

Neotropical migratory birds (NTMB) use all habitats within the Santa Rosa Ranger District during the breeding season when cattle are present. Priority species were identified in the Nevada Bird Conservation Plan (Nevada Partners in Flight 1999) and can be found in the project record. Inventories were done in 2002, some species of interest include: Brewer's sparrow, Cassin's finch, Dusky Flycatcher, Green-tailed towhee, MacGillivray's warbler, Orange-crowned warbler, sage sparrow, sage thrasher, spotted towhee, vesper sparrow, and yellow-breasted chat. Because no long term monitoring has been done on the district, local population trends are unknown. The district developed an All Bird Monitoring plan in 2002 and would be conducting repeatable bird surveys in various habitats throughout the district.

Riparian areas, wet meadows, spring areas, aspen and cottonwood forests are habitats within the District that show considerable alteration from livestock grazing. These habitats are also high priority habitats identified in the Nevada Bird Conservation Plan (Nevada Partners in Flight 1999). The distribution and diversity of birds is highly associated with vegetation structural diversity (MacArthur and MacArthur 1961).

### California Bighorn Sheep

The Santa Rosa Mountains are historic range for bighorn sheep. The last recorded sighting was made in the 1930's. It is estimated that the bighorn disappeared because of a combination of factors including poaching, disease and competition for food, water and space with domestic livestock, particularly domestic sheep. During the last decades of the nineteenth century, and until about 1910, large bands of nomadic domestic sheep and cattle grazed this area. After the National Forest was established, livestock numbers were reduced and eventually domestic sheep were removed from the range.

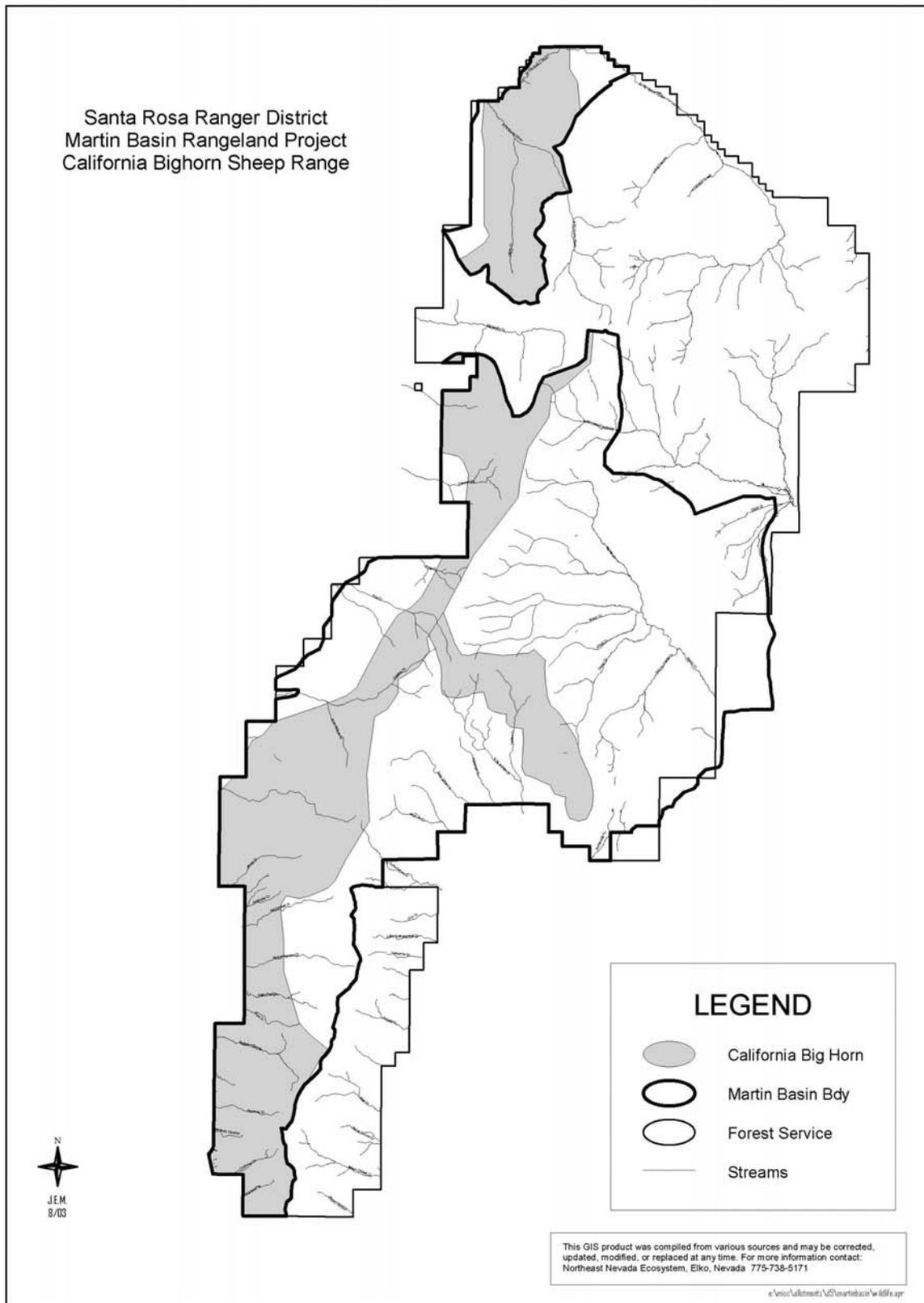
Nevada Department of Wildlife, formerly the Nevada Fish and Game Department, released twelve California bighorn sheep into Eight-Mile Canyon on March 23, 1978. Later that year five lambs were born. Two mortalities occurred, but fifteen bighorns made it through the winter in good condition.

