USDA Natural Resources
Conservation Service

Ecological site R024XY625OR
ALKALINE BASIN 8-10 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.

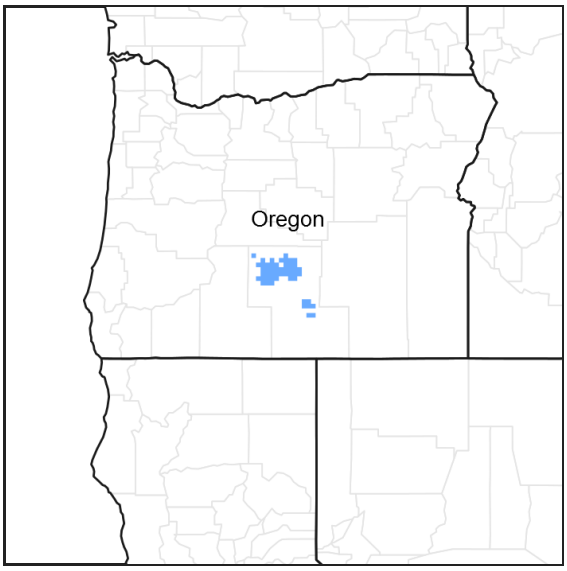


Figure 1. Mapped extent

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.

Ecological site concept

transferred from D23 to D24 with utilization of the same 3 digit site number. Mapped on the western edge of 23, bordering 6. Land scape position and soils are similar to 024XY022NV/024XY14OR.

Associated sites

R024XY001OR	**SODIC FLAT** Sodic Flat (higher sodic conditions, lower production, different composition - SAVE4/DISP dominant, ARTRT absent)
R024XY003OR	**SODIC BOTTOM** Sodic Bottom (higher sodic conditions, additional available subsurface moisture, greater production, different composition - ARTRT minor to absent)
R024XY112OR	**DRY SODIC FLOODPLAIN** Dry Sodic Floodplain(higher sodic conditions, gravelly loamy surface over stratified heavier subsoil, different composition - DISP dominant grass, LECI4 prominent)

Similar sites

R024XY120OR	**SILTY LOW SODIC TERRACE 6-10 PZ** Silty Low Sodic Terrace 6-10 PZ (lower sodic conditions, loam over silty clay loam subsoil, different composition – LETR5 dominant grass, ATCO & GRSP prominent, LECI4, DISP & ARTRT minor)
R024XY632OR	**DRY LAKE TERRACE 6-10 PZ** Dry Lake Terrace 6-10 PZ (lower sodic conditions, finer surface over clayey subsoil, different composition - LETR5 dominant grass)
R024XY644OR	**SILTY DUNES** Silty Dunes (lower sodic conditions, deep silt loam, greater slopes, different composition – LETR5 dominant grass, ARTRT, LECI4 & DISP minor)
R024XY009OR	**DRY BASIN** Dry Basin (fine sandy loam over silt loam, longer available seasonal water table, higher production, different composition – ARTRT dominant shrub)
R024XY112OR	**DRY SODIC FLOODPLAIN** Dry Sodic Floodplain (higher sodic conditions, gravelly loamy surface over stratified heavier subsoil, different composition - DISP dominant grass, LECI4 prominent)
R024XY121OR	**SILTY SODIC TERRACE 6-10 PZ** Silty Sodic Terrace 6-10 PZ (lower sodic conditions, loam over silty clay loam subsoil, different composition – LETR5 dominant grass, GRSP prominent, LECI4 & DISP minor)
R024XY645OR	**SILTY ALKALINE BOTTOM 8-10 PZ** Silty Alkaline Bottom 8-10 PZ (lower sodic conditions, deep ashy fine loamy often over diatomaceous earth, different composition – LETR5 dominant grass, LECI4 prominent)

Table 1. Dominant plant species

Tree	Not specified
Shrub	(1) *Sarcobatus vermiculatus* (2) *Artemisia tridentata subsp. tridentata*
Herbaceous	(1) *Leymus cinereus* (2) *Distichlis spicata*

Physiographic features

This site typically occurs on the floors of low elevation basins in association with playas and ephemeral drainage systems. On playas it occurs where eolian and alluvial deposits of soil material accumulate over the lakebed’s sodic clayey surface. Slopes typically range from 0 to 2 percent. Elevations vary from 4,000 to 4,800 feet.

