USDA Natural Resources Conservation Service

Ecological site R010XB052OR
JD Droughty Shallow South 9-12 PZ

Accessed: 05/20/2025

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.

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 and canyon side slopes composed of early Cenezoic tuffaceous sediments. Slopes range from 15 to 90 percent with slopes of 30 to 60 percent being most typical. Elevation varies from 1300 to 2600 feet.

Table 2. Representative physiographic features

Landforms	(1) Hill (2) Mountain (3) Plateau
Flooding frequency	None
Ponding frequency	None
Elevation	1,300–2,600 ft
Slope	15–90%
Water table depth	72 in
Aspect	S, SW, W

Climatic features

Elevation and aspect affect precipitation and the relative effectiveness of the precipitation and temperatures. Temperature changes can occur rapdily. In addition, the topography also results in localized cold air drainages, along with occasional cold air entrapment and inversions in the valleys.

Table 3. Representative climatic features

Frost-free period (average)	140 days
Freeze-free period (average)	180 days
Precipitation total (average)	12 in

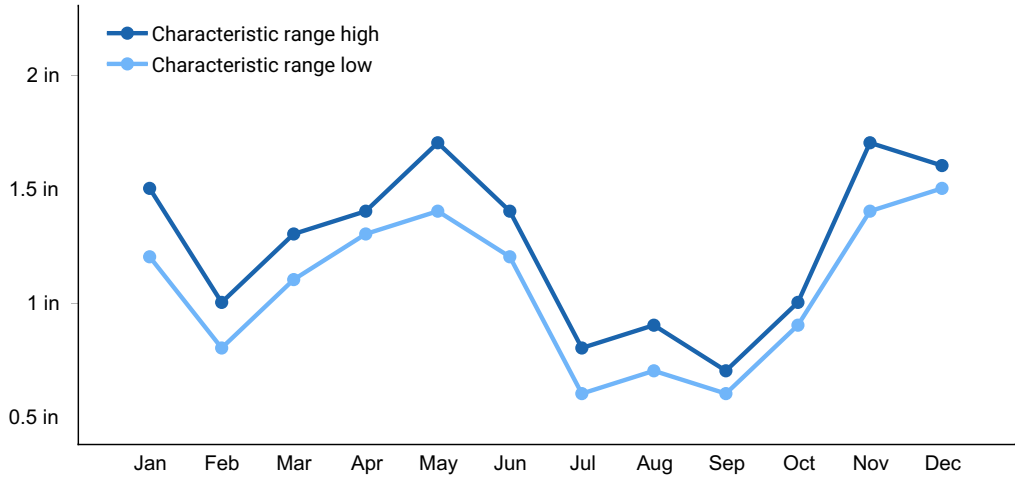


Figure 1. Monthly precipitation range

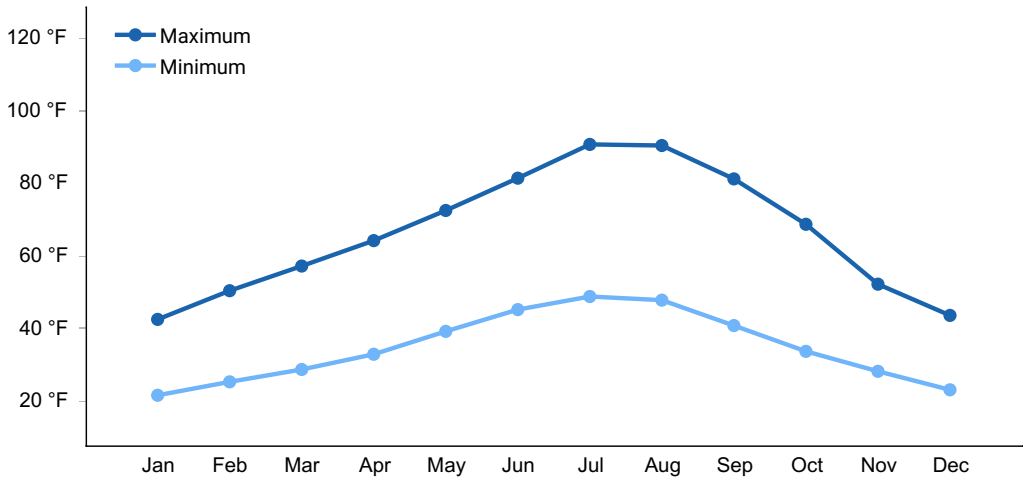


Figure 2. Monthly average minimum and maximum temperature

Influencing water features

Soil features

Soils on this site are typically shallow. The surface is predominantly loamy. These soils are well drained.

