

Forested Vegetation - Introduction

Forested Vegetation Chapter Components

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“The general aspect of the reserve is that of a lightly forested region. It contains no large or valuable timber. Nearly all has been burned, much of it recently, and a larger part has been subjected to repeated fires. A considerable proportion of its area consists of open parks from which the timber has been completely driven out. Another large part is covered with young growth, ranging from 10 to 50 years of age, while the ground is strewn with dead trees, the victims of fires, in an intricate cobwork. As a rule these trees are small. It is only limited localities that mature forests exist.”

F.E. Town, General Land Office Surveyor, after inspecting the Bighorn Forest Reserve in 1898.

Table 1 compares the relative amounts of the major forest cover types at two scales, at the Big Horn section and mountain scales. The Big Horn section data is from the CVU-GAP union data set, and covers the 2.7 million acre section. The Big Horn Mountain data is from the Bighorn National Forest CVU database, and covers the Bighorn National Forest and up to about 1 mile past the National Forest boundary.

Table 1. Comparison of Major Vegetation Types at the Big Horn Section and Mountains scale

Vegetation Cover Type	Percentage in Big Horn Section	Percentage in Big Horn Mountains
Grass-forb	25%	18%
Shrub	16%	9%
Non-Vegetated	4%	10%
Forest	55%	63%

“The predominant distribution of community types on the Big Horns is probably a result of a combination of marginal precipitation and the influence of rock type on the soil” (Despain, 1973).

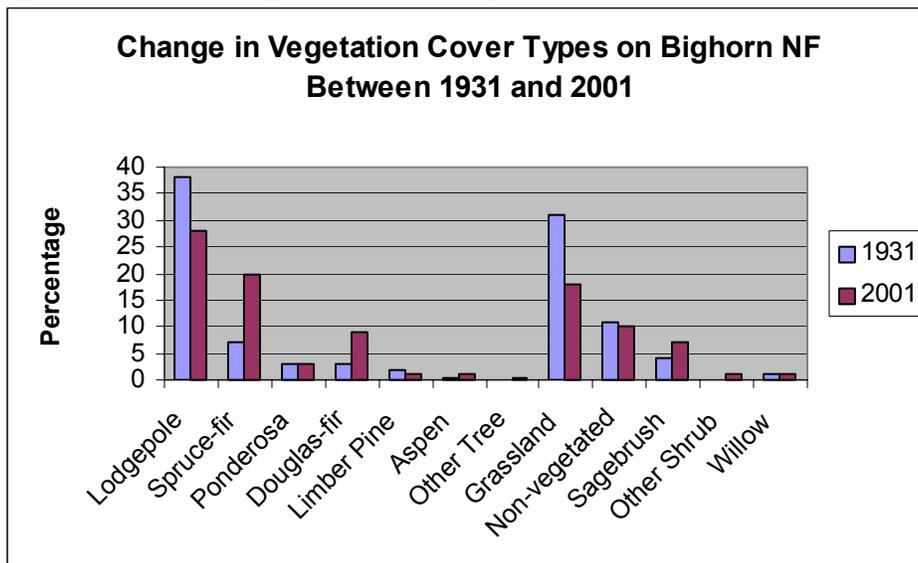
Picture 1 shows an extremely stable forest-meadow boundary. The forested area was “dead timber” in a 1901 Forest Reserve boundary survey, indicating a recent stand-replacing fire, while the meadow was “prairie”. The picture is indicative of the general lack of “encroachment” by forests into the meadows in the subalpine habitats of the Big Horn Mountains.

Picture 1. 1994 photo of a stable forest-meadow boundary. This was a boundary between “dead timber” and “prairie” in the 1901 Forest Reserve boundary survey.



Table 2 shows how the major vegetation cover types have changed on the Bighorn NF between 1931 and 2001. The 1931 data is from silvicultural notes by V.J. Dayharsh, while the 2001 data is from the Common Vegetation Unit database. There is a slight discrepancy between these data since the CVU database includes some areas of other than National Forest System lands. In addition, there may be some discrepancy in the definition of “grassland”. In some older surveys of the forest, notably F.E. Town (1898), recently burned forests were classified as grassland. Town estimated that 50% of the reserve was park.

Table 2. Vegetation Cover Types on the Bighorn NF in 1931 and 2001



The amount of lodgepole (-10%) and grasslands (-13%) cover types decreased, while spruce-fir (+13%), Douglas-fir (+6%) and sagebrush (+3%) were the cover types that increased over the past 70 years.

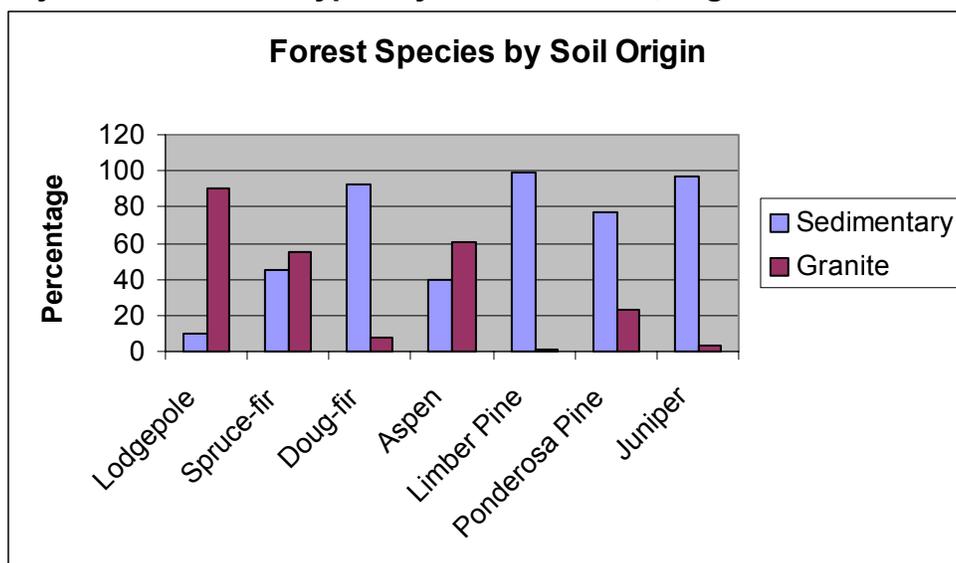
Table 3 compares the relative amounts of the major forest cover types at two scales, at the Big Horn section and mountain scales. The Big Horn section data is from the CVU-GAP union data set, and covers the 2.7 million acre section. The Big Horn Mountain data is from the Bighorn National Forest CVU database, and covers the Bighorn National Forest and up to about 1 mile past the National Forest boundary. The “Other Forest” in table 4 includes burned and clearcut conifer, forest-dominated riparian, low density and mixed xeric forest, and mixed broadleaf and conifer forest. This table shows that while juniper covers an extensive portion of the Section, it comprises a small amount of the land coverage on the National Forest. Conversely, spruce-fir covers a higher percentage of the National Forest than of the entire section.

Table 3. Relative Percentages of Major Forest Cover Types at the Big Horn Section and Mountain Scales.

Forest Cover Type	Percentage in Big Horn Section	Percentage in Big Horn Mountains
Lodgepole Pine	30%	46%
Spruce-fir	16%	32%
Douglas-fir	13%	14%
Ponderosa Pine	8%	4%
Aspen/Cottonwood	1%	1%
Juniper	21%	1%
Limber Pine	8%	2%
Other Forest	3%	NA

Table 4 shows the affinity of the major forest species for specific soil substrates on the Bighorn National Forest. This data is from the CVU and CLU coverages. In very general terms, lodgepole pine is more prevalent on granitic substrates, where it can be the potential natural vegetation, especially in the southeast corner of the Bighorn National Forest. Douglas-fir is almost entirely restricted to sedimentary substrates. While spruce-fir forests can occur on either substrate, they only occur on granite in cooler, more mesic environments, such as at high elevation, north aspects, or along riparian areas. The distribution of each cover type will be addressed more fully in the species-specific section of this report.

Table 4. Major Forest Cover Types by Soil Substrate, Bighorn National Forest



The following tables show the relative “importance”, as measured by the number acres, of the Bighorn National Forest for forest species cover types within the Big Horn mountain section. These tables are from the GAP-CVU coverage.

The Bighorn National Forest is very important for:

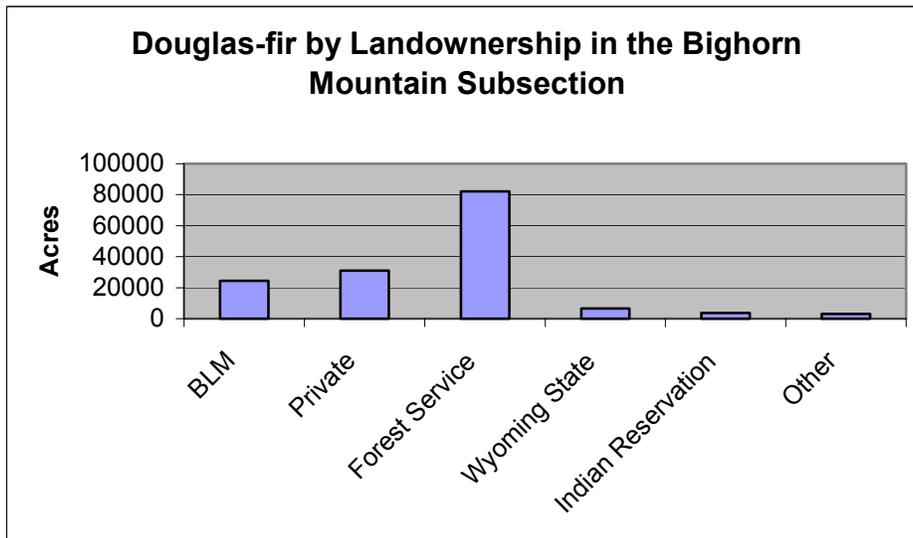
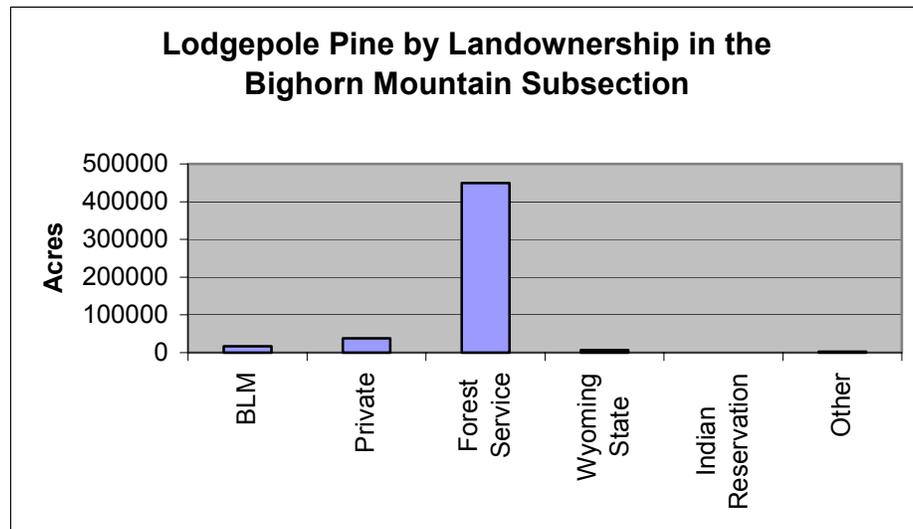
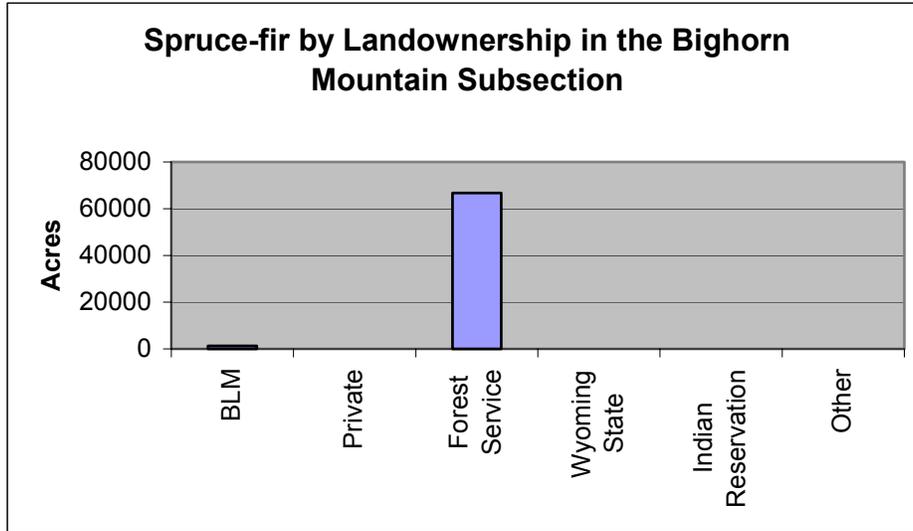
Spruce-fir, Lodgepole Pine, and Douglas-fir

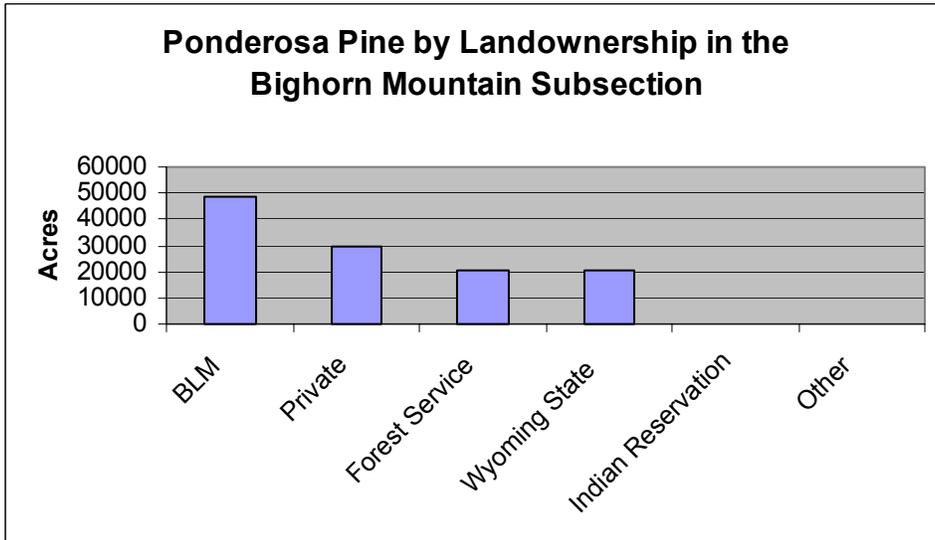
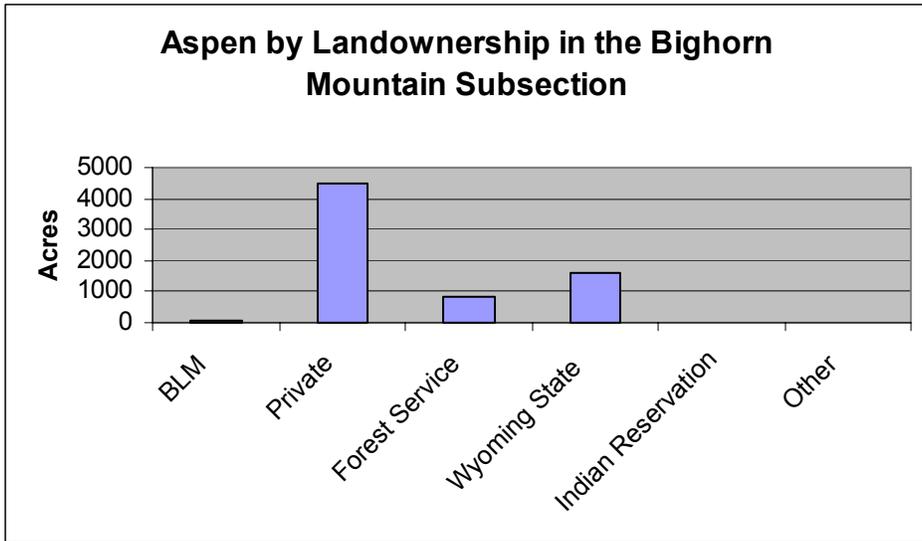
The Bighorn National Forest provides some habitat for:

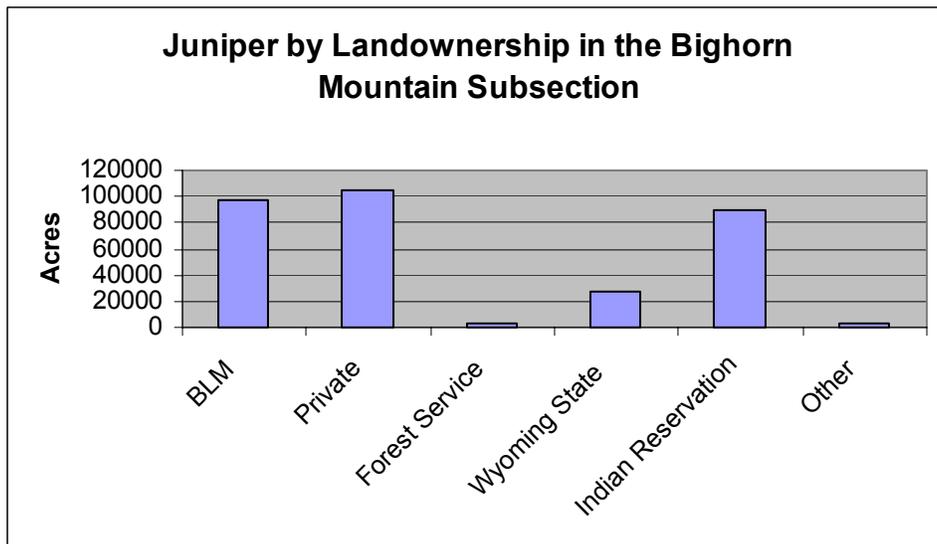
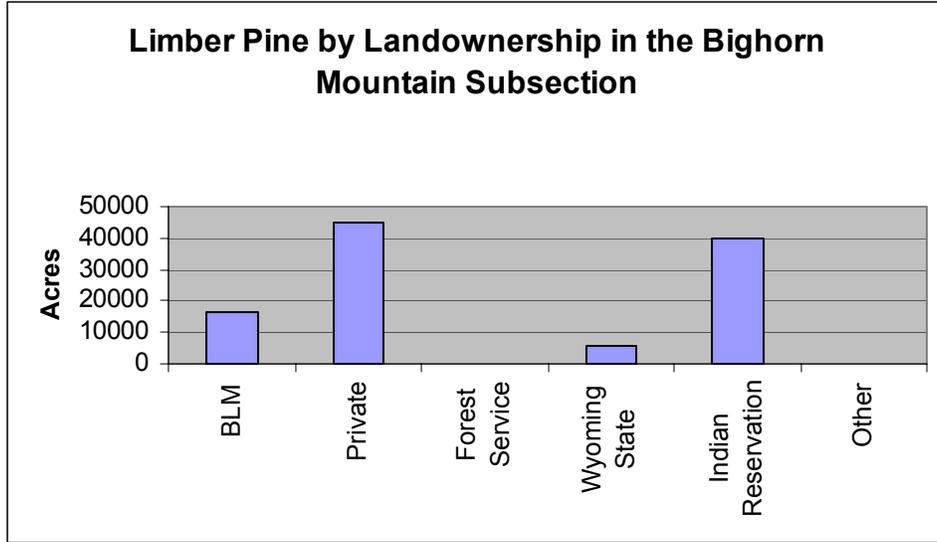
- Aspen and Ponderosa Pine

The Bighorn National Forest provides a small amount of the total habitat in the Section for:

- Limber Pine and Juniper

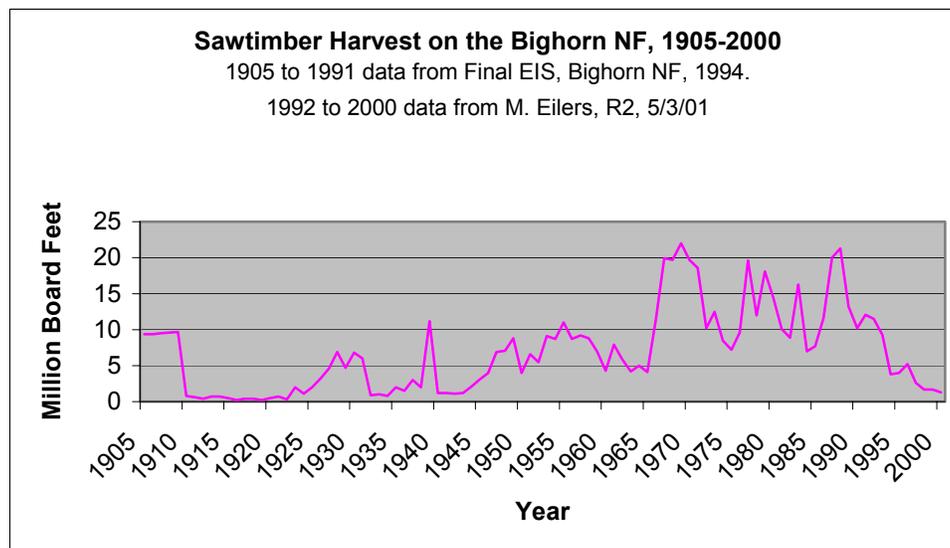






SOME GENERAL OBSERVATIONS ON TIMBER HARVEST AND FIRE IN THE FORESTS OF THE BIGHORN NATIONAL FOREST

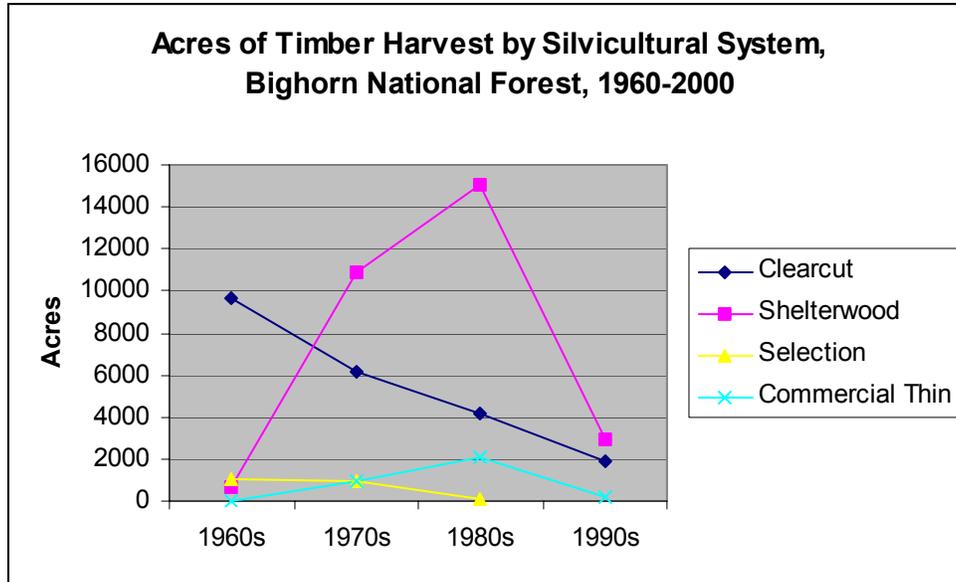
Timber Harvest in General



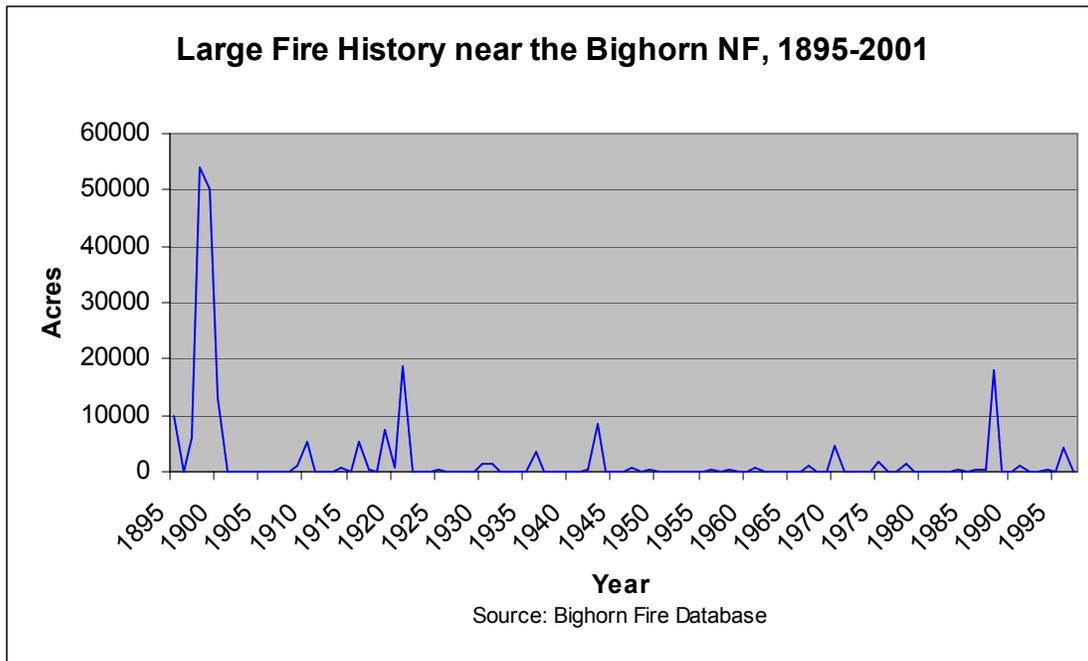
Timber harvesting began in the Bighorn Mountains in about the mid-1860s, when the US Army established Ft. Phil Kearney on Piney Creek. The soldiers cut Ponderosa Pine for construction and fuelwood. Tie hacking occurred between 1890 and 1910 in Tongue River, and between about 1925 and 1933 in Clear Creek. The largest period of timber harvesting in the Bighorns began in the 1960s, when Wyoming Sawmills opened in Sheridan. Timber harvest levels varied between 10 and 22 million board feet (MMBF) between about 1963 and 1992. Since 1992, the Bighorn National Forest has offered an annual average of just over 2 MMBF of sawtimber. The 1985 Forest Plan Allowable Sale Quantity is about 15 MMBF, but the Bighorn has been operating under an administrative “cap” of 4 to 5 MMBF since 1996.

Silvicultural Systems

The following table shows how silvicultural system implementation has changed on the Bighorn National Forest in the past 40 years. Clearcutting has steadily declined over that timber period, while shelterwood harvesting made up for that decline in the 1970s and 1980s. As evidenced in the table above, all implementation of all systems declined significantly in the 1990s.



Just a reminder: we have data for number of fires by size class (shows that vast majority of total number of fires are very small, and as size class increases, total numbers of fires decline). Also, data for cause of fires: Since 1900, there have been 808 man-caused fires on the Bighorn NF, and 633 lightning caused fires. This is a really interesting piece of information that bucks the trend in the western US for majority of fires being lightning caused. I think that perhaps the bighorns misses lightning – in 2000, a very big fire year in northern WY, southern MT, the Bighorn had nothing. Large fires burned all around, but almost no ignitions on Bighorn.



This table is from the GAP coverage. Comparing to the table above, there actually has been about 20,000 acres of clearcuts on the Bighorn NF since about 1960, while the GAP coverage shows over 60,000 acres of “clearcut conifer”. The GAP coverage drew lines around areas where clearcutting had occurred, and contains inclusions of unharvested forest.