Table 2. Representative physiographic features

Landforms	(1) Basin floor (2) Valley floor (3) Playa
Ponding duration	Brief (2 to 7 days) to very brief (4 to 48 hours)
Ponding frequency	Occasional to rare
Elevation	4,000–4,800 ft
Slope	0–2%
Water table depth	30–72 in
Aspect	Aspect is not a significant factor

Climatic features

The annual precipitation ranges from 8 to 10 inches, most of which occurs in the form of rain and snow during the months of December through April. A short duration supply of ephemeral ponded and subsurface moisture augments the precipitation. The soil temperature regime is mesic to frigid near mesic with a mean air temperature of

48 degrees F. Temperature extremes range from 100 to -20 degrees F. The frost-free period ranges from 70 to 120 days. The optimum growth period for plant growth is from April to early June.

Table 3. Representative climatic features

Frost-free period (average)	120 days
Freeze-free period (average)	0 days
Precipitation total (average)	10 in

Influencing water features

Soil features

The soils of this site are typically medium to fine textured, very deep and poorly drained. The surface layer is a silt loam over a clayey subsoil which is over deep lacustrine sediments. Soils are mildly sodic in the surface with pH's increasing in the subsoil. Ponding in the spring for a short duration is frequent. Permeability is moderately slow to slow. The available water holding capacity (AWC) is about 6 to 8 inches for the profile. A seasonal water table is occasionally present at 30 to greater than 72 inches. The water erosion potential is slight due to the low elevation flat position of the site. Wind erosion potential is moderate.

Table 4. Representative soil features

Parent material	(1) Lacustrine deposits–rhyolite
Surface texture	(1) Silt loam (2) Silty clay loam
Family particle size	(1) Clayey
Drainage class	Somewhat poorly drained to poorly drained
Permeability class	Moderately slow to slow
Soil depth	60 in
Available water capacity (0-40in)	6–8 in

