

Ecological site R012XY023ID

Dry Meadow PONE3-PHAL2

Last updated: 9/22/2020

Accessed: 09/14/2026

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.

MLRA notes

Major Land Resource Area (MLRA): 012X—Lost River Valleys and Mountains

Land Resource Region: B (Northwestern Wheat and Range) MLRA: 12 (Lost River Valleys and Mountains) EPA EcoRegion: Level III (Middle Rockies)

LRU notes

012X—Lost River Valleys and Mountains Additional Moisture Site: <https://soils.usda.gov/survey/geography/mlra/index.html>

Ecological site concept

Site receives additional moisture not saline or sodic deep to very deep, somewhat poorly drained seasonal water table 60-100 cm (24-40 in)

Associated sites

R012XY001ID	Limy Gravelly 8-13 PZ ARNO4/PSSPS
R012XY038ID	Meadow DECA18/CANE2
R012XY045ID	Riparian Wet Meadow Salix/Carex
R012XY046ID	Wet Meadow Carex-Juncus

Similar sites

R012XY026ID	Dry Loamy 7-10 PZ ATCO-ARFR4/PSSPS
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Table 1. Dominant plant species

Tree	Not specified
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Shrub	Not specified
Herbaceous	(1) <i>Poa nevadensis</i> (2) <i>Phleum alpinum</i>

Physiographic features

This site occurs on gently sloping topography in small stream and high mountain valleys. Slopes are generally less than 5 percent. The site is frequently cut by old stream courses and oxbows. Elevation ranges from 3600 to 8000 feet (1100 to 2500 meters).

Table 2. Representative physiographic features

Landforms	(1) Mountain valley
Flooding duration	Brief (2 to 7 days)
Flooding frequency	Very rare to rare
Ponding duration	Very brief (4 to 48 hours)
Ponding frequency	Rare
Elevation	1,100 – 2,440 m
Slope	0 – 10 %
Ponding depth	0 – 30 cm
Water table depth	0 – 100 cm

Climatic features

MLRA 12 is dominated by dramatic changes in elevation which, in turn, influence local weather patterns. The intermontane valleys have elevations as low as 3800 feet, while the adjacent mountains may reach more than 12,600 feet. The average annual precipitation for the entire MLRA, based on 10 long term climate stations located throughout the MLRA, is approximately 9.38 inches. However, the dry valleys may have averages as low as 6 inches, while the upper peaks may have averages that exceed 46 inches per year.

Temperatures vary considerably over the year. The average annual temperature is 42.25 degrees F. The average low is 27.4 degrees while the average high temperature is 57 degrees.

In the summer the sun shines 78% of the time, but drops to 40% in the winter. The prevailing wind is location-dependent, and generally flows parallel to the orientation of the dominant valleys. In the summer localized afternoon upslope winds and evening downslope winds are common. The average windspeed is greatest in the spring and early summer.

The frost free period ranges from 102 to 107 days while the freeze free period ranges from 134 to 139 days across the MLRA.

Table 3 Representative climatic features

Frost-free period (average)	110 days
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Freeze-free period (average)	140 days
Precipitation total (average)	280 mm

Influencing water features

This site is influenced by adjacent wetlands, streams or run on.

Soil features

The soils on this site are generally silt loams. They are poorly to moderately well drained and have slow to very rapid permeability. The water table fluctuates from the surface down to 40+ inches during the growing season, restricting most deep-rooted shrubs. Run-off is ponded or very rapid and depressional areas usually accumulate local sediment instead of eroding. Severe removal of vegetation can cause channel cutting, which may cause a lowering of the water table. These very deep soils are formed from local alluvium. The available water capacity ranges from low to high and is supplemented by upward capillary movement of water from the water table. The surface is usually dark and high in organic matter. Bigant, Lemhi, Thosand, Wimpey and Zeph have an O horizon ranging from 1 to 5 inches thick. The soils have a aquic to xeric soil moisture regime. The soil temperature regime ranges from frigid to cryic.