California bighorn sheep rarely venture off the district and reside totally on the Santa Rosa Ranger District (Map 11-M). The impact of below average moisture during the growing season and summer may negatively effect lamb survival, because of poor plant production and stress on adult ewes (NDOW 2003).

Recently, range wildfires have burned some tracts of bighorn sheep range in Management Area 5. In 2001, over 41,000 acres of habitat was impacted in the Upper Willow fire, which is off the west face of the Santa Rosa Range. The majority of the habitat burned was bighorn sheep transitional range, but winter range in the Canyon Creek drainage was also impacted. The population trend remains in growing status with an estimated population over 310 individuals. Over the last 10 years there has been an increase of about 6% annually, with 1993 population estimated at 190 (NDOW 2002). The bighorn sheep continue to expand into new use areas as evidenced by reported sightings. Nomadic rams explore new areas in search of forage and eventually establish their own bands in these new areas.

A food study in Colorado (USFS, 1968) showed bighorn sheep diets were 81% grasses and grass-like species with sedges, fescues, muhlys, and bluegrass as preferred species. Forbs and browse made up 19%. These percentages vary with each area, but bighorn are primarily grazers. Along with having preferred forage bighorns also need escape cover. Good visibility and steep escape cover are structural habitat elements that provide bighorns with security from predators (Coates and Schemnitz 1994).

**Map 11-M: California Bighorn Sheep Range**



## Pygmy Rabbit

The pygmy rabbit is the smallest of North American rabbits. The morphology of the pygmy rabbit includes dark grizzled or slate-gray above and buffy white or grayish below, with a tail that's short, gray and inconspicuous. Pygmy rabbits can be distinguished from other rabbits by size alone, but also have shorter ears and do not have a white tail, such as cottontails. The elevational range in Nevada is from 4,500-7,000 feet. Their habitat is associated with big sagebrush, such as *Artemisia tridentata*, which is their primary food source and constitutes up to 97 to 99% of their diet in the winter (White et. al. 1982, Knopf 1996). During the summer, grasses become an important part of the diet utilizing 30 to 40% (Green and Flinders 1980). Pygmy rabbits differ from other native rabbits in that they dig their own burrow system (Weiss and Verts 1984), generally having two (2) or more entrances and their home range is usually within 30 yards of the burrow entrances (Burt, 1964).

Pygmy rabbits are found primarily on plains dominated by big sagebrush and on alluvial fans where plants occur in tall, dense clumps (Green and Flinders 1980). The hiding/cover attribute of woody vegetation (height) and the herbaceous component is perhaps the most critical habitat element for this species (Green and Flinders 1980), because they would seldom venture even a short distance from suitable cover. Dense stand of big sagebrush along streams, roads, fences and ditches may be the avenues of dispersal (Green and Flinders 1980). Fragmentation and loss of sagebrush habitat is a major concern. Pygmy rabbits are suspected of being reluctant or unable to cross open areas to disperse (Weiss and Verts 1984).

Within the project area, potential habitat for pygmy rabbits occurs and consists of broad sagebrush basins where thick and healthy Wyoming and mountain big sagebrush communities occur adjacent to riparian areas, springs or other sources of water. Old mine sites and/or homesteads may also provide potential habitats. No formal surveys have been conducted within the analysis area.

## VEGETATION

The Martin Basin Rangeland Project area vegetation components are characterized by diverse upland mountain brush species, expansive stands of aspen, mountain creeks and riparian corridors. Elevation ranges from 5,200 feet at the forest boundary to 9,732 feet at Granite Peak, which is the highest peak in the Santa Rosa Mountain Range.

In 2003, vegetation types were delineated from Landsat 7 satellite photography and categorized using the Society of Range Management (SRM) cover types (Map 12-M, Appendix D). The Table 22-T lists acres by the dominant vegetative type.

**Table 22-T: Acres by Dominant Vegetative Type**

Vegetative Type	Acres
Aspen Woodland	25,948
Curl-leaf Mountain Mahogany	4,140
Dry Upland Meadow	3,979
Low Sagebrush Light	6,924
Montane Grassland (result of fire)	24,944
Mountain Big Sagebrush	72,587
Mountain Brush	48,924
Willow	620
Wyoming Big Sagebrush	2,040
Subtotal	190,106
Rockslides-barren	730
<b>TOTAL</b>	<b>190,836</b>

### **RIPARIAN COMMUNITIES**

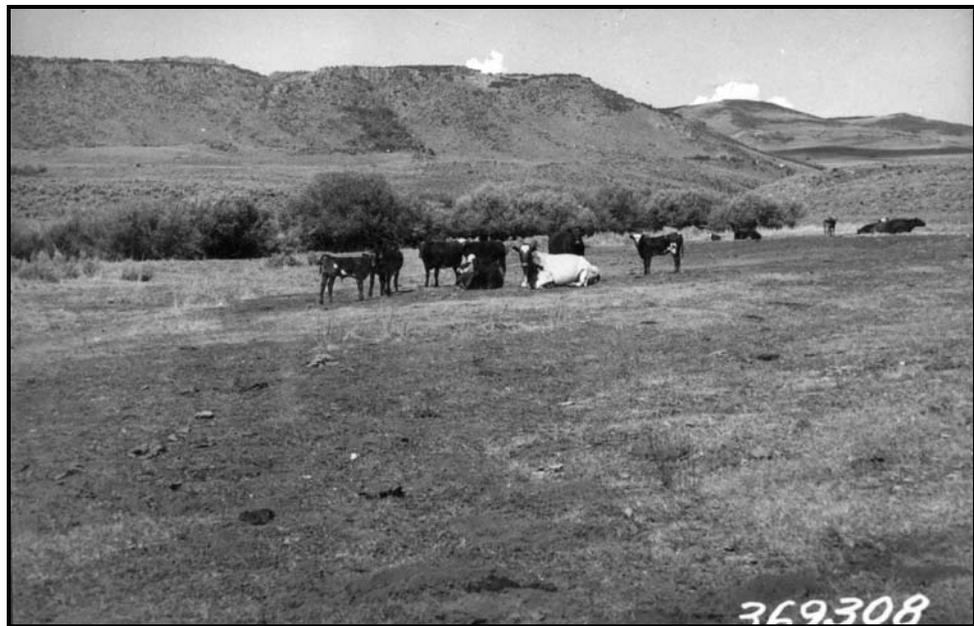
Riparian vegetation communities are generally characterized as being scattered throughout the whole geographic project area. Although these communities seem common, only 1 to 4% of these diverse systems persist in the given geographic area within the Great Basin (SRM, 1994). The west side of the Santa Rosa Range has deep canyons where the riparian community is confined to the creek bottoms. Willows are found on all creeks on the west side of the mountain range and remnant cottonwood species are found on some west side creeks. Riparian communities on the east side of the Santa Rosa Range are typically not confined to deep canyons but rather large areas of broad valley bottoms. Riparian communities maintain the most diverse plant compositions, provide habitat to wildlife, and tend to be areas where livestock concentrate.

