

Ecological site R025XY014ID CLAYEY 12-16

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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): 025X—Owyhee High Plateau

MLRA Notes 25—Owyhee High Plateau

This area is in Nevada (56 percent), Idaho (30 percent), Oregon (12 percent), and Utah (2 percent). It makes up about 27,443 square miles. MLRA 25 is characteristically cooler and wetter than the neighboring MLRAs of the Great Basin. The western boundary is marked by a gradual transition to the lower and warmer basins of MLRA 24. The boundary to the south-southeast, with MLRA 28B, is marked by gradual changes in geology marked by an increased dominance of singleleaf pinyon and Utah juniper and a reduced presence of Idaho fescue. The boundary to the north, with MLRA 11, is a rapid transition from the lava plateau topography to the lower elevation Snake River Plain.

Physiography:

All of this area lies within the Intermontane Plateaus. The southern half is in the Great Basin section of the Basin and Range province. This part of the MLRA is characterized by isolated, uplifted fault-block mountain ranges separated by narrow, aggraded desert plains. This geologically older terrain has been dissected by numerous streams draining to the Humboldt River.

The northern half of the area lies within the Columbia Plateaus province. This part of the MLRA forms the southern boundary of the extensive Columbia Plateau basalt flows. Most of the northern half is in the Payette section, but the northeast corner is in the Snake River Plain section. Deep, narrow canyons draining into the Snake River have been incised into this broad basalt plain. Elevation ranges from 3,000 to 7,550 feet on rolling plateaus and in gently sloping basins. It is more than 9,840 feet on some steep mountains. The Humboldt River crosses the southern half of this area

Geology:

The dominant rock types in this MLRA are volcanic. They include andesite, basalt, tuff, and rhyolite. In the north and west parts of the area, Cretaceous granitic rocks are exposed among Miocene volcanic rocks in mountains. A Mesozoic igneous and metamorphic rock complex dominates the south and east parts of the area. Upper and Lower Paleozoic calcareous sediments, including oceanic deposits, are exposed with limited extent in the mountains. Alluvial fan and basin fill sediments occur in the valleys.

Climate:

The average annual precipitation in most of this area is typically 11 to 22 inches. It increases to as much as 49 inches at the higher elevations. Rainfall occurs in spring and sporadically in summer. Precipitation occurs mainly as snow in winter. The precipitation is distributed fairly evenly throughout fall, winter, and spring. The amount of precipitation is lowest from midsummer to early autumn. The average annual temperature is 33 to 51 degrees F. The freeze-free period averages 130 days and ranges from 65 to 190 days, decreasing in length with elevation. It is typically less than 70 days in the mountains.

Water:

The supply of water from precipitation and streamflow is small and unreliable, except along the Owyhee, Bruneau, and Humboldt Rivers. Streamflow depends largely on accumulated snow in the mountains. Surface water from mountain runoff is generally of excellent quality and suitable for all uses. The basin fill sediments in the narrow alluvial valleys between the mountain ranges provide some ground water for irrigation. The alluvial deposits along the large streams have the most ground water. Based on measurements of water quality in similar deposits in

adjacent areas, the basin fill deposits probably contain moderately hard water. The water is suitable for almost all uses. The carbonate rocks in this area are considered aquifers, but they are little used. Springs are common along the edges of the limestone outcrops.

Soils:

The dominant soil orders in this MLRA are Aridisols and Mollisols. The soils in the area dominantly have a mesic or frigid temperature regime and an aridic, aridic bordering on xeric, or xeric moisture regime. Soils with aquic moisture regimes are limited to drainage or spring areas, where moisture originates or runs on and through. These soils are of a very limited extent throughout the MLRA. They generally are well drained, clayey or loamy, and shallow or moderately deep. Most of the soils formed in mixed parent material. Volcanic ash and loess mantle the landscape. Surface soil textures are loam and silt loam with ashy texture modifiers in some areas. Argillic horizons occur on the more stable landforms. They are exposed nearer the soil surface on convex landforms, where ash and loess deposits are more likely to erode. Soils that formed in carbonatic parent material in areas that receive less than 12 inches of precipitation are characterized by calcic horizons throughout the profile, while soils in areas that receive more than 12 inches of precipitation do not have calcic horizons in the upper part of the profile. Soils that formed on stable landforms at the lower elevations are dominated by ochric horizons. Soils that formed at the middle and upper elevations are characterized by mollic epipedons. Soils in drainage areas at all elevations that receive moisture running on or through them are characterized by thicker mollic epipedons.

Biological Resources:

This MLRA supports shrub-grass vegetation. Lower elevations are characterized by Wyoming big sagebrush associated with bluebunch wheatgrass, western wheatgrass, and Thurber's needlegrass. Other important plants include bluegrass, squirreltail, penstemon, phlox, milkvetch, lupine, Indian paintbrush, aster, and rabbitbrush. Black sagebrush occurs but is less extensive. Singleleaf pinyon and Utah juniper occur in limited areas. With increasing elevation and precipitation, vast areas characterized by mountain big sagebrush or low sagebrush/early sagebrush in association with Idaho fescue, bluebunch wheatgrass, needlegrasses, and bluegrass become common. Snowberry, curl-leaf mountain mahogany, ceanothus, and juniper also occur. Mountains at the highest elevations support whitebark pine, Douglas-fir, limber pine, Engelmann spruce, subalpine fir, aspen, and curl-leaf mountain mahogany.

