MONTANA

Forest Legacy Program

February 29,2000

ASSESSMENT OF NEED

Montana Fish, Wildlife & Parks

USDA

United States Department of Agriculture

Office of the Secretary
Washington, D.C. 20250

The Honorable Marc Racicot
Governor of Montana
Helena, Montana 59620-0801

Dear Marc:

I am writing in response to the September 14, 1999, transmittal of the Assessment of Need (AON) document and request to join the Forest Legacy Program from Patrick J. Graham, Director, Montana Fish, Wildlife, and Parks Department. Pursuant to my authority under Section 7 of the Cooperative Forestry Assistance Act of 1978 (16 USC 2103c), as amended, I have reviewed the Montana AON and am pleased to welcome your State into the Forest Legacy Program.

The AON identified thirteen conservation goals and objectives for the Forest Legacy Program in Montana as follows:

- Identify and protect environmentally important, privately-owned forest lands threatened with conversion to uses that are inconsistent with traditional forest uses including but not limited to, residential subdivisions, commercial development, extensive pasture, cultivated farmland, and mining that causes extensive surface disturbance;
- Reduce forest fragmentation caused by development;
- Provide environmental benefits through the protection of riparian areas, native forest plants and animals, remnant forest types, and natural ecosystem functions;
- Enhance recreational opportunities;
- Provide watershed and water supply protection;
- Provide employment opportunities and economic stability through the maintenance of traditional forest uses;
- Maintain important scenic resources;
- Provide links to public and other privately-owned protected areas;
- Protect rare, threatened, endangered, and sensitive species;
- Protect or enhance habitat connectivity and related values needed to ensure biodiversity;
- Protect important historical and cultural sites;
- Promote forest stewardship; and
- Provide buffer areas to already protected areas.

Six Forest Legacy areas meeting eligibility criteria to achieve these objectives and having public support were proposed. They are described and mapped in the Montana AON. All six areas are hereby instituted as approved Forest Legacy areas.

The staffs of the Montana Fish, Wildlife, and Parks Department, with the personal leadership of Patrick J. Graham and Alan Wood, and the Montana Department of Natural Resources and Conservation, with the personal leadership of Donald K. Artley and Chris Tootell, have worked diligently to bring Montana into the Forest Legacy Program. Please thank them on my behalf.

Thank you again for your efforts to join the Forest Legacy Program. If I can be of further assistance, please do not hesitate to contact me.

Sincerely,

DAN GLICKMAN
Secretary

OFFICE OF THE GOVERNOR

STATE OF MONTANA

MARC RACICOT
GOVERNOR

STATE CAPITOL
HELENA, MONTANA 59620-0801

March 30, 1999

Dale Bosworth
U.S.D.A. Forest Service
P.O. Box 7669
Missoula MT 59807

Dear Mr. Bosworth:

This is to confirm my appointment of Montana Fish Wildlife and Parks (FWP) as the lead agency for the state in our participation in the Forest Legacy Program. FWP will coordinate closely with the Department of Natural Resources and Conservation (DNRC) and the State Forest Stewardship Coordinating Committee to develop an Assessment of Needs and individual projects. Lead contacts within these departments will be Mr. Chris Smith, FWP Chief of Staff, and Mr. Don Artley, DNRC State Forester.

The Forest Legacy Program will be a valuable addition to Montana's "tool kit" for maintaining open space and the economic base for our forest resources. I look forward to successful implementation of our partnership in this area.

Sincerely,

MARC RACICOT
Governor

cc: Glenn Roloff
Bud Clinch
Pat Graham

TELEPHONE: (406) 444-3111 FAX: (406) 444-5529

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Executive Summary

This Assessment of Need evaluates the need for and use of the Forest Legacy Program in Montana, establishes goals and objectives for the Montana program, determines the eligibility criteria for lands to be included within the program, and establishes and describes Montana's Forest Legacy Areas. Major sections are summarized below.

Montana's Forests and Forest Industries

Montana's forests are both expansive and diverse. They comprise an estimated 22.4 million acres. The northwest part of the state has species characteristic of the rain forests of the Pacific coast, while eastern Montana supports trees found only on the relatively arid Great Plains. Ecologists have identified seven major forest types in the state. Of these, the Douglas-fir, Lodgepole Pine, and Ponderosa Pine types occupy over 15 million acres—about two-thirds of the state's forest land.