Table 4. Representative soil features

Surface texture	(1) Gravelly silt loam (2) Very gravelly loam (3) Silty clay loam
Drainage class	Poorly drained to moderately well drained
Permeability class	Slow to very rapid
Soil depth	150 cm
Surface fragment cover <=3"	0 – 40 %
Surface fragment cover >3"	Not specified
Available water capacity (0-101.6cm)	3.81 – 24.89 cm
Calcium carbonate equivalent (0-101.6cm)	0 – 40 %
Electrical conductivity (0-101.6cm)	0 – 10 mmhos/cm

Sodium adsorption ratio (0-101.6cm)	0 – 10
Soil reaction (1:1 water) (0-101.6cm)	4.5 – 8.4
Subsurface fragment volume <=3" (Depth not specified)	20 – 70 %
Subsurface fragment volume >3" (Depth not specified)	0 – 10 %

Ecological dynamics

The dominant visual aspect of this site is a plant community dominated by Nevada bluegrass, alpine timothy, and meadow barley. Shrubs are normally not present; however, several willow species can be found in small amounts. Composition by weight is approximately 80-90 percent grasses and grass-like and 10-20 percent forbs. The soil surface of the site is typically slightly undulating causing small depressions and high spots with variable soil moisture characteristics. This site is commonly found in complex with the following sites:

1. Marsh site.

Deeper depressions with water slightly above the surface. This site is dominated by Northwest territory sedge, common spikerush, broadleaf cattail, hardstem bulrush, common threesquare and beaked sedge.

2. Wet Meadow site.

Shallow depressions with the water table at or near the surface for the entire growing season. This site is dominated by Northwest territory sedge and beaked sedge.

3. Meadow site.

Slightly higher areas that are drier during the growing season. This site is dominated by tufted hairgrass, Nebraska sedge and alpine timothy.

The soils within any complex of meadow sites are highly variable. Factors that affect the determination of the site include depth to water table at end of growing season, micro-topography and drainage class. Depth to water table and micro-topography are measurable features. Determination of drainage class requires the use of soil interpretation tables. Other interpretive factors that may be used for site determination are depth and duration of ponding frequency and the timing and duration of flooding frequency.

Micro-topography is a feature that has a dramatic effect on depth to water table and the resulting plant communities. A few inches of change in surface elevation changes species composition and/or production. Slightly undulating topography is common in meadow complexes; therefore, more than one site should be expected.

An infinite number of combinations of factors that influence the ecology of potential plant communities exist. For practical purposes, four plant communities where the depth to the water table drives the vegetative composition have been described. They are:

- Dry meadow

Water table at >40" at end of growing season

- Meadow

Water table at 20-40" at end of growing season

- Wet meadow

Water table at 10-20" at end of growing season

- Marsh

Water at surface to

State and transition model

Additional community tables

Table 5. Community 1.1 plant community composition

Group	Common Name	Symbol	Scientific Name	Annual Production ()	Foliar Cover (%)
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Table 6. Community 2.1 plant community composition

Group	Common Name	Symbol	Scientific Name	Annual Production ()	Foliar Cover (%)
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Table 7. Community 3.1 plant community composition

Group	Common Name	Symbol	Scientific Name	Annual Production ()	Foliar Cover (%)
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Table 8. Community 4.1 plant community composition

Group	Common Name	Symbol	Scientific Name	Annual Production ()	Foliar Cover (%)
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Animal community

