

Species reaching greatest importance include *Cercocarpus ledifolius*, *Prunus virginiana*, *P. emarginata*, *Chrysothamnus nauseosus*, and *Woodsia scopulina*. Species primarily restricted to basalt flows of NE. California include *Rubus leucodermis*, *Amelanchier alnifolia*, *Chamaebatiaria millefolium*, *Agastache parvifolia*, *Scrophularia lanceolata*, and *Penstemon deustus* ssp. *heterander*. Notably absent from this community are *Arctostaphylos patula* and *Ceanothus prostratus*. There is almost no species overlap between this and similar nearby forest located off the recent lava flow.

Plant Diversity

Seventy-five species of vascular plants are listed.

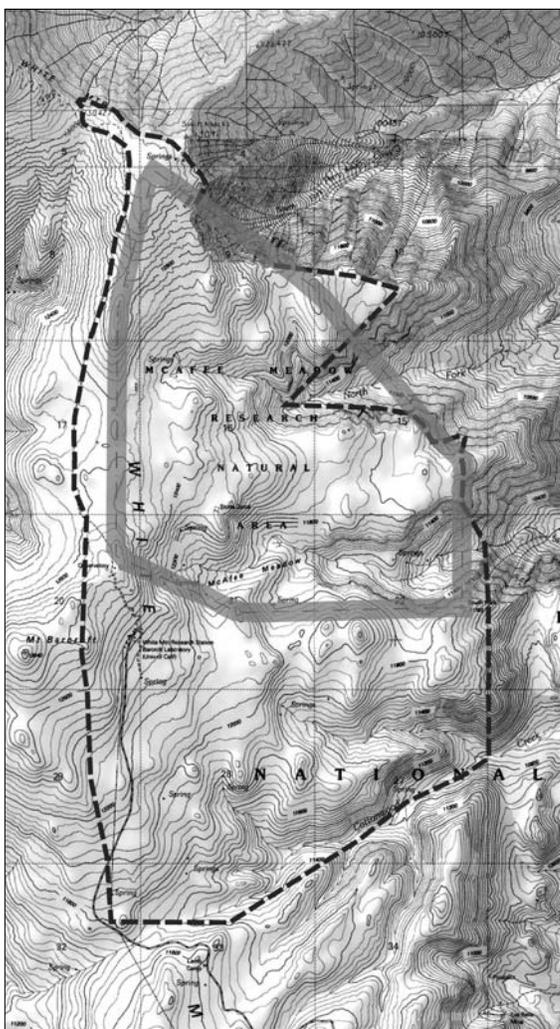
Conflicting Impacts

Recreational use of the rRNA is minimal. A management strategy should be written that provides for prescribed burning of the area and control of the mistletoe infection if the knobcone pine and other tree species are to be protected.

56. McAfee (White Mountain Summit) (Taylor 1976, Travers 1993)

Figure 114—McAfee rRNA

Dashed line = Ecological study area
Solid gray line = RNA Boundary



Location

This recommended RNA (rRNA) is on the Inyo National Forest. The study area lies within T4S, R34E MDBM and includes portions of sects. 8, 9, 10, 15, 16, 17, 20, 21, and 22 (37°35'N., 118°15'W.), USGS Mount Barcroft and White Mountain Peak 15' quad (fig. 114). Ecological subsection – White Mountains (341Dj).

Target Element

Alpine Fell-Field

Distinctive Features

Previous Alpine Research: The summit plateau of the White Mountains contains the largest continuous area of alpine steppe vegetation in California and the Great Basin. It is also the most accessible large alpine area in California. The area is well studied and has been used as a high altitude research center since the early 1950s. Many important physiological experiments have been conducted at the two laboratories (Barcroft and White Mountain) within the area, although detailed ecological surveys of the vegetation are lacking.

Alpine Geomorphology: Several types of frost patterning occur in the area. These include frost polygons and congeliturbation. Unlike many areas with relictual patterned ground (e.g., Devil's Garden), these geomorphic processes are still active as a result of the cold climate. Solifluction lobes are also present, but they are relatively rare. Two plant associations are restricted to areas where these processes occur.

Rare Plants: *Heuchera duranii* (CNPS 1B), *Polemonium chartaceum* (CNPS 1B), *Astragalus kentrophyta* ssp. *danaus* (CNPS 4), *Lomatium foeniculaceum* ssp. *inyoense* (CNPS 4), *Carex eleocharis* (CNPS 2), *Pinus longaeva* (CNPS 4).

Physical Characteristics

The study area covers 6400 acres (2590 ha), which is much larger than the proposed area for RNA establishment in the

forest plan (2030 acres [822 ha]). Elevations range from 11,600 to 14,300 ft (3536-4358 m). White Mountain Peak is the highest point at the N. end of the area and is steep-sloped with active talus. A major ridge, extending from the peak of White Mountain and running S., lies on the W. border of the RNA. To the E. of the ridge, the area is cut into three plateaus by the North and South Forks of McAfee Creek, which form steep canyons.

In general, the whole area appears rocky with shallow and poorly developed soil. In the SE. corner the soil is dolomite in origin and has a striking white color. Climate is severe, cold, and dry with strong winds.

Parent rocks are Reed Dolomite (Precambrian), Campito formation (sandstones and hornfels), Barcroft Pluton (granodiorite), and undifferentiated metavolcanic (underlying White Mountain Peak). Soils are shallow and poorly developed.