Timber harvesting is permitted on approximately 19 million acres. An estimated 23% of these forest lands are held in private ownership. Industrial private forests (IPF) comprise 7% of the state's timberlands, and non-industrial private forests (NIPF) account for about 16%. Timber harvests from NIPF lands increased dramatically during the late 1980s, and the trend has continued through the 1990s.

The forest products industry is concentrated in nine contiguous counties in western Montana. Those nine counties account for over 80% of the industry's labor income. The industry represents 41% of western Montana's local economic base, down from 50% in 1978. In recent years, however, the harvest of forest products in Montana has shifted somewhat so that it now includes significant harvests from farms and ranches east of the Continental Divide.

In the 1990s, the forest products industry was the third largest basic industry sector in Montana. It accounted for about 14% of the state's wages and 10% of the jobs. Timber harvesting in the state has averaged a little over one billion board feet per year (BBF/yr). Douglas fir, lodgepole pine, and ponderosa pine comprise three fourths of all products harvested in the state.

Montana's Forest Resources

Montana's forests provide an array of other benefits important to Montana's economy, culture, and environment. The total supply of surface water in Montana is over 53 million acre-feet, and the forested mountains of western Montana are the source of much of this water. The headwaters of the major rivers of the state all begin in forested regions where large winter snowpacks gradually melt, maintaining streamflow well into the summer and fall.

Montana's scenic splendor, bountiful fish and wildlife resources, and outstanding recreational opportunities are second to none. Our forests, prairies, valleys, and waterways are home to over 600 species of mammals, birds, fish, reptiles and amphibians. The state is dissected by 179,000 miles of streams and contains more than 10,000 lakes, reservoirs, and ponds that occupy nearly 980,000 acres. In some of the more remote areas of the state, such as northwestern Montana, the diversity of species is similar to what it was at the time of European-American settlement.

Opportunities for outdoor recreation such as hunting, fishing, wildlife viewing, are an important reason why many people choose to live in the state. Consequently, fish and wildlife populations are a major part of our culture and an equally important component of the economy. An estimated 32% of Montana residents go hunting each year. In 1996, hunting generated an estimated $334 million in hunter-related direct expenditures. Approximately 83% of Montana residents participate in some form of wildlife recreation other than hunting each year. This activity generates nearly $219 million annually in direct expenditures. Fishing is even more popular than hunting; 44% of adults in Montana go fishing each year. The activity generates $243 million annually to the state's economy.

Largely because of the scenery and fish and wildlife resources, recreation is one of the primary uses of Montana's forests. Of the 22.5 million acres of forest land, over 16 million are publicly owned. An additional 4 million acres are officially open to public recreation through agreements with the state. The primary uses of forest land are hunting, fishing, hiking, camping, wildlife viewing, berry picking, skiing, biking, horseback riding, rock climbing, mountaineering, picnicking, boating, swimming, and rock hounding.

Trends and Threats in Forest Management

Montana's economy is not as healthy and vibrant as that of the remainder of the nation. Census information indicates that in 1997 Montana was ranked 46th in the nation in per capita income, and Montana ranks first in number of people per capita who hold more than one job. The positive side of those two statistics is that Montanans are willing to do what it takes to remain in Montana. When asked to describe the most important reasons they decided to live in Montana, participants in a recent survey cited the following: scenic beauty and open space; safe place to raise a family; good place for children to learn values; close-knit, neighborly communities; and opportunities for outdoor recreation.

The structure of Montana's economy has changed in recent decades, due mostly to different rates of employment growth and shifts in the share of employment among the various sectors of the economy. While agricultural employment remained constant and the non-farm goods producing sector (which includes logging, mining, construction, and manufacturing) increased by 25% over the

last two decades, employment in the service industries increased by 113% (service industries include economic activities such as medicine, law, and automobile repair). Employment in the non-goods producing sector (which includes the service industries, as well as utilities, government, and retail trade) grew 56%. These shifts explain why in 1970, roughly half of Montana's workers were employed in basic industries such as agriculture, manufacturing, mining, and forest products, whereas by 1997, employees in these industries made up only one-fourth of statewide employment.

During the 1980s, 53,084 more people moved out of the state than moved into it. During the 1990s net migration has been positive; 51,578 more people moved into Montana than moved out. The primary destinations of migrants is western Montana, the Rocky Mountain Front, and the upper Yellowstone drainage (including Billings). These three areas contain the majority of the state's forests. Seven counties—Flathead, Ravalli, Gallatin, Yellowstone, Missoula, Lewis & Clark, and Lake—accounted for 82% of the state's growth in the 1990s.

