

Danthonia compressa - (*Sibbaldiopsis tridentata*) Herbaceous Vegetation

COMMON NAME Mountain Oatgrass - (Mountain-cinquefoil) Herbaceous Vegetation
SYNONYM Grassy Bald (Southern Grass Type)
PHYSIOGNOMIC CLASS Herbaceous Vegetation (V)
PHYSIOGNOMIC SUBCLASS Perennial graminoid vegetation (V.A)
PHYSIOGNOMIC GROUP Temperate or subpolar grassland (V.A.5)
PHYSIOGNOMIC SUBGROUP Natural/Semi-natural (V.A.5.N)
FORMATION Short sod temperate or subpolar grassland (V.A.5.N.e)

ALLIANCE *Danthonia compressa* Herbaceous Alliance

CLASSIFICATION CONFIDENCE LEVEL 2

USFWS WETLAND SYSTEM Upland

RANGE

Globally

This community occurs in the southern Blue Ridge of North Carolina, Tennessee, and Virginia.

Great Smoky Mountains National Park

This community was sampled from the Cade Cove quadrangle. It was not sampled on the Mount Le Conte quadrangle, nor is it expected to occur there. This community is possible in other areas of the Park. On the Cade Cove quadrangle this community was sampled from Russell Field Bald and from Gregory Bald.

ENVIRONMENTAL DESCRIPTION

Globally

This community occurs on moderate to high elevation peaks and saddles in the southern Blue Ridge. It is found on high elevation (usually above 1350 meters or 4500 feet), often south- to southwest-facing domes, ridgetops, and gentle slopes. Strong winds, high rainfall, frequent fog, shallow rocky soils, and extremes of temperature and moisture are characteristic of these environments.

Great Smoky Mountains National Park

The two examples of this community sampled were on gentle ridges, at 4320 and 4950 feet elevation. Invasion by woody species is occurring in both examples.

MOST ABUNDANT SPECIES

Globally

Stratum

Short shrub

Herbaceous

Species

(*Rubus allegheniensis*, *Rhododendron calendulaceum*, *Sibbaldiopsis tridentata*)

Danthonia compressa, *Carex brunnescens*, *Carex pensylvanica*, *Carex debilis*, *Potentilla canadensis*, *Agrostis perennans*, *Deschampsia flexuosa*

Great Smoky Mountains National Park

Stratum

Short shrub

Herbaceous

Species

(*Rhododendron calendulaceum*, *Vaccinium corymbosum*)

Danthonia compressa

CHARACTERISTIC SPECIES

Globally

Danthonia compressa, *Danthonia spicata*, *Deschampsia flexuosa*, *Houstonia serpyllifolia*, *Hypericum mitchellianum*, *Prenanthes roanensis*, *Senecio schweinitzianus*, *Sibbaldiopsis tridentata*, *Solidago roanensis*

Great Smoky Mountains National Park

Danthonia compressa

VEGETATION DESCRIPTION

Globally

This community consists of graminoid-dominated vegetation with scattered shrubs, occurring on moderate to high elevation peaks and saddles in the southern Blue Ridge. Characteristically, this vegetation is strongly dominated by *Danthonia compressa* or in some areas codominated by the sub-shrub *Sibbaldiopsis tridentata* (= *Potentilla tridentata*). Other characteristic herbaceous species are *Angelica triquinata*, *Aster acuminatus* (= *Oclemena acuminata*), *Carex pensylvanica*, *Carex debilis*, *Carex intumescens*, *Carex brunnescens*, *Deschampsia flexuosa*, *Erythronium umbilicatum* ssp. *monostolum*, *Gentiana austromontana*, *Gentianella quinquefolia*, *Houstonia serpyllifolia*, *Ionactis linariifolius* (= *Aster linariifolius*), *Lysimachia*

quadrifolia, *Potentilla canadensis*, *Prenanthes roanensis*, *Smilax herbacea*, *Solidago bicolor*, *Solidago glomerata*, *Stachys clingmanii*, *Trautvetteria caroliniensis* var. *caroliniensis*. The floristic composition is a mixture of widespread species, northern disjunct species (such as *Agrostis mertensii*, *Carex aenea*, *Minuartia groenlandica*, *Senecio schweinitzianus*, *Sibbaldiopsis tridentata*), and southern Appalachian endemics (such as *Erythronium umbilicatum* ssp. *monostolum*, *Geum geniculatum*, *Geum radiatum*, *Houstonia serpyllifolia*, *Lilium grayi*, *Prenanthes roanensis*, *Solidago glomerata*, *Stachys clingmanii*). Typical shrubs, which may occur as scattered individuals or as patches, are *Rhododendron calendulaceum*, *Rhododendron catawbiense*, *Menziesia pilosa*, *Vaccinium corymbosum*, and *Rubus canadensis*. Species indicative of past grazing include *Phleum pratense*, *Agrostis gigantea*, *Hieracium scabrum*, *Rumex acetosella*, *Prunella vulgaris*.

