

Ecological site R010XB044OR JD Droughty South 9-12 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.

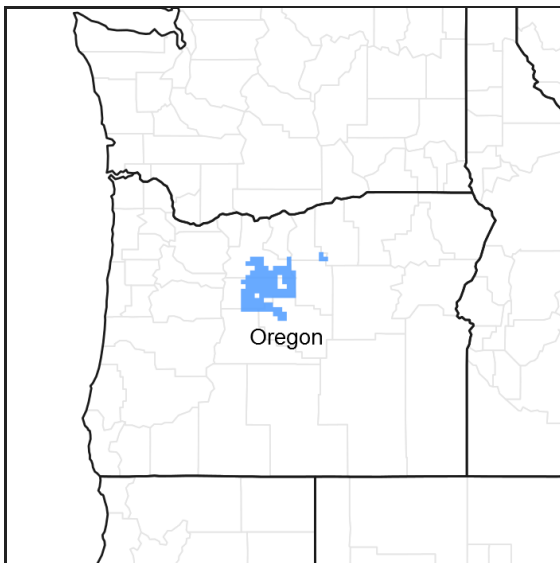


Figure 1. Mapped extent

Areas shown in blue indicate the maximum mapped extent of this ecological site. Other ecological sites likely occur within the highlighted areas. It is also possible for this ecological site to occur outside of highlighted areas if detailed soil survey has not been completed or recently updated.

Associated sites

R010XB064OR	JD North 9-12 PZ The site is on droughty north slopes with Bluebunch wheatgrass predominant.
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Similar sites

R010XB041OR	JD Clayey South 9-12 PZ Site is on Clayey South slopes with a 9-12" precipitation zone.
R010XB052OR	JD Droughty Shallow South 9-12 PZ Site is a droughty south with shallow soils.

Table 1. Dominant plant species

Tree	Not specified
Shrub	Not specified
Herbaceous	Not specified

Physiographic features

This site occurs on southerly exposures of low elevation terraces composed of early Cenezoic tuffaceous

sediments. Slopes typically range from 15 to 60% with slopes. Elevation varies from 1300 to 2400 feet.

Table 2. Representative physiographic features

Landforms	(1) Hill (2) Terrace
Flooding frequency	None
Ponding frequency	None
Elevation	396–732 m
Slope	15–60%
Ponding depth	0 cm
Water table depth	183 cm
Aspect	SE, S, W

Climatic features

Elevation and aspect affect precipitation and the relative effectiveness of the precipitation and temperatures. Temperature changes can occur rapidly. In addition, the topography also results in localized cold air drainages, along with occasional cold air entrapment and inversions in the valleys. Annual snowfall is 13 inches to 17 inches, with most coming in the winter and spring. Snow cover is of short duration and melts quickly at low elevations.

Table 3. Representative climatic features

Frost-free period (average)	150 days
Freeze-free period (average)	209 days
Precipitation total (average)	305 mm

Influencing water features

Soil features

Soils on this site are Mollisols with predominantly gravelly loam over clay textures. The soils are very deep with fine textures and well drained. These soils are formed from Cenozoic Tuffaceous Sediments that are weathered from John Day (mid-Oligocene) or Clarno (late Eocene) geological formations. Cobbles are present. The soils are generally aridic. The major taxonomic units correlated to this site include fine, smectitic, mesic Vertic Palexerolls.

Table 4. Representative soil features

Surface texture	(1) Loam (2) Gravelly loam
Family particle size	(1) Clayey
Drainage class	Well drained
Permeability class	Very slow
Soil depth	152 cm
Surface fragment cover ≤3"	20%
Surface fragment cover >3"	20%
Available water capacity (0-101.6cm)	15.24–22.86 cm
Calcium carbonate equivalent (0-101.6cm)	0–5%

Electrical conductivity (0-101.6cm)	0 mmhos/cm
Sodium adsorption ratio (0-101.6cm)	0
Soil reaction (1:1 water) (0-101.6cm)	6.6–7.8
Subsurface fragment volume <=3" (Depth not specified)	15%
Subsurface fragment volume >3" (Depth not specified)	25%