More residential and commercial subdivision has occurred in the montane regions of western and southwestern Montana than in the remainder of the state. Properties with timber or water frontage present the most lucrative parcels for land development profits. Of forest lands cleared in 1989 for nonforest uses (including subdivision), 99.6% were non-industrial private forests. Additionally, NIPF ranches are being sold for homesite development. Forest conversion to residential use is evident along Montana's major waterways.

Recently, the parcelization of industrial private forests has also become an issue. Of major concern is a proposal by Plum Creek Timber Company to sell 110,000 acres of commercial forest lands in the valley bottoms and foothills of western Montana for real estate development. These lands include some of the most productive forests and the most important big-game winter range and wildlife corridors in western Montana, lands that Montana sportsmen have used for generations to access hunting and fishing opportunities.

Conserving the Land Base

The loss of forest and agricultural land to various developments has motivated Montanans to protect open space, wildlife, wetland, riparian, recreational, or historic values by placing land in conservation easements. Between 1978 and 1999, state acreage in conservation easements increased from 840 acres to over 600,000 acres. Over half of the increase occurred in the last seven years. According to the Land Trust Alliance in Washington D.C., Montana now leads the nation in acreage in conservation easements. All but one of the other states that rank in the top ten are in the northeast. A number of organizations in Montana work for forest land protection and preservation through conservation easements and other mechanisms.

Changing economic conditions and demographic trends are putting increasing pressure on private forest landowners to convert their land to non-traditional forest uses. Continued demand for wood products in the face of declining harvests from Montana's public lands have also resulted in increased timber harvest on private forest lands. This combination of pressures threatens the direct loss of productive forest lands and potentially irreplaceable or irreversible impacts to: (1) soil and water resources, (2) threatened and endangered species, (3) forest genetics, and (4) forest health. The Forest Legacy Program offers an excellent opportunity to expand and compliment existing conservation efforts in the state. By working cooperatively with other conservation programs and partners, the Forest Legacy Program can help address these issues in Montana by preventing conversions of forest land on high priority parcels and by encouraging responsible forest management through the development and implementation of forest stewardship plans.

Montana's Forest Legacy Program

Montana's Forest Legacy Program is designed to conserve forest lands and to maintain natural and public values by assisting with the purchase of conservation easements or fee-title on private forest lands. A conservation easement is a legal means that allows land to remain in private ownership while ensuring natural resource values of the land will not be compromised by incompatible development. The program offers an opportunity for private, local, state, and federal interests to cooperatively furnish forest landowners with new incentives to voluntarily protect their forest resources.

Landowner participation in the program is completely voluntary. The landowner must be a willing seller of the parcel, to which he or she must hold a clear and unencumbered title. The landowner must clearly understand the conservation easement concept. Landowners who wish to include their lands in the program may submit an application to Montana Fish, Wildlife, and Parks. Their lands must be forested, must fall within designated forest legacy areas, must meet specific eligibility criteria described herein, and must conserve forest resources. A 25% cost-share match of purchase funds must also be available.

The Federal Forest Legacy Program is one of several national programs established to promote the long-term integrity of forest lands. Specifically, the intent of the Forest Legacy Program is to identify and protect environmentally important private forest lands that are threatened by conversion to nonforest uses. The U.S. Forest Service implements the program through close cooperation with a lead state agency designated by the Governor. Montana Fish, Wildlife, and Parks is the lead agency in Montana.

The overall goal of the Montana Forest Legacy Program is to conserve and enhance land, water, wildlife, and timber resources while providing for the continued working of Montana's forest

lands and the maintenance of natural and public values. Many forest lands across Montana will meet the eligibility criteria for the Forest Legacy Program. To determine the outstanding ones, each area will be evaluated within its regional context. Those values may be expressed in terms of regionally distinctive scenic, geologic, or biological resources and societal benefits. Ideally, areas selected will embody multiple public values of a regional scale, be acquirable, and enjoy public support for that purpose, be threatened with imminent conversion, be delineated by natural boundaries, and/or contribute to biodiversity.

