

V.D.2.N.D. SHORT TEMPERATE ANNUAL GRASSLAND

V.D.2.N.d.2. BROMUS TECTORUM SEMI-NATURAL HERBACEOUS ALLIANCE

Cheatgrass Semi-natural Herbaceous Alliance

Alliance Identifier: A.1814

Bromus tectorum Semi-natural Herbaceous Alliance

Cheatgrass Herbaceous Semi-natural Alliance

Cheatgrass Annual Grassland

ELEMENT CONCEPT

GLOBAL SUMMARY: This alliance-level herbaceous vegetation type is found throughout much of western North America from the western Great Plains to Intermountain West. Elevation ranges from sea level to 2200 m. It occurs after disturbance of a natural shrub- or grass-dominated community that results in the replacement of the natural vegetation by non-native, annual grass species of *Bromus*. *Bromus tectorum* typically dominates the community with over 80-90% of the total vegetation cover, making it difficult to determine what natural community was formerly present. This alliance also includes grasslands dominated or codominated by other Eurasian introduced annual *Bromus* species such as *Bromus hordeaceus*, *Bromus madritensis*, *Bromus japonicus*, *Bromus rigidus*, or *Bromus rubens*. It is distinct from the annual *Bromus* communities found along the Pacific Coast typical of the Mediterranean or maritime climates.

ENVIRONMENTAL DESCRIPTION

USFWS WETLAND SYSTEM: TERRESTRIAL

Ouray National Wildlife Refuge Environment: *Bromus tectorum* Semi-natural Herbaceous Alliance vegetation grows mostly on the fine sediments that have washed from badlands formations and have deposited as deltas or fans at the base of badlands bluffs. In some instances, cheatgrass has become established among river cobble that is eroding from the badlands formations, as well. In most sites dominated by cheatgrass, the soils are very fine silty clay.

Global Environment: This alliance-level herbaceous vegetation type is found throughout much of western North America from the western Great Plains to intermountain and southwestern U.S. Elevation ranges from sea level to 2200 m. Stands occur after disturbance of a natural shrub- or grass-dominated community resulting in the replacement of the natural vegetation by non-native, annual grass species of *Bromus*. At Wind Cave National Park in South Dakota, weedy non-native graminoid vegetation occurs on recently disturbed areas, most commonly along roads. Small stands also occur in prairie dog towns (H. Marriott pers. comm. 1999). In the Great Basin, *Bromus tectorum* grasslands has invaded large areas of burned-over sagebrush steppe. *Bromus tectorum* increases the fire frequency of steppe communities, which eventually eliminates sagebrush (FEIS 2001).

VEGETATION DESCRIPTION

Ouray National Wildlife Refuge Vegetation: The *Bromus tectorum* Semi-natural Herbaceous Alliance is a sparse annual grass/forbland that rarely exceeds 10% foliar cover. This short-statured type is usually less than 15 cm in height. Sites supporting this type are usually disturbed through wind and water erosion, or some type of on-going human disturbance. While *Bromus tectorum* is normally the type dominant, some sites such as prairie dog towns may be dominated by *Halogeton glomeratus* and have little or no cheatgrass present. This situation was noted more when soils were clayey (depressions and shallow drainages), as cheatgrass was more successful establishing on sandy to loamy soils.

Global Vegetation: This alliance-level vegetation type is characterized by a sparse to dense short annual graminoid layer that is typically dominated by *Bromus tectorum* with over 80-90% of the total vegetation cover. Other Eurasian introduced annual species of *Bromus* which may alternatively dominate or codominate are *Bromus carinatus*, *Bromus hordeaceus*, *Bromus madritensis*, *Bromus japonicus*, *Bromus rigidus*, or *Bromus rubens*. Although there may be remnant species of the former native vegetation, the high cover of annual bromes makes it difficult to determine what natural community was

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formerly present. At Wind Cave National Park in South Dakota, this weedy non-native graminoid vegetation is usually dominated by several perennial and annual brome grasses, including *Bromus inermis*, *Bromus japonicus*, and cheatgrass *Bromus tectorum*. Cover is variable (H. Marriott pers. comm. 1999).