Major wildlife species include mule deer, bighorn sheep, pronghorn, mountain lion, coyote, bobcat, badger, river otter, mink, weasel, golden eagle, red-tailed hawk, ferruginous hawk, Swainson's hawk, northern harrier, prairie falcon, kestrel, great horned owl, short-eared owl, long-eared owl, burrowing owl, pheasant, sage grouse, chukar, gray partridge, and California quail. Reptiles and amphibians include western racer, gopher snake, western rattlesnake, side-blotched lizard, western toad, and spotted frog. Fish species include bull, red band, and rainbow trout.

Ecological site concept

This site is on toe slopes of hills, tablelands and terraces. Slopes range from 0 to 6 percent and it is on all aspects. Elevation ranges from 5,200 to 6,100 feet (1,585 to 1,860 meters).

The soils of this site are moderately deep, well drained, with impermeable to slow permeability above an impermeable duripan or bedrock. The surface texture is generally loamy. These soils typically have gravels, cobbles or stones on the surface.

This site is dominated by an alkali sagebrush and Idaho fescue community. Annual production is between 300 and 1400 pounds per acre.

Associated sites

R025XY035ID	CHURNING CLAY 12-16
R025XY011ID	LOAMY 13-16
R025XY019ID	LOAMY 10-13
R025XY022ID	LOAMY 16-22

Similar sites

R025XY010ID	CLAYPAN 12-16 Gravelly loam surface with accumulation of clay within 11cm of surface.
R025XY044ID	VERY SHALLOW STONY LOAM 10-14
R025XY048ID	SHALLOW CLAYPAN 11-13

Table 1. Dominant plant species

Tree	Not specified
Shrub	(1) <i>Artemisia arbuscula subsp. longicaulis</i>
Herbaceous	(1) <i>Festuca idahoensis</i>

Physiographic features

This site is on toe slopes of hills, tablelands and terraces. Slopes range from 0 to 6 percent and it is on all aspects. Elevation ranges from 5,200 to 6,100 feet (1,585 to 1,860 meters).

Table 2. Representative physiographic features

Landforms	(1) Tableland > Terrace (2) Hills > Hillslope
Runoff class	Medium to high
Flooding frequency	None to very rare
Ponding frequency	None
Elevation	5,200–6,100 ft
Slope	0–6%
Water table depth	84 in
Aspect	W, NW, N, NE, E, SE, S, SW

Climatic features

In MLRA 25 summers are hot, especially at lower elevations, and winters are cold and snowy. Precipitation is usually lighter at lower elevations throughout the year. At higher elevations precipitation is much greater, and snow accumulates to a considerable depth. The average total precipitation is 14.39 inches (37cm) (based on 6 long term climate stations located throughout the MLRA).

The mean annual temperature is 45.9 degrees F. The average high is 59.7 and the average low temperature is 32.1 degrees. The prevailing wind is from the west. Average wind speed is greatest, at about 10 miles per hour, in March.

The frost-free period ranges from 70 to 103 days and the freeze free period ranges from 114 to 140 days.

*The above data is average from the Western Regional Climate Center and NASIS.

Table 3. Representative climatic features

Frost-free period (characteristic range)	70-103 days
Freeze-free period (characteristic range)	100-140 days
Precipitation total (characteristic range)	13-16 in
Frost-free period (average)	95 days
Freeze-free period (average)	120 days
Precipitation total (average)	14 in

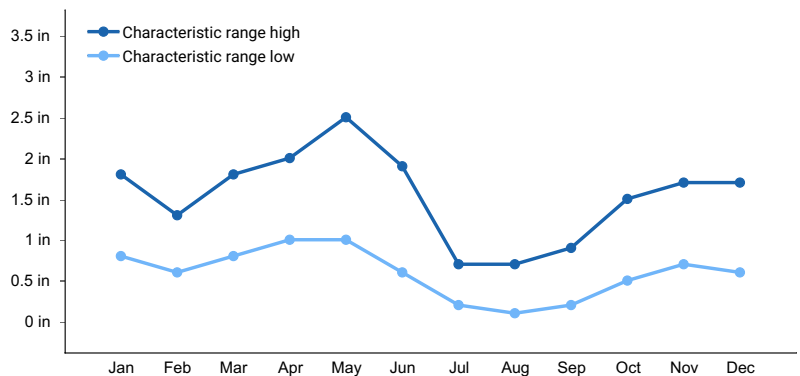


Figure 1. Monthly precipitation range

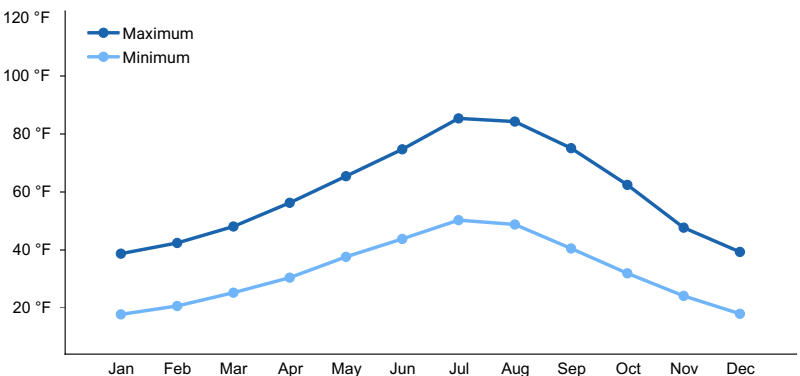


Figure 2. Monthly average minimum and maximum temperature

Influencing water features

This site may be influenced by run on.