Montana's Forest Legacy Areas

The Montana Forest Legacy Program delineates six Forest Legacy Areas (FLAs):

- The Northwest Forest Legacy Area encompasses Lincoln, Flathead, Sanders, and Lake Counties.
- The West-Central Forest Legacy Area encompasses Mineral, Missoula, Granite, Powell, and Ravalli Counties.
- The Southwest Forest Legacy Area encompasses Deer Lodge, Silver Bow, Beaverhead, Madison, Gallatin, and Park Counties.
- The Central Forest Legacy Area encompasses Broadwater, Cascade, Chouteau, Fergus, Jefferson, Judith Basin, Lewis & Clark, Meagher, and Wheatland Counties.
- The Northeast Forest Legacy Area encompasses Glacier, Pondera, Teton, Toole, Liberty, Hill , Blaine, Phillips, Petroleum, Valley, Garfield, McCone, Daniels, Roosevelt, and Sheridan Counties.
- The Southeast Forest Legacy Area encompasses Big Horn, Carbon, Carter, Custer, Dawson, Fallon, Golden Valley, Musselshell, Powder River, Prairie, Richland, Rosebud, Stillwater, Sweet Grass, Treasure, Yellowstone, and Wibaux Counties.

I. Montana's Forests and Woodlands

A Brief Historical Perspective

Aside from climate and topography, the single most important factor shaping Montana's forests before the days of European settlement was fire. Fire determined the kinds and ages of trees, how close together they grew, and the number and types of openings that existed. These structural characteristics in turn, determined the kinds of plants and animals that lived within the forest.

Not all of the fires that occurred during presettlement times were natural. Many were lit by Indian people in order to keep brush down in favorite campsites, open travel routes through dense timber, enhance berry production over large areas, increase forage for big game and herds of horses, and force wildlife to move. Fire research has shown that the use of fire was so extensive in some areas that Indian people doubled the number of fires that would have occurred from lightning alone.

By using fire on a regular basis, Native Americans exerted a tremendous influence over the character of the forest during presettlement times. The plant and animal communities native to Montana are in large part the legacy of thousands of years of regular and purposeful burning by Native Americans and frequent, uncontrolled lightning-fires.

In the early 1800s, explorers and trappers moving through Montana cut trees for firewood, cabins, trading posts, and a few early forts. But it was not until 1841 that the first sawmill appeared. Built by Jesuit priests at a site that would later become the town of Stevensville, the saw was fashioned from the flattened rims of wagon wheels notched with crude teeth. In the decades that followed, prospectors discovered gold at dozens of locales across the state; from 1862 to 1876 over 500 mining camps and towns sprung up. At one such camp, near what would become Virginia City, two miners built Montana's second mill, a secondhand affair they had carted all the way from Colorado. Other mills followed, and during the peak of the placer-mining era, miners and entrepreneurs cut millions of lineal feet of rough-sawn lumber to build sluices, flumes, and shantytowns. This lumbering and the clearing that was done for towns and homesites was the first significant impact that non-Indians had on the state's forests. Yet it was only a beginning.

Soon dozens of pioneer sawmills were serving the increasing number of settlers. By 1869, these mills produced an estimated 13 million board feet a year. Hard rock mining followed placer mining in Montana, and the mines demanded mine timbers and building lumber (the Anaconda Copper Company alone used 40,000 board feet of lumber a day in its mines). In addition, smelting furnaces required hundreds of tons of fuelwood. Soon the mining enterprises had stripped the surrounding hills and mountainsides of trees. By the 1880s, railroads had arrived in the territory. They required 3,000 ties for every mile of track and timbers for bridges, tunnels, and station houses. The timber industry in Montana continued to grow.

At the same time, other resources—fish and wildlife, scenery, recreation, grazing, and water—increased in value, and Americans were beginning to realize that their frontier was not boundless. Congress established the first National Park, Yellowstone, in 1872. During that same decade, it created a precursor of the Forest Service. By the early 1900s, Congress had established forest reserves and some National Forests, and Teddy Roosevelt and others had introduced the idea of resource conservation. These steps meant forests were beginning to receive some official protection. In 1960, Congress passed the Multiple Use Sustained Yield Act, which broadened the agency's management outlook and responsibility beyond mere timber production. Since then, the general trend on both public and private land has been to focus increasing attention on noncommodity resource values. In the 1970s especially, people began viewing Montana's forests as a national treasure with far more to offer than timber.

