

Ecological site R021XY218OR SHRUBBY LOAM 16-20 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.

| Table | 1. | Dominant | plant | species |
|-------|----|----------|-------|---------|
|-------|----|----------|-------|---------|

| Tree | Not specified |
|------------|---------------|
| Shrub | Not specified |
| Herbaceous | Not specified |

Physiographic features

This site occurs on low hills, benches, dissected high terraces and fans of large valleys and basins. Slopes typically range from 1 to 25%. Elevations range from 4500 to 5200 feet.

| Table 2. Representative | physiographic | features |
|-------------------------|---------------|----------|
|-------------------------|---------------|----------|

| Landforms | (1) Hill (2) Plateau |
|-------------------|------------------------------------|
| Elevation | 1,463–1,554 m |
| Slope | 2–15% |
| Water table depth | 152 cm |
| Aspect | Aspect is not a significant factor |

Climatic features

Hot dry summers and cold wet (rain or snow) winters characterize this site. This site receives between 16-20 inches of precipitation annually. It occurs mainly between the months of November and June as both rain and snow. The soil temperature regime is typically frigid. the average annual air temperature is 43-46 degrees F with extreme temperatures ranging from 85 to -30 degrees F. The frost free period is 40 to 70 days. The optimum period for plant growth is from late April through July.

Table 3. Representative climatic features

| Frost-free period (average) | 70 days |
|-------------------------------|---------|
| Freeze-free period (average) | 90 days |
| Precipitation total (average) | 508 mm |



Figure 1. Monthly average minimum and maximum temperature

Influencing water features

Soil features

The soils of this site range from moderate to deep (40+ inches), they are well drained and have loamy surface textures and clayey subsoils. They are sometimes stony or gravelly on the surface and throughout the profile. Parent materials are generally tuff, basalt or diatomite (sediments) and may contain a small amount of ash. Permeability is slow. The potential for water erosion is low to moderate, depending on slope.

| Surface texture | (1) Gravelly loam (2) Stony loam |
|--|--|
| Family particle size | (1) Clayey |
| Drainage class | Well drained to somewhat excessively drained |
| Permeability class | Moderately slow to moderately rapid |
| Soil depth | 114–152 cm |
| Available water capacity (0-101.6cm) | 0 cm |
| Calcium carbonate equivalent (0-101.6cm) | 2% |
| Electrical conductivity (0-101.6cm) | 0 mmhos/cm |
| Sodium adsorption ratio (0-101.6cm) | 0 |
| Soil reaction (1:1 water) (0-101.6cm) | 6.3–7.4 |

Table 4. Representative soil features

Ecological dynamics

The potential plant community is dominated by mountain big sagebrush and antelope bitterbrush. Idaho fescue dominates the understory, but bluebunch wheatgrass is sometimes common. The interpretative plant community for this site is the Historic Climax Plant Community.

Bluebunch wheatgrass is more abundant in the driest climatic areas and more droughty positions. Bitterbrush is more common sandy inclusions. Idaho fescue is more abundant in moist locations, and an occasiaonal ponderosa pine or juniper is present when this site is near tree covered areas. Locations with very high surface stones/bolders have lower production and less plant cover. Some basin big sagbrush naturally occurs on the site in warmer areas. Big sagebrush and bitterbrush are easily damaged or killed by high intensity fires and are slow to return after burning. Sustained heavy grazing pressure by livestock or poor grazing management may reduce wheatgrass, fescue, needlegrass and bitterbrush, depending on season of use and growing conditions. Rabbitbrush and cheatgrass invade after fires and ground disturbance along with annual fescue, mustard and other weeds. Western

juniper may increase with fire exclusion.

State and transition model



GENERAL MODEL FOR COOL-SEASON BUNCHGRASS RANGELANDS

State 1 HCPC, FEID/PUTR2-ARTRV

Community 1.1 HCPC, FEID/PUTR2-ARTRV

HCPC: Dominated by antelope bitterbrush, mountain big sagebrush, Idaho fescue, bluebunch wheatgrass, and bluegrasses.

Table 5. Annual production by plant type

| Plant Type | Low (Kg/Hectare) | Representative Value (Kg/Hectare) | High (Kg/Hectare) |
|-----------------|---------------------|--------------------------------------|----------------------|
| Grass/Grasslike | 743 | 1086 | 1428 |
| Shrub/Vine | 262 | 408 | 554 |
| Forb | 44 | 110 | 175 |
| Tree | 29 | 52 | 73 |
| Total | 1078 | 1656 | 2230 |