Soil features

The soils supporting this site are moderately deep, well drained, with impermeable to slow permeability above an impermeable duripan or bedrock. Runoff is high to very high. The erosion hazard is slight to moderate by water, and slight to moderate by wind. The available water capacity is very low to moderate. These soils are typically 20 to 40 inches (51 to 102 cm) deep to bedrock or duripan. The surface texture is generally loamy. These soils normally have gravels, cobbles or stones on the surface. The subsoil is usually well developed with clay ranging from approximately 42 to 65 percent. These soils are characterized by the duripan and/or a strong argillic horizon. The soils are thoroughly wetted up during spring run-off, resulting in saturation at the surface horizons and lateral movement of water. These soils have a xeric soil moisture regime. Soil temperature regime is mesic in Camas County (not in D25) and frigid elsewhere.

Soil series correlated to this site are: Yatahoney, Wickahoney, Wagonbox, Deunah and Bostrum.

Table 4. Representative soil features

Parent material	(1) Alluvium–basalt (2) Colluvium (3) Residuum
Surface texture	(1) Stony silt loam (2) Very gravelly loam (3) Very cobbly clay loam
Drainage class	Well drained
Permeability class	Slow
Depth to restrictive layer	5–40 in

Soil depth	20–40 in
Surface fragment cover ≤3"	0–14%
Surface fragment cover >3"	0–28%
Available water capacity (0–40in)	1.9–7.4 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)	5.6–7.3
Subsurface fragment volume ≤3" (Depth not specified)	0–20%
Subsurface fragment volume >3" (Depth not specified)	0–63%

Table 5. Representative soil features (actual values)

Drainage class	Not specified
Permeability class	Not specified
Depth to restrictive layer	Not specified
Soil depth	2–40 in
Surface fragment cover ≤3"	Not specified
Surface fragment cover >3"	Not specified
Available water capacity (0–40in)	Not specified
Calcium carbonate equivalent (0–40in)	Not specified
Electrical conductivity (0–40in)	Not specified
Sodium adsorption ratio (0–40in)	Not specified
Soil reaction (1:1 water) (0–40in)	Not specified
Subsurface fragment volume ≤3" (Depth not specified)	Not specified
Subsurface fragment volume >3" (Depth not specified)	Not specified

Ecological dynamics

The dominant visual aspect of this site is alkali sagebrush and Idaho fescue. Bluebunch wheatgrass is common in the plant community. Composition by weight is approximately 40–60 percent grasses, 15–25 percent forbs and 25–35 percent shrubs.

During the last few thousand years, this site has evolved in an arid climate characterized by warm, dry summers and cold, wet winters. Herbivory has historically occurred on the site at low levels of utilization. Herbivores include pronghorn antelope, mule deer, sage grouse, lagomorphs and small rodents. Fire has historically occurred on this site every 80–100 years. The plant community is dominated by alkali sagebrush and Idaho fescue. Subdominant

species include bluebunch wheatgrass, Nevada bluegrass, bottlebrush squirreltail and Hooker's balsamroot. Total annual production is 800 pounds per acre (899 Kg/ha) in a normal year. Production in a favorable year is 1200 pounds per acre (1300 Kg/ha). Production in an unfavorable year is 400 pounds per acre (444 Kg/ha). Structurally, cool season deep rooted bunchgrasses are very dominant, followed by medium height shrubs and perennial forbs and shallow rooted bunchgrasses are subdominant.

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 1.1. The plant species composition of Phase 1.1 is listed later under "Reference Plant Community Phase Plant Species Composition".

FUNCTION:

This site is suited for livestock grazing during late spring, summer and fall. This site is suited for grazing by livestock in spring, early summer, and fall. It also provides habitat for mule deer, pronghorn antelope, small game, sage grouse, small birds and rodents. The site provides limited recreational opportunities except early spring flower observation.

This site can be degraded easily by improper grazing management since slopes are moderate which allows easy access. Inherent low production on the site makes it susceptible to accelerated degradation.

Infiltration and production can be maintained with a mixed stand of deep-rooted perennial bunchgrasses and shrubs. Runoff potential is medium to rapid and the erosion hazard is generally moderate.

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. Idaho fescue and Thurber's needlegrass can be lost with a fire. Rabbitbrush species can increase with fire. Cheatgrass and medusahead can be a troublesome invader on this site after fire, preventing perennial grass and shrub re-establishment and increasing the fire frequency. Sandberg bluegrass is usually maintained in the community.

