

## **Juniper encroachment**

Expansion of western juniper coincides with Euro-American settlement in the Great Basin. It is thought that climate, altered fire frequencies, and grazing in the late 1800s were primary factors initiating juniper's expansion.

Following the end of the Little Ice Age in the mid 1800s, winters became more mild and precipitation increased above the present long-term average in the northern half of the Great Basin between 1850 and 1916. Mild, wet winters and cool, wet springs have since promoted vigorous growth of juniper. With settlement came large herds of livestock resulting in an over-grazed range, thereby reducing the fuel necessary to support fire. Settlement brought an increasing concern over the risks and hazards of wildfires resulting in deliberate measures to prevent fire from occurring. The result was reduced fire frequency, intensity, and area burned. The opportunity was created for expansion of the range of juniper (Miller and Rose 1995) and increasing density of juniper stands.

The rapid expansion of juniper into many areas that formerly had little to no juniper may change traditional land use practices. In some instances, ranchers who grazed cattle on open range are finding many areas of range now occupied by juniper. If juniper continues to increase in density, a decrease in carrying capacity will follow.

Juniper crowns intercept precipitation, reducing by up to half the amount of water reaching the soil. Other investigators have reported that as crown cover of juniper increases, grass and shrub cover (Jeppsen 1977) and wildlife populations are reduced. Loss of vegetation results in decreased infiltration, increased surface runoff, greater surface erosion, and increased water temperature (Borman 1996). Decreased grass cover reduces the carrying capacity of the range for livestock (Bedell 1977) and the opportunity to use controlled burning as a management tool (Agee 1993).

Ranchers have reported that as juniper became established on their rangelands, small streams dried up and springs stopped flowing (Bedell 1987). Control of juniper is difficult and expensive. Grasses and shrubs, necessary to fuel controlled burns, are decreased by grazing and competition for soil moisture from juniper trees. Even in successful burns, older juniper trees often survive and repopulate the area. Controlled burning reduces juniper density and results in a more open landscape; repeated control measures are necessary to maintain the desired landscape.

R.F. Miller and J.A. Rose. Great Basin Naturalist, 1995, Volume 55, No. 1, pages 37-45