

38. Haypress Meadows (Imper 1988a)



**Figure 78—
Haypress
Meadows cRNA**

Location

This candidate RNA is within the Marble Mountain Wilderness on the Klamath National Forest. It lies within portions of sects. 17, 18, 19, and 20 T13N, R7E HBM (41°30'N., 122°23'W.), USGS Some Bar quad (fig. 78). Ecological subsection – Upper Salmon Mountains (M261Ag).

Target Element

Red Fir (*Abies magnifica*)

Distinctive Features

Red Fir: Approximately 80 percent of the area is described as Shasta red fir (*Abies magnifica* var. *shastensis*) forest. Some small areas are dominated by exceptional old-growth stands. However, the actual area of canopy dominance of Shasta red fir is only about 9 percent of the total. The remaining area has red fir in the understory. Other species such as white fir (*Abies concolor*), incense-cedar (*Libocedrus decurrens*), Douglas-fir (*Pseudotsuga menziesii*), and sugar pine (*Pinus lambertiana*) are important canopy constituents. The study area offers a good cross-section of habitats at the lower elevation range of the red fir zone.

The area is unusual for its undeter-mined genetic status of firs. Some attributes of the local fir populations are more like noble fir (*Abies procera*) than typical Shasta red fir. These include the extreme projections of the cone bracts and the characteristic way "red fir" locally codominates with mountain hemlock (*Tsuga mertensiana*). However, definitive genetic determinations have not been made. The name Shasta red fir is used loosely in this report to describe all trees with red or noble fir characteristics.

General Habitat Diversity: Habitat diversity in the area is high, given the narrow elevational range. The diversity is related to the abundance of surface water and varied fire history of the area. Several wet and dry meadow associations are present. Forests range from the open, sparse understory of the Shasta red fir-prince's pine association to the dense lush understory of the Shasta red fir-vanilla leaf association, and the dense shrub layer of the Shasta red fir-Sadler oak association. Well-developed riparian vegetation lines several miles of creeks in the area, and mountain chaparral dominates burned sites.

Meadow Ecology: The broad range of wet meadow types, their exceptional floristic diversity, and proximity to trailheads makes them conducive to study. Livestock grazing has declined over the past several decades, and some of the meadows that were overgrazed are undergoing successional changes (fig. 79). Other meadows suffered little impact from grazing and are essentially pristine. A number of potential succession-related studies focusing on the meadows could be undertaken. These include meadow recovery processes following heavy grazing, grazing impact on soil loss, general successional relationship between meadows and surrounding coniferous vegetation, and factors governing *Alnus viridus* (*sinuata*) invasion of meadows.

Rare Plants: *Carex halliana* (CNPS List 2) and *Gentiana setigera* (CNPS List 3) are present in the meadows. The following species are members of CNPS List 4: *Lupinus tracyi*, *Lilium wigginsii*, *Epilobium oreganum*, *Veronica cusickii*, and *Collinsia linearis*. Two hybrids (*Veratrum californicum* x *V. viride* and *Vaccinium membranaceum* x *V. uliginosum* ssp. *occidentale*) are unusual and occur in the meadow-forest ecotone.

Physical Characteristics

The survey area covers about 1250 acres (506 ha). Elevations range from 4400 to 5400 ft (1341-1646 m). Most of the area is gently sloping, with slopes of all aspects represented. The steepest slopes (up to 60 percent) are in the Cub Creek valley, the major N.-flowing drainage in the E. of the area. The series of flats supporting meadows is in the S. half of the area. The area is underlain by granitic rock (Wooley Creek Pluton). Soils are classified as the Entic Xerumbrepts-Gerle family-Tallac family association 15-50 percent slopes. Climate is moderately marine influenced. Precipitation averages somewhat above 70 inches (1778 mm) annually (Rantz 1972).

Association Types

A total of twenty 0.1-acre (0.04-ha), circular plots were sampled in four forest associations.

Shasta Red Fir-Vanilla Leaf Forest (84240, 85310): 310 acres (125 ha). This association occupies moist N. slopes and meadow borders between 4700 and 5400 ft (1432-1646 m). Soils may be well developed and moist, but rocky. Most of this association occurs as narrow borders along meadows. The canopy is dominated by white fir with Shasta red fir, Douglas-fir, incense-cedar, and sugar pine as subdominants. Shasta red fir is the principal reproducer. Fire is less important than in other forest associations in the red fir zone. Stands may be even or uneven aged (fig. 80).

Productivity is the highest of any forest, and on four plots basal area ranges from 57.4 to 82.6 m²/ha. Dominant Shasta red fir and white fir average 30-50 inches (76-127 cm) dbh, and occasional sugar pines and Douglas-fir are greater than 75 inches (190 cm) dbh. Many of the larger trees have been protected from fire by their mesic meadow border location.