Influence of improper grazing management:

Season-long grazing and/or excessive utilization can be detrimental to this site. This type of management leads to reduced vigor of Idaho fescue, bluebunch wheatgrass and other deep-rooted perennial bunchgrasses. With reduced vigor, recruitment of these species declines. As these species decline, the plant community becomes susceptible to an increase in alkali sagebrush and/or an invasion of noxious and invasive species.

Continued improper grazing management influences fire frequency with an increase in cheatgrass and/or medusahead. If they become co-dominant with Sandberg bluegrass and other annuals, fires become more frequent.

Proper grazing management that addresses frequency, duration, and intensity of grazing can also keep fine fuels from developing, thereby reducing fire frequency. This reduction can lead to gradual increases in alkali sagebrush. A planned grazing system can also be developed to maintain the integrity of the plant community.

Weather influences:

Above normal precipitation in March, April and May can dramatically increase total annual production. These weather patterns can also increase viable seed production of desirable species to provide for recruitment. Extended periods of drought significantly impact this site due to the low to medium water holding capacity and shallow soil. Extended drought reduces vigor of the perennial grasses and shrubs. Extreme drought may cause plant mortality.

Influence of Insects and disease:

Outbreaks can affect vegetation health. An outbreak of a particular insect is usually influenced by weather but no specific data is available for this site.

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 and medusahead can be very invasive on this site, especially after fire. Once they become established the fire frequency increases. As a result, the shrub component can be lost.

Influence of wildlife:

Relatively low numbers of wildlife use this site and have little impact. 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. Sage grouse use the site yearlong. Winter and spring use by mule deer occasionally occurs.

Watershed:

Decreased infiltration and increased runoff occur when alkali sagebrush is removed with frequent fires, particularly following the fire event. The increased runoff also increases sheet and rill erosion. Early spring grazing also causes trampling damage and soil compaction resulting in increased 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 1.1 to 1.2. Develops with fire. Fire only occurs in above normal precipitation about every 80-100 years.

Phase 1.1 to 1.3. Develops under improper grazing management and no fire.

Phase 1.2 to 1.1. Develops under prescribed grazing management program and no fire.

Phase 1.3 to 1.1. Develops from prescribed grazing management and no fire.

State 1, Phase 1.2 to State 2. Results from continued improper grazing management and/or frequent fire. This site has crossed the threshold. It is economically impractical to move the site back to State 1 with accelerated practices.

State 1, Phase 1.3 to State 3. Results from continued improper grazing management and no fire. This site has crossed the threshold. It is economically impractical to move the site back to State 1 with accelerated practices.

State 2 to State 3. Develops from continued improper grazing management and no fire.

State 3 to State 2. Results from fire.

State 2 to Unknown Site. Excessive soil loss and changes in the hydrologic cycle caused by continued improper grazing management and fire causes this state to cross a threshold and retrogress to a new site with reduced potential. It is economically impractical to move the site back to State 1 with accelerated practices.

State 3 to Unknown Site. Excessive soil loss and changes in the hydrologic cycle caused by continued improper grazing management. Frequent fire may have played a role also. The potential of the site has been lost and it crosses a threshold and retrogresses to a new unknown site. It is economically impractical to move the site back to State 1 with accelerated practices.

Practice Limitations.

Cobbles and stones on the surface of this site limit mechanical seeding and brush control methods.

Plant Community Narrative:

State 1, Reference State

State 1. Phase 1.1, Reference Plant Community Phase. This plant community is dominated by Idaho fescue, bluebunch wheatgrass and alkali sagebrush. Sandberg bluegrass is sub-dominant. Small amounts of bottlebrush squirreltail, Thurber's needlegrass and Nevada bluegrass may be present. A large variety of forbs are present but each represents a small amount in the community. Fuzzy sagebrush may be present in small amounts. The natural fire frequency is about 80-100 years.

State 1. Phase 1.2. This plant community is dominated by bluebunch wheatgrass and Sandberg bluegrass. Small amounts of Idaho fescue and Thurber's needlegrass may be present but in low vigor for a few years after fire. Bottlebrush squirreltail, a variety of forbs and rabbitbrush can be present. This phase has developed due to fire.

State 1, Phase 1.3. This plant community is dominated by early sagebrush with Sandberg bluegrass in the understory. Idaho fescue, bluebunch wheatgrass and other deep-rooted perennial bunchgrasses are present but in reduced amounts and in low vigor. This phase has developed due to improper grazing management and no fire.

State 2. This plant community is dominated by Sandberg bluegrass, cheatgrass, medusahead and a variety of forbs. Some perennial forbs are present. The community has developed due to continued improper grazing management and fire. Some soil loss has occurred. This site has crossed the threshold. It is not economical to return this site to State 1 with accelerating practices.

State 3. This plant community is dominated by early sagebrush, Sandberg bluegrass, cheatgrass, medusahead and a variety of other annuals. The community has developed due to continued improper grazing management and lack of fire. Some soil loss has occurred. This site has crossed the threshold. It is not economical to return this site to State 1 with accelerating practices.

Unknown Site. This plant community has gone over the threshold to a new site. Site potential has been reduced. Significant soil loss has occurred. Infiltration has been reduced and run-off has become more rapid. This community has developed due to continued improper grazing management and/ or fire. It is not economical to return this site to State 1 with accelerating practices.

