

Ecological site R011XY013ID

Saline Silty

7-10 PZ ATNU2/ACHY

Last updated: 4/06/2020
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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.

MLRA notes

Major Land Resource Area (MLRA): 011X–Snake River Plains

Major Land Resource Area (MLRA): 011X – Snake River Plains Precipitation or Climate Zone: 7-10" P.Z.

Classification relationships

Land Resource Region: B (Northwest Wheat and Range) MLRA: 11 (Snake River Plains) EPA Eco Region: Level III (Snake River Plain)

Ecological site concept

Site does not receive additional moisture Soils are: saline or saline sodic Moderately deep to very deep, with 35% coarse fragments (by volume). Not skeletal not strongly or violently effervescent in the surface mineral 10" Textures range from loam to clay loam in the surface mineral 4" Slope is 30% Clay content is =35% in surface mineral 4" Site does not have an argillic horizon with >35% clay

Associated sites

R011XB017ID	Loamy 6-8 PZ ATCO/ACHY
R011XY009ID	Silty 7-10 PZ KRLA2/ACHY
R011XY010ID	Calcareous Loam 7-10 PZ ATCO-PIDE4/ACHY-ACTH7

Similar sites

R011XY009ID	Silty 7-10 PZ KRLA2/ACHY
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Table 1. Dominant plant species

Tree	Not specified
Shrub	Not specified

Herbaceous	Not specified
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Physiographic features

This site occurs on nearly level to rolling slopes of 0 to 10 percent. This site occurs on all aspects at elevations ranging from 2400 to 4800 feet (725-1475 meters). This site is associated with silty alluvial deposit areas, most often at the base of fans.

Table 2. Representative physiographic features

Landforms	(1) Hill
Elevation	730 – 1,460 m
Slope	0 – 10 %
Aspect	Aspect is not a significant factor

Climatic features

MLRA 11 is part of Idaho's Snake River Plain. The elevation ranges from 2,077 to 7,549 feet, with a mean of 3,992 feet. Most of the precipitation falls as rain in the fall, winter and spring. Very little precipitation occurs during the summer months. In general this MLRA receives more sun than the U.S. average during the summer, but less than average during the winter.

The average annual precipitation is 10.01 inches (based on 10 long term climate stations located throughout the MLRA), with minimum and maximum values of 8.38 and 11.62 inches, respectively.

The average annual temperature ranges from 38° to 65° Fahrenheit. With a maximum average temperature of 65 degrees F. and a minimum average of 38 degrees F. The frost free interval ranges from 139 to 165 days and the freeze free interval ranges from 168 to 196 days.

Table 3 Representative climatic features

Frost-free period (average)	170 days
Freeze-free period (average)	200 days
Precipitation total (average)	310 mm

Influencing water features

This site is not influenced by adjacent wetlands, streams, or run on.

Soil features

The soils on this site are well drained silt loams. They are saline. Depth is usually over 40 inches to gravels or bedrock. Water intake rate and permeability are moderate. The available water holding capacity (AWC) is medium to high.

Soil Series Correlated to this Ecological Site

No data

Ecological dynamics

The dominant visual aspect of this site is Gardner saltbush and Indian ricegrass. Composition by weight is approximately 30-40% grass, 1-5% forbs, and 60-70% shrubs.

During the last few thousand years, this site has evolved in a semi-arid climate characterized by dry summers and cold winters. Herbivory has historically occurred on this site at low levels of utilization. Herbivores include pronghorn antelope, mule deer, and lagomorphs.

Fire has historically occurred on the site at intervals of 80-100 years. Fire only occurs in favorable years.

The Historic Climax Plant Community (HCPC), the Reference State (State 1), moves through many phases depending on the natural and man-made forces that impact the community over time. State 1, described later, indicates some of these phases. The Reference Plant Community Phase is Phase A. This plant community is dominated by Gardner saltbush, Indian ricegrass, and bottlebrush squirreltail. Subdominants include Sandberg bluegrass and scarlet globemallow. The plant species composition of Phase A is listed later under "Reference Plant Community Phase Plant Species Composition".

