The following text reviews the history of human occupation in the Basin and some Federal policies that have helped to shape human uses of resources. The main purpose of this discussion is to develop a better understanding of the relationships between settlement patterns and the progression of natural resource use in the Basin. A brief description of land-use practices of American Indians is included, but more details of the relationships between American Indians and Basin resources are presented later in this chapter.

Native American Settlement

The Columbia Basin has been occupied by people for at least 12,000 years, from the time it is believed migration occurred across the Bering Straits land bridge from northern Asia. After continued warming conditions caused glacial retreat, early hunting societies diversified and began fishing and gathering, creating localized cultural groups that followed the seasonal patterns of flora and fauna.

Although the lifeways of native cultures evolved with important regional differences (including distinctive languages), the tribal groups within the Columbia Basin exhibit enough common elements to be considered together. The term “Columbia Plateau culture” is frequently used to differentiate the original inhabitants of the Basin from their neighbors (Beckham 1995).

American Indians were linked to their environment by careful observation, economic calculation, ritual monitoring, and religious explanation. People in the Columbia Plateau culture possessed lifeways and a knowledge of the land gained over centuries of occupation. Specific places for fishing, hunting, and gathering within a yearly rhythm of seasonal rounds became important to tribal groups. Hundreds of native plant and animal species developed cultural importance through subsistence, spiritual, and commercial uses. Favored areas for berry picking, root gathering, hunting, and collecting of other necessary materials offered a familiarity and continuity of use that affirmed people’s spiritual beliefs that their lives had been ordered by their “right” behaviors in association with the land.

Access to major rivers was critical. The rivers provided salmon, steelhead, sturgeon, lampreys, suckers, and trout. Methods such as dip-net fishing were especially successful adjacent to major waterfalls of the Columbia River, including Kettle Falls, Priest Rapids, Celilo Falls, Five Mile Rapids, and the Cascades, as well as other rapids on the upper Snake River. Because rivers were arteries for both commerce and food, people resided in permanent villages on terraces adjacent to major streams for most of the year. Family unit structure was based on seasonal harvesting chores. Villages provided a structural coherence among family groups, bringing tribal members together during the winter and early spring to hear the stories of elders and to share in ritual feasts, dances, and renewal (Beckham 1995).

---

2 Much of this discussion is based on Stephen Beckham’s report (1995) produced under contract to the ICBEMP.
Contrary to the beliefs of non-Indian emigrants arriving in the region in the 19th century, the Basin and adjoining areas were not pristine wildernesses, but ecological systems in which humans had been an active component (MacCleery 1994, Woolfenden 1993). American Indians liberally employed fire as a tool to manage vegetation (Fowler 1986, Robbins 1994). Their fires differed from fires ignited by lightning in terms of seasonality, frequency, and intensity (Lewis 1985).

The low intensity, high frequency fires set by American Indians served many purposes. They were used to enrich grazing; encourage vegetation for browse for large mammals and berries for human and animal consumption; signal other tribes or send warnings; and conduct ceremonies. The widespread use of fires by American Indians over long periods shaped the mosaic of vegetation and the associated animal communities in the West, resulting in an anthropocentric landscape that could only be “natural” to the extent that people are considered a natural part of the ecosystem.

The long-standing patterns of interaction between humans and the land on the Columbia Plateau were disrupted, however, early in the 19th century. In addition to changes in land uses and resulting effects on a broader scale, the introduction of infectious diseases caused population declines in Indian villages of 20 to 50 percent by episode and loosened the cultural fabric of tribal social bands (Boyd and Hyde 1989).

**Arrival of Euro-Americans**

By 1780, the coastal areas of the Pacific Northwest had been charted by navigators from Russia, England, France, and Spain, yet the Basin remained unexplored by visitors of European origin. Lewis and Clark's expedition from 1804 to 1806 offered Euro-Americans the first glimpse of the potential of the American West: a seemingly endless expanse of land, game, and rivers that attracted adventurers, fur trappers, and homesteaders.

The fur trade soon lured many newcomers. By 1820, 450 vessels had sailed into coastal waters to engage in the fur trade. Fur trappers and traders established outposts throughout the Pacific Northwest in the first decades of the 18th century. The Hudson's Bay Company held a near-monopoly on the fur trade in the Basin. It tried to maintain this dominant position by trapping the fur-bearing animals of the Snake River plains to extinction, discouraging potential competitors.

Missionaries began traveling west in search of converts, bringing not only religion but family-based agriculture, venturing into eastern and western Oregon in the mid-1830s. The success of agricultural operations on the American frontier was a major draw for families (West 1994).

**Overland Emigration**

The 1840s brought profound change to the American West, as restlessness seized a generation of Americans. Many factors fueled people's desire to seek a new life in the Pacific Northwest. The Panic of 1837 created a prolonged economic recession that hit hard on farmers and land speculators in the Mississippi and Missouri River valleys. Repeated floods in the late 1830s in these same river valleys ruined agricultural production and created infestations of mosquitoes that carried malarial fevers. People from Illinois and Missouri were lured by reports of the Willamette valley where neither floods nor pestilence would harm them (Beckham 1995). Another factor was technological expansion; the advent of railroads, steamboats, and communications by telegraph made distant travel and far-flung commerce seem possible. By 1845, Asa Whitney and other investors were already proposing a transcontinental railroad, which was viewed favorably by the Federal Government. A westward movement appeared as practical as it was romantically appealing.

Based on the success of early missions, families began making the nearly 2,000-mile trek on the Oregon Trail from Independence, Missouri, to the Willamette Valley in Oregon. In 1843, 900 people arrived in Oregon in what was called the "Great Migration," followed in 1844 by another 1,200 new settlers.
During the 1840 to 1860 period, most overland migrants passed through the Basin en route to the Willamette Valley's greener pastures and the proximity to navigable waters. Other destinations, particularly California after the gold strike in 1848, lured emigrants away from the Pacific Northwest. To those who had grown accustomed to the lush landscapes of eastern hardwood forests, the Snake River plains seemed too dry, rocky, and forbidding. The Cascade Range has a strong rainshadow effect in eastern Oregon and Washington with substantial portions of the Basin receiving less than 12 inches of precipitation annually. Even a Federal land donation program between 1850 and 1855 did not entice many settlers to claim land east of the Columbia Gorge.

In this era, a series of Federal laws reflected current policy: to transfer public lands as easily as possible to settlers who could use them. The Congress offered settlers free land through passage of the Homestead Act of 1862. Claimants could receive 160 acres of land for a modest filing fee and proof of five years of residence and improvements. In later congressional acts, including the Desert Land Act of 1877, the Forest Homestead Act of 1906, the Enlarged Homestead Act of 1909, and the Stockraising Homestead Act of 1916, larger size tracts more appropriate for the arid environment were authorized for disposition to settlers.

Passage of the Newlands Reclamation Act in 1902 established the Reclamation Service in the Department of Interior. The Act deposited profits from the sale of western lands into a reclamation fund to support irrigation projects, allowing the Federal Government to underwrite the building of dams, canals, and ditches beyond the capabilities of communities or the private sector. This made it possible for far more people to settle in the Basin.

Not surprisingly, early migrants chose to settle in the environments most likely to sustain them, which were fertile valleys and areas along waterways. In 1860, the Census described just two centers of Euro-American population in the Oregon Country east of the Cascades: The Dalles, Oregon and Walla Walla, Washington, each with about 1,300 inhabitants. At that time, the estimated Euro-American population was just 50,000 in Oregon and 12,000 in Washington, which were great increases from the total of about 13,000 in 1850. From 1860 to 1900, the Euro-American population in Oregon increased to more than 400,000, and in Washington to more than 500,000.

The national survey system established land-use patterns throughout the West. The Ordinance of 1785 ordered the Northwest Territory surveyed into sections measuring one square mile. (At the time, the "Northwest Territory" was the region north and west of the Ohio River, not the Pacific Northwest as the term is used in this document.) Next, the Ordinance of 1787, or the Northwest Ordinance, established a plan of government for the territory that the legislators assumed (incorrectly) would soon be sold and settled. Although modified slightly over the decades, both laws were eventually extended to include lands beyond the Mississippi. These ordinances determined the political form of the growing nation. In 1786, government surveyors laid out a baseline westward from the precise point where the Ohio River left Pennsylvania. They laid the first townships and sections, then built more onto those, range after range, westward to the Pacific. That first square inch of the first surveyor's stake was a polestar of national development (West 1994).

This creation of a national grid system affected the way people thought about land. Presented as squares or rectangles, land can be easily subdivided and turned into a commodity. The shape of land's presentation to an owner dictated styles of farming, allowing each field to be "plowed into straight lines among straight fences besides straight roads" (West 1994).

As in much of the West, settlement and development of the Basin hinged on the use of natural resources and associated economic opportunities. A closer look at the history of mining, transportation and access, grazing, and timber harvest shows the developing interactions between the growing population and the Basin's natural resources.
Mining

Coal deposits had been reported as early as 1833 by an employee of the Hudson's Bay Company, and significant base metal and silver lodes were discovered in eastern Washington during the late 1800s and early 1900s. It was the discovery of gold, however, that attracted many people to the Basin. In 1862, several placer deposits were announced, including deposits on the John Day River near Canyon City, Oregon; at Florence, Idaho, on the Snake River; and at Pierce City and Orofino, Idaho, on the Clearwater River. Strikes in the Boise basin and other locations soon followed. Thousands of miners came to the region, leading to development of towns and their infrastructures, which in turn attracted stock raisers and farmers.

The General Mining Law of 1872, following the precedent of the Mining Law of 1866, opened minerals on public lands to all. Mining practices of the 19th century also established the logic behind western water law: first in time, first in right. Water became a user's property from the moment of its first use until its use was abandoned.

Transportation and Access

The evolution of transportation played a major role in commercial development of the Basin. Public lands were distributed not just to families, but to transportation companies and speculators via auctions in eastern states. Federally supported railroad developments changed the shape of the West. From 1862 to 1871, 61 different land grant subsidies to railroads were offered in the region, the largest to the Northern Pacific Railroad, which eventually secured 39 million acres. The famous “checkerboard” ownership patterns of lands in central Washington state and elsewhere are a legacy of these land grants.

By the 1880s, it was possible to arrive in the Pacific Northwest in five days instead of five months. Commerce and exchange with other regions expanded, establishing patterns of external trade relations that continue to dominate the Northwest’s economy. The railroads either “made or broke” a town because a road network of any consequence did not develop until after World War I. Until then, railroads moved cattle, lumber, wool, and other products to major markets.

Railroads allowed more efficient development of base metal and silver districts, compared to initial mining of only the highest grade ores that could be shipped at a profit to distant smelters. Development of communities throughout the Basin followed both the expansion of mining and the extension of the railroad network. Mining towns assumed an urban cast, with hotels, restaurants, general stores, blacksmith shops, sawmills, laundries, and other service businesses that supported workers.

In the early 1900s, road construction began to open entry into the forests of eastern Washington and Oregon. Constructed mainly through river valleys, riparian areas, floodplains, and adjacent hillsides, the roads efficiently provided access but decreased the land’s effectiveness as wildlife habitat and provided a new avenue for erosion and discharge of sediment into streams.

In 1916, the region’s first paved rural road, the Columbia River Highway, opened to link the western and eastern slopes of the Cascades. The Joint Board on Interstate Highways within the U.S. Department of Agriculture designated a “comprehensive system of through interstate routes,” changing previously local initiatives to a coordinated, Federal highway system that remains today. During the interwar years, the miles of hard-surfaced all-weather roads increased in Idaho and Washington by nearly 300 percent and in Oregon by nearly 250 percent. In 1940, the Pacific Northwest had a total of 12,000 miles of roads.
Automobile access provided people with the means to travel throughout the Basin for recreation. In 1916, the National Park Service was created to administer the growing set of national parks and monuments. Although the early parks had been promoted for local economic development, increased visitation and public sentiment to protect natural features led to the Park Service's Organic Act of 1916, mandating a mission of limited development: "...conserve the scenery and the natural and historic objects and the wild life therein and to provide for the enjoyment of the same in such manner and by such means as will leave them unimpaired for the enjoyment of future generations."

**Grazing**

Historically, a wide variety of ungulates, including deer, elk, mountain sheep, antelope, and bison, populated eastern Washington and Oregon. Natural predators kept the numbers of ungulates in balance. Because these animals had wide-ranging mobility, their grazing and browsing did not have extensive effects on vegetation. The widespread presence of bunchgrass initially attracted migrant herdsmen who could walk their stock to markets. By the 1870s, ranches and farms were established throughout the Great Basin, Snake River Plains, and Columbia Plateau. The goal of most ranchers was to secure a base of operations with dependable water supplies and the ability to cut and store sufficient hay to feed livestock during the winter; this type of base has sustained many cattle operations to the present day.

Cattle have dominated livestock production throughout the Basin since the first agricultural data collection in the Census of 1870, which reported a total of approximately 76,000 head. Twenty years later, that figure had multiplied over tenfold to approximately 793,000 head. The number of cattle grew steadily throughout the 20th century from 1.4 million in 1910, to 2.6 million in 1950, and to 4.1 million in 1969, a level that has remained relatively constant.

As Euro-American settlement began, not only were many predators displaced, but sheep, and then cattle, were introduced in rapidly increasing numbers. Toward the end of the century, sheep were so numerous on eastern Oregon rangelands that anecdotal reports and photographs suggested summer ranges so laden with sheep that they appeared to be snow drifts. Fescues and other bunchgrasses were irreversibly modified by extensive grazing in the late 1800s and early 1900s. Overgrazing damaged stream and riparian vegetation in many basins in eastern Oregon and Washington. Overgrazing also facilitated the spread of annual cheatgrass and reduced vegetation that had provided fuels for fires. When combined with later fire suppression efforts, the result was reduction of an important ecosystem disturbance.

In the 1920s, ranchers and others recognized that overgrazing of public lands, in combination with drought conditions, was severely impairing the land's ability to support their operations. Impetus for initial regulations also came from Frederic V. Coville's influential *Forest Growth and Sheep Grazing in the Cascade Mountains of Oregon*, published in 1898. His recommendations led to an allocation and permit system in which stockraisers secured grazing rights within bounds of regulations established by the Forest Service.

The Taylor Grazing Act of 1934 brought range regulation to 142 million acres in 11 western states, removing the land from potential sale and placing it under the jurisdiction of the Grazing Service, which evolved into the Bureau of Land Management in 1946. Range improvement projects were undertaken and local advisory boards established to allocate and manage the rangelands. The condition of rangelands in the Basin has generally improved since then, with the exception of riparian areas, which have continued to decline in much of the Basin.
Timber Harvest

Vast stands of timber on the eastern slopes of the Cascades and in the Bitterroots and Rockies were another resource subject to increasing demand. Following on the heels of mining and agriculture, a third leg of the Basin’s economy, the timber industry, took off near the close of the 19th century. The industry paralleled development of mines and railroads; railroads needed wood for ties and trestles, mines needed timbers for shoring, and lumber mills needed access to the woods to extract logs.

Serving only local markets in the early years after settlement, the industry began to change with completion of the Northern Pacific Railroad in 1883 and the advance of the Oregon Railway and Navigation Company’s line eastward to the Blue Mountains and southeast via the Oregon Short Line to connect with the Central Pacific. Their construction created an important market for ties, trestle materials, and finished lumber for warehouses, depots, and dwellings for workers.

The influx of settlers engaged in farming created local markets for forest products. Spokane, Washington became one of the important regional manufacturing centers that met these needs. In 1888, the Spokane Mill Company produced 15 million board feet of lumber, 6,000 doors, and 10,000 windows. The following year, Spokane had nine mills that cut an estimated 30 million board feet of lumber valued at $2.2 million. Loggers supplied these plants with timber transported down the St. Joe, St. Maries, and Coeur d’Alene rivers and then rafted across Lake Coeur d’Alene.

By the end of the 1880s, mills in the Blue Mountains of Oregon were harvesting up to 30 million board feet annually, and the Clearwater River in Idaho was reported as a “floating woodyard.” By 1900, exhaustion of the supply of trees in the upper Midwest invited timber investors to look westward, and the northern Basin became the focus of a new scramble for wood supplies. The rapid increase in harvest levels was reflected in Idaho, where 65 million board feet of lumber was cut in 1899. By 1910, Idaho was producing 745 million board feet, and its market had shifted from local to national. The railroads enabled mill owners to supply and compete favorably in the Dakotas, Nebraska, Wisconsin, Iowa, Colorado, and other states. Employment data in the logging and lumbering industry for Idaho shows the growth of those enterprises in the early 20th century. In Idaho, for example, employment of loggers, rafters, and sawmill workers increased from just over 300 in 1880, to more than 8,000 in 1920, and to 14,900 in 1995.

Because smaller stems could not be processed efficiently, early harvesting concentrated on the largest trees of the more important commercial species, such as ponderosa pine and western larch. Eastern markets in particular demonstrated a preference for ponderosa and Idaho white pine, leading to select cutting where other species in mixed forests were left standing.

The Forest Service was established in 1905 to conserve water, as well as to manage a growing inventory of Federal forest reservations that dated to 1891. Theodore Roosevelt entered office in 1901 with 41 million acres in reserves; when he left office in 1909, there were 151 million acres of national forests whose management was to ensure a sustained yield of timber to contribute to national growth and the stability of local economies. In the view of Gifford Pinchot, the first Forest Service Chief, the forests could protect water supplies for irrigation and western cities, provide cheap grazing, and repay the Federal treasury with timber sales. After nearly a century of policies to dispose of public lands, the Federal Government started to view the remaining public domain as a storehouse to sustain productive values. The Progressive Movement influenced leaders in government to emphasize “scientific” management of physical resources for more “efficient” development.

Exclusion of fire from ecosystems began systematically in the early 1900s; fire was viewed as a threat to forests, as well as to the lives and property of increasing numbers of settlers. The newly created Forest Service, unaware of the increased problems
with wildfire control and forest health, believed that fires killed regeneration under larger trees. This societal attitude prevailed until fairly recently as fire's natural role as a disturbance came to be more widely understood. While fire was being used west of the Cascades to reduce slash after logging, fire was being excluded from the east side of the Cascades where it historically had occurred more frequently. Although well intended, this management philosophy over time resulted in changing forest stands from serai fire-adapted species, to species that are more susceptible to fire and that tend to form unhealthy stands more prone to larger-scale fires, as well as increased outbreaks of insects and disease.

Growth of the timber industry continued in subsequent decades, driven by demand for wood products in growing urban centers, especially in the Midwest and California. Development of the skidder, caterpillar tractor, log truck, and chain saw lowered costs, increasing production dramatically. The easier terrain of eastern Oregon and Washington facilitated the change to more mechanized equipment. Timber cutting practices were adapted to fit the technology available, leading to clearcutting.

From 1945 to 1970, timber harvest on Federal lands in the Basin increased about 5 percent per year, or 50 percent faster than the growth of the national economy. This increase was important to the expansion of softwood and plywood production in the western states, which supported many communities. Nationwide, harvest volume increased from 4 billion board feet in 1950, to 11.4 billion board feet in 1970, 90 percent of which came from western national forests, and 41 percent from Washington and Oregon.

**Fishing and Dam Construction**

When Euro-American settlers arrived during the early 1800s, salmon were abundant and diverse. Spawning runs of chinook salmon made their way up the mainstream Columbia to the Snake River, and on up to the headwaters of the Owyhee and Bruneau rivers and Salmon Falls Creek as far as Nevada. Estimated historical run size for all species of salmon and steelhead in the Columbia River ranged from 10 to 16 million adult fish. Not only was their course unimpeded by dams, but there was ample suitable habitat to support these populations. Fur trappers and traders reported extensive stands of willows and alders growing side-by-side across many of the valleys and along moist gulches and draws; they also reported wide, wet meadows along stream systems throughout the Basin. The Ochoco Mountains take their name from an American Indian word meaning "streams lined with willows."

Commercial harvest began in earnest when the first cannery started operating on the Columbia in 1866 and soon exceeded sustainable levels. Commercial catches of chinook salmon in the Columbia peaked in 1883 when about 43 million pounds of fish were landed. Coho, sockeye, chum, and steelhead also were abundant in the Basin. Catch of coho peaked at 6.8 million pounds in 1895, and catch of sockeye and steelhead totaled 4.5 million pounds.

By the late 1800s, overfishing was blamed for broad declines in chinook salmon runs. By 1900, certain fishing gear was banned to protect spawning runs but impacts from mining, timber harvest, livestock grazing, and agriculture had begun.

New Deal\(^3\) programs were critical in sustaining and building infrastructure in the Basin. Perhaps the most publicized Federal programs were the dam projects along the Columbia and Snake rivers. The Army Corps of Engineers had been involved in surveys, navigation, and flood control along the Columbia River since the 19th century, but these activities were of low intensity compared to the major dams constructed during the Depression\(^4\) and after World War II on the Columbia River. In 1938, Bonneville Dam became the first dam on the Columbia, and the Grand Coulee Dam was built in 1942.

---

\(^3\) Policies and programs for economic recovery and reform, relief, and social security introduced during 1930s by President Franklin D. Roosevelt and his administration.

\(^4\) Period of severe economic hardship in early 1930s.
Although the Federal initiatives from the New Deal did not extend to regional planning, such as in the Tennessee Valley, the effect of Federal actions in the Depression years pulled the region out of the frontier and onto the main stage of late 20th century development. As Abbott (1994) wrote:

> Whether residents liked to admit it or not, the federal initiatives saved the West from collapse. There were fewer farmers and miners in 1940 than in 1920, and there were more abandoned towns on the high plains and plateaus. By and large, however, the West in 1940 had new resources in place for an economic take-off: new electric power, new expertise in large-scale construction, workers with new skills for an industrial economy, and a renewed commitment to the progressive agenda of efficient resource development.

A broad public consensus on construction of the dams helped the Nation out of economic crisis, even though biologists recognized at the time that dams would likely be barriers to native salmon runs. Later, however, the debate over dams symbolized new types of emerging social values. After World War II, as more citizens became affected by environmental changes, grassroots action and citizen demands began to bring to the forefront other values that were deemed environmental. This citizen movement set the course for conflict between forces associated with large-scale management and technology and those emphasizing protection of environmental quality. This change was symbolized by debate over dams in Hells Canyon, which shifted from who should build them and how many to the possibility, voiced by Supreme Court Justice William O. Douglas, that maybe the river had greater value in its free-flowing condition.

Another landmark decision regarding social priorities for fish resources came in 1974, which marked the beginning of a key set of court decisions with a United States v. Washington District Court decision reaffirming the priority of off-reservation fishing rights. Tribes were allowed up to a 50 percent share of harvestable fish returning to accustomed traditional fishing sites. More detail on laws specific to American Indians is provided later in this chapter.

**Recent Legal and Political Climate**

Social discussion regarding land uses described above has been reflected in a series of laws, policies, and court decisions. A brief history of some of these social actions helps to provide context for understanding current debates about ecosystem management.

Since passage of the Multiple-Use Sustained-Yield Act of 1960, the Forest Service and Bureau of Land Management have had increasingly complex and conflicting demands on Federal land stewardship, with policy dictating that multiple demands be met from a limited resource base. In the late 1950s, the Forest Service experienced difficulties with ambiguities of its Organic Act mandates and subsequently evolving responsibilities. Wilderness enthusiasts and others sought to put recreation on an equal footing with other uses. The traditional users, which were timber operators, ranchers, and miners, argued for greater allocation to their particular needs, causing the Forest Service to seek legislative clarity from the Congress (Coggins and Wilkinson 1981).

The result was the Multiple-Use Sustained-Yield Act of 1960 (MUSYA) which defined multiple use as “management of all the various renewable surface resources of the National Forests so that they are utilized in the combination that will best meet the needs of the American people...without impairment of the productivity of the land, with consideration being given to the relative values of the various resources, and not necessarily the combination of uses that will give the greatest dollar return or the greatest unit output.”

The Multiple-Use Sustained-Yield Act has meant all things to all people. The literature on the meaning and application of multiple-use sustained-yield management has burgeoned with...

---

5 The initial draft of this section was written by Christopher E. DeForest and Amy L. Horne. Horne is an economist at the USDA Forest Service, Pacific Northwest Research Station; DeForest is an independent contractor.
out appreciably clarifying the concept as a legal standard (Coggins and Wilkinson 1981). The Act could have marked a clear continuation of emphasis on commodity production. It could also have stated what weight to give to society's different demands on the land. Instead, it institutionalized uncertainty and ambiguity, and marked the beginning of the modern period of conflict over what constitutes proper stewardship of the public lands.

The 1970s have been called the decade of “Regulating Public Lands” (Caldwell and others 1994). In 1975, a Federal court enjoined timber sales on the Monongahela National Forest in West Virginia, finding the Forest Service in violation of the 1897 Organic Act. The Forest Service complied with the court order to develop a new multiple-use plan and to limit the size and range of clearcuts, extending these policies to all National Forests.

The Forest and Rangeland Renewable Resources Planning Act (RPA) of 1974 was intended to institute long-term strategic planning in the Federal Government (Cubbage and others 1993). In the name of multiple use, the Forest Service assembled plans to manage all resources in an attempt to diffuse arguments that the agency concentrated on timber at the expense of other outputs. However, congressional failure to allocate the necessary funding resulted in maintaining the status quo of primarily focusing on timber (Cubbage and others 1993).

Senator Frank Church of Idaho chaired congressional hearings in 1972 that culminated in a report recommending major restrictions on the size and suitability of clearcuts; the Church Report was instrumental in the development of the National Forest Management Act of 1976 (NFMA), an amendment to the RPA. The Federal Land Policy and Management Act of 1976 (FLPMA) gave the Bureau of Land Management a multiple-use mandate similar to the Forest Service’s in MUSYA and requirements for comprehensive long-range planning similar to those in NFMA (Cubbage and others 1993).

The 1980s were characterized as a decade of “Clashing Imperatives” (Caldwell and others 1994). There was bitter debate about Northwest old growth among the Congress, several administrations, and the courts, in which the spotted owl was used as legal leverage to redefine desirable management of the national forests. The polarities were seen as protecting ecosystems by protecting endangered species, versus maintaining local timber-dependent economies. The decade included Judge Dwyer’s rejection of the 1986 Forest Service spotted owl management guidelines, which enjoined timber sales pending revisions to the guidelines. Then, there was a 1989 congressional rider to undo the injunctions for two years; subsequent scientific reports on old growth, spotted owls, timber, and tradeoffs; and the Supplementary Environmental Impact Statement (EIS) and Forest Ecosystem Management Assessment Team report (FEMAT 1993). A new approach to reserving old-growth ecosystems (Option 9 of the Northwest Forest Plan) was adopted but has been under almost continuous challenge.

The 1990s are being characterized by continued controversy and public concern about ecosystem health and its physical, biological, economic, and social meanings. The costs and benefits of programs for activities, such as salvage logging and its appropriate role, have become national issues. The aggressive fire suppression policy of Federal land-managing agencies has been increasingly criticized as agency and academic foresters learned more about natural fire cycles (Langston 1994, Everett and others 1994). The health of forest, rangeland, and aquatic systems is under close public scrutiny, as are the tradeoffs associated with achieving various levels of health at various places in the Basin. Recent debate over reform of Federal rangeland management demonstrates the social and political intensity of rangeland, as well as forest, issues. It remains to be seen whether ecosystem management will be viewed as the solution to these complex issues.

Implications for Ecosystem Management

A brief look at the history of interactions between people and other ecosystem components of the Basin provides some explanation for past actions. Besides explaining how present ecosystem conditions evolved, this discussion also provides rationale for human uses of natural resources and the basis for people’s judgements about the acceptance of those uses and their effects. Several lessons emerge from study of the history of people’s interactions with physical and biological resources in the Basin:

- People’s perceptions of Basin resources have changed dramatically in a relatively short time. Initially viewed by Euro-American settlers as unpriced, seemingly limitless supplies to be disposed of efficiently, many natural resources are now increasingly scarce and subject to highly competitive uses. Federal laws and policies regarding resource use reflect the changes in both the supply of resources and public perceptions of their values.

- Although the industries that led to settlement and infrastructure development of the Basin (mining, timber, ranching, and transportation) still play critical roles in the social and economic functioning of Basin ecosystems, their roles have changed with time and the tremendous growth of new industries.

- Landscape ecology analyses suggest that even if society wanted a return to pre-European settlement conditions, it would not be possible to achieve. The question now is: “What does society want to accomplish through ownership and management of BLM- and FS-administered lands?”
POPULATION AND DEMOGRAPHIC CHARACTERISTICS

Management of Federal lands in the Basin occurs within a context of the human population, its size and growth, and other demographic characteristics. The following text describes current human populations, reviews recent and projected patterns of population growth, and discusses lifestyles of the rural population in the Basin. When considered in conjunction with economic trends described in the Economic Assessment, including poverty, unemployment, and other economic measures that have obvious social implications, this information gives land managers and other decision-makers an idea of demands likely to be placed on natural resources. Detailed demographic characteristics are provided in a supplemental report (McGinnis and Christensen 1996).

Population Dynamics and Characteristics

The Basin is sparsely populated, with a density of about 11 people per square mile compared to the national average of 70. Although the counties in the Basin account for about 8 percent of the land area in the United States, they have only 1.2 percent of the Nation's population.

The total 1990 population in the Basin was just less than three million people (USDC 1991a and b). Washington residents comprise 38 percent of the Basin's population, compared to 27 percent for southern Idaho, 12 percent for Oregon, 11 percent for Montana, 7 percent for northern Idaho, and 5 percent for the other states (Wyoming, Utah, and Nevada). The most populated county is Spokane in Washington, which has approximately 361,000 people. Nearly half of the population is located in 12 of the Basin's 100 counties, although just 6 of these (Ada and Canyon in Idaho; and Benton, Yakima, Franklin, and Spokane in Washington) are large enough to be called metropolitan counties.

The age distribution of Basin residents is similar to that of the Nation, but the Basin has a greater proportion of people younger than age 18 and a smaller proportion in the prime wage-earning years of 25 to 49 (McGinnis and Christensen 1996). Between 1980 and 1990, the age structure of Basin residents changed significantly. The 65-and-older age group increased by a greater proportion (28%) than other age groups, and the 18-to-24 age group declined by 20 percent. This proportion reflects in-migration rates and the aging of the baby boomers.

The Basin has a larger proportion of Whites (92%) and American Indians (2.5%) than the Nation as a whole (80% and 0.8%, respectively), and a smaller proportion of Blacks (0.6% compared with 12% nationally). The Basin also has a smaller proportion of Hispanics (6.7% compared with 9% nationally), although Hispanics are the largest non-Anglo group in the Basin. From 1980 to 1990, the Hispanic population increased by 69 percent.
Ethnic minorities who have come to the Basin use public lands for income and recreation. Many minorities were drawn to the Basin by jobs in irrigated agriculture. Few of the significant numbers of minorities who arrived in the Basin in the 1940s settled permanently. Many spoke only Spanish, lived lifestyles confined to camps, worked long hours during harvest season, and returned to their homeland when the crop season ended. Few had opportunity to realize or discover the Basin’s recreational possibilities (Valle 1994). Some migrant workers who journeyed with their families began to settle in the Basin in the 1950s and 1960s (Gamboa 1990). Increasing numbers of single workers began to come from Mexico in the 1970s, first from northern and central Mexico and lately from southern Mexico. Some of these also settled in the Basin.

As children of the first migrant settlers have attended school, learned English, and entered jobs outside of agriculture, their available time has increased. Recreation has become more important. Although family outings to nearby parks constitute some of this recreation, increasing numbers of this population segment hunt, fish, and camp on public lands. Although the numbers using public lands are proportionately low for their population, increasingly more are expected as more of the first and second generation work outside agriculture (Pfister 1993).

Public lands are used by large numbers of minorities who earn income in forestry-related activities, including reforesting, pruning, and thinning trees (Hansis 1995). Migrant workers and southeast Asians harvest special forest products, such as huckleberries, beargrass, and mushrooms. Other products, such as medicinal plants, may become the next commodity of interest for Southeast Asians. Besides providing income, some harvesting may be a basis for family and social cohesion. In some cases, entire families go to public lands, camp, pick beargrass and mushrooms, and socialize in extended kin networks.

The Basin contains or overlaps 20 American Indian Reservations and one Colony, which includes some trust lands; these areas total about 14,000 square miles or 5 percent of the Basin. In six counties, reservation and trust lands account for more than 40 percent of the land base. In 1990, about 115,000 people lived within the borders of these lands. Hanes (1995) contains a list of Indian tribal governments having interests in the region.

Nearly two-thirds of the Basin’s population live in towns, villages, and cities. The Bureau of Census recognizes 400 incorporated places and 76 “Census Designated Places,” which are locations that are unincorporated but have an identity to the local population. Although 65 percent of the Basin’s population (as recorded in the 1990 Census) live in a town, village or city, most of these communities are relatively small. Only about 30 of these communities have more than 10,000 population; most have less than 2,500 people. Additional detail about the Basin’s small, rural communities is included later in the section on community resiliency.

Population Trends

Concerns about the effects of rapid growth in the rural West have been widespread in the media. Although people in rural communities desire economic opportunities that are associated with population growth, they are concerned about social and environmental consequences and the ability of communities to cope with a new “Rocky Mountain resurgence.” What is clear from recent growth statistics and media discussions is that such rapid growth brings various impacts. This is an issue not only for local governments, but also for managers of adjacent Federal lands.

To understand how the Basin’s population has changed in the past and may change in the future requires understanding the two major components of population change, which are natural increase and net migration. Natural increase is the number of deaths subtracted from the number of births in
a year; this indicates if an area's population is increasing or decreasing as a result of shifts in fertility or mortality. For many rural areas, natural increase has been negative, paralleling national trends for the past few decades.

Net migration is the difference between out-migration and in-migration. The sum of these two components shows changes in the population base; a negative figure indicates that more people are moving out of an area than are moving into it. There have been two major trends in migration patterns in the United States since 1900: (1) migration to the western and southern states, and (2) migration from rural to urban areas. The West as a whole has gained population through migration.

The Basin's demographic patterns have followed national trends over the past 45 years. Figure 7.1 shows the population of 100 counties in the Basin by decade. During the first two decades of this period, 1950 to 1970, there was a significant national level out-migration from rural to urban settings. This pattern was also reflected in the Basin, where over one-third of the counties showed population losses in this period.

During the 1970s, the second trend changed significantly (Fuguitt and others 1989). During this time, most counties in the Basin reported population increases, reflecting the "rural renaissance" occurring for the Nation as a whole in that decade. Brown and Beale (1981) regard the population turnaround of the 1970s as "one of the most significant demographic events of recent decades." The 1980s demonstrated a return to traditional migration and population patterns (Johnson 1993), as 41 percent of the counties in the Basin showed population declines.

However, in the early 1990s, another urban-to-rural migration began. Johnson and Beale (1994) report that nationally about 43 percent of the population growth in nonmetropolitan counties between 1990 and 1992 was due to migration. Census data for the Basin shows that an even higher proportion (64%) of the net population increase from 1990 to 1994 could be attributed to migration. Nationally, counties that attract retirees or are "centers of recreation" were more likely to gain population, and 82 percent had net migration in the 1990 to 1992 period. In the Basin, 96 percent of the counties increased in population for the period 1990 to 1994, reversing the trend of the 1980s (Johnson and Beale 1994). Map 7.1 shows population growth by county for the 1990 to 1994 period. The absolute increase in population in this four-year period is equal to one-third the increase occurring in the previous three decades.

The impact of in-migration differs among counties. One type of county that showed large increases was "recreation counties," which are counties in which recreation and tourism play a major role in the economy (Johnson and Beale 1994). In recreation counties, about 77 percent of the population growth could be attributed to net migration. The figures for metropolitan and other rural counties were 60 and 57 percent respectively. Recreation counties are particularly important centers of growth in the Basin; although recreation counties accounted for 17 percent of the population in 1990, they accounted for 24 percent of the total population increase in the Basin and 29 percent of the total net migration.

Figure 7.1 - Population of the Basin by decade.
Although most communities and counties are growing, some traditionally agricultural counties are experiencing population declines, principally because of rising production efficiency in agriculture. Counties distant from metropolitan areas also have generally experienced slower growth or population decline.

Projected Population Growth

There are several reasons for considering future human population growth. First, population is a significant component in understanding the context within which ecosystem management decisions will occur. Second, demands of human populations for both commodities and amenities associated with natural resources on Federal lands are partly functions of population levels. Third, the additional development resulting from population increases escalates the potential for habitat fragmentation, particularly in popular “recreation” counties located in ecologically diverse settings. Finally, although development occurs on private lands, people also affect nearby Federal lands, so population change suggests a need for appropriate Federal and local cooperation.

This assessment compares two projections of potential population growth in the region, each based on its own set of assumptions, especially specific to net migration (fig. 7.2). The first, and lower, population projection was developed by the Bureau of Economic Analysis (BEA) in 1994; it is strongly influenced by projected economic conditions and patterns of population growth that occurred in recent periods. However, BEA projections are below the current population for many counties in the Basin, suggesting the need for an alternative projection based on new assumptions.

The second, and higher, population projection was made by ICBEMP staff (McCool and Haynes 1995). They based their assumptions about a natural increase on persistent differences between the Basin and the Nation, with the Basin averaging about 22 percent higher. Their projection also assumed a rate of net migration from the years 1995-2000 equal to the 1990-1994 rate, and then a reduced rate to zero by the year 2030. Another assumption of this projection was that recreation and metropolitan counties in the region would record higher growth rates than other counties.

Both projections were developed for counties, and then aggregated to the 100-county Basin level. Beginning in 2010, the projections depart dramatically. Although uncertain and subject to alteration by many factors, both projections call attention to likely demands on resources, potential conflicts, and growth management issues. Although the high projection results in what could only be termed spectacular population growth, the overall population density within the Basin would remain well below the national average. This population would be concentrated on private lands, which compose 48 percent of the Basin's total area.

Migration

Migration is an issue for several reasons. The low population growth estimate cited above assumes, for all practical purposes, no net migration into the Basin; in the higher estimate, migration forms the bulk of the population increase. People’s reasons for migrating can be affected by public land
management policies and actions. Knowing the reasons for migration can help managers to better understand the potential of individual areas for immigration and to become active in mitigating effects on Federal lands.

The Basin's overall growth in opportunities for employment, as discussed in the Economic Assessment chapter, continues to be a central factor in people's decisions to relocate. In addition, recent literature shows that migration decisions often contained not just economic dimensions such as employment opportunities, but noneconomic dimensions such as amenities or family ties (Wardwell 1992). The migration literature traditionally was principally concerned with economic motives, such as moving for a new job or a job transfer. Census enumerators did not ask people about quality of life or lifestyle factors as motivations for relocation. Wardwell (1992) argued that research demonstrated the economic explanations were insufficient to explain the return to rural areas during the 1970s, although increases in communication and transportation technology made rural areas more feasible as bases of operation.

Only since the "rural renaissance" of the 1970s have scientists explored non-economic reasons for migration (Zuiches 1980, 1981). Long (1988) reported that about 50 percent of the households moving between states in the 1979 to 1981 period relocated mainly for other than work-related reasons:

A case can be made that a great many moves are not accounted for by classic economic approaches linking long-distance migration to employment opportunities... Many of the 10.1 percent of moves that could not be classified in one of the 34 preset categories may have represented persons seeking lifestyles and values that do not appear to be governed strictly by economic considerations.

Between 1979 and 1981, motivations for migration were strongly related to age (Long 1988). Job-related motives were most frequently cited by younger movers, while older movers listed climate and family among other reasons. As the regional and U.S. population ages, these latter motives will have a greater influence on the population. Areas high in amenities attractive to seniors will experience higher than average population growth. Lifestyles of these individuals may be more oriented toward outdoor recreation and protection of natural resources. The 20 counties classified as "recreation" counties in the assessment area already have a different lifestyle composition than other counties in the region, as discussed in following text.

The economic impact of retirement can be substantial; population, employment, and personal income increased significantly faster over the period 1969 to 1989 in rural counties classified as retirement counties than in other rural counties (Deller 1995). Besides being higher as a source of personal income than for the Nation as a whole, transfer payments within the Basin have increased much faster than the national average (see discussion on communities in this chapter and also in the Economic Assessment, Chapter 6).

Population Lifestyles

A description of Basin population characteristics relevant to ecosystem management would be incomplete without an overview of Basin lifestyles. The character of rural life in the Basin varies as much as the people do, and the Basin population is diverse in many ways. Although describing Basin lifestyles at this broad scale oversimplifies the many ways that people live and earn a living in the Basin, there are some advantages, such as being able to compare Basin lifestyles with those elsewhere. Not surprisingly, many Basin lifestyles are tied closely to the natural environment and to public land management.

To better understand lifestyles within the Basin, the ICBEMP used a lifestyle segmentation system called PRIZM developed by Claritas (1994). PRIZM describes people's lifestyles through multivariate analysis of household characteristics combined with consumer purchasing behaviors. The two primary criteria defining lifestyles are affluence and residence (urban to rural). The database
describes 62 lifestyles located in 12 major groups, each representing about 1.5 percent of the Nation's households. Not all 62 lifestyles are represented in the Basin, because several exist only in large cities or have strong regional affinities.

Twelve lifestyles tend to be found in rural areas or small communities in the Basin (table 7.1). These lifestyles are most subject to change as the population grows and as the underlying economic structure of communities shifts. Certain rural-based lifestyles are found more frequently in the Basin, and their distribution is much different from the west side of the Cascades. Rural-based lifestyles account for more than 50 percent of the Basin's population, compared to about 20 percent of the population nationally or west of the Cascades.

The Basin is dominated in rural areas by agriculturally based lifestyles. However, in rural counties where rapid population growth is occurring, Basin lifestyles differ significantly from other areas. In general, compared to households nationally or those west of the Cascades, lifestyles in the Basin's rural areas experiencing rapid growth appear more oriented toward the natural environment, with occupations related to natural resources, and recreation activities dependent on resources from Federal lands. The importance of environmentally based amenities to Basin lifestyles is discussed in more detail later in the chapter addressing social benefits of amenities.

**Implications for Ecosystem Management**

Besides being helpful to ecosystem managers for decision-making, information on population and lifestyle changes results in significant and often controversial discussions about the future of communities and Federal lands within the Basin. Even assuming modest in-migration, the level and characteristics of the population will affect any such debates and lead to additional demands on public lands and resources within the Basin.

Rapid population growth in the Basin presents major challenges to the BLM and FS, especially in locations having high levels of environmental amenities. In these areas, growth and associated development threaten the qualities that make such places attractive for recreation, retirement, and new businesses. At the urban-wildland interface, where such growth is most dramatic and developments are most visible, habitat fragmentation and fire protection are critical issues. Habitat loss on private lands translates into increased pressure on remaining habitat on Federal lands, further exacerbating constraints on natural resource commodity production. Increased numbers of residential dwellings adjacent to forest and rangelands present new challenges in fire prevention and suppression for Federal and local agencies.

Johnson and Beale (1995) showed that counties with either rapidly increasing or declining populations tend to have more difficulties raising revenues for needed services. Although the amenities on Federal lands are sources of economic growth, they indirectly present problems in planning and managing growth by stretching the response capacity of local governments to develop and implement solutions. Changes in Federal revenue resulting from policy changes may exacerbate such local capacity.

The important conclusion from lifestyle data is that lifestyles vary significantly within the Basin, and also differ from those experienced elsewhere. Management actions affecting Federal lands differentially affect people across the Basin based on the distribution of lifestyles at specific locations. In addition, the ability of agencies to meet demands for outdoor recreation may vary according to population growth and lifestyle composition. Population growth and changes in lifestyles distribution also suggest a rethinking about vegetation management alternatives and their potential to affect people with varying lifestyles. For example, rapidly growing rural areas generally attract people whose lifestyles suggest sensitivity to environmental modification.
Table 7.1—Rural-based lifestyles in the Basin.

<table>
<thead>
<tr>
<th>Lifestyle Segment Label</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>Small Town, Blue-Collar Families</td>
<td>Moderately-affluent people living in mid-scale, low-density towns located at outskirts of larger cities. Tend to be skilled workers in industrial and blue-collar occupations, primarily mining, milling, manufacturing, and construction. Very outdoor oriented.</td>
</tr>
<tr>
<td>Mid-scale Families and Farmland</td>
<td>Have average college education and income levels well above U.S. median. Well-paid, skilled craftsmen, machinists, and builders, living in scenic locales. Family-centered; devoted to hobbies, hunting, and boating.</td>
</tr>
<tr>
<td>Rural White- and Blue-Collar Farm Families</td>
<td>Only rural segment with above average college educations. Has even mix of white- and blue-collar jobs and high index for personal computers, reflecting several new, hi-tech industries in pristine, ecological sanctuaries.</td>
</tr>
<tr>
<td>Middle-Class Rural Families</td>
<td>Blue-collar occupations. Live in wide variety of agricultural settings.</td>
</tr>
<tr>
<td>Retirement Town Seniors</td>
<td>Found over wide range in country. Includes myriad of rustic towns and villages in scenic areas where seniors choose to retire. Younger and less urban and affluent than other retirees. A few play golf, but most prefer to adopt local customs.</td>
</tr>
<tr>
<td>Older Families, Mine and Mill Towns</td>
<td>Tends to have very low incomes; ranked 56th out of 62 segments. Older, largely single, with fewer children. Towns are located in scenic areas.</td>
</tr>
<tr>
<td>Rural Farm-Town and Ranch Families</td>
<td>Includes farming, forestry, fishing, ranching, mining, and other rural occupations. Close to median income level, large families, and like fishing.</td>
</tr>
<tr>
<td>Farm Owners and Tenants</td>
<td>Centered in Great Plains, but has large representation in the Basin as well. Primarily owners and tenants of farms; not very wealthy. Higher than average proportion of Latino migrant workers.</td>
</tr>
<tr>
<td>Moderate Blue-Collar/Farm Families</td>
<td>Tends to be in more isolated areas. Low income, with large families. Prefer hunting, fishing, and camping.</td>
</tr>
<tr>
<td>Low-Income, Older, Rural Couples</td>
<td>Third most elderly segment in nation. Have relatively-low incomes, but preference for country clubs, power boats, and sailboats. Oriented around rural environments.</td>
</tr>
<tr>
<td>Poor Isolated Areas With Older Families</td>
<td>One of lowest income segments in the Basin. Rural lifestyle; primarily blue-collar occupations.</td>
</tr>
</tbody>
</table>

Source: Claritas, Inc. (1994).