State and transition model

R025XY014ID – Clayey 12-16 ARARL/FEID

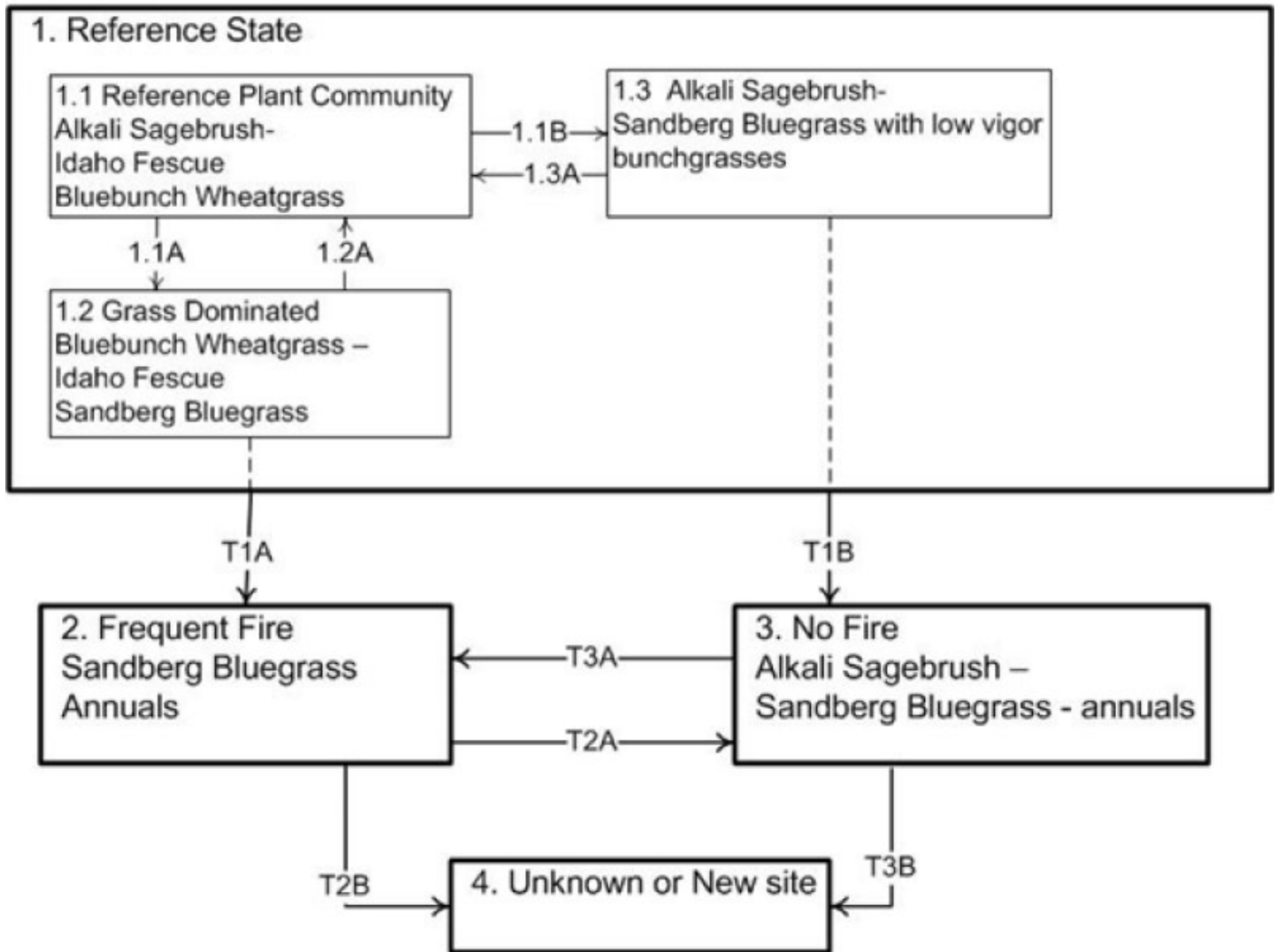


Figure 3. 25x-14

State 1 Reference State

Community 1.1 Reference Plant Community

This plant community is dominated by Idaho fescue, bluebunch wheatgrass and alkali sagebrush. Sandberg bluegrass is sub-dominant. Small amounts of bottlebrush squirreltail, Thurber's needlegrass and Nevada bluegrass may be present. A large variety of forbs are present but each represents a small amount in the community. Fuzzy sagebrush may be present in small amounts. The natural fire frequency is about 80-100 years.

Table 6. Annual production by plant type

Plant Type	Low (Lb/Acre)	Representative Value (Lb/Acre)	High (Lb/Acre)
Grass/Grasslike	200	400	600
Shrub/Vine	120	240	360
Forb	80	160	240
Total	400	800	1200

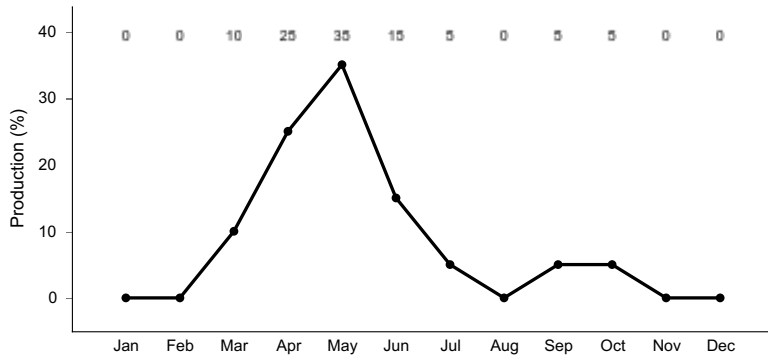


Figure 5. Plant community growth curve (percent production by month).
ID0910, ARNO4/ACTH7/PSSPS.