The understory is rich and well developed, the most diverse of any forest association. Twenty-eight typical species are listed, including *Achlys triphylla*, *Trillium ovatum*, *Linnaea borealis*, *Rubus lasiococcus*, *Gaultheria ovatifolia*, *Adenocaulon bicolor*, *Pyrola secunda*, *Anemone deltoidea*, *Penstemon laetus*, *Disporum hookeri*, and *Mahonia (Berberis) nervosa*.

Shasta Red Fir-Prince's Pine Forest (84240, 85310): 310 acres (125 ha). This forest occurs at similar elevations and contains the same tree species as the previous association, but occurs on distinctly more xeric locations. Ponderosa and Jeffrey pines (*Pinus ponderosa* and *P. jeffreyi*, respectively) are uncommon indicators of the more xeric conditions as is the typical scattered understory dominated by *Chimaphila umbellata* (to >40 percent cover). An open shrub layer of *Quercus sadleriana*, *Rhamnus purshiana*, and/or *Rosa gymnocarpa* is also typical. *Lilium washingtonianum* is common along with other species such as *Pteridium aquilinum*, *Hieracium albiflorum*, *Chrysolepis chrysophylla*, *Symphoricarpos mollis*, *Arctostaphylos nevadensis*, *Corylus cornuta*, *Trientalis latifolia*, *Penstemon anguineus*, and *Viola sheltonii*.



Figure 79—Haypress Meadows (#1), with mountain hemlock, Shasta red fir, and lodgepole pine invading drier portions, meadow had had a history of grazing. (D. Imper, 1988)

Productivity is second only to the previous association, and basal area on five plots ranges from 60 to 83 m²/ha. The largest Douglas-fir is about 60 inches (152 cm) dbh. With several even-aged cohorts dating to 35, 65, 105, and 165 years, fire history in this type is complex. Many stands are distinctly two-layered with young understory and mature overstory. Large relict Douglas-fir, ponderosa pine, or incense-cedar are conspicuous. Some areas on warmer slopes may never become dominated by Shasta red fir. A number of shade-suppressed *Quercus sadleriana* seedlings are present in the understory. *Q. sadleriana* dominates the understory of stands with less than 69 m²/ha basal area and less than 60 percent canopy cover. Some of the many fires may have been caused by humans, to improve the range capabilities of the meadows.

Shasta Red Fir-Sadler Oak Forest (84240, 85310): 140 acres (57 ha). This is another forest dominated by white fir, but with reproduction predominantly from red fir. Relative cover figures are similar to those of the previous forest; however, the canopy is more open (<60 percent). There are many snags and down logs. *Quercus sadleriana* dominates the understory in dense cover of 60-90 percent. A few other species occur including *Chimaphila umbellata*, *Apocynum androsaemifolium*, *Rosa gymnocarpa*, *Pyrola secunda*, *Arctostaphylos nevadensis*, *Symphoricarpos mollis*, and *Rhamnus purshiana*.

Dominant white and red fir are typically 40-50 inches (1.02-1.27 m) dbh, and basal areas on three plots range from 34 to 51 m²/ha. The largest Douglas-firs are 6.8 ft (2.08 m) dbh and 500 years old.

Wet Meadow-Riparian Complex (45100, 63500): 136 acres (55 ha). This category includes a range of association types in the wet meadows and the riparian corridors. There are four main subtypes:

1. *Alnus* scrub: 82 acres (33 ha). This association is dominated by *Alnus viridis*, with *Salix* spp., *Cornus stolonifera*, *Sorbus californica*, *Ribes marshallii*, *Rhododendron occidentale*, *Acer glabrum*, *Prunus emarginata*, and a rich variety of understory herbs. It occurs as dense thickets over many of the hydric openings, especially in the N. half of the area such as along Cub and Haypress creeks.

2. *Vaccinium* meadow is an open meadow type, generally near saturation in early summer. It is dominated by *Vaccinium uliginosum* ssp. *occidentale* with many herbs.

3. *Carex* meadow is the predominant type of wet meadow with high species diversity. It is saturated or immersed much of the growing season. *Carex rostrata* dominate the wettest areas. Other species include *Pedicularis attolens*, *Dodecatheon alpinum*, *Lupinus polyphyllus*, *Gentiana setigera*, *Viola macloskeyi*, *Veratrum viride*, *Lilium wigginsii*, *Scirpus congdonii*, *Glyceria elata*, *Caltha leptosepala*, and *Ranunculus gormanii*.