The riparian communities within the broad valley bottoms have been impacted most by livestock grazing. Several riparian community types occur within the project area. These include wet meadows, moist meadows, dry meadows, cottonwood, aspen and willow communities. False hellebore and yellow pea are becoming more and more common in moist-to-dry meadows. Both species are not preferred by livestock or wildlife and appear to have increased over the last few years.

The following photograph points show a change over time in the riparian of the North Fork of Cabin Creek. Photograph 11-P was taken in black and white to facilitate comparison to the two earlier photographs. The background of Photograph 9-P shows the most willow growth. Photograph 11-P, taken most recently, shows less willow growth, and sagebrush appears to have increased.

#### **Photograph 9-P:**

North Fork Cabin Creek.  
August 1938



**Photograph 10-P:**

North Fork Cabin Creek  
August 1966



**Photograph 11-P:**

Note increase in sage brush.  
North Fork Cabin Creek. July  
2003



### Wet Meadow Community Type

Wet meadow community types are generally associated with seeps and springs at a groundwater depth of 10 to 100 centimeters. Currently, wet meadows do not exist to the extent that they probably existed at the turn of the century. Soil compaction and down cutting of stream channels has reduced available soil moisture to the extent that it prohibits the growth of wet meadow species such as Nebraska sedge (*Carex nebrascensis*) and reedgrass (*Calamagrostis canadensis*) (Pers. Comm. from Cheri Howell, Forest Ecologist).

Manning and Padgett suggest that management of these communities should allow for re-growth at the end of the grazing season in order replenish spring growth. The typically wet, fine-textured soils are susceptible to compaction and hummocking by excessive livestock use, particularly if the sod layer is broken and hummocks are present. Under severe grazing pressure, especially when accompanied by a drop in the water table, Nebraska sedge can be replaced by species with wider ecological amplitude, such as Baltic rush (*Juncus balticus*), Meadow barley (*Hordeum brachyantherum*), and Kentucky bluegrass (*Poa pratensis*).

Forb species that are present in these converted wet meadows include dock (*Rumex spp.*), thistle (*Cirsium spp.*), water hemlock (*Cicuta douglasii*), yellow pea (*Thermopsis Montana*), dandelion (*Taraxacum officinale*), Western yarrow (*Achillea millifolium*), aster (*Symphyotrichum spp.*), and false hellebore (*Veratrum californicum*). These species have a deep tap root system and can extract water from compacted soils.

### Dry-to-Moist Meadow Community Type

Dry-to-moist meadow community types occur within the project area and are generally associated with creeks and areas that the depth to groundwater is 100 plus centimeters for dry meadows and 55-100 centimeters for the moist meadow community. Dry-to-moist meadow types are most likely the first plant communities to experience cattle impacts and have been impacted by cattle grazing more than any other vegetation community. Early in the grazing season when water is more abundant, cattle generally stay out of the wet meadow areas, congregating in the dry to moist meadow vegetation. Many of the dry-to-moist meadows within the project area have experienced a loss of soil moisture resulting in a conversion to drier meadow or upland plant species (Pers. Comm. from Cheri Howell, Forest Ecologist).