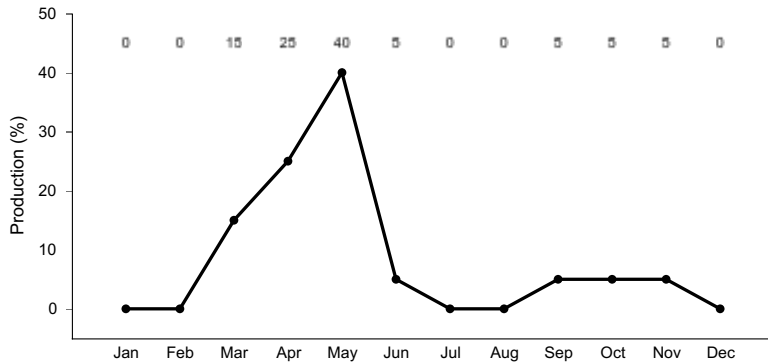


Figure 6. Plant community growth curve (percent production by month).
ID0911, D25 POSE/BRTE/ANNUALS.

Community 1.2

Grass Dominated - Post Fire

This plant community is dominated by bluebunch wheatgrass and Sandberg bluegrass. Small amounts of Idaho fescue and Thurber's needlegrass may be present but in low vigor for a few years after fire. Bottlebrush squirreltail, a variety of forbs and rabbitbrush can be present. This phase has developed due to fire.

Community 1.3

Alkali Sagebrush - Low Vigor Bunchgrasses

This plant community is dominated by early sagebrush with Sandberg bluegrass in the understory. Idaho fescue, bluebunch wheatgrass and other deep-rooted perennial bunchgrasses are present but in reduced amounts and in low vigor. This phase has developed due to improper grazing management and no fire.

Pathway P1.1a

Community 1.1 to 1.2

Develops with fire. Fire only occurs in above normal precipitation about every 80-100 years.

Pathway P1.1b

Community 1.1 to 1.3

Develops under improper grazing management and no fire.

Pathway P1.2a

Community 1.2 to 1.1

Develops under prescribed grazing management program and no fire.

Pathway P1.3a

Community 1.3 to 1.1

Develops from prescribed grazing management and no fire.

State 2

Annual - Frequent Fire

Community 2.1

Sandberg Bluegrass - Annuals

This plant community is dominated by Sandberg bluegrass, cheatgrass, medusahead and a variety of forbs. Some perennial forbs are present. The community has developed due to continued improper grazing management and fire. Some soil loss has occurred. This site has crossed the threshold. It is not economical to return this site to State 1 with accelerating practices.

State 3

Alkali Sagebrush - Annuals

Community 3.1

Alkali Sagebrush- Sandberg Bluegrass, Annuals

This plant community is dominated by early sagebrush, Sandberg bluegrass, cheatgrass, medusahead and a variety of other annuals. The community has developed due to continued improper grazing management and lack of fire. Some soil loss has occurred. This site has crossed the threshold. It is not economical to return this site to State 1 with accelerating practices.

State 4

Unknown Site.

Community 4.1

Unknown Site.

This plant community has gone over the threshold to a new site. Site potential has been reduced. Significant soil loss has occurred. Infiltration has been reduced and run-off has become more rapid. This community has developed due to continued improper grazing management and/ or fire. It is not economical to return this site to State 1 with accelerating practices.

Transition T1A

State 1 to 2

Results from continued improper grazing management and/or frequent fire. This site has crossed the threshold. It is economically impractical to move the site back to State 1 with accelerated practices.

Transition T1B

State 1 to 3

Results from continued improper grazing management and no fire. This site has crossed the threshold. It is economically impractical to move the site back to State 1 with accelerated practices.

Transition T2A

State 2 to 3

Develops from continued improper grazing management and no fire.

Transition T2B

State 2 to 4

Excessive soil loss and changes in the hydrologic cycle caused by continued improper grazing management and fire causes this state to cross a threshold and retrogress to a new site with reduced potential. It is economically impractical to move the site back to State 1 with accelerated practices.

Transition R3A State 3 to 2

Results from fire.

