g., short-term response to drought or wildfire) are not invasive plants. Note that unlike other indicators, we are describing what is NOT expected in the reference state for the ecological site:** Western Juniper readily invades the site. Cheatgrass and Medusahead invade sites that have lost deep rooted perennial grass functional groups.

17. **Perennial plant reproductive capability:** All species should be capable of reproducing annually