Dynamics: *Bromus tectorum* is an annual grass and is able to complete its lifecycle in the spring before drying out in mid-summer. Its fine structure makes it extremely flammable when dry, and it will increase the fire frequency of a site (FEIS 2001). Frequent fires favor *Bromus tectorum* because they eliminate competing perennial vegetation, but do not kill all the *Bromus tectorum* seeds, which survive in the unburned organic material (FEIS 2001). This altered ecological process has promoted the spread of *Bromus tectorum* and other exotic annual bromes at the expense of sagebrush shrublands in large parts of the western U.S. (Daubenmire 1975, Young and Evans 1973, 1978).

This type is most common where disturbances have eliminated or largely set back the native vegetation. Where the brome grasses are invading native vegetation, the types may still be tracked as native types, since the native species may still persist. A recent study (Karl et al. 1999) found that despite strong seed and seedling production by the exotic brome grasses (*Bromus japonicus*, *Bromus tectorum*), the large amount of herbaceous biomass produced by the two vegetatively propagating native grasses, *Bouteloua gracilis* and *Pascopyrum smithii*, suggests that these native grasses may well maintain their ecological importance in the stands.

In Nevada, Beatley (1976) found dense stands the introduced winter annual grass *Bromus tectorum* growing in disturbed *Artemisia* shrublands. *Bromus rubens* is more common in lower elevation sites, and *Bromus tectorum* is most common in higher elevation sagebrush and pinyon-juniper communities.

MOST ABUNDANT SPECIES

Ouray National Wildlife Refuge

| Stratum | Species |
|------------|--|
| HERBACEOUS | <i>Bromus tectorum</i> , <i>Halogeton glomeratus</i> , <i>B. japonicus</i> |

Global

| Stratum | Species |
|-----------|------------------------|
| GRAMINOID | <i>Bromus tectorum</i> |

CHARACTERISTIC SPECIES

Ouray National Wildlife Refuge

| Species |
|--|
| <i>Bromus tectorum</i> , <i>Halogeton glomeratus</i> , <i>Salsola kali</i> |

Global

| Species |
|------------------------|
| <i>Bromus tectorum</i> |

OTHER NOTEWORTHY SPECIES

Ouray National Wildlife Refuge

| Stratum | Species |
|---------|---------|
| N/A | |

Global

| Stratum | Species |
|---------|---------|
| N/A | |

GLOBAL SIMILAR ASSOCIATIONS:

SYNONYMY:

Cheatgrass series (Sawyer and Keeler-Wolf 1995)

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CLASSIFICATION COMMENTS

Ouray National Wildlife Refuge: In a year with higher precipitation during the growing season, this alliance may be more dense and lush. Cheatgrass as an understory species in other associations would probably have a higher cover value under wetter conditions.

Global Comments: This alliance also includes grasslands dominated or codominated by other Eurasian introduced annual *Bromus* species, but is distinct from the annual *Bromus* communities found along the Pacific Coast with Mediterranean or maritime climates because it does not have the introduced annual oatgrass (*Avena barbata* and *Avena fatua*), or other species typical of the California annual grassland (Sawyer and Keeler-Wolf 1995).

ELEMENT DISTRIBUTION

Ouray National Wildlife Refuge Range: The *Bromus tectorum* Semi-natural Herbaceous Alliance is dominant on badland slopes comprised of river cobble and erosion fans along the base of badlands bluffs. Cheatgrass is sometimes a component of prairie dog towns and other disturbed sites; it is also widely distributed as a minor component of many upland sites. Near Woods Bottom and on the uplands of Johnson Bottom, sites disturbed by early settlers and for oil exploration have become dominated by cheatgrass and other annual species.

Global Range: This alliance-level herbaceous vegetation type is found throughout much of western North America from the western Great Plains to intermountain and southwestern U.S.

Nations: US

States/Provinces: AZ CA UT

TNC Ecoregions: 10:C, 18:C, 19:C, 21:C

USFS Ecoregions: 262A:CC, 313A:CC, 341C:CC, 342:C, M261:C, M313A:CC, M341C:CC

Federal Lands: NPS (Walnut Canyon, Zion); USFWS (Ouray)

ELEMENT SOURCES

Identifier: CEGL003019 **Confidence:** 2 **Conservation Rank:** GW

REFERENCES: Beatley 1976, Daubenmire 1975, FEIS 2001, Karl et al. 1999, Sawyer and Keeler-Wolf 1995, Thompson 2001, Von Loh 2000, Young and Evans 1973, Young and Evans 1978.