Under optimal conditions, these meadows should be occupied by species such as Sandberg bluegrass, (*Poa secunda*), Slender wheatgrass (*Elymus trachycaulus*), Great Basin wildrye (*Leymus cinereus*), tufted hairgrass (*Deschampsia caespitosa*), oatgrass (*Danthonia spp.*), and Douglas sedge (*Carex douglasii*). Because tufted hairgrass is a bunchgrass, which reproduces by seed, it has a competitive disadvantage compared to rhizomatous sedges and grasses, which spread vegetatively. The typically clayey or clayey-skeletal soils are susceptible to compaction when wet; as sites dry, they are less likely to be compacted under light to moderate grazing (Manning and Padgett, 1995).

Historical heavy grazing has converted many of these meadows to species such as Kentucky bluegrass (*Poa pratensis*), meadow foxtail (*Alopecurus pratensis*), foxtail barley (*Hordeum jubatum*), redtop (*Agrostis stolonifera*), smooth brome (*Bromus inermis*), cheatgrass (*Bromus tectorum*) and bulbous bluegrass (*Poa bulbosa*) (Pers. Comm. from Cheri Howell, Forest Ecologist).

Forb and shrub species present in converted dry-to-moist meadows include bur buttercup (*Ceratocephala testiculata*), thistle species (*Cirsium spp.*), dandelion (*Taraxacum officinale*), Western yarrow (*Achillea millifolium*), aster (*Symphyotrichum spp.*), mule's ears (*Wyethia amplexicaulis*), wild iris (*Iris missouriensis*), cinquefoil species (*Potentilla spp.*), Green rabbitbrush (*Chrysothamnus viscidiflorus*), wild rose (*Rosa woodsii*), and any subspecies of big sagebrush (*Artemisia tridentata ssp.*).

### Cottonwood Community

Cottonwood (*Populus spp.*) communities occur within the project area along creeks. The depth to groundwater is generally more than 100 centimeters and is often variable. Cottonwood stands vary in size throughout the project area. Granite Peak Allotment has several small remnant stands of cottonwood, mostly occurring on benches next to riparian corridors and generally lacking seedling regeneration. Larger cottonwood stands occur on the west side of the Santa Rosa Mountain Range, in deep canyons and riparian areas. Within the project area, regeneration is lacking in several remnant stands due to livestock and/or ungulate grazing, alterations of the water flow and stream channels, disease, lack of available soil moisture,

recreation, fire suppression, and poor genetic variability (Manning and Padget, 1995; Padget et. al., 1989, Pers. Comm. K. Wearstler).

Under the most desirable conditions, the following forb species would be present in the understory; wild geranium, wild peony (*Paeonia brownii*), marsh violet (*Viola palustris*), western white clematis (*Clematis ligusticifolia*), silver lupine and wild onion (*Allium spp.*). Graminoid species include Great Basin wildrye, slender wheatgrass, mountain brome, and Sandberg bluegrass. Species present in undesirable conditions include thistle (*Cirsium spp.*), dandelion, tansy mustard (*Descurainia pinnata*), aster, cinquefoil, smooth brome, Kentucky bluegrass, cheatgrass, and bulbous bluegrass.

### Photograph 12-P:

Note the re-sprouting following fire in 2001. Cottonwood stand in Canyon Creek. 2003



### Stream Group Overview

Several willow species (*Salix spp.*) occur in the project area within riparian communities. Willows provide habitat and shade to wildlife, stream bank stability and have root structures that withstand high water flows. The depth to groundwater is 0-50 centimeters. Willow species that occur in the project area include Geyer's willow (*Salix geyeriana*), Booth willow (*Salix boothii*), Pacific willow (*Salix lucida lasiandra*), yellow willow (*Salix lutea*) and coyote willow (*Salix exigua*).

Livestock have impacted willow species, particularly in the low gradient streams in the broad valley bottoms due to browsing of new lateral shoot growth and young seedlings. Mature willow species often lack lateral shoots due to livestock grazing and resulting in a mushroom-shaped willow; this is also called "high-lining." To a moderate extent, downcutting has resulted in a species conversion from willows to wild rose and big sagebrush within the project area.

A discussion of specific stream groups within the project area follows.

### *Cabin Creek*

Cabin Creek is included in the Martin Basin Allotment. The vegetation is characteristic of a dry-to-moist meadow, associated with willow species lining the banks. Moderate to heavy grazing of willows has occurred, resulting in a mushroom appearance also known as high-lining. Willow species include Geyer's willow, Booth willow, and yellow willow.

Livestock grazing in Cabin Creek has increased soil compaction and has decreased available soil water and rooting depth for plant species that normally occur in a meadow complex. (Pers. Comm., Cheri Howell, Forest Ecologist).

Greenline vegetation data was collected in North Fork Cabin Creek of the Martin Basin Allotment in 1991 and 1999. Greenline data is a sample of the plant community composition along the edges of live water that can give an indication of the short-term trend of the riparian community. There is a strong relationship between the amount and kind of vegetation along the water's edge and bank stability. Natural or native plant species in the watershed area have developed root systems that enhance bank stability. Greenline data therefore provides an evaluation of the vegetation and thus provides a good indication of the general health of the entire watershed (*Integrated Riparian Evaluation Guide*, USDA, 1992).

In 1991, the ecological status rating for North Fork Cabin Creek was 84.2 percent, this indicated the Potential Natural Community (PNC) to be in a stable desirable condition based on the vegetative species in the riparian community. In 1999, Cabin Creek greenline was re-read and the ecological status rating had dropped to 47 percent. Young sagebrush and annual forbs were encroaching on the meadow edge, indicating drying of the soil. The change in the ecological status rating indicates a declining trend in vegetation, which may be attributable to North Fork Cabin Creek drying up for extended periods several times in recent years due to drought conditions.

**Photograph 13-P:**

Cabin Creek Meadow 2002



**Dutch John Creek**

Dutch John Creek is located within the Bradshaw Allotment, which is currently vacant. This stream has had a minimal amount of grazing in the recent past and is a popular dispersed camping area. Predominant willow species include Geyer's willow, Booth willow and yellow willow.



**Photograph 14-P:**

Note heavy willow cover.  
Dutch John Creek. 2002.



***Martin Creek***

Martin Creek is located in Martin Basin Allotment and flows southeast into Buttermilk Allotment and eventually terminates into the Humboldt River. Martin Creek has had historically heavy grazing, resulting in down-cutting along several sections of this stream. Bare ground and stream bank trampling is prevalent also along the stream.

**Photograph 15-P:**

Martin Creek. 2002.



### **South Fork Quinn River**

The South Fork of the Quinn River is located in Indian Allotment. This stream flows into the East Fork of the Quinn River, which eventually terminates in the Black Rock Desert after flowing west from the project area. Scotch thistle (*Onoropordum acanthium*) and Canada thistle (*Cirsium arvense*) infestations are prevalent in the lower reaches of this stream. The stream receives substantial use from unauthorized cattle and horses that enter the National Forest from neighboring private lands and from the Fort McDermitt Paiute-Shoshone Indian Reservation.

### **Falls, Buffalo, Porcupine, Chimney, Horse, and Andorno Creeks**

These creeks are located on the west side of the Santa Rosa Mountain Range within the Buffalo Allotment. They are all characterized as having steep canyon walls, rugged terrain and riparian corridors in the creek bottoms. Several willow species line the creeks and remnant cottonwood stands are also present. Many fires have burned below these canyons adjacent to the project area and, as a result, the lower elevations have converted to cheatgrass.

### **Aspen Community Overview**

Aspen stands in the project area tend to occur in moist swales and basins. Aspen stringers are found along the outer portions of semi arid sagebrush stands or as small islands. The canopy overstory is generally made up of a mixed age class with an understory of graminoids and forbs as the simple primary structure and tall and low shrubs as the complex structure (Mueggler, 1988).

#### **Photograph 16-P:**

Typical high elevation aspen stand in the project area.