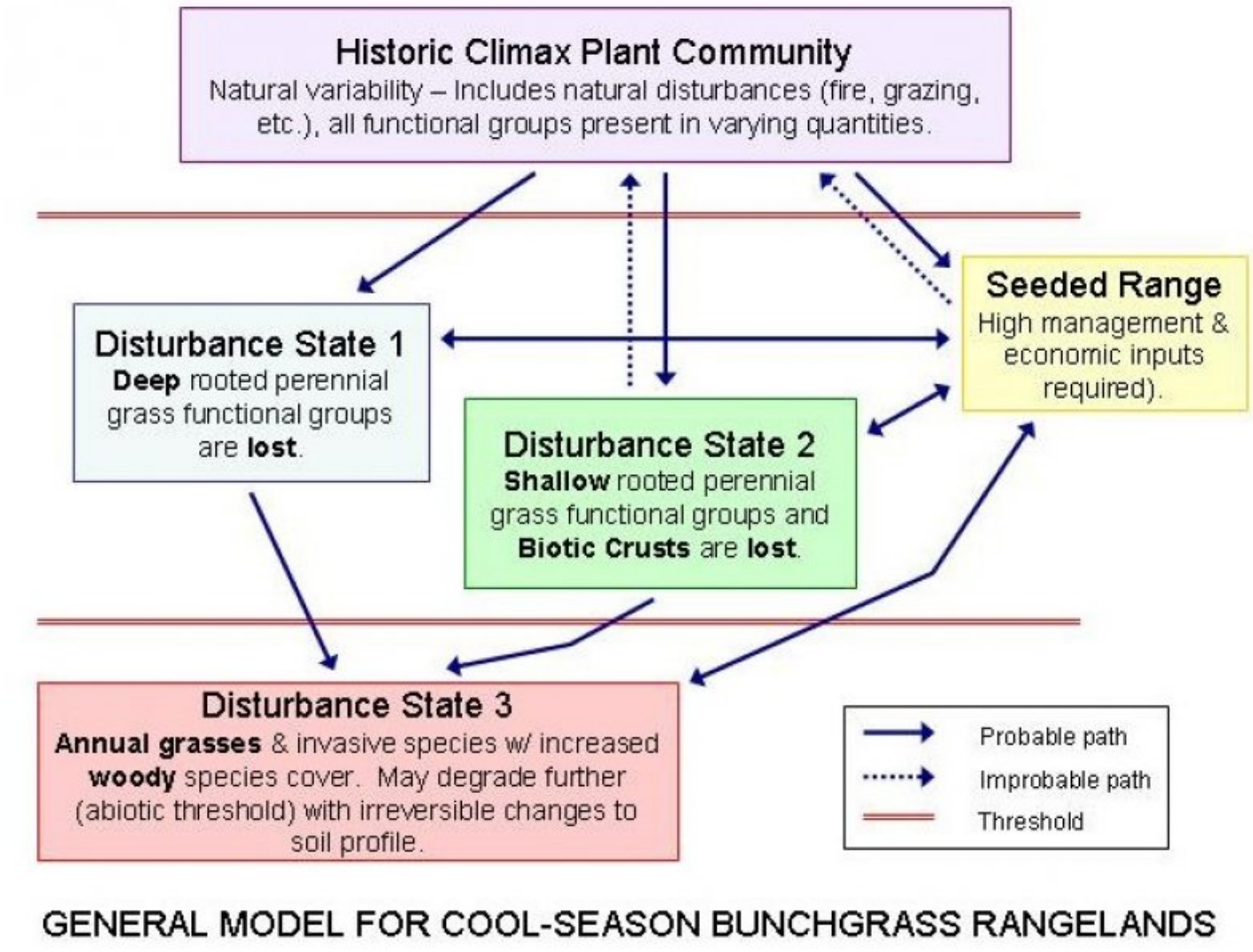
Table 4. Representative soil features

Surface texture	(1) Very cobbly loam (2) Stony coarse sandy loam (3) Clay loam
Family particle size	(1) Loamy
Drainage class	Well drained
Permeability class	Slow to rapid
Soil depth	5–19 in
Available water capacity (0-40in)	0.15–1.94 in
Calcium carbonate equivalent (0-40in)	0%
Electrical conductivity (0-40in)	0 mmhos/cm
Sodium adsorption ratio (0-40in)	0
Soil reaction (1:1 water) (0-40in)	6.6–8.4

Ecological dynamics

This site occurs on southerly exposures of low elevation terraces and canyon side slopes. Grasses dominate this plant community with forbs and shrubs making up a lesser component. Fluctuations in species composition and relative production may change from year to year depend upon abnormal precipitation or other climatic factors. Thurber needlegrass increases with a gravelly surface and decreases with a clay surface. Bluebunch wheatgrass increases with soil depth. The interpretive plant community for this site is the Historic Climax Plant Community (HCPC).
State and transiiton pathways: 1) Absence of fire combined with overgrazing.

State and transition model



GENERAL MODEL FOR COOL-SEASON BUNCHGRASS RANGELANDS

State 1
HCPC: ACTH7-PSSP6

Community 1.1
HCPC: ACTH7-PSSP6

This site is dominated by Thurber needlegrass. Forbs and shrubs make up a minor component of this site.

Table 5. Annual production by plant type

Plant Type	Low (Lb/Acre)	Representative Value (Lb/Acre)	High (Lb/Acre)
Grass/Grasslike	510	680	850
Shrub/Vine	60	80	100
Forb	30	40	50
Total	**600**	**800**	**1000**

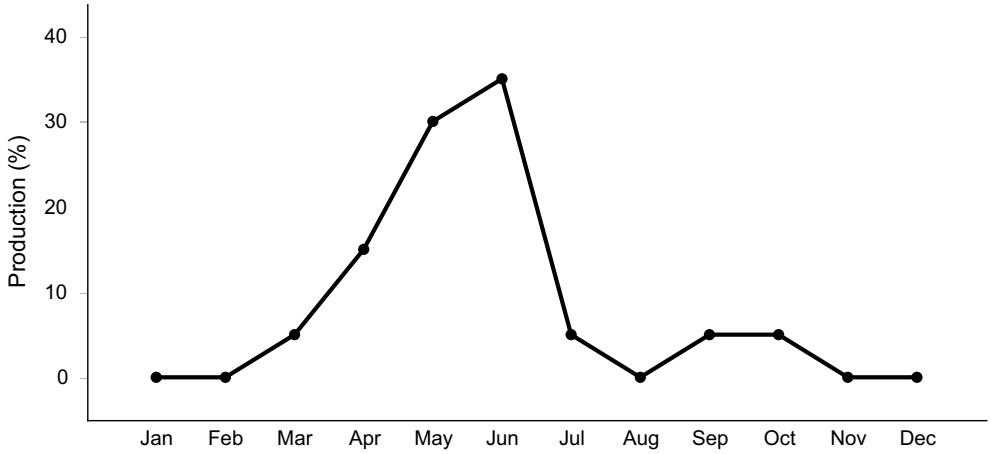


Figure 4. Plant community growth curve (percent production by month). OR4241, B10 JD Droughty Shallow South 9-12 A. JD Droughty Shallow South 9-12 RPC Growth Curve.

State 2
State B: Disturbance (Broom snakeweed/cheatgrass-eroded)

Community 2.1
State B: Disturbance (Broom snakeweed/cheatgrass-eroded)

This site is dominated by Broom snakeweed. Cheatgrass, China lettuce, Salsify, mustard and Juniper invade.

Table 6. Annual production by plant type

Plant Type	Low (Lb/Acre)	Representative Value (Lb/Acre)	High (Lb/Acre)
Shrub/Vine	120	240	360
Grass/Grasslike	60	120	180
Forb	20	40	60
Total	**200**	**400**	**600**

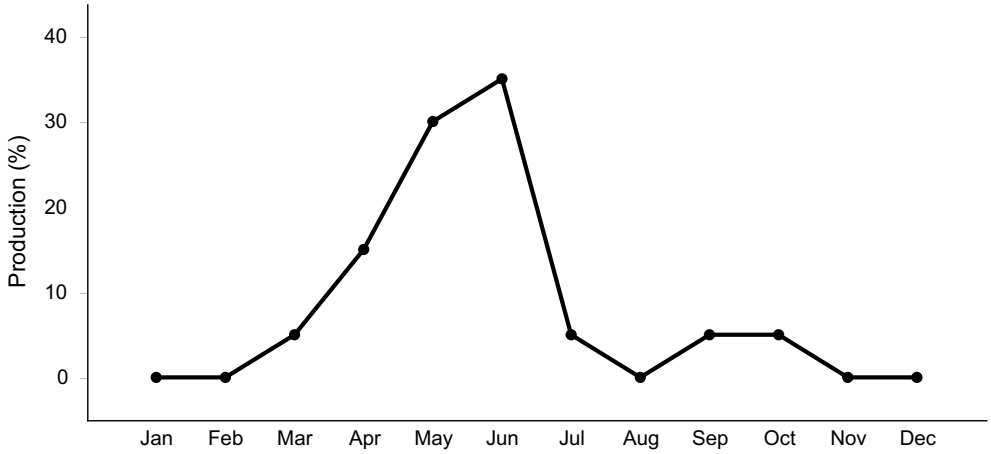


Figure 6. Plant community growth curve (percent production by month).