4. *Helenium* meadow is the driest of the wet meadow types. It is dominated by *Helenium bigelovii*, *Castilleja miniata*, and other herbs.

White Fir-Prince's Pine Forest (84240): 125 acres (51 ha). This association occurs on dry upper slopes and is characterized by nearly pure stands of white fir with local concentrations of Douglas-fir, sugar pine, and incense-cedar, as well as occasional ponderosa or Jeffrey pine. Shasta red fir occurs in mesic sites. The understory is depauperate with occasional individuals of *Rhamnus purshiana*, *Chimaphila menziesii*, and *Pteridium aquilinum*. Older stands have scattered *Quercus sadleriana* and sparse mats of *Chimaphila umbellata*. The even-aged structure of the forest underscores the importance of fire. No sampling was done in this forest.

Shasta Red Fir-Thinleaf Huckleberry Forest (85310): 110 acres (45 ha). This is the only association clearly dominated by Shasta red fir in the canopy and understory. It occurs in canyons and sheltered N.-facing slopes. Substrate is rocky and moist. Mountain hemlock is the principal subordinate tree, and there are occasional Douglas-fir, Brewer spruce (*Picea breweriana*), western white (*Pinus*

monticola) and lodgepole (*Pinus contorta* ssp. *murrayana*) pines. The shrub layer is generally dense, dominated by *Quercus sadleriana* and *Vaccinium membranaceum*. The herb layer includes *Gaultheria ovatifolia*, *Rubus lasiococcus*, *Clintonia uniflora*, *Linnaea borealis*, *Achlys triphylla*, *Smilacina stellata*, and *Paxistima myrsinites*.

Basal area on seven plots ranges from 37 to 74 m²/ha. Shasta red fir is represented by several age classes with dominants 35-50 inches (89-127 cm) dbh. Largest individuals are 57 inches (1.45 m) dbh, 160 ft (49 m) tall, and 400+ years old.

White Fir-Vanilla Leaf Forest (84240): 105 acres (43 ha). This is a mesic low-elevation association ranging from 4400 to 4700 ft (1341-1433 m) on N.-facing slopes and to over 5100 ft (1554 m) on gentle S.-facing exposures. The understory is lush with well-developed shrub and herb layers; the substrate is often rocky. Stands are typically uneven-aged, and fire is not an important factor.

Pussypaws-Western Needlegrass Dry Meadow Complex (45120): 7 acres (3 ha). This category includes a variety of associations in the Haypress Meadows area, all apparently related to past overgrazing. Typical herb cover in the dry sandy meadows includes *Calyptridium umbellatum*, *Lupinus albicaulis*, occasional *Carex* spp., *Eriogonum umbellatum*, and *Stipa occidentalis*. More mesic sites have greater species diversity including such taxa as *Sanicula graveolens*, *Ipomopsis aggregata*, *Monardella odoratissima*, *Penstemon laetus*, *Linanthus nuttallii*, *Gayophytum nuttallii*, *Phacelia mutabilis*, and *Rumex acetosella*.

Tobacco Brush-Greenleaf Manzanita Scrub (37510): 6 acres (2 ha). This chaparral is seral to Shasta red fir forest. It is associated with relatively recently burned patches on ridgetops or steep S.-facing slopes. Conifer reproduction is typically poor. Species include *Ceanothus velutinus*, *Arctostaphylos patula*, *A. nevadensis*, *Chrysolepis sempervirens*, *Apocynum androsaemifolium*, *Anemone deltoidea*, *Quercus sadleriana*, and *Lilium washingtonianum*.

White Fir-Pinemat Manzanita Forest (84240): 3 acres (1 ha). This association occurs as a small patch on a xeric, steep S.-facing slope. Douglas-fir and sugar pine dominate the canopy, white fir the understory. *Arctostaphylos nevadensis* may cover 50 percent of the surface. Soil is poorly developed and rocky. The rare *Collinsia linearis* occurs here along with *Silene campanulata*, *Chrysolepis chrysophylla*, *Polystichum imbricans*, *Arctostaphylos patula*, and *Eriogonum nudum*.

Plant Diversity

Two hundred twelve taxa are listed.

Conflicting Impacts

Because the area is entirely within the Marble Mountain Wilderness, there may be some conflict with recreational use. Several of the lush meadows are adjacent to trails, and the meadows are attractive camping sites. Thus, some impact on potential meadow research projects may be expected. Apparently some cattle still graze the meadow and riparian zones. It is suggested that the actual area of Shasta red fir dominance could be increased by adding land S. of the proposed boundary.



Figure 80—Haypress Meadows (#2), Shasta red fir/vanilla leaf forest at base of north-facing slopes, the lushest and most species-rich of the local forest types. (D. Imper, 1988)