Total annual production is 400 pounds per acre (448 Kg/ha) in a normal year. Production in a favorable year is 650 pounds per acre (728 Kg/ha). Production in an unfavorable year is 250 pounds per acre (280 Kg/ha). Structurally, medium height shrubs are dominant followed by cool season grasses being more dominant than perennial forbs while shallow rooted perennial bunchgrasses are subdominant.

FUNCTION:

This site is suited for livestock grazing in all seasons. Natural water supplies are normally short or absent. Slopes generally do not limit grazing. The site provides good habitat for various upland wildlife. It has low value for aesthetics or recreation.

Due to the low rainfall, this site is easily degraded by improper grazing management or frequent fires.

Impacts on the Plant Community.

Influence of fire:

This site historically had a very low fire frequency, approximately every 80-100 years. Most of the shrubs evolved in the absence of fire, therefore they can be severely damaged when burned at a high intensity. Winterfat will re-sprout after a low intensity fire. However, Gardner saltbush will re-sprout after fire, regardless of intensity. Cheatgrass can be a troublesome invader at lower elevations on this site after fire, preventing perennial grass and shrub re-establishment and increasing the fire frequency.

Influence of improper grazing management:

Gardner saltbush, bud sagebrush, and winterfat can all be impacted by improper grazing management. Relatively low levels of utilization by cattle and sheep are needed to maintain the shrub component.

Weather influences:

Extended periods of drought reduces vigor of the perennial grasses and palatable shrubs. Extreme drought may cause plant mortality.

Influence of insects and disease:

Mormon crickets and grasshopper outbreaks occur occasionally. Since defoliation usually occurs only once during the growing season, little mortality occurs.

Influence of noxious and invasive plants:

Annual and perennial invasive species compete with desirable plants for moisture and nutrients. The result is reduced production and change in composition of the understory. Cheatgrass can be invasive on this site, especially after fire. Once it becomes established the fire frequency increases. As a result, the shrub component can be lost or severely reduced.

Influence of wildlife:

Relatively low numbers of wildlife use this site and have little impact on it. Pronghorn antelope is the dominant large herbivore using the site. They use the site yearlong but prefer it in the spring, fall, and early winter. Winter and spring use by mule deer occasionally occurs.

Watershed:

Decreased infiltration and increased runoff occurs when Gardner saltbush, bud sagebrush and winterfat is removed with frequent fires, particularly the year following the fire event. The increased runoff also increases sheet and rill erosion. The long-term effect is a transition to a different state.

Plant Community and Sequence:

Transition pathways between common vegetation states and phases:

- State 1.
- Phase A to C. Develops with fire (approximately every 80-100 years). Fire only occurs in above normal precipitation (favorable) years.
- Phase A to B. Develops under improper grazing management.
- Phase C to A. Develops under a good prescribed grazing management program and no fire.
- Phase B to A. Develops from prescribed grazing and no fire.

State 1 to State 2.

Develops from Phase B with frequent fire or from Phase C with improper grazing management and fire. This site has crossed the threshold. It is economically impractical to return this plant community to State 1 with accelerating practices.

State 2 to unknown site.

The site has deteriorated further and soil loss has occurred resulting in a loss of site potential. This has resulted from improper grazing management and/or frequent fires. This site has crossed the threshold. It is economically impractical to return this plant community to State 1 with accelerating practices.

Practice Limitations.

Seeding limitations are severe due to low annual precipitation. Brush management is usually not recommended due to moderate to high forage value of shrubs that occur on the site.