Largely as a result of this trend, the area of productive forest land available for commodity production in Montana has declined. Reserved areas—areas not available for commercial timber harvest—account for 15% of Montana's forest land. Reserved areas grew by about 1.5 million acres between 1974 and 1989. The increase is the result of areas being set aside for their ecological value, their unique natural beauty, their recreational significance, or their historic importance.

In recent years, yet another trend has become apparent. Timber harvest from federal lands has been steadily declining while that from private lands has increased. Between 1990 and 1995, for example, the timber harvest from National Forest lands in Montana declined 66%. Between 1985 and 1990, the harvest from nonindustrial private forest lands increased by 133%. It jumped another 20% between 1990 and 1995. A number of factors caused the shift: cumulative impacts of past harvesting, changing national priorities, more constrained Forest Service timber budgets, threatened and endangered species protection, and appeals and litigation of timber sales. The increase in harvest from private forest lands can be attributed to a significant increase in the stumpage value of timber. It occurred as the amount of private forest available for harvest was declining from homesite and subdivision development.

The timber industry is still centered in western Montana. In recent years, however, the output of wood products from the state's eastern counties has increased. By 1996, eastern counties were producing four times the timber produced in 1981 and twenty times the amount cut in 1976.

While the harvest of trees and the construction of logging roads has had a significant impact on Montana's forests, the nation's fire exclusion policies have probably had a greater influence. Around 1910, the Federal government instituted a national policy that required all forest fires to be extinguished as soon as possible. This policy was fully implemented in Montana and continues to this day with some modification (under certain conditions, some natural fires are allowed to burn in isolated parts of the forest, such as in wilderness and other natural areas). Because our forests evolved

with fire, the policy has had enormous consequences. In the absence of fire, forest stands have changed to include more fire-susceptible tree species that are subject to large-scale fires and increased incidence of insect and disease epidemics. But perhaps the biggest concern is that fuels have accumulated and are now in excess of what they would have been under natural fire conditions. Although fire can be kept out of the forest for long periods, it will eventually return, and when it does, the fuel build-ups caused by the past ninety years of fire exclusion will result in larger and more catastrophic burns—burns that can consume tens of thousands of acres and do long-term damage to soils and other resources.

In the early 1990s, recognition of these and other problems ushered in a new management philosophy, called ecosystem management. Ecosystem management takes many forms in Montana, but in general it emphasizes the importance of key elements or processes like fire—the natural forces that shaped the forest and created the basic pattern or mosaic our plant and animal communities evolved with. It tends to view the entire forest as the context for management rather than individual stands, and it focuses on the diversity of forest structures and how they function across relatively large areas. Ecosystem management attempts to develop policies and programs designed to restore or mimic natural processes with the ultimate goal of sustaining forest communities as diverse, productive, and resilient ecosystems. Ecosystem management is now practiced to varying degrees across much of Montana's public forest land.

Montana's Forest Types and Distribution[1]

The area occupied by Montana's forests is large[2]. It is also diverse, both in terms of climate and topography, the two factors exerting the greatest influence over vegetation. Depending on where one happens to be in the state, he or she could encounter plant and animal species characteristic of the Rocky Mountains, the Great Plains, the Great Basin, the Pacific Coast, or the subarctic. Some of Montana's tree species are at the eastern edge of their range, others are at the western edge. At lower elevations in the northwestern Montana, the forests are similar to the rain forests of coastal Washington—dense, luxuriant stands of western hemlock and western redcedar tower over Pacific Coast ferns and thickets of devil's club. Those forests couldn't be more different from the dry forests of unusually short ponderosa pine trees that cover certain lowlands of eastern Montana and the stream-bottom stands of green ash and American plum on the Great Plains. Twenty-seven tree species—17 conifers and 10 hardwoods—compose the state's forests (Appendix A). Where and how

[1] Sources: Green, A. W., et al. Montana Forests and Arno, Stephen F., Forest Regions of Montana.
[2] Montana has 22.5 million acres of forest lands.

each grows depends on temperature, available moisture, aspect, elevation, and, to a lesser extent, soil and geologic characteristics. Figure 1 shows the distribution of forests in Montana.