Great Smoky Mountains National Park

This community includes open vegetation dominated by graminoid species, sometimes with large patches dominated by deciduous ericads. *Danthonia compressa* is the aspect dominant herb, although other herbaceous species with high coverage include *Arnoglossum muehlenbergii*, *Cinna latifolia*, *Danthonia spicata*, *Phleum pratense*, *Poa compressa*, *Potentilla canadensis*, and *Rumex acetosella*. Other species present in the herbaceous stratum include *Achillea millefolium*, *Ageratina altissima* var. *roanensis*, *Arrhenatherum elatius*, *Aster dumosus*, *Aster paternus*, *Carex aenea*, *Carex leavenworthii*, *Dichantheium laxiflorum*, *Galium pilosum*, *Houstonia purpurea* var. *purpurea*, *Houstonia serpyllifolia*, *Hypericum punctatum*, *Juncus effusus*, *Juncus marginatus*, *Luzula acuminata*, *Lysimachia quadrifolia*, *Malaxis unifolia*, *Melampyrum lineare*, *Potentilla simplex*, *Prenanthes altissima*, *Prunella vulgaris*, *Rubus canadensis*, *Rudbeckia hirta*, *Rumex acetosella*, *Senecio anonymus*, *Solanum carolinense*, and *Viola primulifolia* var. *villosa*. Alien species present that may indicate past grazing include *Agrostis stolonifera*, *Carduus acanthoides*, *Cerastium nutans*, *Holcus lanatus*, *Leucanthemum vulgare*, *Phleum pratense*, *Trifolium pratense*, and *Veronica serpyllifolia*. On Gregory Bald, the shrubs *Rhododendron calendulaceum* and *Vaccinium corymbosum* are locally dominant. Other scattered woody plants in this community include *Amelanchier laevis*, *Kalmia latifolia*, *Magnolia acuminata*, and *Prunus serotina*.

OTHER NOTEWORTHY SPECIES

Rare or northern disjunct plant species reported from this community include *Agrostis mertensii*, *Alnus viridis* ssp. *crispa*, *Botrychium multifidum*, *Calamagrostis canadensis*, *Carex aenea*, *Carex cristatella*, *Carex misera*, *Delphinium exaltatum*, *Gentiana austromontana*, *Geum geniculatum*, *Houstonia purpurea* var. *montana*, *Huperzia selago*, *Hypericum buckleyi*, *Lilium grayi*, *Lilium philadelphicum*, *Lycopodium dendroideum*, *Lycopodium hickeyi*, *Minuartia groenlandica*, *Monarda media*, *Phlox subulata*, *Platanthera grandiflora*, *Poa palustris*, *Prenanthes roanensis*, *Rhododendron cumberlandense*, *Rhododendron vaseyi*, *Senecio schweinitzianus*, *Spiranthes ochroleuca*, and *Trisetum spicatum* (Schafale and Weakley 1990). Rare animals include *Microtus chrotorrhinus carolinensis* and *Thryomanes bewickii altus* (DeSelm and Murdock 1993). Exotic species that occur, probably as a result of grazing, include *Prunella vulgaris*, *Phleum pratense*, and *Poa compressa*.

CONSERVATION RANK G1

RANK JUSTIFICATION

This community has a small range, few occurrences, and is rapidly disappearing due to vegetational succession. This community is threatened by high levels of recreational use and the introduction of exotic plant and animal species, as well as by successional trends of uncertain cause.

DATABASE CODE CEGL004242

COMMENTS

Globally

This montane grassland is typically surrounded by dwarfed forests dominated by *Fagus grandifolia* or *Quercus rubra*. Notable examples include various peaks of the Roan Mountain complex, Long Hope Valley, Shining Rock Wilderness, and the Great Smoky Mountains National Park. The origin of this community is not clear, and in fact, several mechanisms, both natural and anthropogenic, have been proposed, including fire, grazing, trampling, clearing, climatic change, windthrow, or some combination of these influences. The presence of northern disjunct species requiring open habitat may suggest that some of these areas have been open since the Ice Age. A. Weakley (pers. comm.) suggests that the balds of Roan Mountain, Tennessee, are primarily natural, whereas those farther north are of anthropogenic origin. It appears that new occurrences of this community are not being created and those that exist are being encroached by shrub and tree species. Lindsay (1976) reported that examples of this community in the Great Smoky Mountains National Park will have disappeared by the end of the century if management is not undertaken to halt invasion by woody plants. However, these balds are among those most likely to be of anthropogenic origin.

Great Smoky Mountains National Park

Gregory Bald is currently maintained by manual woody species removal.

REFERENCES

Billings and Mark 1957, DeSelm and Murdock 1993, Gersmehl 1973, Lindsay 1976, Lindsay and Bratton 1979, Mark 1958, Mark 1959, Schafale and Weakley 1990