Additional community tables

Table 6. Community 1.1 plant community composition

| Group | Common Name | Symbol | Scientific Name | Annual Production (Kg/Hectare) | Foliar Cover (%) |
|-------|--|------------|---------------------------------------|-----------------------------------|---------------------|
| Grass | Grass/Grasslike | | | | |
| 1 | Dominant deep rooted perennial grasses | | | 510–729 | |
| | Idaho fescue | FEID | Festuca idahoensis | 510–729 | _ |
| 2 | Sub-dominant deep rooted | l perennia | al grasses | 58–131 | |
| | bluebunch wheatgrass | PSSP6 | Pseudoroegneria spicata | 29–73 | _ |
| | Thurber's needlegrass | ACTH7 | Achnatherum thurberianum | 15–29 | _ |
| | basin wildrye | LECI4 | Leymus cinereus | 15–29 | _ |
| 4 | Sub-dominant shallow roo | ted perer | inial grasses | 73–146 | |
| | Sandberg bluegrass | POSE | Poa secunda | 73–146 | - |
| 5 | Other perennial grasses | | | 18–73 | |
| | western needlegrass | ACOC3 | Achnatherum occidentale | 0–6 | - |
| | Ross' sedge | CARO5 | Carex rossii | 0–6 | - |
| | squirreltail | ELEL5 | Elymus elymoides | 0–6 | - |
| | prairie Junegrass | KOMA | Koeleria macrantha | 0–6 | - |
| Forb | | | | | |
| 7 | Dominant perennial forbs | | | 29–58 | |
| | milkvetch | ASTRA | Astragalus | 15–29 | _ |
| | lupine | LUPIN | Lupinus | 15–29 | _ |
| 9 | Other perennial forbs | | | 15–117 | |
| | common yarrow | ACMI2 | Achillea millefolium | 0–6 | _ |
| | agoseris | AGOSE | Agoseris | 0–6 | - |
| | sandwort | ARENA | Arenaria | 0–6 | _ |
| | balsamroot | BALSA | Balsamorhiza | 0–6 | _ |
| | mariposa lily | CALOC | Calochortus | 0–6 | - |
| | Indian paintbrush | CASTI2 | Castilleja | 0–6 | _ |
| | pincushion | CHAEN | Chaenactis | 0–6 | - |
| | tapertip hawksbeard | CRAC2 | Crepis acuminata | 0–6 | _ |
| | Trinity buckwheat | ERAL6 | Eriogonum alpinum | 0–6 | - |
| | fleabane | ERIGE2 | Erigeron | 0–6 | - |
| | buckwheat | ERIOG | Eriogonum | 0–6 | _ |
| | western stoneseed | LIRU4 | Lithospermum ruderale | 0–6 | _ |
| | desertparsley | LOMAT | Lomatium | 0–6 | - |
| | phacelia | PHACE | Phacelia | 0–6 | - |
| | spreading phlox | PHDI3 | Phlox diffusa | 0–6 | - |
| | Oregon checkerbloom | SIOR | Sidalcea oregana | 0–6 | - |
| | deathcamas ZIGAD Zigadenus | | | 0–6 | - |
| Shrub | /Vine | | | | |
| 11 | Dominant evergreen shrut | os | | 73–219 | |
| | mountain big sagebrush | ARTRV | Artemisia tridentata ssp. vaseyana | 73–219 | - |

| 13 | Dominant deciduous (or 1 | /2 shrubs |) shrubs | 146–219 | |
|------|--------------------------------|-----------|------------------------|---------|---|
| | antelope bitterbrush | PUTR2 | Purshia tridentata | 146–219 | - |
| 15 | Other shrubs | • | • | 44–117 | |
| | Saskatoon serviceberry | AMAL2 | Amelanchier alnifolia | 0–6 | _ |
| | curl-leaf mountain mahogany | CELE3 | Cercocarpus ledifolius | 0–6 | _ |
| | Klamath plum | PRSU2 | Prunus subcordata | 0–6 | - |
| | chokecherry | PRVI | Prunus virginiana | 0–6 | - |
| | desert gooseberry | RIVE | Ribes velutinum | 0–6 | - |
| | rose | ROSA5 | Rosa | 0–6 | - |
| | snowberry | SYMPH | Symphoricarpos | 0–6 | - |
| Tree | | - | | | |
| 16 | Dominant evergreen trees | | | 29–73 | |
| | western juniper | JUOC | Juniperus occidentalis | 15–44 | _ |
| | ponderosa pine | PIPO | Pinus ponderosa | 15–29 | _ |

Animal community

Livestock Grazing- This site is suited to use under a planned grazing system by cattle in the late spring, summer or fall. Care should be taken to avoid use until soils are sufficiently dry and stable to reduce the impacts of trampling and root reserves have been established. Excessive early use or season long use are the primary factors in the deterioration of this site.

Wildlife- This site provides nesting and feeding cover to a variety of wildlife species. It is particularly important in fall and winter for deer which feed heavily on the bitterbrush. Use should be managed in such a manner as to maintain or improve conditions for wildlife populations. This site is seasonally utilized by native ungulates (mule deer, elk, and antelope). Other animals that use this site are quail, coyotes, bobcats, and rabbits.

Wood products

This site has limited potential for fence posts and firewood.

Contributors

BLM ESI Team

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 |
|---|---|
| Contact for lead author | Oregon NRCS State Rangeland Management Specialist |
| Date | 08/22/2012 |
| Approved by | Bob Gillaspy |
| Approval date | |
| Composition (Indicators 10 and 12) based on | Annual Production |

Indicators

- 1. Number and extent of rills: None, slight to moderate sheet & rill erosion hazard
- 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): 1-5%
- 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
- 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
- Soil surface structure and SOM content (include type of structure and A-horizon color and thickness): Moderately deep to deep, well drained and somewhat excessively drained loams and ashy silt loams: Low OM (1-2%)
- 10. Effect of community phase composition (relative proportion of different functional groups) and spatial distribution on infiltration and runoff: Relatively high vegetative cover (60-80%) and moderate slopes (0-25%) effectively limit rainfall impact and overland flow; infiltration is moderately slow to moderately rapid
- 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: Idaho fescue > Antelope bitterbrush > Mountain big sagebrush > Sandberg bluegrass > other grasses > other shrubs > forbs > trees

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 annualproduction): Favorable: 1500, Normal: 1300, Unfavorable: 1000 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: Perennial brush secies will increase with deterioration of plant community. Western Juniper readily increases on 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