Transition T3B State 3 to 4

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				200–600	
	Idaho fescue	FEID	<i>Festuca idahoensis</i>	120–360	—
	bluebunch wheatgrass	PSSP6	<i>Pseudoroegneria spicata</i>	60–180	—
	Sandberg bluegrass	POSE	<i>Poa secunda</i>	0–30	—
	squirreldail	ELEL5	<i>Elymus elymoides</i>	0–20	—
	prairie Junegrass	KOMA	<i>Koeleria macrantha</i>	0–10	—
	onespike danthonia	DAUN	<i>Danthonia unispicata</i>	0–10	—
Forb					
2				80–240	
	Hooker's balsamroot	BAHO	<i>Balsamorhiza hookeri</i>	10–35	—
	arrowleaf balsamroot	BASA3	<i>Balsamorhiza sagittata</i>	0–35	—
	tapertip hawksbeard	CRAC2	<i>Crepis acuminata</i>	0–30	—
	longleaf phlox	PHLO2	<i>Phlox longifolia</i>	1–25	—
	Wyeth biscuitroot	LOAM	<i>Lomatium ambiguum</i>	1–20	—
	lupine	LUPIN	<i>Lupinus</i>	0–20	—
	spiny phlox	PHHO	<i>Phlox hoodii</i>	0–20	—
	milkvetch	ASTRA	<i>Astragalus</i>	0–20	—
	largehead clover	TRMA3	<i>Trifolium macrocephalum</i>	0–10	—
	fleabane	ERIGE2	<i>Erigeron</i>	0–10	—
	cushion buckwheat	EROV	<i>Eriogonum ovalifolium</i>	0–10	—
	pale agoseris	AGGL	<i>Agoseris glauca</i>	0–10	—
	pussytoes	ANTEN	<i>Antennaria</i>	0–10	—
	castilla	CASTI	<i>Castilla</i>	0–10	—
	bushy bird's beak	CORA5	<i>Cordylanthus ramosus</i>	0–10	—
Shrub/Vine					
3				120–360	
	little sagebrush	ARARL	<i>Artemisia arbuscula</i> ssp. <i>longiloba</i>	90–270	—
	little sagebrush	ARAR8	<i>Artemisia arbuscula</i>	0–60	—
	Owyhee sage	ARPA16	<i>Artemisia papposa</i>	0–20	—

Animal community

Animal Community – Wildlife Interpretations

Large herbivore use on the reference plant community includes mule deer and pronghorn antelope. South facing slopes can provide winter habitat for these large herbivores. The rangeland habitat provides seasonal habitat for resident and migratory animals including western toad, common sagebrush lizard, shrews, bats, jackrabbits, ground squirrels, mice, coyote, red fox, badger, sage-grouse, Ferruginous hawk, prairie falcon, horned lark and western meadowlark. Sage-grouse is an area sensitive species that may be present on this site. In isolated areas encroachment of noxious and invasive plant species (cheatgrass, medusahead rye and bulbous bluegrass) have replaced native plant species which provided critical feed, brood-rearing and nesting cover for a variety of native wildlife. Water is limited, being provided only by seasonal runoff, artificial water catchments and spring sites.

State 1 Phase 1.1 – Alkali Sagebrush/ Idaho Fescue/ Bluebunch Wheatgrass Plant Community (HCPC): This plant community provides a diversity of grasses, forbs and shrubs, used by native insect communities that assist in pollination. The reptile and amphibian community is represented by common sagebrush lizard, western rattlesnake, western toad and northern leopard frog. Amphibians are associated with springs and isolated water bodies adjacent to this plant community. Spring developments that capture all available hydrology would preclude the use of these sites by amphibians. Lekks, brood-rearing, winter cover and winter food for sage grouse are provided by this plant community. Alkali sagebrush is a desirable winter food for sage-grouse. The plant community provides spring, fall and winter food habitat for large herbivores including mule deer and pronghorn. Mule deer and pronghorn have a preference for alkali sagebrush. A diverse small mammal population including golden-mantled ground squirrels, jackrabbits, Merriam's shrew, and deer mice utilize this plant community.

State 1 Phase 1.2- Bluebunch Wheatgrass/ Sandberg Bluegrass Plant Community: This phase has developed due to fire. The plant community, dominated by herbaceous vegetation with little or no sagebrush provides less vertical structure for animals. Insect diversity would be reduced with the loss of sagebrush but a native forbs plant community similar to State 1 Phase 1.1 would still support select pollinators. Encroachment of rabbitbrush would add fall pollinator habitat to the site. As rabbitbrush matures it replace the loss of vertical structure. Until rabbitbrush is established, the quality of habitat for reptiles would decline. The dominance of herbaceous vegetation with no sagebrush canopy would eliminate use of this area for winter cover and winter food for sage-grouse. This plant community provides limited brood-rearing habitat for sage-grouse if site is adjacent to sagebrush cover. The dominant herbaceous vegetation improves habitat for grassland avian species (horned lark and western meadowlark). Winter habitat for large herbivores would be reduced or eliminated with the loss of low sagebrush and antelope bitterbrush. Small mammal diversity and populations would be reduced due to loss of cover and increase in success of hunting by predators.

State 1 Phase 1.3- Low Sagebrush/ Sandberg Bluegrass Plant Community: This phase has developed due to improper grazing management and no fire. The reduced vigor and canopy cover of forbs would lower the quality of habitat for pollinators. The reptile community is represented by common sagebrush lizard and western rattlesnake. The reduced diversity of insects and understory cover may reduce quality of food and cover for reptile populations. The site would provide winter cover and winter food for sage-grouse. The quality of brood-rearing habitat for sage-grouse would be lowered as herbaceous understory is depleted. Reduced vigor and production of deep rooted perennial vegetation would lower quality of grazing habitat for large herbivores. The small mammal population will be similar to State 1 Phase 1.1.