State and transition model

Additional community tables

Table 4. Community 1.1 plant community composition

Group	Common Name	Symbol	Scientific Name	Annual Production ()	Foliar Cover (%)
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Table 5. Community 2.1 plant community composition

Group	Common Name	Symbol	Scientific Name	Annual Production ()	Foliar Cover (%)
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Table 6. Community 3.1 plant community composition

Group	Common Name	Symbol	Scientific Name	Annual Production ()	Foliar Cover (%)
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Table 7. Community 4.1 plant community composition

Group	Common Name	Symbol	Scientific Name	Annual Production ()	Foliar Cover (%)
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Table 8. Community 5.1 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 rangeland ecological site provides a sparse plant community for select native wildlife species. The plant community exhibits a low level of diversity and productivity of grasses, forbs, and shrubs. Mule deer and antelope are the large herbivores using the site during spring and winter months. The site provides seasonal habitat for resident and migratory animals including sagebrush lizard, shrews, ground squirrels, mice, coyote, red fox, badger, sage-grouse, Ferruginous hawk, prairie falcon, horned lark, and western meadowlark. Area sensitive species may include burrowing owl, Great Basin ground squirrel, long-nosed snake, groundsnake, Great Basin collared lizard, Townsend pocket gopher, and sage-grouse. Encroachment of noxious and invasive plant species (cheatgrass, Russian thistle, and kochia) in isolated areas can replace native plant species which provide critical feed, brood-rearing, and nesting cover for a variety of native wildlife. Water features are sparse provided by seasonal streams, artificial water catchments, and springs. State 1 Phase 1.1 – Gardner Saltbush/ Indian Ricegrass/ Winterfat/ Bud Sagebrush /

Bottlebrush Squirreltail/ Sandberg Bluegrass Reference Plant Community (RPC) This plant community provides a diversity of grasses, forbs, and shrubs used throughout the growing season by native insect communities that assist in pollination. The reptile community is represented by leopard lizard, sagebrush lizard, and short horned lizard. Sage-grouse may utilize the site for brood-rearing habitat. The plant community provides forage throughout the year for large mammals including mule deer and antelope. Winterfat is a good to fair feed for deer and is eaten readily by elk on the few sites where it occurs at high elevations. Winterfat is utilized extensively by rodents, rabbits, birds, and antelope. Bud sagebrush provides important spring forage for antelope and mule deer. Rodent populations on this site can be high and provide an excellent prey base for raptors. State 1 Phase 1.2 – Sandberg Bluegrass/ Gardner Saltbush Plant Community: This plant community is the result of improper grazing and lack of fire. The plant community is similar to State 1 Phase 1.1 but with low vigor and reduced canopy cover. The plant community, dominated by herbaceous vegetation would provide less vertical structure for animals. Insect diversity would be reduced but native forbs are still present and support select pollinators. Habitat quality for reptiles would be fair for short horned lizard and sagebrush lizard due to the reduction of Gardner saltbush and bud sagebrush. The dominant herbaceous vegetation improves habitat for grassland avian species (horned lark and western meadowlark). The loss of bud sagebrush and reduction of winterfat would reduce the quality of the habitat for mule deer and antelope. The populations of small mammals would be dominated by open grassland species like the Columbian ground squirrel. State 1 Phase 1.3- Indian Ricegrass/ Sandberg Bluegrass/ Bottlebrush Squirreltail/ Gardner Saltbush Plant Community: This plant community is the result of fire. The plant community, dominated by herbaceous vegetation would provide less vertical structure for animals. Gardner saltbush would re-sprout adding vertical structure overtime. The forbs present would be similar to State 1 Phase 1.1. Diversity of insects would be reduced due to the loss of winterfat and bud sagebrush. The reptile community would be reduced or eliminated due to the loss of sagebrush. The herbaceous vegetation improves habitat for grassland avian species (horned lark and western meadowlark). The loss of winterfat and bud sagebrush and reduction of Gardner saltbush would lower the quality of habitat for mule deer and antelope although, Indian ricegrass provides excellent early spring feed. Small mammal populations may be reduced with the loss of cover and enhanced predator hunting success. State 2 – Sandberg Bluegrass/ Cheatgrass / Annuals Plant Community: This state has developed due to frequent fires with or without improper grazing management. The reduced forb and shrub components in the plant community would support a very limited population of pollinators. The loss of native forbs may reduce butterfly larval habitat due to host specific needs of the butterfly. Most reptilian species are not supported with food, water, or cover. This plant community does not support the habitat requirements for sage-grouse. Diversity of grassland avian species is reduced due to poor cover and available food. Birds of prey including hawks and falcons may range throughout these areas looking for prey species. Large mammals may utilize the herbaceous vegetation in the early part of the year when the invasive annuals (cheatgrass) are more palatable. At other times of the year large mammals would not regularly utilize these areas due to poor food and cover conditions. The populations of small mammals would be dominated by open grassland species like the Columbian ground squirrel. Grazing Interpretations. This site is suited for livestock grazing in all seasons. 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 group C. They have moderately high runoff potential.