Generally, wherever there are mountains and river systems in Montana there are forests, but the most heavily forested part of the state lies west of the Continental Divide where the climate is dominated by moist, Pacific air masses. East of the divide, the climate is controlled by continental air masses, and conditions are drier—in many places too harsh for trees. Forests are still associated primarily with the mountains and river valleys on the east side of the divide, but conifers occur at higher elevations than in the west—in some locations conifer forests start at 6,000 feet or more above sea level compared to 1,800 feet for conifer forests west of the divide. Most occur as islands or patches. The eastern half of the state also has a few thousand acres of woodland—forest land where timber species make up less than 10% of the stocking. Across the state, woodlands occupy about 92,000 acres. Rocky Mountain juniper and ponderosa pine are the dominate tree species on most of that ground, although Rocky Mountain maple and curlleaf mountain-mahogany also occur.

Ecologists recognize ten major forest types in Montana. Named mostly for their dominant or most characteristic tree species, they include Douglas-fir, Lodgepole Pine, Ponderosa Pine, Spruce-Fir, Miscellaneous Western Softwoods, Western Larch, Engelmann Spruce, Hardwoods, Grand fir, and Limber Pine. The area covered by each is given in Appendix B. The Douglas-fir, Lodgepole Pine, and Ponderosa Pine Forest Types total over 15 million acres, which is over two-thirds of the state's forest land.

The **Douglas-fir Forest Type** is found just up slope from the zone dominated by ponderosa pine and occupies over 7 million acres in Montana. The type consists of forests in which Douglas-fir is the only species or is codominant with ponderosa pine, grand fir, Engelmann spruce, subalpine fir, or western larch. Douglas-fir itself grows under an enormous range of climatic conditions and in terms of volume, is one of the most important timber species in the state. Large trees reach 130 feet in height. Douglas-fir has greatly expanded its range since the early part of this century when fire exclusion policies took hold.

The **Lodgepole Pine Forest Type** often consists of stands composed solely of lodgepole, especially at mid elevations. It occurs across a range of conditions in Montana—lodgepole pine has one of the widest ranges of any tree in the state. It covers about 4.9 million acres of Montana, split evenly between the western and eastern sides of the divide. One of the chief characteristics of lodgepole pine is its tendency to grow in dense, evenaged stands—thousands or tens of thousands of stems per acre is not uncommon. Short-lived, lodgepole pine is considered old at 100 years.