State 2 –Sandberg Bluegrass/ Cheatgrass/ Medusahead Rye Plant Community: This plant community is the result of continued improper grazing management and fire. The reduced forbs and shrub component in the plant community would support a very limited population of pollinators. Most reptilian species identified in State 1 Phase 1.1 are not supported with food, water or cover. This plant community does not support life requisites for sage-grouse. Diversity of grassland avian species is low due to poor cover and available food. Birds of prey including hawks and falcons may range throughout these areas looking for prey species. Hunting success by raptors may increase. Mule deer and pronghorn 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 these large mammals would not regularly utilize the area due to poor vigor and production of herbaceous vegetation. Small mammal populations and diversity would be reduced due to poor quality cover, food and increase in success of hunting by predators.

State 3 - Low Sagebrush/ Sandberg Bluegrass/ Cheatgrass/ Medusahead Rye Plant Community: This phase has

developed due to improper grazing management and no fire. The reduced vigor and canopy cover of forbs and increase in cheatgrass would lower the quality of habitat for pollinators. The reptile community is represented by common sagebrush lizard and western rattlesnake. The reduced diversity of insects and sparse understory cover would reduce quality of food and cover for reptile populations. The site would provide winter cover and winter food for sage-grouse. The quality of brood-rearing habitat for sage-grouse would be lowered as herbaceous understory is depleted. The poor herbaceous understory lowers the quality of grazing in the spring and fall for large herbivores although alkali sagebrush still provides desirable browse for mule deer and pronghorn throughout the year. The poor herbaceous understory lowers the quality of food and cover habitat for small mammals.

Grazing Interpretations

This site is suited to livestock grazing during late spring, summer and fall. Spring grazing when the soil surface horizons are saturated, causes trampling damage and soil compaction. This accelerates erosion and greatly reduces the productivity of the site.

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.

Hydrological functions

Soils on this site are in hydrologic group D. Run-off is high and erosion hazard is slight to moderate.

Recreational uses

The colorful flowers of spring-blooming forbs provide excellent opportunities for photography and nature study. The site has potential for big game hunting, primarily pronghorn, and sage grouse observation and hunting.

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, State Rangeland Management Specialist, NRCS, Idaho (Retired)

Joe May, State Rangeland Management Specialist, NRCS, Idaho

Leah Juarros, Resource Soil Scientist, NRCS, Idaho

Lee Brooks, Assistant State Conservationist, NRCS, Idaho (Retired)

Type locality

Location 1: Elko County, NV	
Township/Range/Section	T47 N R50 E S13
General legal description	NW ¼, SEC. 13
Location 2: Elko County, NV	
Township/Range/Section	T47 N R50 E S11
General legal description	SE ¼, SEC. 11

Location 3: Ada County, ID	
Township/Range/Section	T16 S R1 W S25
General legal description	NW ¼, SE ¼, SEC. 25
Location 4: Ada County, ID	
Township/Range/Section	T14 S R1 E S33
General legal description	NE ¼, SW ¼, SEC. 33

Contributors

Dave Franzen And Jacy Gibbs

Approval

Kendra Moseley, 4/24/2024

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-NRCS 9173 W Barnes Boise, ID 83709
Date	06/11/2007
Approved by	Kendra Moseley
Approval date	
Composition (Indicators 10 and 12) based on	Annual Production

Indicators

1. **Number and extent of rills:** Rarely occur on this site due to the flat slopes, gravelly and stony surface.

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

3. **Number and height of erosional pedestals or terracettes:** These can occur on the site. They are most likely to occur where water flow patterns are present and surface stones are absent.

4. **Bare ground from Ecological Site Description or other studies (rock, litter, lichen, moss, plant canopy are not bare ground):** Ranges from 40-50 percent .

5. **Number of gullies and erosion associated with gullies:** Do not occur on this site.
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6. **Extent of wind scoured, blowouts and/or depositional areas:** Does not occur.
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7. **Amount of litter movement (describe size and distance expected to travel):** Fine litter moves by wind or water. Fine litter can move up to 2 feet after a strong summertime convection storm. Due to the flat slopes, large litter does not move.
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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):** Values should range from 4-6 .
-
9. **Soil surface structure and SOM content (include type of structure and A-horizon color and thickness):** Structure ranges from weak or moderate thin and medium platy to weak medium subangular blocky. The A or A1 horizon is typically 0-3 inches thick. Soil organic matter (SOM) is 0.5 to 2 percent.
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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.
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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):** May be present, especially if the site has a history of grazing in the spring-time when soils are wet. Do not mistake an argillic horizon or a duripan for a compaction layer.
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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 bunchgrasses
- Sub-dominant: Medium shrubs>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):** 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):** 800 pounds per acre (889 Kg/ha) in a year with normal precipitation and temperatures. Perennial grasses produce 40-60 percent of the total production, forbs 15-25 percent and shrubs 25-35 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:** Include cheatgrass, medusahead, Vulpia species, bulbous bluegrass and annual mustards.
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17. **Perennial plant reproductive capability:** All functional groups have the potential to reproduce in favorable years.
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