

Ecological site F043BP709WY

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): 043B–Central Rocky Mountains

043B – Central Rocky Mountains – This MLRA is extensive including Montana, Idaho, Wyoming and a small portion in Utah. This MLRA consists of the major chains of Mountain Ranges with the corresponding valleys. Cartographic standards limited the ability to capture the foothills as a separate MLRA, so revisions of the MLRA boundaries in 2006 led to the inclusion of the foothills with the mountains for much of Wyoming. Further information regarding MLRAs, refer to: United States Department of Agriculture, Natural Resources Conservation Service. 2006. Land Resource Regions and Major Land Resource Areas of the United States, the Caribbean, and the Pacific Basin. U.S. Department of Agriculture Handbook 296. Available electronically at: http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/ref/?cid=nrcs142p2_053624#handbook.

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

F043BP708WY	Upland Aspen Woodland Group Upland Aspen Woodlands are common on the lower edge of Upland Cool Woodlands, especially in areas with snow catch/runoff.
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F043BP707WY	Subirrigated Cool Woodland Group Subirrigated Cool Woodlands can be found in areas with snow melt catch, or seeps on the lower fringes of or in depressions within the Upland Cool Woodlands.
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Similar sites

F043BP710WY	Upland Cool Woodland Group Upland Cool Woodland have similar soils, but the temperature is warmer with lower moisture than the Upland Cold Woodland.
R043BY122WY	Loamy High Mountains Loamy High Mountains has similar soils, but is the rangeland composition of this site. No timber is seen within this community.
R043BY108WY	Coarse Upland High Mountains Course Upland High Mountains has similar soils, but is the rangeland composition of this site. No timber is seen within this community.

Table 1. Dominant plant species

Tree	(1) <i>Abies lasiocarpa</i> (2) <i>Pinus contorta</i>
Shrub	(1) <i>Ribes montigenum</i> (2) <i>Shepherdia canadensis</i>
Herbaceous	(1) <i>Calamagrostis rubescens</i> (2) <i>Carex geyeri</i>

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

Geomorphic position, mountains	(1) Mountainflank (2) Free face
Landforms	(1) Mountains > Mountain slope (2) Mountains > Moraine (3) Mountains > Escarpment

Runoff class	Negligible to high
Elevation	1,980 – 3,050 m
Slope	20 – 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.

The following information is from the "Darwin Ranch", "Snake River", "Old Faithful", and "Burgess Junction" climate stations, at the lower end of this precipitation zone. Climate Data is limited and is being extrapolated from the nearest stations.

Table 3 Representative climatic features

Frost-free period (characteristic range)	0-10 days
Freeze-free period (characteristic range)	10-30 days
Precipitation total (characteristic range)	480-690 mm
Frost-free period (actual range)	0-10 days
Freeze-free period (actual range)	10-40 days
Precipitation total (actual range)	430-740 mm
Frost-free period (average)	0 days
Freeze-free period (average)	20 days
Precipitation total (average)	580 mm

- (1) DARWIN RCH [USC00482375], Jackson, WY
- (2) SNAKE RIVER [USC00488315], Moose, WY
- (3) OLD FAITHFUL [USC00486845], Yellowstone National Park, WY
- (4) BURGESS JUNCTION [USC00481220], Dayton, WY

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.

Figure 7. Hand excavated soils pit for the Upland Cold Woodland ecological site.

Table 4. Representative soil features

Parent material	(1) Colluvium – volcanic rock (2) Slope alluvium – igneous, metamorphic and sedimentary rock (3) Residuum – granite and gneiss (4) Quartzite
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
Depth to restrictive layer	50 cm
Soil depth	50 cm
Surface fragment cover <=3"	0 – 20 %
Surface fragment cover >3"	0 – 20 %

Calcium carbonate equivalent (Depth not specified)	0 – 10 %
Electrical conductivity (Depth not specified)	Not specified
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 – 20 %

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

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 2.2 plant community composition

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

Inventory data references

Information presented here has been derived from NRCS data and other inventory data. Field observations from range trained personnel were also used. Those involved in developing this site include: Bill Christensen, Range Management Specialist, NRCS; Karen Clause, Range Management Specialist, NRCS; and Everet Bainter, Range Management Specialist, NRCS. Other sources used as references include: USDA NRCS Water and Climate Center, USDA NRCS National Range and Pasture Handbook, and USDA NRCS Soil Surveys from various counties.

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

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Approval

Kirt Walstad, 3/05/2025

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)	
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Contact for lead author	
Date	05/02/2024
Approved by	
Approval date	
Composition (Indicators 10 and 12) based on	Annual Production

Indicators

1. Number and extent of rills:

2. Presence of water flow patterns:

3. Number and height of erosional pedestals or terracettes:

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

5. Number of gullies and erosion associated with gullies:

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

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

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

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

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

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

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:

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:
