

93. Whippoorwill Flat (Keeler-Wolf and Keeler-Wolf 1976, Keeler-Wolf 1989o)

Location

This established RNA is on the Inyo National Forest about 18 miles (29 km) SSE. of the town of Big Pine. The RNA falls partly or wholly within sects. 23, 24, 25, 26, 35, and 36 of T10S, R36E MDBM and also within sects. 1 and 2 of T11S, R36E MDBM (37°3'N., 118°0'W.), USGS Waucoba Mtn. and Waucoba Spring quads (fig. 185). Ecological subsection – Inyo Mountains (341Fb).

Target Elements

Pinyon-Juniper (*Pinus monophylla*-*Juniperus osteosperma*) and Limber Pine (*Pinus flexilis*)

Distinctive Features

Dense, Well-Developed Pinyon Forest: The granitic alluvium in the E.-central portion of the RNA appears to be optimal substrate for single-leaf pinyon pine. Numerous specimen trees exist with single, straight trunks and spreading crowns. Growth rates are relatively rapid (16 inches [41 cm] dbh in 100 years), and densities are high. The high density and large stature of the pinyon pines provide an excellent habitat for many animal species, some not typically found in high numbers in pinyon associations. For example, gray flycatchers (*Empidonax wrightii*), hermit thrushes (*Catharus guttatus*), western tanagers (*Piranga ludoviciana*), mountain chickadees (*Parus gambeli*), and pinyon mice (*Peromyscus truei*) are notable for their high densities.

Substrate Differences: The diverse rock types, ranging from granite through shale and limestone, provide a backdrop for comparative work on ecological amplitudes of many species within several communities of the Great Basin mountains, including bristlecone pine (*Pinus longaeva*) forest, sagebrush scrub, pinyon forest, and *Cercocarpus* scrub.

Effect of Climate on Vegetation Types: Although the area is notable for its large area of contact between the bristlecone-limber pine forest and the pinyon-juniper zone, several small bare zones – largely uncolonized by trees – separate the two coniferous associations. Upon close inspection, it appears that these zones, with a tendency towards NE. exposures, are a dynamic boundary between the two associations. At present, dead stems of limber and bristlecone pines are scattered through these bare patches, many dead and dying bristlecones and limbers occur above the bare areas, and numerous young pinyons occur at the lower edges of them. This suggests that over the past several hundred years there has been a trend for the local subalpine forest to retreat upslope, while pinyon forest has advanced somewhat to replace it. The long persistence of stands of dead bristlecone pine stems elsewhere has been shown to indicate climatic change (LaMarche and Mooney 1967, Mooney 1973).

Archeological: Pinyon pine nuts, in large supply in the dense forest on the E. side of the RNA, were an important source of food for the Paiute and Shoshone Indians. Many signs of their inhabitation have been discovered including wickiup circles, obsidian chips and tools, pinyon-nut storage cairns, and so forth. The name Waucoba (from the prominent mountain along the W. boundary of the RNA) means “pine” in Paiute.

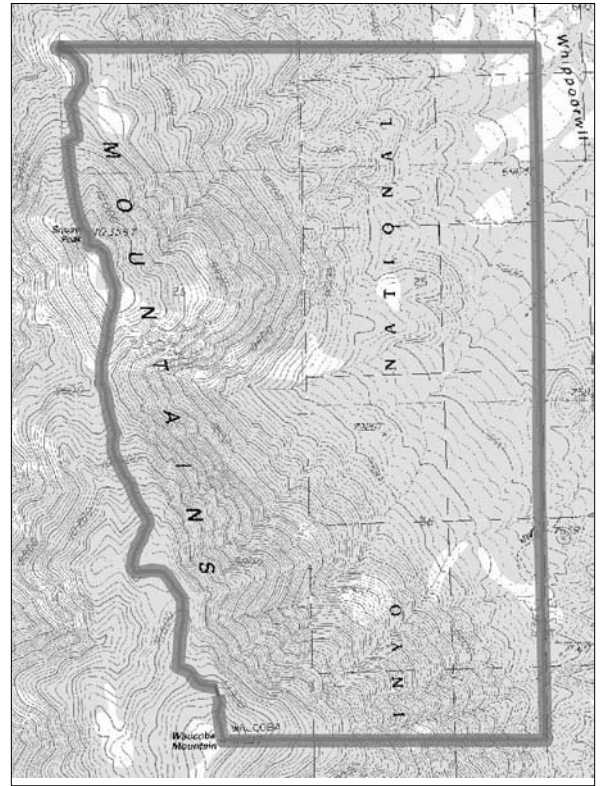


Figure 185—
Whippoorwill Flat
RNA

Physical Characteristics

The area covers 3328 acres (1347 ha). Elevations range from about 6800 ft (2073 m) in the NE. corner of the area to 11,123 ft (3390 m) atop Waucoba Mountain. The area occupies the E. flanks and upper bajada slopes of Squaw Peak (10,358 ft, 3157 m) and Waucoba Mountain. Topography is steep and rugged on the upper slopes of the mountains, but it becomes moderate to gradual on the lower slopes.

The lower slopes are predominantly Quaternary granitic alluvium brought down from the slopes of Waucoba Mountain. The coarse alluvium is cut by several arroyos up to 35 ft (11 m) deep and broken by several small outcrops and ridges of Precambrian metasedimentary shale (Wyman formation). All of Squaw Peak is composed of Wyman formation, which also includes oolitic limestones locally transformed into marbles and dolomite. The main canyon separating Squaw and Waucoba has a conspicuous outcrop of this marble. The Papoose Flat quartz monzonite is the Cretaceous granitic rock in the area and underlies virtually all of Waucoba Mountain. A small amount of the Precambrian Reed Dolomite occurs in the E. portion of sect. 36.

Soil units include Abgese-Berent-MacKey families 2-15 percent slopes; Brad family-rock outcrop, granitic complex 15-30 percent slopes; Mescamp-Summing families-Rock outcrop, metasedimentary complex, 30-60 percent slopes; Rock outcrop-rubbleland complex, Rock outcrop, granitic-Brad-Hartig families complex, 30-60 percent slopes; Rock outcrop, granitic-Brad-Hartig families complex, 60 to 80 percent slopes; and Washoe-Checkett-Mulett families association, 30 to 60 percent slopes.

Precipitation is thought to be relatively high locally, between 15 and 22 inches (381-559 mm) per year, with the majority falling as snow in the winter and occasional significant summer thundershowers. Temperatures range from July maxima of 86-93 °F (30-34 °C) to January minima of about 0 °F (-18 °C).

Association Types

Seven 100-m² plots were sampled in the dense pinyon forest, and three 100-m² plots were sampled in the mixed pinyon-juniper phase.

Pinyon Forest and Pinyon-Juniper Woodland (72122, 72121): 1954 acres (791 ha). This association may be divided into two types: a mixed *Pinus monophylla* and *Juniperus osteosperma* woodland on the slopes and ridges underlain by Wyman formation and Papoose Flat granite, and a *Pinus monophylla* forest phase on the granitic alluvium (fig. 186) in sects. 25 and 36.

The sample from the dense pinyon forest on the alluvium has an average density of 730 pinyon pines/ha. Ten shrubs are typical of this association, the most important of which are *Artemisia tridentata*, *Lupinus palmeri*, *Ribes velutinum* var. *glanduliferum*, *Opuntia erinacea* var. *erinacea*, and *Chrysothamnus viscidiflorus*. Thirty species of grasses and herbs are enumerated in the sample, with such species as *Gilia ophthalmoides*, *Cryptantha echinella*, *Mimulus densus*, *Gayophytum diffusum* ssp. *parviflorum*, *Lomatium nevadense*, *Poa* sp., *Sitanion hystrix*, *Eriogonum panimentense*, *Cryptantha flavoculata*, and *Erysimum capitatum* among the most frequent.

In the typical pinyon-juniper phase, pinyon pine dominates over juniper at a ratio of about 2:3. Total density of stems (including multiple trunks of juniper) on the small sample is 930 trees/ha. However, most areas appear substantially lower in density than the sample. Typical shrubs include *Artemisia arbuscula* ssp. *nova*, *Chrysothamnus nauseosus*, *Ribes velutinum* var. *glanduliferum*, and *Opuntia erinacea*. Herbs include *Penstemon floridus* ssp. *austinae*, *Petalostemum searlsiae*, *Gilia ophthalmoides*, *Cordylanthus helleri*, *Stanleya elata*, and *Astragalus minthorniae* var. *villosus*.

Sizes of the typical mature pinyon pine on the alluvium are 16-20 inches (41-51 cm) dbh and 35-45 ft (11-14 m) tall. These trees range between 100 and 150 years with occasional dominants slightly more than 200 years. Reproduction of both types of trees is good.

Nearly the entire elevational range of the local pinyon association is represented. At the NE. corner of the area, the pinyon-juniper association gives way to the sagebrush scrub of lower elevations, whereas between 8300 and 8600 ft (2530-2621 m), the pinyon forest commonly grades abruptly into the bristlecone-limber pine forest (on N. exposures) or *Cercocarpus* scrub (on S. exposures).

Bristlecone-Limber Pine Forest (86400, 86700): 711 acres (288 ha). This association covers the upper slopes of Squaw Peak and Waucoba Mountain and N.-facing limestone canyons from summits to about 8800 ft (2682 m) (as low as 8300 ft, 2530 m, in the canyon between Squaw Peak and Waucoba Mountain). Bristlecone pine dominates on steep N.-facing exposures, and limber pine tends to dominate on more gently sloping exposures. The two species also form extensive mixed forests on the upper E. exposures of Waucoba Mountain and on the NE. slope of Squaw Peak. Both species are replaced by sagebrush scrub on the exposed summits of Waucoba Mountain and Squaw Peak and tend to occur primarily on E.- and N.- facing slopes. At the lowest elevations, bristlecone pine appears restricted to calcareous soils. However, at upper elevations on Waucoba Mountain bristlecone pine grows exceptionally well on granitic soils.

No sampling was conducted in these forests. Tree densities are estimated as averaging between 300 and 700 trees/ha. Many of the limber and bristlecone pines are moderate-aged and reproducing well. The largest bristlecones noted are about 60 inches (1.5 m) dbh. No tree ring studies have been made, but a number of trees, particularly on the exposed lower S. slopes of Squaw Peak, appear to be at least in the 3000-year-old range. The largest limber pines are 40-44 inches (1-1.1 m) dbh. Typical canopy height is 40-45 ft (12-14 m) with dominants of both species up to 55 ft (17 m). The understory is moderately sparse to very sparse with occasional *Ribes cereum*, *Cercocarpus ledifolius*, *Artemisia*



Figure 186—Whippoorwill Flat,
view south from small knoll just
east of the Whippoorwill Flat RNA
in the SW - sec. 31 showing dense,
pure single-leaf pinyon pine forest
on granitic alluvium. Inyo Mountains
and Saline Valley in distance. (1987)

tridentata, and scattered subalpine herbs in low duff areas. Fire charring from lightning strikes is common, but fires rarely spread beyond one or a few trees, owing to the light duff and open understory.

Sagebrush Scrub (35210, 35220): 476 acres (193 ha). This association varies somewhat, depending on soil depth, substrate, and elevation. In general, however, it is dominated by either *Artemisia tridentata* (on deeper soils) or *Artemisia arbuscula* ssp. *nova* (shallower and calcareous soils) with *Purshia glandulosa*, *Ephedra viridis*, *Chrysothamnus viscidiflorus* ssp. *viscidiflorus*, *Chrysothamnus viscidiflorus* ssp. *pumilus*, and *Chrysothamnus nausiosus* ssp. *albicaulis*. At low and mid-elevations herbs include *Eriastrum wilcoxii*, *Gilia ophthalmoides*, *Eriogonum panamintense*, *Allium atrovirens* var. *inyoensis*, *Astragalus minthorniae*, *Lomatium nevadense*, *Mentzelia montana*, *Calyptidium roseum*, *Penstemon confusus*, *Cryptantha circumscissa*, *C. watsonii*, *Arabis holboellii* var. *retrofracta*, *Oxytheca dendroidea*, and *Sphaeralcea ambigua*.

The high-elevation sagebrush scrub on the summits of Squaw and Waucoba has many subalpine herb species intermixed and may be considered subalpine sagebrush scrub (Holland 35220). This phase covers 114 acres (46 ha) and includes such species as *Astragalus lentiginosus* var. *semotus*, *A. calycosus*, *Cymopterus cinerarius*, *Oxytropis viscida*, *Erigeron clokeyi*, *Arenaria nuttallii* ssp. *gracilis*, *Eriogonum ovalifolium* var. *nivale*, *Castilleja nana*, *Artemisia norvegica* var. *saxatilis*, and *Ipomopsis congesta* ssp. *montana*.

Density of shrubs and herbs varies, with the lowest elevation and deepest soil stands typically having the highest shrub density while the subalpine ridgetop stands maintain lowest densities.

Cercocarpus Scrub (no Holland equivalent): 187 acres (76 ha). This minor association covers the upper rocky slopes of Squaw Peak and Waucoba Mountain on harsh S. and W. exposures as well as a few low-elevation outcrops of limestone in the E. portion of sect. 36. *Cercocarpus ledifolius* dominates on most sites except dry limestone or marble outcrops where *C. intricatus* is important. Shrub densities may be open to dense depending on slope steepness and rockiness. Associated species are relatively few and include *Chamaebatiaria millefolium*, *Holodiscus microphyllus*, and *Ribes cereum*. At lower elevations *Juniperus osteosperma* and occasional *Pinus monophylla* may occur with the mountain mahoganies and *Tetradymia canescens*, *Artemisia arbuscula*, *Eriogonum heermannii*, *Astragalus calycosus*, *A. purshii* var. *tinctus*, and *Cryptantha confertiflora*.

At higher elevations such as the saddle between Squaw Peak and Waucoba Mountain, more subalpine species such as *Lesquerella kingii*, *Trifolium andersonii* ssp. *monoense*, *Erigeron clokeyi*, *Ipomopsis congesta* ssp. *montana*, *Stipa comata*, *Poa epilis*, *P. incurva*, and *Sitanion hystrix* occur.

Plant Diversity

One hundred forty-five species are listed.

Conflicting impacts

Feral burros had an impact on the shrubby and herbaceous vegetation before the late 1970s, but they have been controlled, with good vegetation recovery. Some woodcutting and prospecting have taken place in the area adjacent to two poorly maintained dirt roads that just enter the extreme E. portion of the area. Litter and other disturbance around informal campgrounds are minimal.