

79. Snow Canyon (Nachlinger 1992)

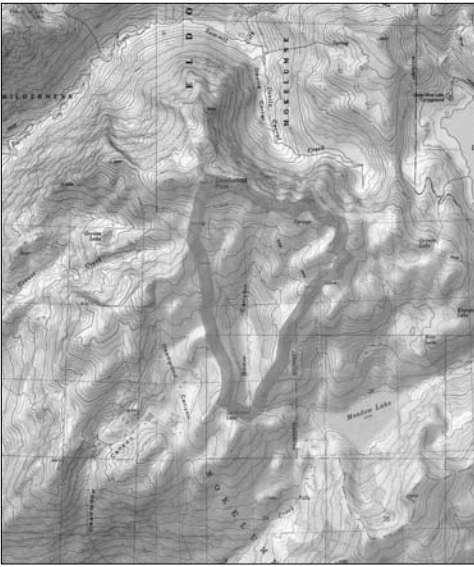


Figure 159—Snow Canyon cRNA

Location

This candidate RNA is on the Eldorado National Forest in Alpine County, W. of the main crest of the central Sierra Nevada and roughly 80 miles (129 km) E. of Sacramento. It lies in the N. half of sect. 27 T9N, R18E MDBM and unsurveyed sects. to the N. (38°37'N., 119°59'W.), USGS Pacific Valley and Carson Pass quads (*fig. 159*). Ecological subsection – Glaciated Batholith and Volcanic Flows (M261Ek).

Target Elements

Western White Pine (*Pinus monticola*)

Distinctive Features

Subalpine Western White Pine Forest: Stands of subalpine conifers dominated by western white pine are uncommon in the Sierra Nevada, although the species is commonly present throughout the upper montane and subalpine zones in the Rocky Mountain and Intermountain regions. The nearly pure stands at Snow Canyon are in exemplary condition and a good example of this forest type for the central Sierra Nevada region (*fig. 160*).

Distinctive Species Mix: The location of the cRNA places it within the Sierra Nevada ecological section but near the Mono ecological section. A large number of Mono ecological section disjunct plant species add to the area's biological diversity. The flora of Snow Canyon is distinctive because of this mix of mountain and desert species.

Rare Plants: *Silene invisa* (CNPS List 4) is known to occur at middle elevations in the western white pine forest and was observed in the cRNA by a Forest Service reconnaissance team.

Physical Characteristics

Snow Canyon (703 acres [285 ha]) is within the upper watershed of the North Fork of the Mokelumne River, situated immediately adjacent to the main Sierra Nevada crest. Elevations range from 8200 ft (2499 m) in the lower drainage of Snow Canyon to 9846 ft (3001 m) along the N. ridgeline.

At the uppermost elevations are gentle to steep talus slopes, outcrop knolls, and a well-defined ridgeline. The mostly S.-facing slopes below the ridgeline are open, moderately steep, and composed of talus and cobble-size stones. Several notable seeps and springs issue from a readily apparent contact between volcanic rock and the granitic batholith at about 9200 ft (2804 m). Lower and middle elevations feature open, broad slopes, glacially-scoured rock lands, gullies of decomposed granite, knolls, a flat canyon bottom, and several perennial streams. Pliocene volcanic rock of unknown composition predominates on the ridgeline at highest elevations and covers about 18 percent of the cRNA. Mesozoic granodiorite, which forms the core of the Sierra Nevada, commands the remainder of the Snow Canyon area.

A thin mantle of soil, classified as medial Lithic Cryadepts or Typic Cryopsamments, occurs in crevices and depressions and on gentle-to-steep slopes at the higher elevations of Snow Canyon. At lower elevations on gently sloping to flat sites are somewhat deeper Typic Cryopsamments and deep Aquic Entic Cryumbrepts.

Climate data collected at two nearby stations at 8000 ft (2438 m) may represent conditions at lower elevations of the cRNA. Snowfall is greatest in January, with an average of 84 inches (210 cm), and snowpack is deepest in late March. Summer rainfall is scant. Winter minimum daily temperatures average 15.6 °F (-9.1 °C), maximum average is 36.3 °F (2.4 °C). Summer maximums average 66.7 °F (19.3 °C) whereas average minimums are 41.9 °F (5.5 °C). Freezing temperatures can occur in any month.

Association Types

Qualitative assessments of plant communities were made using the releve method of vegetation sampling. Within the western white pine forest two 0.1-ha sites in five rectangular plots were sampled.

Alpine Barrens and Scree (91200): 120 acres (49 ha). The alpine barrens and scree association is found at the highest elevations in Snow Canyon on substrates derived from volcanic rocks. It occurs on S.- and SW.-facing gentle-to-steep slopes which are probably windswept and snow-free in winter. The alpine community is dominated by herbaceous perennials and low-growing shrubs. Plants may cover as little as 2 percent of the area on more exposed sites, but as much as 25 percent on moist, more protected sites. The most common dominants are *Polygonum davisiae* and *Haplopappus suffruticosus*. Common shrubs are *Eriogonum umbellatum*, *Leptodactylon pungens* ssp. *pulchriflorum*, and *Ribes montigenum*. Grasses and low growing perennials are commonly scattered throughout the community, but they provide little cover.

Alpine Shrub Steppe (94000): <1 acre (0.4 ha). Alpine shrub steppe is found at high elevations, about 9500 ft (2896 m), on a SW.-facing, moderately inclined slope. It occurs on volcanic substrates at a windswept site kept moist from seepage from a higher snowbank. Low shrubs dominate the alpine shrub steppe. *Artemisia tripartita* is the most common woody species, with 25-50 percent cover. Other shrubs present include *Eriogonum umbellatum*, *Haplopappus macronema*, *H. suffruticosus*, and *Leptodactylon pungens* ssp. *pulchriflorum* with cover values <5 percent. Scattered among the shrubs are herbaceous grasses and broad-leaved perennials common in the adjacent alpine barrens.

Subalpine Barrens and Bedrock (no Holland equivalent): 320 acres (130 ha). This community is a broad ecotone between subalpine coniferous forest (Holland type 86000) and alpine boulder and rock field (Holland type 91000). The subalpine barrens and bedrock community is found at high elevations, about 8600 to 9200 ft (2621-2804 m), on granitic substrates sandwiched above the more continuous forest and below the alpine community of volcanic substrates. It occurs on SW.-, S.-, and SE.-facing slopes of moderate inclinations. The community is governed by extensive outcrops of bedrock scoured and exposed by Pleistocene glacier activity. Little soil has developed except in crevices and depressions. Accordingly, few trees are present, although scattered individuals of western juniper (*Juniperus occidentalis* ssp. *australis*), whitebark pine (*Pinus albicaulis*), Jeffrey pine (*P. jeffreyi*), and western white pine occur. *Holodiscus microphyllus* is a commonly occurring shrub, and *Polygonum davisiae* and *Sitanion hystrix* var. *brevifolium* are the most common perennials. Other scattered perennials contribute little to the total plant cover. They include *Antennaria rosea*, *Calochortus leichtlinii*, *Eriogonum incanum*, *E. lobbiai*, *E. umbellatum*, *E. wrightii* var. *subscaposum*, *Haplopappus suffruticosus*, *Ivesia gordonii*, *Lomatium nevadense*, *Penstemon davidsonii*, *P. newberryi*, *Potentilla breweri*, *Silene sargentii*, *Streptanthus tortuosus* var. *orbiculatus*, and *Valeriana capitata*.

Subalpine Western White Pine Forest (86200): 195 acres (79 ha). The western white pine forest is found at middle elevations, 8250-8800 ft (2515-2682 m), on granitic substrates with gentle-to-steep inclinations, on all but N.-facing slopes. It is dominated by western white pine, although pure stands are not present.

Mountain hemlock (*Tsuga mertensiana*) is common, generally on moister sites with W.-facing exposures. Other tree species occurring in low numbers are red fir (*Abies magnifica*), western juniper, whitebark pine, lodgepole pine (*P. contorta* var. *murrayana*), and Jeffrey pine. The forest has a fairly open canopy throughout its elevational range, even on the best sites with good soil development. Up to 70 percent of the forest floor may be covered by herbaceous plants, the most common of which are *Polygonum davisiae*, *Festuca viridula*, and *Poa nervosa*. Each may attain up to 50 percent cover.

Subalpine Riparian Scrub (63500): <2 acres (0.8 ha). The subalpine riparian scrub community lines major drainages from low to high elevations at about 8250-9100 ft (2515-2774 m). It typically occurs within the larger surroundings of the subalpine western white pine forest and subalpine barrens and bedrock and sometimes in close association with subalpine meadows. It forms narrow corridors of streamside vegetation along little more than 3 miles (4.8 km) of perennial streams. The canopy is dominated by shrubs, which may form open or closed thickets. *Salix jepsonii* or *S. orestera* may dominate with *Alnus incana* ssp. *tenuifolia*, *Cornus sericea*, *Prunus emarginata*, and *Sambucus racemosa* var. *microbotrys* as codominants. Undergrowth is sparse where canopies are closed or where topography limits the width of the riparian area. Where adequate light penetrates, many herbaceous plants occur, and mosses, liverworts, and foliaceous lichens are found at ground level.

Subalpine Meadow (45200): 65 acres (26 ha). Subalpine meadows occur from lowest to highest elevations, on flat to gently-sloping terrain in Snow Canyon. At highest elevations, they tend to cover small areas at seeps, especially at the interface between volcanic and granitic substrates. Throughout the entire elevational range they are found along gentle drainages within the subalpine barrens or forest complex, and are often associated with the riparian community. An extensive meadow occurs in the bottom of the drainage with the main creek meandering along its E. half. These subalpine meadows are often diverse communities dominated by herbaceous plant species about 1-2 ft (0.3-0.6 m) tall. Wet, moist, and dry phases occur along a moisture gradient defined by depth of the water table and distance to flowing water. Drier phases tend to occur at the outer margins of meadows where soils are well-drained and soil texture is coarse. Dominants here are *Polygonum davisiae*, *Penstemon heterodoxus*, and *Calyptidium umbellatum*. Moist phases are most common and dominated by species such as *Festuca viridula*, *Lupinus sellulus*, and *Phyllodoce breweri*. Wet phases occur in close association with flowing water. Soils are saturated throughout the growing season and may have high organic matter content. *Graminoids*, such as *Carex aquatilis*, *C. nebrascensis*, and *C. scopulorum* dominate wet meadow. Both moist and wet phases may have up to 100 percent cover, but in the wet meadows only one or few species contribute to that cover.

Plant Diversity

Two hundred twenty-three taxa are listed.

Conflicting impacts

A moderately used hiking trail crosses the upper watershed, but most hikers are bound for a destination beyond the cRNA and do not wander off the trail. The relatively isolated location of Snow Canyon restricts most impacts and conflicts by humans. Livestock grazing has occurred historically. The most recent livestock permit has expired, and there is no current allotment management or annual operating plan. There is little evidence of past grazing, and older damage to stream banks in the largest meadow is recovering, although occasionally cattle wander through the meadow.



Figure 160—Snow Canyon, a view south of the southern portion of Snow Canyon. The target element, subalpine western white pine forest, forms a band of vegetation from about 8250 to 8800 ft (2514 – 2682 m) in elevation, and surrounds a large subalpine meadow, which lies in a flat at about 8250 ft (2514 m). (1990 or 1991)