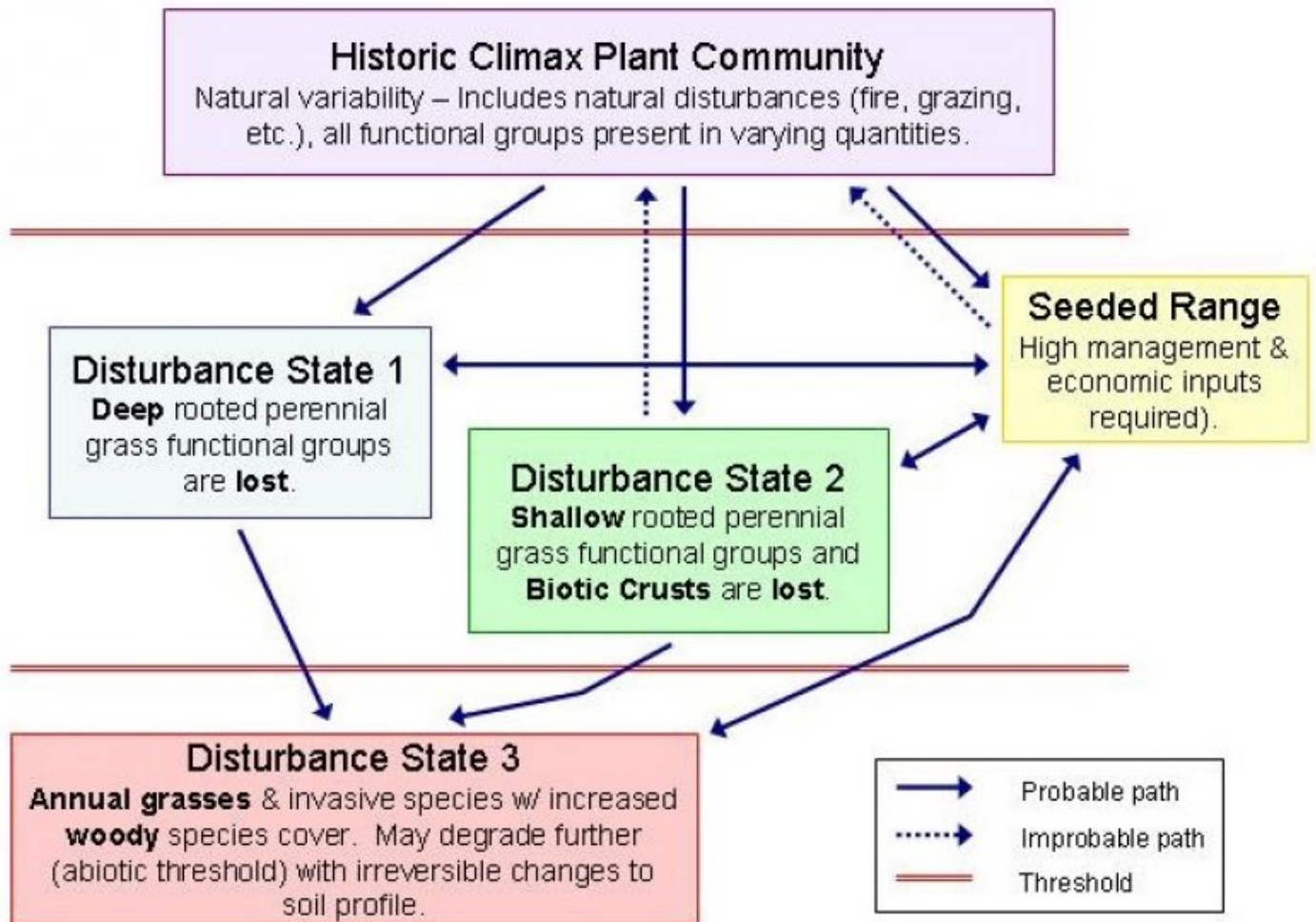
Ecological dynamics

The interpretative plant community for this site is the Historic Climax Plant Community (HCPC). Grasses with few forbs and shrubs dominate this plant community. Fluctuations in species composition and relative production may change from year to year dependent upon abnormal precipitation or other climatic factors. The historic climax plant community has been determined by study of rangeland relic areas, or areas protected from excess disturbance. Trends in plant communities going from heavily grazed areas to lightly grazed areas, seasonal pastures, and historical accounts have also been used.

