

## **Ecological site F013XP609ID Upland Cold Woodland Group**

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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): 013X–Eastern Idaho Plateaus

Major Land Resource Area (MLRA) 13, Eastern Idaho Plateaus, consists of approximately 5 million acres in Idaho with a small part in Utah and Wyoming, it consists of 6 Land Resource Units (LRU). These units are divisions of the MLRA based on geology, landscape, common soils, water resources and plant community potentials. The elevation ranges from approximately 4500 to 6600 feet (1370 to 2010 m) on the plateaus and foothills to as much as 9500 feet (2895 m) on the mountains. Annual precipitation ranges from 10 to 48 inches (254-1220 mm), with the driest areas in the Bear River Valley on the far eastern portion and the wettest areas on the mountain summits. The Fort Hall Indian Reservation and several national forests are in this MLRA, including the Caribou, Cache, and Targhee National Forests. Yellowstone and Grand Teton National Parks occur just outside the northeast boundary.

### **LRU notes**

LRU P: PES (Provisional Ecological Site or Group - PEG) A PROVISIONAL ECOLOGICAL SITE is a conceptual grouping of soil map unit components within a Major Land Resource Area (MLRA) based on the similarities in response to management. Although there may be wide variability in the productivity of the soils grouped into a Provisional Site, the soil vegetation interactions as expressed in the State and Transition Model are similar and the management actions required to achieve objectives, whether maintaining the existing ecological state or managing for an alternative state, are similar. Provisional Sites are likely to be refined into more precise concept during the process of meeting the APPROVED ECOLOGICAL SITE DESCRIPTION criteria.

This PROVISIONAL ECOLOGICAL SITE has been developed to meet the standards established in the National Ecological Site Handbook. The information associated with this ecological site does not meet the Approved Ecological Site Description Standard, but it has been through a Quality Control and Quality Assurance processes to assure consistency and completeness. Further investigations, reviews and correlations are necessary before it becomes an Approved Ecological Site Description.

### **Classification relationships**

Other Classifications

ABLA/JUCOD habitat type (Steele Et.Al. 1983)

ABLA/RIMO2 habitat type (Steele Et.Al. 1983)

POTR5-ABLA/SHCA habitat type (Steele Et.Al. 1983)

ABLA/ARCO9 habitat type (Steele Et.Al. 1983)

ABLA/ARLA8 habitat type (Steele Et.Al. 1983)

ABLA/MARE11 habitat type (Steele Et.Al. 1983)

ABLA/LIBO3 habitat type (Steele Et.Al. 1983)

ABLA/VAME habitat type (Steele Et.Al. 1983)

POTR5-ABLA/ARCO9 habitat type (Steele Et.Al. 1983)

## Ecological site concept

- Site does not receive any additional water
- Soils are
  - o Generally not saline or saline-sodic
  - o Moderately deep, deep, or very deep
  - o Typically less than 5% stone and boulder on surface (<30%)
  - o Soil surface texture ranges from sandy loam to clay loam in surface mineral 4"
  - o Duff layer is common

## Associated sites

R013XY016ID	<b>Moist Mountain Loam 20+ PZ POTR</b> Upland Aspen Woodlands are common on the lower edge of Upland Cool Woodlands, especially in areas with snow catch/runoff.
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## Similar sites

F013XP610ID	<b>Upland Cool Woodland Group</b> Upland Cool Woodland have similar soils, but the temperature is warmer with lower moisture than the Upland Cold Woodland.
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Table 1. Dominant plant species

Tree	(1) <i>Abies lasiocarpa</i>
Shrub	Not specified
Herbaceous	Not specified

## Physiographic features

This site occurs on most slopes, especially in pockets or concave areas within landslides and other deposits. Average slope is less than 45 percent.

Table 2. Representative physiographic features

Landforms	(1) Mountains > Mountain slope (2) Landslide
Runoff class	Negligible to high
Elevation	6,000–9,500 ft
Slope	15–80%
Aspect	Aspect is not a significant factor

## Climatic features

Annual precipitation ranges from 24-60 inches per year. June is generally the wettest month. July, August, and September are somewhat less with daily amounts rarely exceeding one inch. Wide fluctuations may occur in yearly precipitation and result in more dry years than those with more than normal precipitation.

Temperatures show a wide range between summer and winter and between daily maximums and minimums. This is predominantly due to the high elevation and dry air, which permits rapid incoming and outgoing radiation. Cold air outbreaks in winter move rapidly from northwest to southeast and account for extreme minimum temperatures.

Snowfall is quite heavy in the area. Annual snowfall averages about 200 inches. Extreme storms may occur during the winter, but most severely affect ranch operations during late winter and spring. Prevailing winds are from the southwest, because of the varied topography, the wind will vary considerably for different parts of the area. The wind is usually much lighter at the

lower elevations and in the valleys as compared with the higher terrain. Occasional storms, however, can bring brief periods of high winds with gusts exceeding 50 mph. Growth of native cool season plants begins about May 15 and continues to about September 15.

Table 3. Representative climatic features

Frost-free period (characteristic range)	22-39 days
Freeze-free period (characteristic range)	67-83 days
Precipitation total (characteristic range)	24-60 in
Frost-free period (actual range)	18-43 days
Freeze-free period (actual range)	63-87 days
Precipitation total (actual range)	24-60 in
Frost-free period (average)	31 days
Freeze-free period (average)	75 days
Precipitation total (average)	42 in

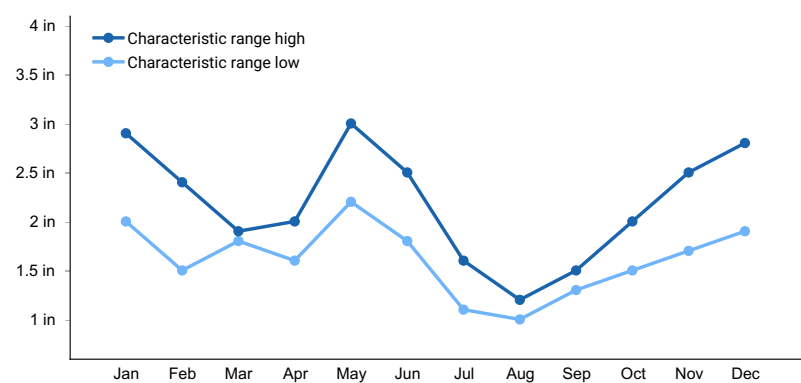


Figure 1. Monthly precipitation range

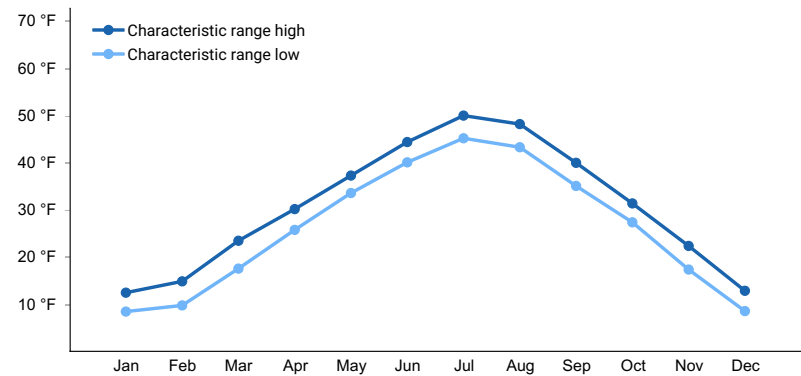
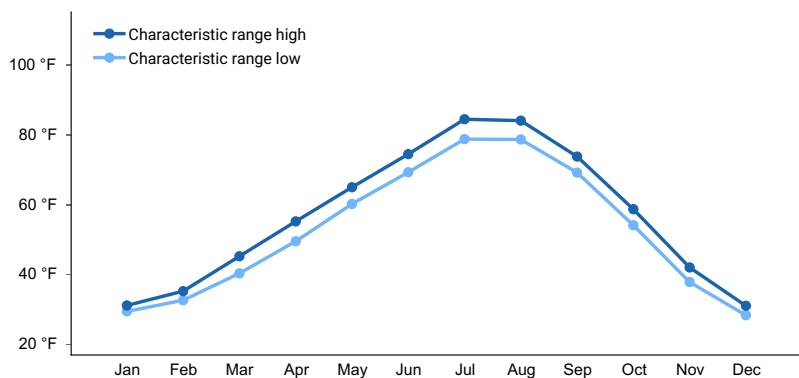
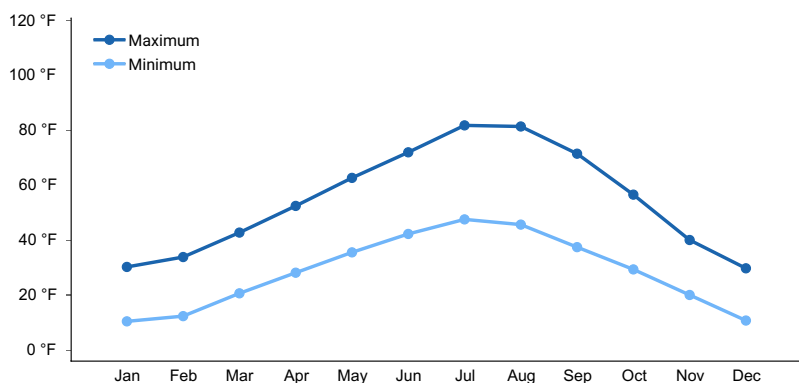


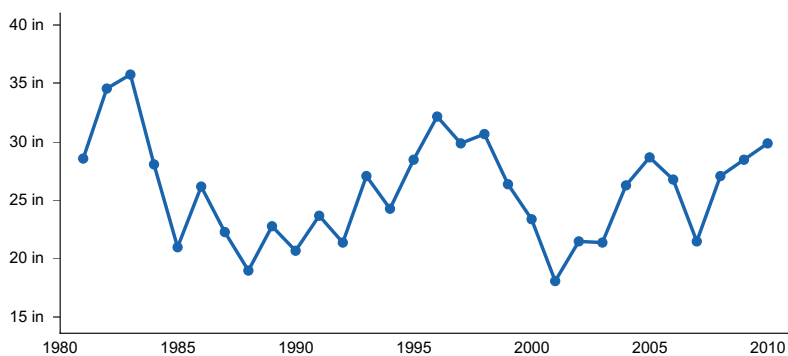
Figure 2. Monthly minimum temperature range



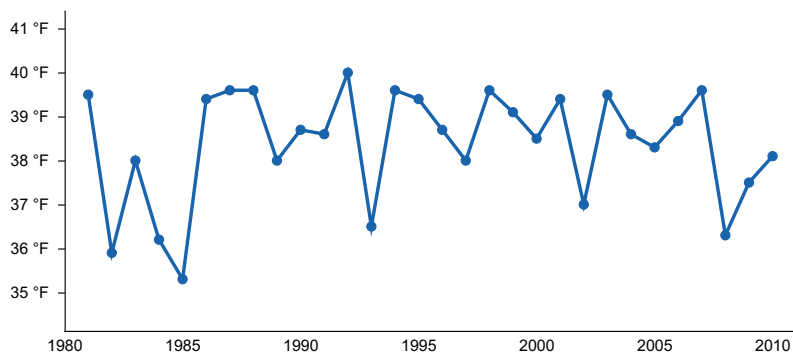
**Figure 3. Monthly maximum temperature range**



**Figure 4. Monthly average minimum and maximum temperature**



**Figure 5. Annual precipitation pattern**



**Figure 6. Annual average temperature pattern**

## Climate stations used

- (1) ALTA 1 NNW [USC00480140], Alta, WY
- (2) ISLAND PARK [USC00104598], Island Park, ID
- (3) LAVA HOT SPRINGS [USC00105143], Lava Hot Springs, ID

## Influencing water features

This site is not associated with any type of surface water feature. Snow drift impact is moderate.

## Soil features

The soils associated with this site were derived from calcareous sandstone, limestone, quartzite-sandstone mixes, or granitics. These soils are generally less than 20" in depth and virtually impermeable to plant roots. Pockets of deep soil may occur in this site and are moderately acidic. The bedrock will include igneous, metamorphic and sedimentary material. The soil characteristic having the most influence on the plant community is the shallow depth and slope. Soil temperature regime is cryic; while, soil moisture regime is typic udic.

**Table 4. Representative soil features**

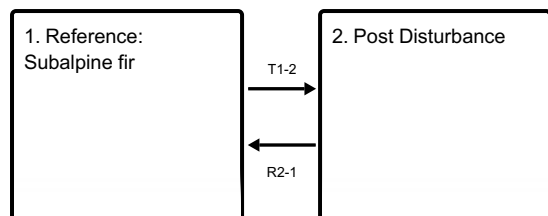
Parent material	(1) Colluvium–volcanic rock (2) Slope alluvium–igneous, metamorphic and sedimentary rock (3) Residuum
Surface texture	(1) Bouldery, stony, cobbly sandy loam (2) Clay loam (3) Loam (4) Silty clay loam
Drainage class	Well drained
Permeability class	Slow to rapid
Soil depth	10–40 in
Surface fragment cover <=3"	0–20%
Surface fragment cover >3"	0–15%
Calcium carbonate equivalent (Depth not specified)	0–5%
Electrical conductivity (Depth not specified)	0–2 mmhos/cm
Soil reaction (1:1 water) (Depth not specified)	3.8–7.1
Subsurface fragment volume <=3" (Depth not specified)	0–20%
Subsurface fragment volume >3" (Depth not specified)	0–15%

## Ecological dynamics

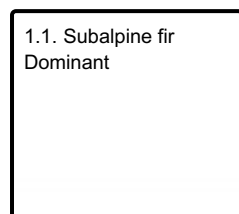
The cold extent of these deep soils are forested with a diverse under story. In capturing the transitions in the community phases, there is opportunity to debate whether a transition is between community phases or states. In considering the time required for regeneration and growth of the forests in this climate as well as the fire frequency and management responses, transitions between significant stages of forest growth will be considered as states within this ecological site. Fire is a major player in the natural cycle of this community; however, frequency, intensity and type of fire will influence the shifts within communities. Logging and other alternative land uses has had an impact in these transitions, and these shifts will be described briefly in the following state and transition model. For more information concerning the major forest community groupings in this class, refer to the Habitat type guides referenced below.

## State and transition model

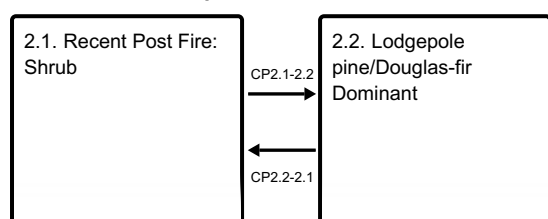
## Ecosystem states



## State 1 submodel, plant communities



## State 2 submodel, plant communities



## State 1

### Reference: Subalpine fir

Subalpine fir has the most extensive range reaching from the alpine zone to the fringes of the upland cool woodlands with Douglas-fir and Engelmann's spruce. Lodgepole pine is a major seral species in this community. This state is typical of old standing timber stands with a long duration fire return interval. Although fire has altered much of this community, the State is relatively fire resistant.

**Characteristics and indicators.** Subalpine fir are the dominant tree species in this state, with both old and young growth showing sufficient signs of reproduction. There will be other sub-dominant species within the stand as well, including lodgepole pine, white bark pine, and engelmann spruce. The under story of this community is predominately shrubs and forbs with a few grasses intermixed. The composition of the under story is highly variable from north to south and from the west to eastern extent of this community.

## Community 1.1

### Subalpine fir Dominant

Subalpine fir are dominant on this site with an intermixed canopy with lodge pole pine and white bark pine. Under story canopy is diverse depending on openness of the over story canopy and access potential to the site.

**Resilience management.** This state is slow to mature, slow to change once mature. Fire frequency is long-term (150 years), so old growth stands are common. The fire resistance of this community relates to the dead or down fall within the timber stand and the health of the standing timber. Managing this community to maintain a diversity of age classes, and to minimize disease and insect impacts, improves resiliency.

## State 2

### Post Disturbance

The succession of the subalpine fir community following a major disturbance, generally an intense stand replacing fire or timber harvest/logging, includes two major stages before the stand can transition back to a subalpine fir community. These two phases include a shrub dominated community that then matures to a lodgepole pine community. Community composition will vary across the extent of this state based on parent materials, aspect, slope, and other site factors (historic use, past disturbance history) that are too broad to cover at this time.

**Characteristics and indicators.** The initial indicator of this state is the evidence of subalpine fir stands that have recently burned, disturbed, or have been harvested. The regeneration on this state includes primarily lodgepole pine at first, but Engelmanns spruce, white bark pine, and Douglas-fir are commonly associated species that may be present. Fireweed is a major indicator species of the disturbance, along with ceanothus. As the community establishes and matures, lodgepole pine and Douglas-fir are the dominant forest components.

## **Community 2.1**

### **Recent Post Fire: Shrub**

Following an intense stand replacing fire or other major disturbance, the first community to establish is a shrub dominated community. Location and historic disturbances and use will influence the composition of the community. The main characteristic of this community phase is a shrub dominated community with only young sapling trees present in the canopy.

## **Community 2.2**

### **Lodgepole pine/Douglas-fir Dominant**

The re-establishment of the woody canopy following a major fire or other major disturbance is not a rapid occurrence on these sites, and is a successional process. Initially, lodge pole pine and Douglas-fir establish and becomes dominant with white bark pine, subalpine fir, and Englemann's spruce as sub-dominant species. The under story maintains a strong shrubby component with intermittent forbs and grasses.

## **Pathway CP2.1-2.2**

### **Community 2.1 to 2.2**

Time and management of use of the area drives the transition between community phases.

## **Pathway CP2.2-2.1**

### **Community 2.2 to 2.1**

Fire, disease, insect or other tree removing disturbance transitions this community phase back to a shrub dominated phase.

## **Transition T1-2**

### **State 1 to 2**

Fire, insect and disease impacts as well as logging can initiate the transition to the post disturbance state.

## **Restoration pathway R2-1**

### **State 2 to 1**

Time for recovery with management of forest stand health is what drives the recovery to the Reference State.

## **Additional community tables**

### **Animal community**

This site and plant community complex has minimal livestock grazing capacity in the old stand forests. In new growth or following logging or fire, this site does provide some livestock forage. This site is common habitat for elk, mule deer, bear, wolf, mountain lion, and a variety of other wildlife.

## **Hydrological functions**

Water is the principal factor limiting forage production on this site. This site is dominated by soils in hydrologic group C, with localized areas in hydrologic group B and D. Infiltration ranges from moderately slow to moderate. Runoff potential for this site varies from low to moderate depending on soil hydrologic group and ground cover. In many cases, areas with greater than 75% ground cover have the greatest potential for high infiltration and lower runoff. An

example of an exception would be where short-grasses form a strong sod and dominate the site. Areas where ground cover is less than 50% have the greatest potential to have reduced infiltration and higher runoff (refer to Part 630, NRCS National Engineering Handbook for detailed hydrology information).

Rills and gullies should not typically be present. Water flow patterns should be barely distinguishable if at all present. Pedestals are only slightly present in association with bunchgrasses. Litter typically falls in place, and signs of movement are not common. Chemical and physical crusts are rare to nonexistent. Cryptogamic crusts are present, but only cover 1-2% of the soil surface.

**Recreational uses**

This site provides hunting opportunities for large ungulates and fur bearing species. Limited for upland game bird species. Hiking is limited by density of mature tree stands, otherwise provides an excellent area to camp, hike, and recreate.

**Wood products**

Timber harvest for lumber and firewood, as well as post and pole cuttings are common on this forest type. Christmas tree harvest occurs on lower extents of this forest type.

**Other products**

Berry harvest from under story species as well as medicinal plants can be found within this ecological site. Fungi (mushroom) harvest can also occur in specific locations.

**Other references**

Steele, Robert; Cooper, Stephen V.; Ondov, David M.; Roberts, David W.; Pfister, Robert D. 1983. Forest Habitat Types of Eastern Idaho-Western Wyoming. General Technical Report INT-144. Ogden, UT: U.S. Department of Agriculture, Forest Service, Intermountain Forest and Range Experiment Station. 122 p.

**Contributors**

Bob Spokas  
Bryan Christensen

**Approval**

Kirt Walstad, 5/02/2024

**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	
Date	05/02/2024
Approved by	Kirt Walstad
Approval date	
Composition (Indicators 10 and 12) based on	Annual Production



## Indicators

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

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

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

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

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

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

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

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

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

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

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

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12. **Functional/Structural Groups (list in order of descending dominance by above-ground annual-production or live foliar cover using symbols: >>, >, = to indicate much greater than, greater than, and equal to):**

Dominant:

Sub-dominant:

Other:

Additional:

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

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

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

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:**
- 

17. **Perennial plant reproductive capability:**
-