

UNITED STATES DEPARTMENT OF AGRICULTURE  
NATURAL RESOURCES CONSERVATION SERVICE

This draft ecological site description is approved for field use and testing for a one-year period beginning MM, YYYY.  
Additional information and comments on this site should be sent to the Utah State Range Management Specialist.

STATE: Utah

SITE TYPE: Rangeland

ECOLOGICAL SITE NAME: Desert Gypsum Loam (Torrey Mormontea)

SITE NUMBER: 035XY106UT

MLRA: D-35

Original Site Description: Author: GSC

Date: 04/01/1984

Revised Site Description: Author: GSC

Date: 09/10/1993

Revised Site Description: Author: SM

Date: 06/09/2004

Approved by: Title: Signed:

Date:

Ecological Site Definition - A distinctive kind of land, with specific physical characteristics, which differs from other kinds of land in its ability to produce a distinctive kind and amount of vegetation, and in its response to management.

## **A. PHYSICAL CHARACTERISTICS**

### **1. SOILS**

Depth: moderately deep to very deep (20 inches to greater than 60 inches)

Surface Textures: very fine sandy loam, sandy loam, and fine sandy loam

Surface Fragments ( $\leq 3$ " % cover,  $> 3$ " % cover): none

Subsurface Textures: sandy loam, fine sandy loam, gravelly fine sandy loam, very fine sandy loam, gravelly very fine sandy loam and loam

Subsurface Fragments ( $\leq 3$ " % vol.  $> 3$ " % vol.): 0 to 10%

Geologic Parent Materials: mixed alluvium and residuum derived mainly from gypsiferous sandstone and shale

Moisture Regime: Typic Aridic

Temperature Regime: Mesic

Runoff: medium to rapid

Permeability (min-max): moderate to moderately rapid (0.6 to 6.0 in/hr)

Drainage Class (min-max): well drained

Water Erosion Hazard: moderate

Wind Erosion Hazard: slight to moderate

Electrical Conductivity (EC in mmhos/cm): 0 to 4 mmhos/cm

Sodium Adsorption Ration (SAR): 0

Calcium Carbonate Equivalent (%): 5-15%

pH Range (1:1 water): 8.0 to 8.2

Available Water Capacity (inches): 1 to 3 inches and 6.5 to 9 inches

The soils have an accumulation of gypsum (30 to 60%) between at the depth of 4 to 60 inches. They contain less than 18% clay in the 10 to 40 inch control section. Surface crust is very hard and reduces both water and wind erosion hazards. Average annual soil loss in potential is approximately 1.0 tons/acre. Moderately deep soil (Mussentuchit) have an available water capacity of 1 to 3 inches while very deep soils have an available water capacity of 6.5 to 9 inches Erosion hazard are severe when slopes are greater than 30%. Robroost Family has an electrical conductivity of 4 to 8 mmhos/cm in the San Juan County – Central survey. In soil horizons with gypsum present, electrical conductivity is 2 to 4 mmhos/cm.

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Major Soils Associated With This Site (*Soil Survey Area + Series Name*):

Henry Mountains (631): **Robroost** in mapunit 84 & 85  
 Capitol Reef NP(685): **Mussentuchit** in mapunit 160  
 Glen Canyon NRA: **Robroost** in mapunit 162  
 San Juan County – Central (638): **Robroost Family** in mapunit 53.

**Additional information may be found in Section II of the Field Office Technical Guide.**

**2. PHYSIOGRAPHIC FEATURES**

Landform and Position: Gently sloping fans, benches, alluvial fans, Upland valley plains, and hillsides.

Aspect: all

	<u>Minimum</u>	<u>Maximum</u>
Slope:	2%	50%
Elevation:	4,300 ft.	5,200 ft.
Flooding:	none	
Frequency:		
Duration:		
Ponding:	none	
Depth (inches):		
Frequency:		
Duration:		
Water Table Depth:		

**B. CLIMATIC FEATURES**

Mean Annual Precipitation (inches): 5 to 8  
 Mean Annual Air Temperature: 46°F to 52°F  
 Mean Annual Soil Temperature: 49°F to 54°F  
 Frost Free Period (days): 140 to 220 days  
 Freeze Free Period (days): 140 to 220 days

Temperature and Moisture Distribution:

Climate Stations: St. ID. : 420688    Location: Big Water, Utah    Period: From: 5/1986 To: 7/2003

Temperature	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANNUAL
High Mean	47.4	54.1	65.0	75.3	84.3	95.2	99.8	96.4	88.3	75.3	58.7	47.0	73.9
Average Mean	35.7	41.4	50.1	59.0	67.3	77.3	82.8	80.5	72.0	59.5	45.3	35.1	58.8
Low Mean	24.1	28.7	35.2	42.6	50.2	59.4	65.9	64.6	55.6	43.7	32.0	23.3	43.8

Precipitation	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANNUAL
Highest	3.16	1.66	2.93	2.14	1.18	0.67	1.33	2.29	2.66	3.53	1.33	0.93	9.00
Average Mean	0.52	0.66	0.64	0.43	0.33	0.14	0.52	0.72	0.74	0.85	0.43	0.29	6.27
Lowest	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.08	0.00	0.00	0.00	0.00	3.22

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Approximately 70% occurs as rain from March through October. On the average, April, May, and June are the driest months and August, September, and October are the wettest months. Precipitation is extremely variable from month to month and from year to year. Much of the precipitation occurs as convection thunderstorms.

Influencing Water Features (if any):

Wetland Description (Cowardin System)      System      Subsystem      Class  
 None

Stream Types (Rosgen System)      System  
 None

### **C. PLANT COMMUNITY CHARACTERISTICS**

#### **1. Potential Plant Community Description and Ecological Factors**

(Includes dominant vegetative aspect, cool-season and warm-season components, typical plant spacing, etc.)

The dominant aspect of the plant community is Torrey mormontea, shadscale, and matted crinklemat. The composition by air-dry weight is approximately 20% perennial grasses, 20% forbs, and 60% shrubs. In average years, plants begin growth around February 20 and end growth around October 30.

#### **2. Plant Community Composition by Weight and Percentage**

Grasses and Grasslike, 15-25%

Common Name	National Symbol	Group	Pounds per Acre		% by Weight of Total Composition	
			Low	High	Low	High
Galleta	PLJA	0	15	30	5	10
Indian Ricegrass	ACHY	0	15	30	5	10
Alkali Sacaton	SPAI	1	3	9	1	3
Sand Dropseed	SPCR	1	3	9	1	3
Sandhill Muhly	MUPU2	1	3	9	1	3
Other Perennial Grasses	PPGG	1	8	15	3	5
Other Annual Grasses	AAGG	1	8	15	3	5

Forbs, 15-20%

Common Name	National Symbol	Group	Pounds per Acre		% by Weight of Total Composition	
			Low	High	Low	High
Woolly Locoweed	ASMO7	0	8	15	3	5
Gooseberryleaf Globemallow	SPGR2	0	3	9	1	3
Desert Trumpet	ERIN4	0	3	9	1	3
Badland Mules-ears	WYSC	2	3	9	1	3
Largeflower Skeletonplant	LYGR	2	3	9	1	3
Mountain Pepperweed	LEMO2	2	3	9	1	3
Stemless Four-nerve Daisy	TEACA2	2	3	9	1	3
Brenda's Yellow Cryptantha	CRFL5	2	3	9	1	3
Snowball Sand Verbena	ABFR2	2	3	9	1	3
Matted Crinklemat	TILA6	2	3	9	1	3
Other Perennial Forbs	PPFF	2	25	45	10	15
Other Annual Forbs	AAFF	2	25	45	10	15

Shrubs, 50-60%

Common Name	National Symbol	Group	Pounds per Acre		% by Weight of Total Composition	
			Low	High	Low	High
Torrey Mormontea	EPTO	0	50	90	20	30
Crispleaf Buckwheat	ERCO14	0	15	45	5	15
Shadscale	ATCO	0	8	15	3	5
Slender Buckwheat	ERMI4	3	3	9	1	3
Rubber Rabbitbrush	ERNAN5	3	3	9	1	3
Broom Snakeweed	GUSA2	3	3	9	1	3
Castlevalley Saltbush	ATCU	3	3	9	1	3
Shortspine Horsebrush	TESP2	3	3	9	1	3
Other Shrubs	SSSS	3	15	30	5	10

**3. Plant Community Annual Production**

At the highest potential similarity index, this site will produce approximately the following amount of air-dry herbage, expressed as pounds/acre:

	Low	High
Favorable Year	400	450
Average Year	250	300
Unfavorable Year	100	150

**4. Ground Cover and Structure**

a. Vegetative

Vegetation Type	Percent Canopy Cover	Height Range	Percent Basal Area Cover
Grasses & Grass-like (perennial)	10	1-2 ft.	2
Forbs (perennial)	10	0.5-1 ft.	2
Shrubs	40	1-3 ft.	15
Trees	-	-	-
Cryptogams	0-10	0.1-1 cm	0-10

b. Other

Litter	1-5%
Coarse Fragments	-
Bare Ground	40-60

**5. Ecological Dynamics of the Site**

(Includes a discussion of seral stages; fire influence and effects; effects of prolonged wet or dry periods; resistance to change; the influence of such things as grazing, rodent concentrations, insects, diseases, introduced species, and soil erosion or deposition; other stable vegetative states associated with this site as a result of extreme disturbance)

As ecological condition deteriorates due to overgrazing, perennial grasses, Torrey mormontea, and slender buckwheat decrease while matted crinklemat, badland mules-ears, milkvetch and crispleaf buckwheat increase. Fire is not an important factor in this ecosystem. Cheatgrass, common sunflower, Russian thistle, and ragweed are most likely to invade this site.

The suitability for rangeland seeding is very poor. The major limiting factors are the high content of gypsum, surface crusting and low precipitation.

**Plant Communities & Transitional Pathways**

(Show a steady state diagram with influences to move from one steady state to another)

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## **6. Plant Growth Curves**

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
Percent Growth	0	0	5	25	65	5	0	0	0	0	0	0
Name	PNC											
ID Number	UT1061											
Description	Excellent Condition											

## **7. Similar Sites**

(Give related range sites in MLRA's above and below)

## **8. Associated Sites Within MLRA**

(Give site name and number)

Desert Very Shallow Gypsum (Torrey Mormontea)	035XY142UT
Desert Shallow Clay (Shadscale)	035XY125UT

## **9. Correlated Sites in Other States**

(Give site name and number)

## **D. MAJOR USES OF THIS SITE**

### **1. Livestock**

#### a. Site Factors Influencing Management

This site provides proper grazing for cattle and sheep in all seasons of the year.

#### b. Guide to Forage Quality (Plant preference by season)

Species - Cattle	Oct-Nov	Dec-Feb	Mar-May	Jun-Sep
Galleta	VG	F, G	VG	VG
Indian Ricegrass	F, G	VG	VG	VG
Woolly Locoweed	-	-	P	P
Gooseberryleaf Globemallow	F, G	P	F, G	F, G
Desert Trumpet	-	-	P	P
Torrey Mormontea	F, G	F, G	P	P
Crispleaf Buckwheat	P	P	P	P
Shadscale	F, G	F, G	F, G	F, G

Species - Sheep	Oct-Nov	Dec-Feb	Mar-May	Jun-Sep
Galleta	F, G	F, G	VF	F, G
Indian Ricegrass	F, G	VG	VG	VG
Woolly Locoweed	-	-	F	P
Gooseberryleaf Globemallow	F, G	P	VG	F, G
Desert Trumpet	-	-	F	P
Torrey Mormontea	F, G	F, G	P	P
Crispleaf Buckwheat	F	F	F	F
Shadscale	VG	VG	VG	F, G

VG = Very Good    G = Good    F = Fair    P = Poor

## 2. Wildlife

### a. Site Factors Influencing Management

This site provides food and limited cover for wildlife.

### b. List of Potential Species Present

Wildlife using this site includes jackrabbit, coyote, bobcat, sparrow, hawk, kangaroo rat, mice, and snake.

This is a short list of the more common species found. Many other species are present as well and migratory birds are present at times.

### c. Guide to Forage Preference of Managed Wildlife Species

Wildlife Species →	Mule deer		Elk	
	Use	Season	Use	Season
Galleta	B	F, W, Sp, Su	B	F, W, Sp, Su
Indian Ricegrass	A	F, W, Sp, Su	A	F, W, Sp, Su
Woolly Locoweed	B	Sp, Su	C	Sp, Su
Gooseberryleaf Globemallow	B	F, W, Sp, Su	B	F, W, Sp, Su
Desert Trumpet	C	Sp, Su	C	Sp, Su
Torrey Mormontea	B	F, W, Sp, Su	C	F, W, Sp, Su
Crispleaf Buckwheat	B	F, W, Sp, Su	C	F, W, Sp, Su
Shadscale	B	F, W, Sp, Su	C	F, W, Sp, Su

Use - A = preferred or desirable  
 B = some use, but less important  
 C = little use or used occasionally

Season - F = fall (Oct-Nov)  
 W = winter (Dec-Feb)  
 Sp. = spring (Mar-May)  
 Su. = summer (Jun-Sep)

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### **3. Recreational Uses**

Recreation activities are hiking and hunting. Natural Beauty lies in the topography, soils, and plants of this site. Trafficability over unsurfaced roads is poor because of the low strength of gypsum-affected soils.

### **4. Wood Products**

None.

### **5. Other Uses**

The soil is in hydrologic group B. The hydrologic curve numbers are 61 to 79 depending on the condition of the watershed.

## **E. THREATENED AND ENDANGERED SPECIES**

1. Plants – This section will be added as information is available.
2. Animals – This section will be added as information is available.

## **F. MODAL LOCATION AND DOCUMENTATION**

State: County:  
Latitude: Longitude:  
Section: Township: Range:  
General Legal Description:

Wayne County, Utah: 3 miles S., 1 mile E of Hanksville, Utah; NE ¼ Section 34, T. 28 S., R. 11 E.

Henry Mountains: **Robroost** – 38 miles S of Hanksville; in the NE ¼ of sec. 34, T. 28 S, R. 1 E.

Capitol Reef: **Mussentuchit** – S of state hwy. 24, 600 ft. N & 1,600 ft. E of the SW corner of Sec. 15, T. 29S., R. 7E.

San Juan – Central: **Robroost Family** – Comb Wash; 500 ft. S and 500 ft. E of the NW corner of sec. 25, T. 40S, R. 20E.

Glen Canyon: **Robroost** – 38 miles south of Hanksville, in the NE ¼ of sec. 34, T. 28 S, R. 1 E.

### **Field Office Site Location**

Panguitch, Monticello, Cedar City, and Richfield Field Offices

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**Data Collected and References**

Sampling Source	Number of Records	Range Similarity Index			
		> 76%	51-75%	26-50%	0-25%
NRCS - ECS - 417					
UTAH - RANGE - 2					
Permanent Transect Location					

**4. Other References**