Pathways for the state and transition model are as follows:

- 1 - Over grazing w/o frequent fire
- 2 - Proper grazing or rest
- 3 - Continued mis-management with fire
- 4 - Rest and re-seed, time

State and transition model



GENERAL MODEL FOR COOL-SEASON BUNCHGRASS RANGELANDS

State 1

HCPC: ACTH7-PSSP6

Community 1.1

HCPC: ACTH7-PSSP6



Figure 4. JD Droughty South 9-12, State A

HCPC - Dominated by Thurber Needlegrass and Bluebunch Wheatgrass. This plant community evolved with limited grazing by large herbivores and with fire frequency of every 5 to 15 years. About 5% of the plant composition is made up of forbs and 8% of shrubs. Bluebunch Wheatgrass increases with clay surface and decreases in gravel.

Table 5. Annual production by plant type

Plant Type	Low (Kg/Hectare)	Representative Value (Kg/Hectare)	High (Kg/Hectare)
Grass/Grasslike	780	975	1170
Shrub/Vine	72	90	108
Forb	45	56	67
Total	897	1121	1345

Figure 6. Plant community growth curve (percent production by month).
OR4231, B10 JD Dr South 9-12 A. JD Dr South 9-12 A, RPC Growth Curve.

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0	5	20	25	30	10	5	0	0	5	0	0

State 2 Cheatgrass/Medusahead/Broom Snakeweed

Community 2.1 Cheatgrass/Medusahead/Broom Snakeweed



Figure 7. JD Droughty South 9-12" PZ, State C

A community dominated by Broom Snakeweed, Cheatgrass and Medusahead. Continued mismanagement of this site with fire disturbance has caused the deterioration. The site has passed a threshold and cannot naturally return to a previous state. Mechanical manipulation is needed to bring this site back to a productive state.

Table 6. Annual production by plant type

Plant Type	Low (Kg/Hectare)	Representative Value (Kg/Hectare)	High (Kg/Hectare)
Grass/Grasslike	112	224	336
Shrub/Vine	110	220	330
Forb	2	4	7
Total	224	448	673

Figure 9. Plant community growth curve (percent production by month).
OR4233, B10 JD South 9-12 C. GUSA2/BRTE/TACA8.

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0	10	15	25	30	15	0	0	5	0	0	0

Additional community tables

Table 7. Community 1.1 plant community composition

Group	Common Name	Symbol	Scientific Name	Annual Production (Kg/Hectare)	Foliar Cover (%)
Grass/Grasslike					
1				919–1289	
	Thurber's needlegrass	ACTH7	<i>Achnatherum thurberianum</i>	673–897	–
	bluebunch wheatgrass	PSSPS	<i>Pseudoroegneria spicata</i> ssp. <i>spicata</i>	224–336	–
	Indian ricegrass	ACHY	<i>Achnatherum hymenoides</i>	22–56	–
2				45–157	
	sand dropseed	SPCR	<i>Sporobolus cryptandrus</i>	22–112	–
	Sandberg bluegrass	POSE	<i>Poa secunda</i>	22–45	–
Forb					
3				8–56	
	milkvetch	ASTRA	<i>Astragalus</i>	3–6	–
	prairie clover	DALEA	<i>Dalea</i>	1–3	–
	buckwheat	ERIOG	<i>Eriogonum</i>	1–3	–
	desertparsley	LOMAT	<i>Lomatium</i>	1–3	–
	common yarrow	ACMI2	<i>Achillea millefolium</i>	1–3	–
Shrub/Vine					
4				73–90	
	broom snakeweed	GUSA2	<i>Gutierrezia sarothrae</i>	22–90	–
	western juniper	JUOC	<i>Juniperus occidentalis</i>	6–11	–
	basin big sagebrush	ARTRT	<i>Artemisia tridentata</i> ssp. <i>tridentata</i>	6–11	–
	rabbitbrush	CHRYS9	<i>Chrysothamnus</i>	6–11	–

Table 8. Community 2.1 plant community composition

Group	Common Name	Symbol	Scientific Name	Annual Production (Kg/Hectare)	Foliar Cover (%)
Grass/Grasslike					
1				1–9	
	sand dropseed	SPCR	<i>Sporobolus cryptandrus</i>	0–9	–
	bluebunch wheatgrass	PSSPS	<i>Pseudoroegneria spicata</i> ssp. <i>spicata</i>	0–4	–
2				112–179	
	medusahead	TACA8	<i>Taeniatherum caput-medusae</i>	135–179	–
	cheatgrass	BRTE	<i>Bromus tectorum</i>	90–135	–
Forb					
3				1–4	
	common yarrow	ACMIM2	<i>Achillea millefolium</i> var. <i>millefolium</i>	0–4	–
	buckwheat	ERIOG	<i>Eriogonum</i>	0–4	–
Shrub/Vine					
4				101–168	
	broom snakeweed	GUSA2	<i>Gutierrezia sarothrae</i>	90–135	–
	basin big sagebrush	ARTRT	<i>Artemisia tridentata</i> ssp. <i>tridentata</i>	45–90	–
	western juniper	JUOC	<i>Juniperus occidentalis</i>	22–45	–

Animal community

Grazing

Livestock grazing is suitable for this site as long as management objectives include the improvement or maintenance of this site. It is easy to overuse this site and cause a shift in vegetation that is difficult to change. This site has the potential to produce a large amount of high quality forage. Management should be aimed at harvesting the forage as quickly as possible, letting the site recover from the grazing event prior to fall dormancy.

Initial stocking rates will be determined with the landowner or decisionmaker. They will be based on past use histories and type and condition of the vegetation. Calculations used to determine an initial starting stocking rate will be based on forage preference ratings.

Wildlife

The main wildlife species of concern on this site are large herbivores. These are mule deer and elk. These wildlife species can possibly overuse this site before the time cattle or sheep are planned to be grazed. Being an open grassland, this site is home to a variety of small herbivores, birds, and their associated predators. This site is mainly a foraging area for the larger wildlife. No threatened or endangered wildlife species rely on this site for any of their habitat requirements.

Hydrological functions

The site has a high potential in low seral condition to produce significant run-off to receiving waters. The hydrology of this site is characterized by high intensity thunderstorms during the summer months and by low intensity frontal storms during the winter.

Recreational uses

None

Wood products

No wood products are associated with this site.

Other products

None

Other information

Increase in western juniper and the subsequent competition for moisture will lead to a reduction of available forage. Overgrazing can easily reduce ground cover and accelerate soil loss. Improving infiltration and permeability, and reducing runoff should be the immediate goal of juniper control.

Type locality

Location 1: Wheeler County, OR	
Township/Range/Section	T7S R19E S34
Longitude	120° 27' 19"
General legal description	USGS Quad; Clarno. John Day Fossil Beds National Monument, Clarno Unit, approximately 300 feet east and 1200 feet south of the NW corner of section 34, T.7S, R.19E.
Location 2: Grant County, OR	
Township/Range/Section	T11S R26E S5
Latitude	44° 38' 45"
Longitude	119° 37' 40"
General legal description	USGS Quad: Mt. Misery, Oregon. Foree Unit, John Day Fossil Beds National Monument. (80% SI)
Location 3: Grant County, OR	
Township/Range/Section	T12S R26E S6
Latitude	44° 33' 30"
Longitude	119° 39' 10"
General legal description	USGS Quad; Picture Gorge West, Oregon. John Day Fossil Beds National Monument. (80% SI)

Other references

Soil Conservation Service, Relative Forage Preference of Plants for Grazing Use by Season, Range Technical Note No. 16, 1982.

Western Regional Climate Center, NOAA, National Weather Service, Portland, OR. Web site - <http://nimbo.wrh.noaa.gov/Portland/climate.html>.

Natural Vegetation of Oregon and Washington, Jerry F. Franklin and C. T. Dyrness.

The Ecological Provinces of Oregon, E. William Anderson, Michael M. Borman, and William C. Krueger.

Contributors

CB

Ed Petersen, Rangeland Management Specialist, John Day Field Office, And Alan Bahn, Rangeland Management Specialist, Baker City Field Office

JPR

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 Gillaspay
Approval date	
Composition (Indicators 10 and 12) based on	Annual Production

Indicators

1. **Number and extent of rills:** None to very few on steeper slopes, moderate sheet & rill erosion hazard

2. **Presence of water flow patterns:** None to very few on steeper slopes

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):** 10-25%

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):** Moderately resistant to erosion: aggregate stability = 3-5

9. **Soil surface structure and SOM content (include type of structure and A-horizon color and thickness):** Very deep well drained clay loams, gravelly loams, or very cobbly or stony loams: moderate OM (1-3%)

10. **Effect of community phase composition (relative proportion of different functional groups) and spatial distribution on infiltration and runoff:** Moderate ground cover (50-60%) and gentle to steep slopes (15-60%) moderately 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: Thurber needlegrass > Bluebunch wheatgrass > shrubs > forbs > other grasses

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: 1200, Normal: 1000, Unfavorable: 800 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
