

Bunchgrass Ridge Soil Descriptions

by Duane Lammers and Ted Dyrness

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Old forest near Plot 8

Pedon Number: S04OR039-001

Date described: August 12, 2004

Described by: T. Dyrness, D. Lammers

Slope gradient: 5 percent

Aspect: NNW, 320 degrees

Elevation: 1357 meters

Landform: glaciated mountain ridge

Parent material: Mazama ash over till; andesitic basalt

Vegetation: Trees: *Pseudotsuga menziesii*, *Abies grandis*, *Abies amabilis*; Understory: *Clintonia uniflora*, *Achlys triphylla*, *Chimaphila umbellata*, *Fragaria* spp., *Rubus lasiococcus*, *Anemone deltoidea*, *Viola glabella*, *Osmorhiza chilensis*

Location: UTM Zone 10; Northing: 4903374, Easting: 582912

Taxonomic Class (as sampled): ashy, amorphic Aquic Vitricryands

Pedon description (colors are for moist soil unless otherwise noted, texture and percent clay are by field estimate)

Oi—0 to 2 cm; undecomposed needles and twigs [S04OR039-001-001]

A1—2 to 17 cm; very dark brown (10YR 2/2) ashy fine sandy loam (7 percent clay), very dark grayish brown (10YR 3/2) dry; weak fine granular structure; soft, very friable, nonsticky, nonplastic and smeary; many very fine and fine, common medium and few coarse roots; 10 percent fine gravel; few fine and medium charcoal fragments; clear wavy boundary [S04OR039-001-002]

A2—17 to 46 cm; very dark grayish brown (10YR 3/2) ashy fine sandy loam (7 percent clay), brown (10YR 4/3) dry; weak fine granular structure; soft, very friable, nonsticky, nonplastic and smeary; common very fine and medium, few fine and coarse roots; few fine irregular pores; 5 percent fine gravel; few fine and medium charcoal fragments; upper 60 percent of horizon is bioturbated by rodents; clear wavy boundary [S04OR039-001-003]

Bw—46 to 62 cm; dark brown (7.5YR 3/2) ashy fine sandy loam (9 percent clay), brown (10YR 4/3) dry; weak coarse subangular blocky structure that parts to weak fine granular; soft, very friable, nonsticky, slightly plastic and weakly smeary; few very fine, fine, medium, and coarse roots; few very fine tubular pores; 5 percent fine gravel; gradual wavy boundary [S04OR039-001-004]

2Bwb—62 to 94 cm; dark brown (7.5YR 3/2) ashy fine sandy loam (9 percent clay), brown (10YR 4/3) dry; weak coarse subangular blocky structure that parts to weak fine granular; soft, very friable, nonsticky, nonplastic and weakly smeary; few very fine, fine, and medium roots; few very fine and fine tubular pores; 20 percent gravel, 35 percent cobbles, and 15 percent stones; gradual wavy boundary [S04OR039-001-005]

2Btb—94 to 103 cm; dark grayish brown (10YR 4/2) sandy loam (12 percent clay), brown (10YR 5/3) dry; moderate medium subangular blocky structure that parts to weak fine granular; slightly hard, firm, slightly sticky, slightly plastic and weakly smeary; common clay bridging between sand grains; common faint coarse patches of reduced matrix and few very fine faint oxidized iron masses; few very fine and fine roots; many fine tubular pores; 50 percent gravel; clear wavy boundary [S04OR039-001-006]

2C—103 to 157 cm; dark grayish brown (10YR 4/2) sandy loam (6 percent clay), brown (10YR 5/3) dry; massive; soft, friable, nonsticky and nonplastic; few very fine and fine roots; 45 percent gravel [S04OR039-001-007]

Diagnostic horizons and features in this pedon:

reduced matrix and redox concentrations (Aquic subgroup): 94 to 103 cm; 2Btb

argillic horizon (Alfic subgroup): 94 to 103 cm; 2Btb

umbric epipedon (Humic subgroup): 2 to 94 cm; A1, A2, Bw, 2Bwb

zone with andic soil properties: 2 to 94 cm; A1, A2, Bw, 2Bwb

particle-size control section: 2 to 102 cm

ashy family: 2 to 62 cm; A1, A2, Bw -- thickest part

ashy-skeletal family: 62 to 94 cm; 2Bwb

loamy-skeletal family: 94 to 102 cm; 2Btb



Young forest between Plots 2 and 3

Pedon Number: S04OR039-002

Date described: August 12, 2004

Described by: T. Dyrness, D. Lammers

Slope gradient: 6 percent

Aspect: SW; 300 degrees

Elevation: 1341 meters

Landform: glaciated mountain ridge

Parent material: Mazama ash over till; andesitic basalt

Vegetation: Trees: *Abies grandis* (tall), *Abies procera* (understory), many dead *Pinus contorta*; Understory: *Rubus lasiococcus*, *Galium oreganum*, *Hieracium gracile*, *Fragaria* spp., *Anemone deltoidea*, *Osmorhiza chilensis*, *Campanula scouleri*, *Achlys triphylla*

Location: UTM Zone 10; Northing: 4903305, Easting: 582447

Taxonomic Class (as sampled): ashy, amorphic Humic Vitricryands

Pedon description (colors are for moist soil unless otherwise noted, texture and percent clay are by field estimate)

Oi—0 to 2 cm; undecomposed needles and twigs [S04OR039-002-001]

A1—2 to 15 cm; very dark brown (10YR 2/2) ashy fine sandy loam (9 percent clay), very dark grayish brown (10YR 3/2) dry; weak fine granular structure; soft, very friable, nonsticky, nonplastic and weakly smeary; few very fine, fine and medium roots; common very fine and fine, and few medium and coarse irregular pores; 10 percent fine gravel; clear wavy boundary [S04OR039-002-002]

A2—15 to 34 cm; very dark brown (10YR 2/2) ashy fine sandy loam (9 percent clay), dark brown (10YR 3/3) dry; weak medium subangular blocky structure that parts to weak fine granular; soft, very friable, nonsticky, nonplastic and weakly smeary; few very fine, fine and medium roots; common very fine and fine, and few medium and coarse irregular pores; 10 percent fine gravel; clear wavy boundary [S04OR039-002-003]

Bw1—34 to 72 cm; very dark brown (7.5YR 2.5/2) ashy fine sandy loam (11 percent clay), brown (7.5YR 4/3) dry; weak medium subangular blocky structure that parts to weak fine granular; soft, very friable, nonsticky, nonplastic and weakly smeary; common very fine, fine and medium, and few coarse roots; few medium and coarse tubular pores; 15 percent gravel and 5 percent cobbles; gradual wavy boundary [S04OR039-002-004]

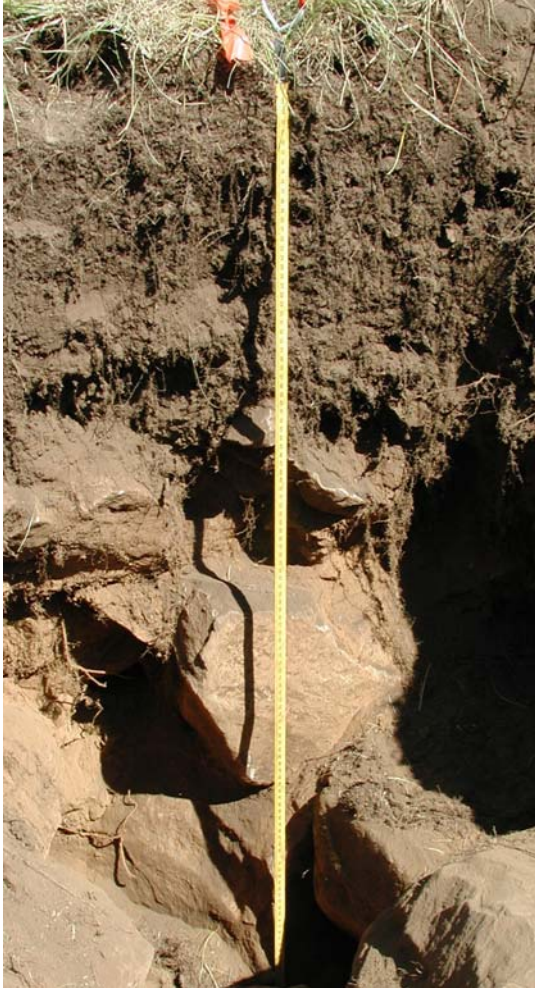
2Bw2—72 to 102 cm; brown (7.5YR 4/3) ashy fine sandy loam (12 percent clay), dark yellowish brown (10YR 4/4) dry; weak medium subangular blocky structure that parts to weak fine granular; soft, very friable, nonsticky, nonplastic and weakly smeary; few very fine, fine and

medium roots; few medium and coarse tubular pores; 20 percent gravel, 25 percent cobbles and 10 percent stones; gradual irregular boundary [S04OR039-002-005]

2C—103 to 129 cm; brown (10YR 4/3) sandy loam (12 percent clay), dark yellowish brown (10YR 4/4) dry; massive; soft, very friable, nonsticky and nonplastic; few fine and medium roots; 15 percent gravel, 35 percent cobbles, 35 percent stones and 2 percent boulders [S04OR039-002-006]

Diagnostic horizons and features in this pedon:

umbric epipedon (Humic subgroup): 2 to 72 cm; A1, A2, Bw1
zone with andic soil properties: 2 to 102 cm; A1, A2, Bw1, 2Bw2
particle-size control section: 2 to 102 cm
ashy family: 2 to 72 cm; A1, A2, Bw1 -- thickest part
ashy-skeletal family: 72 to 100 cm; 2Bw2



Lower section of *Holodiscus* Meadow

Pedon Number: S04OR039-003

Date described: August 13, 2004

Described by: T. Dyrness, D. Lammers

Slope gradient: 11 percent

Aspect: SW; 220 degrees

Elevation: 1338 meters

Landform: glaciated mountain ridge

Parent material: Mazama ash over till; andesitic basalt

Vegetation: Trees: none; Understory: *Festuca idahoensis*, *Cirsium callilepes*, *Lupinus latifolius*, *Carex pensylvanica*, *Erigeron aliceae*

Location: UTM Zone 10; Northing: 4903230, Easting: 582563

Taxonomic Class (as sampled): ashy, amorphic Vitric Melanocryands

Pedon description (colors are for moist soil unless otherwise noted, texture and percent clay are by field estimate)

A1—0 to 7 cm; very dark brown (10YR 2/2) ashy very fine sandy loam (7 percent clay), very dark grayish brown (10YR 3/2) dry; weak very fine granular structure; soft, very friable, nonsticky, nonplastic and smeary; many very fine and fine, and few medium roots (thick root mat); 5 percent fine gravel; clear smooth boundary [S04OR039-003-001]

A2—7 to 31 cm; very dark brown (10YR 2/2) ashy very fine sandy loam (7 percent clay), dark grayish brown (10YR 4/2) dry; weak coarse subangular blocky structure that parts to weak fine granular; soft, very friable, nonsticky, nonplastic and smeary; common very fine and fine, and few medium roots; many very fine irregular pores; 10 percent gravel; clear irregular boundary [S04OR039-003-002]

A3—31 to 51 cm; very dark brown (10YR 2/2) ashy very fine sandy loam (7 percent clay), dark grayish brown (10YR 4/2) dry; weak medium subangular blocky structure that parts to weak fine granular; soft, very friable, nonsticky, nonplastic and smeary; common very fine, and few fine and medium roots; common very fine and fine irregular pores; 10 percent gravel, 10 percent cobbles and 5 percent stones; clear irregular boundary [S04OR039-003-003]

2Bw—51 to 113 cm; dark reddish brown (7.5YR 3/3) ashy very fine sandy loam (10 percent clay), yellowish brown (10YR 5/4) dry; weak fine subangular blocky structure; soft, friable, nonsticky, nonplastic and weakly smeary; few very fine, fine and medium roots; common very fine and fine irregular pores; 10 percent gravel, 10 percent cobbles, 10 percent stones and 50 percent boulders; clear irregular boundary [S04OR039-003-004]

3Bqm—113 to 126 cm; reddish brown (7.5YR 4/3) loam (12 percent clay), pale brown (10YR 6/3) dry; moderate medium subangular blocky structure; slightly hard, firm, nonsticky and slightly plastic; slightly brittle and extremely weakly cemented; common fine vesicular pores; 5 percent gravel and 5 percent cobbles [S04OR039-003-005]

Horizons A1, A2 and A3; 65 percent of soil matrix is bioturbated by rodents

Diagnostic horizons and features in this pedon:

melanic epipedon (Melanic greatgroup): 0 to 113 cm; A1, A2, A3, 2Bw

umbric epipedon (Humic subgroup): 0 to 113 cm; A1, A2, A3, 2Bw

zone with andic soil properties: 0 to 113 cm; A1, A2, A3, 2Bw

particle-size control section: 0 to 100 cm

ashy family: 0 to 51 cm; A1, A2, A3 -- thickest part

ashy-skeletal family: 51 to 100 cm; 2Bw

duripan: 113 to 126 cm; 3Bqm



Upper section of *Holodiscus* Meadow

Pedon Number: S04OR039-004

Date described: August 13, 2004

Described by: T. Dyrness, D. Lammers

Slope gradient: 7 percent

Aspect: SSW; 260 degrees

Elevation: 1345 meters

Landform: glaciated mountain ridge

Parent material: Mazama ash over till; vesicular andesite

Vegetation: Trees: none; Understory: not described, similar to lower meadow: *Festuca idahoensis*, *Cirsium callilepes*, *Lupinus latifolius*, *Carex pensylvanica*, *Erigeron aliceae*

Location: UTM Zone 10; Northing: 4903254, Easting: 582623

Taxonomic Class (as sampled): ashy, amorphic Vitric Melanocryands

Pedon description (colors are for moist soil unless otherwise noted, texture and percent clay are by field estimate)

A1—0 to 18 cm; very dark brown (10YR 2/2) ashy very fine sandy loam (7 percent clay), dark grayish brown (10YR 4/2) dry; weak medium subangular blocky structure that parts to weak fine granular; soft, very friable, nonsticky, nonplastic and smeary; many very fine and fine, and few medium roots; few very fine and many fine tubular pores; 5 percent fine gravel; clear smooth boundary [S04OR039-004-001]

A2—18 to 44 cm; very dark brown (10YR 2/2) ashy very fine sandy loam (7 percent clay), dark grayish brown (10YR 4/2) dry; weak medium subangular blocky structure that parts to weak fine granular; soft, very friable, nonsticky, nonplastic and smeary; many very fine and fine, and few medium roots; common fine and medium tubular pores; 10 percent gravel; clear wavy boundary [S04OR039-004-002]

AB—44 to 61 cm; very dark brown (7.5YR 2.5/2) ashy very fine sandy loam (9 percent clay), brown (10YR 4/3) dry; weak medium subangular blocky structure; soft, friable, nonsticky, nonplastic and weakly smeary; common very fine, and few fine and medium roots; common very fine, fine and medium tubular pores; 10 percent gravel; gradual wavy boundary [S04OR039-004-003]

Bw1—61 to 82 cm; very dark brown (7.5YR 2.5/2) ashy very fine sandy loam (8 percent clay), yellowish brown (10YR 5/4) dry; weak medium subangular blocky structure; soft, friable, nonsticky, nonplastic and weakly smeary; common very fine and fine, and few medium and coarse roots; few very fine and fine irregular pores; 5 percent gravel, 5 percent cobbles and 20 percent stones; gradual wavy boundary [S04OR039-004-004]

Bw2—82 to 116 cm; dark reddish brown (7.5YR 3/3) ashy very fine sandy loam (11 percent clay), yellowish brown (10YR 5/4) dry; weak medium subangular blocky structure; soft, friable, nonsticky, slightly plastic and weakly smeary; few very fine, fine and medium roots; common very fine and fine irregular pores; 20 percent gravel, 5 percent cobbles and 20 percent stones; clear irregular boundary [S04OR039-004-005]

2Bqmb—116 to 139 cm; dark grayish brown (10YR 4/2) coarse loamy sand (4 percent clay), light brownish gray (10YR 6/2) dry; moderate medium subangular blocky structure; hard, firm, nonsticky, nonplastic and smeary; weakly cemented, brittle and dense; few fine faint irregular iron masses on ped faces; few fine roots, many very fine and fine vesicular pores; 60 percent gravel, 15 percent cobbles and 5 percent stones; clear irregular boundary [S04OR039-004-006]
[Note: coarse sand and very fine gravel-size fragments appear to be silica cemented concretions that do not slake in water.]

2Bwb—139 to 160 cm; brown (10YR 4/3) fine sandy loam (11 percent clay), yellowish brown (10YR 5/4) cry; weak medium subangular blocky structure; soft, friable, nonsticky and slightly plastic; few fine and few medium roots; 25 percent gravel, 30 percent cobbles and 10 percent stones [S04OR039-004-007]

Diagnostic horizons and features in this pedon:

melanic epipedon (Melanic greatgroup): 0 to 61 cm; A1, A2, AB
umbric epipedon (Humic subgroup) : 0 to 116 cm; A1, A2, AB, Bw1, Bw2
zone with andic soil properties: 0 to 116 cm; A1, A2, AB, Bw1, Bw2
particle-size control section: 0 to 100 cm
 ashy family: 0 to 82 cm; A1, A2, AB, Bw1 -- thickest part
 ashy-skeletal family: 82 to 100 cm; 2Bw
 duripan: 116 to 139 cm; 2Bqmb
 redox concentrations: 116 to 139 cm; 2Bqmb



Old-growth forest adjacent to Bunchgrass Ridge study area, west of Plot 2

Pedon Number: S04OR039-005

Date described: August 13, 2004

Described by: T. Dyrness, D. Lammers

Slope gradient: 5-6 percent

Aspect: 305 degrees

Elevation: 1345 meters

Landform: glaciated mountain ridge

Parent material: Mazama ash over till; andesitic basalt

Vegetation: Trees: *Pseudotsuga menziesii*, *Abies grandis*, *Abies amabilis*; Understory: *Clintonia uniflora*, *Achlys triphylla*, *Chimaphila umbellata*, *Fragaria* spp., *Rubus lasiococcus*, *Anemone deltoidea*, *Viola glabella*, *Osmorhiza chilensis*

Location: UTM Zone 10; Northing: 4903403; Easting: 582293

Taxonomic Class (as sampled): ashy-skeletal, amorphic Humic Vitricryands

Pedon description (colors are for moist soil unless otherwise noted, texture and percent clay are by field estimate)

Oi—0 to 3 cm; undecomposed needles and twigs [S04OR039-005-001]

A1—3 to 11 cm; dark brown (7.5YR 3/2) ashy fine sandy loam (8 percent clay), brown (10YR 4/3) dry; weak fine granular structure; soft, very friable, nonsticky, nonplastic and weakly smeary; common very fine, few fine and medium roots; common very fine irregular pores; 10 percent gravel; few fine and medium charcoal fragments; clear smooth boundary [S04OR039-005-002]

A2—11 to 26 cm; dark brown (7.5YR 3/2) ashy fine sandy loam (8 percent clay), brown (10YR 4/3) dry; weak medium subangular blocky structure; soft, very friable, nonsticky, nonplastic and weakly smeary; common very fine, few fine, medium and coarse roots; few very fine and common fine irregular pores; 10 percent gravel; few fine and medium charcoal fragments; gradual wavy boundary [S04OR039-005-003]

2Bw1—26 to 73 cm; dark brown (7.5YR 3/3) ashy fine sandy loam (8 percent clay), yellowish brown (10YR 5/4) dry; weak medium subangular blocky structure; soft, very friable, nonsticky, nonplastic and weakly smeary; common very fine, fine and medium, and few coarse roots; common fine and medium, and few coarse; tubular pores; 10 percent gravel, 10 percent cobbles, 20 percent stones and 15 percent boulders; few fine and medium charcoal fragments; gradual wavy boundary [S04OR039-005-004]

2Bw2—73 to 113 cm; dark brown (7.5YR 3/3) ashy fine sandy loam (11 percent clay), yellowish brown (10YR 5/4) dry; moderate medium subangular structure; slightly hard, friable, nonsticky, slightly plastic and weakly smeary; few very fine, fine, medium and coarse roots, few very fine and fine irregular pores; 20 percent gravel, 10 percent cobbles, 15 percent stones and 20 percent boulders; few fine charcoal fragments; abrupt irregular boundary [S04OR039-005-005]

3Bqmb1—113 to 129 cm; brown (10YR 4/3) fine sandy loam (11 percent clay), light yellowish brown (10YR 6/4) dry; moderate medium angular blocky structure; moderately hard, firm, nonsticky, slightly plastic, weakly cemented and brittle; few fine faint irregular iron masses between peds; no roots; few fine irregular pores; 30 percent gravel; abrupt irregular boundary [S04OR039-005-006]

3Bwb—129 to 151 cm; brown (10YR 4/3) loam (14 percent clay), yellowish brown (10YR 5/4) dry; weak medium subangular blocky structure; soft, friable, nonsticky, slightly plastic and moderately smeary; few very fine, fine and medium roots, common fine, few very fine and medium tubular pores; 10 percent gravel and 15 percent stone; gradual wavy boundary [S04OR039-005-007]

4Bqmb2—151 to 173 cm; brown (10YR 5/3) sandy loam (15 percent clay), pale brown (10YR 6/3) dry; strong medium subangular blocky structure; hard, firm, nonsticky, slightly plastic, nonsmeary and brittle; few fine distinct dendritic iron masses on faces of peds; many fine prominent threads of silica on ped faces and on surfaces along pores; 10 percent gravel [S04OR039-005-008]

Diagnostic horizons and features in this pedon:

umbric epipedon (Humic subgroup): 3 to 113 cm; A1, A2, 2Bw1, 2Bw2

zone with andic soil properties: 3 to 113 cm; A1, A2, 2Bw1, 2Bw2

particle-size control section: 3 to 103 cm

ashy family: 3 to 26 cm; A1, A2

ashy-skeletal family: 26 to 100 cm; 2Bw1, 2Bw2

buried silica cemented layers: 113 to 129 cm and 151 to 173 cm; 3Bqmb1, 3Bqmb2