Association Types

Taylor (1976) defined seven plant communities within the study area. However, Travers (1993) classified the vegetation into nine communities.

Dolomite Barrens (91140)

Phlox condensata-*Ivesia shockleyi*: This is the only plant community found on dolomite barrens. It is distributed on the easternmost portions of two ridges in the S. part of the study area. *Phlox condensata* and *Ivesia shockleyi* dominate on both S. and N. aspects of these ridges. In mesic depressions *I. shockleyi*'s frequency decreases; it is replaced by *Chrysothamnus parryi*. Twenty-six plant species are found in this community, including *Astragalus kentrophyta* and *Eriogonum gracilipes*.

Alpine Grassland Steppe (91140)

Koeleria macrantha: This is the largest grassland plant community in the study area; it is generally found at the lower elevations associated with the S. two-thirds of the study area. The dominant species, *K. macrantha*, is also very common in other shrubland communities but with less relative percentage cover. This community is characterized by intermediate soil moisture level. In regions with increased wetness, *Ivesia lycopodioides* dominates. In drier regions, *Trifolium andersonii* takes over as the dominant species. Nineteen species are found in this community.

Ivesia lycopodioides: This community is distributed as small patches scattered throughout the area in mesic regions. It prevails in sloped, mesic regions below snowmelts throughout the central portion of the study area. Generally these wet areas are N.- or E.-aspect slopes where snow patches persist. This plant community also dominates in natural seeps, giving way to *Carex-Deschampsia* in regions with standing surface water. In total, 22 species are identified in this community. *Antennaria rosea* is the codominant species.

Carex sp.-*Eriogonum ovalifolium*: This community distributes on the plateau SW. of White Mountain Peak, which is exposed and windswept. It is characterized by almost pure *Carex incurviformis* interspersed with *Eriogonum ovalifolium*. Species diversity is low and most of the dicot species observed in other plant communities are absent. *Koeleria* is also absent from this community.

Trifolium andersonii: This community is distributed on the tops of plateaus, W. of the *Carex* sp.-*Eriogonum ovalifolium* community and at the easternmost end of the plateau in the central portions of the study area. These areas are flat and relatively dry, shielded

Figure 115—McAfee, McAfee Meadow, where the dominant species are *Deschampsia cespitosa*, *Carex incurviformis*, and *Carex heteroneura*. (S. Cheng 2000)



by ridges to the W. Species composition is very similar to the *Artemisia* communities below 12,000 ft (3657 m) but without the shrubs. *Trifolium andersonii* and *Carex incurviformis* are the two most common species. Associated species are mixtures of *Elymus elymoides* and *Achnatherum occidentale*. *Koeleria macrantha* is present but in much lower frequency than in other grasslands. Twelve species are listed in this plant community.

Shrubland (35220)

Artemisia arbuscula: This community is widespread in the S. portions of the study area. It is found only at relatively low elevations (below 12,000 ft [3567 m]) and confined mainly to areas of Campito sandstone. Patches of *Carex-Deschampsia* can be found in level mesic areas within this community. The three most common species found here are *Trifolium andersonii*, *Linanthus nuttallii*, and *Koeleria macrantha*. Seventeen species are found in this community, among them *Heuchera duranii*, a CNPS-listed rare plant.

Chrysothamnus parryi: This community dominates at rocky transition zones between steep scree slopes and relatively level grasslands. One exception is the northernmost plateau, which is completely covered by *Chrysothamnus parryi* shrubs. *Chrysothamnus parryi*, *Carex incurviformis*, and *Koeleria macrantha* are the three most common species found in this community. Because this community generally occurs at the edge of scree slopes, many of the species found here are shared with scree slope community, including *Ribes viscosissimum*. Seventeen species are identified in this plant community.

Sedge Meadow (45210)

Carex sp.-Deschampsia sp.: This community has the highest percentage of cover and lowest species diversity (nine species) in the RNA. It is also the wettest of all the communities in the study area (fig. 115). Found in wet areas predominantly in the S. (lower elevation) two-thirds of the study area, this community is interspersed with dry, elevated areas of plant communities dominated by *Artemisia*, *Koeleria*, and *Ivesia*. In almost all cases the community is found in association with pooling or flowing surface water from seeps. *Carex sp.* forms a dense sod, and *Deschampsia sp.* indicates standing water during the growing season. The largest area, McAfee Meadow, is along the South Fork of McAfee Creek.

Scree Slopes (91200)

Ribes viscosissimum: The granitic pluton is characterized by outcrops of scree, generally at the tops of steep ridges. These areas are almost completely devoid of vegetation, except *Ribes viscosissimum*. Scree slopes are composed of unstable collections of wither shale or granitic rocks. Higher-elevation (>13,500 ft [4115 m]) examples of this community on the summit of White Mountain Peak (mesozoic metavolcanic rock) are dominated also by *Polemonium chartaceum*, *Erigeron vagus*, and *Anelsonia eurycarpa*. DeDecker (Travers 1993) listed 14 species during her 1960 visit to the SE. corner of White Mountain Peak.

Plant Diversity

Fifty-one species are identified by Travers. An additional 10 can be found in DeDecker's 1960 list (Travers 1993).

Conflicting Impacts

Heavy manipulative research use (i.e., research activities modify the natural condition of the subjects) exists in White Mountain Laboratory of the University of California upslope and adjacent to the rRNA, although little use of the rRNA occurs yet. No grazing is allotted in this area.

Note: for Merced River, see Bishop Creek Ponderosa Pine, #9