Wildlife Interpretations Animal Community – Wildlife Interpretations This dry meadow ecological site provides diverse habitat for wetland and upland wildlife species. The seasonal hydrology results in abundant forage attracting invertebrate and vertebrate animals to this ecological site. Seasonal habitat is provided for resident and migratory animals including western toad, western rattlesnake, shrews, bats, jackrabbits, ground squirrels, mice, coyote, red fox, badger, sage-grouse, Ferruginous hawk, prairie falcon, grasshopper sparrow, horned lark, and western meadowlark. Large herbivore use of the ecological site includes mule deer, pronghorn antelope, and elk. Native reptiles and amphibians are reliant on these dry meadow sites on a seasonal basis. Loss of site hydrology significantly reduces habitat value of this ecological site and also adjacent ecological sites. Open water is seasonal, only being provided by seasonal runoff, ponding, flooding, seasonal high water table, and natural springs. State 1 Phase 1.1 - Nevada Bluegrass/ Alpine Timothy/ Meadow Barley Reference Plant Community (RPC): The RPC provides a diversity of grasses and forbs used by native insect communities who assist in pollination of the plant community. The insects are food for the many predator species utilizing the site. The reptile and amphibian community is represented by leopard lizard, western skink, rubber boa, western rattlesnake, western toad, boreal chorus frog, and northern leopard frog. A diverse amphibian population is a key indicator of good ecological health on this site. Loss of hydrology will limit or exclude amphibians from this ecological site. Sage-grouse utilize the meadows as summer and fall brood-rearing habitat. The plant community supports spring, summer, and fall forage needs of large mammals (antelope, mule deer, and elk.). Limited thermal cover for ungulates is provided due to the lack of woody vegetation in the plant community. A diverse small mammal population including deer mouse, golden-mantled ground squirrels, chipmunks, and yellow-bellied marmots may utilize the habitat on a seasonal basis. State 1 Phase 1.2 - Threadleaf Sedge/ Meadow Barley/ Baltic Rush/ Rocky Mountain Iris/ Louisiana Sagewort Plant Community: This phase has developed due to improper grazing management. Insect diversity and populations would be similar to Phase 1.1 plant community. Continued improper grazing management would lower the quality of amphibian and reptile habitat due to a more open landscape and reduced vertical plant structure. The plant community provides summer and fall brood-rearing habitat for sage-grouse when sagebrush cover is nearby. The plant community is desirable forage for ungulates but with improper grazing management, forage availability would be reduced in the summer and fall. Small mammal populations and diversity would be reduced due to reduced vertical structure and increased vulnerability to predators. State 2 –Kentucky Bluegrass/ Louisiana Sagewort Plant Community: This state developed due to continued improper grazing management and a permanent lowering of the water table. Pollinators would be supported by an increase in forbs that require less moisture than plants in State 1. The loss of historic hydrology will limit or exclude use of the site by amphibians and many reptiles. Suitable habitat for the northern leopard frog, a species of concern, would not be provided. Habitat for grassland bird species would increase if the plant community is managed properly. If the plant community is not managed properly grassland bird use for nesting would be minimal. Birds of prey (northern harrier and Cooper's hawk) may range throughout these areas looking for prey species. Ungulates will utilize the herbaceous vegetation in summer and fall. Kentucky bluegrass is desirable forage for deer and elk. Small mammal populations and diversity would be reduced due to reduced vertical structure and vulnerability to predators. Grazing Interpretations This site is suitable for grazing in late spring after soils have dried sufficiently to prevent trampling and in the summer and fall. Natural water supplies are likely to be limited or absent on the site in late summer and fall. Estimated initial stocking rate will be determined with the landowner or decision-maker. They will be based on the inventory which includes species, composition, similarity index, production, past use history, season of use and seasonal preference. Calculations used to determine estimated initial stocking rate will be based on forage preference ratings.

Hydrological functions

Soils on this site are in hydrologic groups B, C and D.

Recreational uses

This site has some value for aesthetics and natural beauty due to several spring and early summer blooming forbs and shrubs. Some hunting occurs for sage grouse, rabbits, elk and deer. Hikers and fishermen may traverse the edge of the site where it is adjacent to streams.

Wood products

None.

Other products

None.