Ecological dynamics

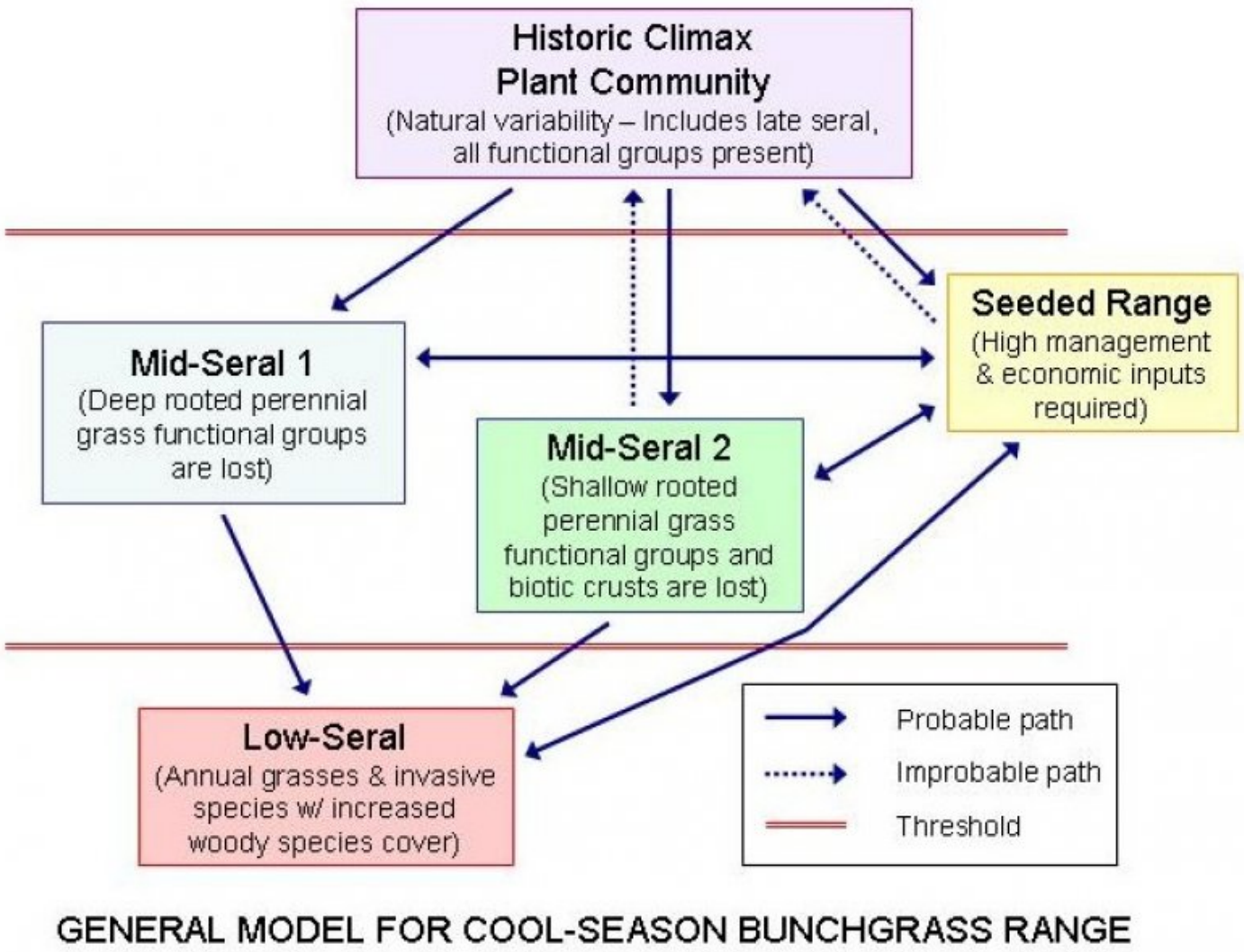
The potential native plant community is dominated by greasewood and basin wildrye. Basin big sagebrush is subdominant along with saltgrass. Lesser amounts of shadscale, spiny hopsage bottlebrush squirreltail, beardless wildrye (creeping) and forbs occur. Vegetative composition of the community is approximately 60 percent grasses, 5 percent forbs and 35 percent shrubs. The approximate ground cover is 40 to 60 percent (basal and crown).

Range in Characteristics:
Production increases on thicker soil surfaces and in areas with increasing available subsurface moisture and decreasing alkalinity. Typically a loam overlay of only a few inches brings significant changes to the vegetative community. Basin wildrye becomes more prevalent with increasing top soil depth, increasing available subsurface moisture and decreasing sodium salts in the soil. Basin big sagebrush increases with decreasing alkaline conditions. Saltgrass, greasewood and other salt tolerant shrubs increase in areas with higher alkaline conditions.

Response to Disturbance - States:
When the condition of the site deteriorates as a result of over grazing, basin wildrye decreases. Greasewood, basin big sagebrush, squirreltail, salt tolerant shrubs and saltgrass increase. With further deterioration, basin big sagebrush and squirreltail decrease. Saltgrass, greasewood, shadscale and spiny hopsage increase. Annuals invade sparingly and areas of bare ground increase. As bare soil increases, soil surface conditions become increasingly sodic and saltgrass increases. Production decreases and site deterioration continues to occur in a cyclic pattern.

States - SAVE4-ARTRT/DISP-ELEL5-bare ground;
SAVE4/DISP-bare ground

State and transition model



GENERAL MODEL FOR COOL-SEASON BUNCHGRASS RANGE

State 1
Reference Plant Community

Community 1.1
Reference Plant Community

The reference native plant community is dominated by greasewood and basin wildrye. Basin big sagebrush is subdominant along with saltgrass. Lesser amounts of shadscale, spiny hopsage bottlebrush squirreltail, beardless wildrye (creeping) and forbs occur. Vegetative composition of the community is approximately 60 percent grasses, 5 percent forbs and 35 percent shrubs. The approximate ground cover is 40 to 60 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	180	300	420
Shrub/Vine	105	175	245
Forb	15	25	35
Total	**300**	**500**	**700**

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	**Dominant, perennial, deep rooted bunchgrass**			125–200	
	basin wildrye	LECI4	*Leymus cinereus*	125–200	–
2	**Sub-dominant, shallow rooted, rhizomatous grass**			50–100	
	saltgrass	DISP	*Distichlis spicata*	50–100	–
3	**Other perennial grasses**			30–75	
	squirreltail	ELEL5	*Elymus elymoides*	25–50	–
	beardless wildrye	LETR5	*Leymus triticoides*	5–25	–
Forb					
4	**Perennial forbs**			10–30	
	povertyweed	IVAX	*Iva axillaris*	5–10	–
	seepweed	SUAED	*Suaeda*	5–10	–
	short-rayed alkali aster	SYFR2	*Symphyotrichum frondosum*	0–5	–
	nodding thelypody	THFL3	*Thelypodium flexuosum*	0–5	–
Shrub/Vine					
5	**Dominant, deciduous, non-sprouting shrub**			75–125	
	greasewood	SAVE4	*Sarcobatus vermiculatus*	75–125	–
6	**Sub-dominant, evergreen, non-sprouting shrub**			25–50	
	basin big sagebrush	ARTRT	*Artemisia tridentata ssp. tridentata*	25–50	–
7	**Other shrubs**			30–75	
	shadscale saltbush	ATCO	*Atriplex confertifolia*	10–25	–
	spiny hopsage	GRSP	*Grayia spinosa*	10–25	–
	bud sagebrush	PIDE4	*Picrothamnus desertorum*	5–15	–
	rubber rabbitbrush	ERNA10	*Ericameria nauseosa*	5–10	–

Animal community

Livestock Grazing:
This site is suitable for livestock grazing use in the late spring and fall under a planned grazing system. Use should be postponed until the soils are firm enough to prevent trampling damage and soil compaction. Grazing management should be keyed for basin wildrye. Deferred grazing or rest is recommended at least once every three years.

Wildlife:
This site is used by pronghorn antelope, mule deer, rabbits, rodents, upland birds and various predators. It provides cover and limited winter spring forage for mule deer and antelope.

Hydrological functions

The soils of this site are typically in or near the lowest topographic position. It accumulates off-site surface flows and when ponded has virtually no runoff potential. The soils have low infiltration rates when vegetation cover is high. Hydrologic cover is high when the basin wildrye component is greater than 70 percent of potential. The soils are in hydrologic group C.

Other information

This site can be difficult to reseed when in poor soil condition. Salt concentrations can reduce germination of basin wildrye. Soils are corrosive to steel.

Contributors

C. Tackman
C.Tackman, R.Williams & A.Bahn - Update
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)	
Contact for lead author	
Date	
Approved by	
Approval date	
Composition (Indicators 10 and 12) based on	Annual Production

Indicators

1. **Number and extent of rills:**

2. **Presence of water flow patterns:**

3. **Number and height of erosional pedestals or terracettes:**

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

5. **Number of gullies and erosion associated with gullies:**

6. **Extent of wind scoured, blowouts and/or depositional areas:**

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

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

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9. **Soil surface structure and SOM content (include type of structure and A-horizon color and thickness):**

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10. **Effect of community phase composition (relative proportion of different functional groups) and spatial distribution on infiltration and runoff:**

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

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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:

    Sub-dominant:

    Other:

    Additional:

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

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

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15. **Expected annual annual-production (this is TOTAL above-ground annual-production, not just forage annual-production):**

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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:**

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17. **Perennial plant reproductive capability:**