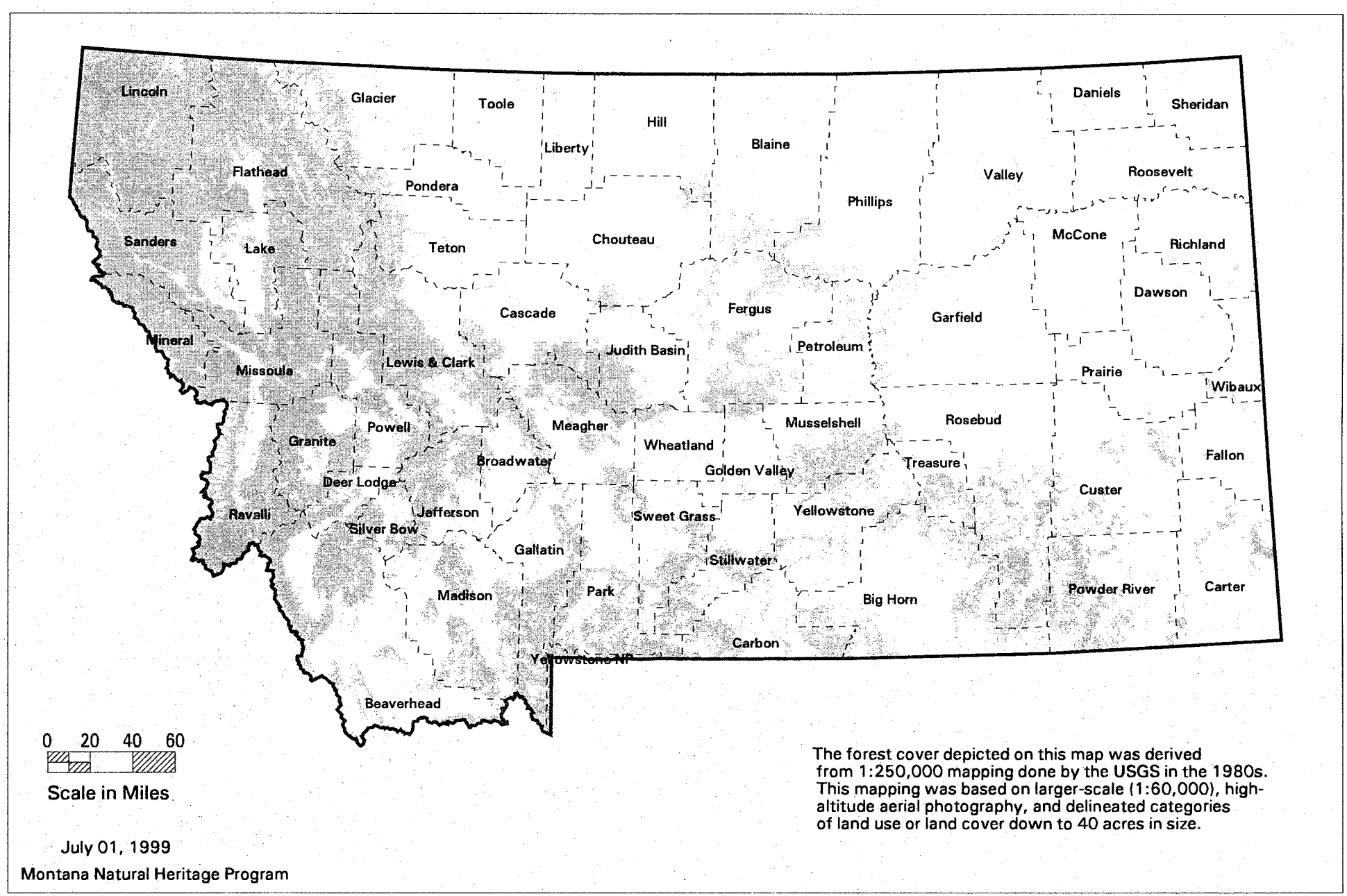

Figure 1. Montana's forested areas.

The **Ponderosa Pine Forest Type** is made up of mostly pure stands of ponderosa pine on dry sites and a mixture of species grading from Douglas-fir to western larch as available moisture increases. There are about 3 million acres of ponderosa pine in Montana, 85% of that acreage falls west of the Continental Divide. East of the divide, a shorter variety of the species grows—one similar to that found in the Black Hills of South Dakota. Throughout much of the eastern third of the state, ponderosa pine is the only commercial conifer species growing in upland areas—the species dominates three-fourths of the area of forest land outside of the National Forests east of the divide, although it gives way to Douglas-fir and lodgepole pine at higher elevations in southwestern Montana.

Ponderosa pine is one of the most important timber species in the U.S.; however, the tree dominates considerably less ground today than it did when white settlers first arrived. Early logging took most of the natural seed source, and fire exclusion policies favored Douglas-fir and grand fir. Ponderosa pine, one of the west's most fire resistant species, can grow 230 feet tall and live to be 500 or more years old.

The **Miscellaneous Western Softwood Forest Type** includes juniper, mountain hemlock and forest land less than 10% stocked with live trees. It occupies about 2.3 million acres of Montana.

The **Spruce-Fir Forest Type** prefers cool, moist sites and covers just over two million acres in Montana, most of it at higher elevations. Grand fir, subalpine fir, and Engelmann spruce are the dominant species, although they are often found in association with western larch, aspen, lodgepole pine, and Douglas-fir. At the upper limits of its range, mountain hemlock is often mixed with whitebark pine, subalpine fir, and Engelmann spruce. Grand fir, like Douglas-fir, has expanded its range in the absence of periodic fires. Still, its distribution is somewhat limited in the state. Subalpine fir is much more widespread, largely because it can regenerate under a variety of conditions. While subalpine fir it is a relatively short-lived tree that seldom survives more than 250 years, Engelmann spruce often lives 400 years or more and reaches heights of 120 to 140 feet.

The **Western Larch Forest Type** is found almost exclusively west of the Continental Divide. On dry, warm sites western larch grows in association with ponderosa pine. On cooler, moist sites it grows with grand fir, western hemlock, and western white pine, and at higher elevations with Engelmann spruce and subalpine fir. The western larch forest type occupies some 959,600 acres in Montana, which represents just under half of the area occupied by the type nationwide. Western larch itself is a deciduous conifer that is often maintained by fire. It is an important timber species and can grow quite large. In Montana, where it attains its greatest size, trees reach 200 feet in height. Some live to be 700 years old.

The **Hardwood Forest Type**, which occupies about .5 million acres, is found predominantly in eastern Montana where the hardwoods of the eastern and western U.S. meet. This forest type can

be composed of aspen, cottonwood, boxelder, bur oak, green ash, willow, birch, or elm in various combinations. