## Ecological relationships for Biological Soil crust cover







### Soil crusts fill the spaces between bunchgrasses like chinking between logs in a cabin







## Summary BSC cover is: Influenced by:

- Soil texture
- Vascular plant cover
- Elevation
- % rock cover
- Stability of the rocks
- Soil depth
- Type of climate cold/ hot deserts



#### Physical properties of soils (cont.)

Soil texture

• the relative proportions of sand, silt and clay in a soil



can be used to predict other soil properties e.g. water holding capacity or ability of the soil to adsorb cations from the soil solution

This soil contains 70% silt, 20% sand, 10% clay; therefore it is a

<u>silty loam</u>





			Soil Texture	
		Sand	Clay	Silt
Soil Moisture Content	Frozen	High	High	High
	Wet	Medium-High	Low	Medium
	Moist	Medium	Low	Medium
	Dry	Low	High	Medium-Low















### Potential crust cover is high







### Crust cover is low, too much vegetation



# Crust potential?

















Different soil depths have different amounts of soil crusts







#### Soil crust lichens that are calcium carbonate indicators

Low	High
Calcium carbonate	Calcium carbonate
Acarospora schleicheri	Aspicilia fruticulosa
Arthonia glebosa	Aspicilia hispida
Aspicilia reptans	Buellia elegans
Cladonia borealis	Caloplaca tominii
Diploschistes muscorum	Collema tenax
Leptochidium albociliatum	Fulgensia bracteata
Megaspora verrucosa	Psora cerebriformis
Ochrolechia upsaliensis	Psora decipiens
Placynthiella spp.	Psora tuckermanii
Xanthoparmelia wyomingica	Toninia sedifolia

### The Ecology of Crusts depends on:

- Soil texture
- Climate
- Competing vascular vegetation
- Calcareous soil
- Spatial arrangement of vegetation
- Site disturbance history





# Why are there no crusts in this site?







Where are the biological soil crusts?



# **Crust are** Iimited by • OHV's • Livestock trampling

- Wildfires



- & Other soil disturbances
  - -Leads to bare ground
    - Dust
    - Recruitment of cheatgrass and other weeds

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