Recreational uses

The site has low value for aesthetics or recreation.

Wood products

None.

Other products

None.

Other information

Field Offices Meridian, ID Caldwell, ID Mountain Home, ID Marsing, ID Payette, ID Weiser, ID Emmett, ID

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 Dan Ogle, Acting State Rangeland Management Specialist, NRCS, Idaho Leah Juarros, Resource Soil Scientist, NRCS, Idaho Lee Brooks, Range Management Specialist, IASCD

Type locality

Location 1: Owyhee County, ID	
Township/Range/Section	T4S R2E S34
General legal description	NE 1/4

Other references

Hironaka, M., M.A. Fosberg, A. H. Winward. 1983. Sagebrush-Grass Habitat Types of Southern Idaho. University of Idaho, Moscow, Idaho. Bulletin Number "35".

USDA Forest Service, Rocky Mountain Research Station. 2004. Restoring Western Ranges and Wildlands. General Technical Report RMRS-GTR-136-vols. 1-3.

USDA, NRCS.2001. The PLANTS Database, Version 3.1 (<http://plants.usda.gov>). National Plant Data Center, Baton Rouge, LA 70874-4490 USA.

USDA, Forest Service, Fire Effects Information Database. 2004. www.fs.fed.us/database.

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.

Contributors

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Approval

Kendra Moseley, 4/06/2020

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.

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Date	06/17/2009
Approved by	
Approval date	

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

1. **Number and extent of rills:** rills rarely occur on this site due to the relatively flat slopes.

2. **Presence of water flow patterns:** water-flow patterns rarely occur on this site. When they do occur they are short and disrupted by cool season grasses and shrubs. They are not extensive.

3. **Number and height of erosional pedestals or terracettes:** rarely occur on this site.

4. **Bare ground from Ecological Site Description or other studies (rock, litter, lichen, moss, plant canopy are not bare ground):** it likely ranges from 70-80 percent but additional data is needed.

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

6. **Extent of wind scoured, blowouts and/or depositional areas:** usually not present in the Reference State.

7. **Amount of litter movement (describe size and distance expected to travel):** fine litter in the interspaces typically moves up to three feet primarily by wind. Coarse litter generally does not move.

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 4 to 6 but needs to be tested.

9. **Soil surface structure and SOM content (include type of structure and A-horizon color and thickness):** No data.

10. **Effect of community phase composition (relative proportion of different functional groups) and spatial distribution on infiltration and runoff:** bunchgrasses, especially deep rooted perennials, slow runoff and increase infiltration. Medium height shrubs accumulate some snow in the interspaces.

11. **Presence and thickness of compaction layer (usually none; describe soil profile features which may be mistaken for compaction on this site):** not present.

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: medium height shrubs

Sub-dominant: cool season perennial grasses

Other: perennial forbs

Additional: shallow rooted perennial bunchgrasses

13. **Amount of plant mortality and decadence** (include which functional groups are expected to show mortality or decadence): very little mortality or decadence is expected on this site. Mortality of shallow rooted grasses may occur due to extended periods of drought.
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14. **Average percent litter cover (%) and depth (in):** additional data is needed but is expected to be low and at a shallow depth.
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15. **Expected annual annual-production** (this is TOTAL above-ground annual-production, not just forage annual-production): is 400 pounds per acre (448 Kg/ha) in a year with normal precipitation and temperatures. Perennial grasses produce 30-40 percent of the total production, forbs 1-5 percent, and shrubs 60-70 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: includes cheatgrass, kochia, Russian thistle, annual mustards, and halogeton.
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17. **Perennial plant reproductive capability:** all functional groups have the potential to reproduce in normal and favorable years.
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