Inventory data references

Information presented here has been derived from NRCS clipping and other inventory data. Also, field knowledge of range-trained personnel was used. Those involved in developing this site description include: Dave Franzen, co-owner, Intermountain Rangeland Consultants, LLC Jacy Gibbs, co-owner, Intermountain Rangeland Consultants, LLC Jim Cornwell, Range Management Specialist, IASCD Chris Hoag, Wetland Specialist, NRCS, Idaho Dan Ogle, Plant Materials Specialist, NRCS, Idaho Brendan Brazee, State Rangeland Management Specialist, NRCS, Idaho Lee Brooks, Range Management Specialist, IASCD Kristen May, Resource Soil Scientist, NRCS, Idaho

Other references

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USDI Bureau of Land Management, US Geological Survey; USDA Natural Resources Conservation Service, Agricultural Research Service; Interpreting Indicators of Rangeland Health. Technical Reference 1734-6; Version 4-2005.

Approval

Kendra Moseley, 9/22/2020

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	USDA/Natural Resources Conservation Service Brendan Brazee, State Range Conservationist 9173 W. Barnes Drive, Suite C Boise, ID 83709 (208) 378-5722
Date	01/18/2008
Approved by	

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

Indicators

- 1. Number and extent of rills:** Rills are not common on this site. If the site is degrading due to gully down-cutting, rills may occur on the side slopes of the gully.

- 2. Presence of water flow patterns:** Water flow patterns are common on this site. When they occur, they are long, often running the length of the site and disrupted by cool season grasses. Water flow patterns are also common from run-in from the adjacent uplands.

- 3. Number and height of erosional pedestals or terracettes:** Erosional pedestals or terracettes are rare on this site.

- 4. Bare ground from Ecological Site Description or other studies (rock, litter, lichen, moss, plant canopy are not bare ground):** Bare ground data is not available. On sites in mid-seral status, bare ground may range from 20-30 percent but more data is needed.

- 5. Number of gullies and erosion associated with gullies:** Gullies do not occur on this site.

- 6. Extent of wind scoured, blowouts and/or depositional areas:** Wind scoured, blowouts and/or depositional areas are usually not present.

- 7. Amount of litter movement (describe size and distance expected to travel):** Fine litter in the interspaces may move more than 6 feet or even off the site following a significant flooding or run-off event.

- 8. Soil surface (top few mm) resistance to erosion (stability values are averages - most sites will show a range of values):** Values should range from 3 to 5 but need to be tested.

- 9. Soil surface structure and SOM content (include type of structure and A-horizon color and thickness):** The A or A1 horizon is typically 2 to 23 inches thick. Structure ranges from moderate fine and medium granular to weak and moderate thin, medium, and thick platy to weak and moderate fine and medium subangular and angular blocky. Soil organic matter (SOM) ranges from 1 to 95 percent.

10. Effect of community phase composition (relative proportion of different functional groups) and spatial distribution on infiltration and runoff: Deep-rooted grasses and grass-likes slow run-off and increase infiltration.
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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): Compaction layer is normally not present. A compaction layer can develop if grazing occurs when the soils are wet.
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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: Cool season deep-rooted perennial grasses and grass-likes>>

Sub-dominant: Perennial forbs>shallow rooted bunchgrasses

Other:

Additional:

13. Amount of plant mortality and decadence (include which functional groups are expected to show mortality or decadence): Most of the grasses and grass-likes on this site will become decadent in the absence of fire and ungulate grazing. Decadence or low vigor is a result of litter buildup in the crowns of the plants.
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14. Average percent litter cover (%) and depth (in): Additional litter cover data is needed but is expected to be 35 to 50 percent to a depth of 0.2 inches. Under mature shrubs and basin wildrye, litter is >0.5 inches deep and is 90-100 percent ground cover.
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15. Expected annual annual-production (this is TOTAL above-ground annual-production, not just forage annual-production): Annual production is 1300 pounds per acre (1444 Kg/ha) in a year with normal precipitation and temperatures. Perennial grasses produce 80-90 percent of the total production and forbs 10-20 percent.
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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: Invasive species include cheatgrass, leafy spurge, whitetop, perennial pepperweed, rush skeletonweed, Canada musk and scotch thistle and diffuse and spotted knapweed.
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17. Perennial plant reproductive capability: All functional groups have the potential to reproduce in most years.
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