Additional community tables

Table 7. Community 1.1 plant community composition

Group	Common Name	Symbol	Scientific Name	Annual Production (Lb/Acre)	Foliar Cover (%)
Grass/Grasslike					
1				25–90	
	Sandberg bluegrass	POSE	*Poa secunda*	16–64	–
	sand dropseed	SPCR	*Sporobolus cryptandrus*	16–40	–
2				550–800	
	Thurber's needlegrass	ACTH7	*Achnatherum thurberianum*	480–640	–
	bluebunch wheatgrass	PSSPS	*Pseudoroegneria spicata ssp. spicata*	80–160	–
	squirreltail	ELEL5	*Elymus elymoides*	16–40	–
Forb					
3				20–60	
	common yarrow	ACMI2	*Achillea millefolium*	8–20	–
	milkvetch	ASTRA	*Astragalus*	8–20	–
	Bruneau mariposa lily	CABR4	*Calochortus bruneaunis*	8–20	–
	buckwheat	ERIOG	*Eriogonum*	8–20	–
	desertparsley	LOMAT	*Lomatium*	8–20	–
	seep monkeyflower	MIGU	*Mimulus guttatus*	8–20	–
	phacelia	PHACE	*Phacelia*	8–20	–
	scarlet globemallow	SPCO	*Sphaeralcea coccinea*	8–20	–
Shrub/Vine					
4				60–100	
	broom snakeweed	GUSA2	*Gutierrezia sarothrae*	40–60	–
	basin big sagebrush	ARTRT	*Artemisia tridentata ssp. tridentata*	16–40	–
	rubber rabbitbrush	ERNA10	*Ericameria nauseosa*	8–20	–
	purple sage	SADOI	*Salvia dorrii ssp. dorrii var. incana*	8–20	–

Table 8. Community 2.1 plant community composition

Group	Common Name	Symbol	Scientific Name	Annual Production (Lb/Acre)	Foliar Cover (%)
Grass/Grasslike					
1				40–80	
	cheatgrass	BRTE	*Bromus tectorum*	60–80	–
	Sandberg bluegrass	POSE	*Poa secunda*	20–60	–
2				20–40	
	Thurber's needlegrass	ACTH7	*Achnatherum thurberianum*	20–40	–
	bluebunch wheatgrass	PSSPS	*Pseudoroegneria spicata ssp. spicata*	10–30	–
Forb					
3				40–60	
	mustard	BRASS2	*Brassica*	10–20	–
	prickly lettuce	LASE	*Lactuca serriola*	10–20	–
	salsify	TRPO	*Tragopogon porrifolius*	10–20	–
Shrub/Vine					
4				175–240	
	broom snakeweed	GUSA2	*Gutierrezia sarothrae*	80–120	–
	western juniper	JUOC	*Juniperus occidentalis*	20–60	–
	basin big sagebrush	ARTRT	*Artemisia tridentata ssp. tridentata*	20–60	–
	rubber rabbitbrush	ERNA10	*Ericameria nauseosa*	15–40	–
	purple sage	SADOI	*Salvia dorrii ssp. dorrii var. incana*	15–40	–

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 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.

Wood products

No wood products are associated with this site.

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	T11S R20E S12
General legal description	SE 1/4 NW 1/4 Sec 12 T11S R20E WM South of Painted Hills Unit (90% SI)
Location 2: Wheeler County, OR	
Township/Range/Section	T12S R26E S6
General legal description	SW 1/4 NW 1/4 Sec 6 T12S R26E WM West boundary Sheep Rock Unit (90% SI)
Location 3: Wheeler County, OR	
Township/Range/Section	T11S R26E S5
General legal description	SW 1/4 Sec 5 T11S R26E WM In Foree Unit (90% SI)

Other references

Soil Conservation Service, Relative Forage Preference of Plants for Grazing Use by Season, Range Technical Note No. 16,j1982.
Western Regional Climate Center, NOAA, National Weather Service, Portland, OR

website-http://nimbo.wrh.noaa.gov/Portland/climate.html
Natural Vegetation of Oregon and Washington, Jerry F. Frankline and C.T. Dyrness.
The Ecological Provinces of Oregon, E. William Anderson, Michael M. Borman, and William C. Krueger.

Contributors

Ed Petersen, Alan Bahn

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 to some on steeper slopes, significant sheet & rill erosion hazard

---

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

---

3. **Number and height of erosional pedestals or terracettes:** None to very few (pedestals)

---

4. **Bare ground from Ecological Site Description or other studies (rock, litter, lichen, moss, plant canopy are not bare ground):** 10-20%

---

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

---

6. **Extent of wind scoured, blowouts and/or depositional areas:** None, moderate 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):** Shallow to very shallow, well drained very stony to cobbly loams, stony coarse sandy loams, or clay 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 steep slopes (30-60%) 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 > 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: 1000, Normal: 800, Unfavorable: 600 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

---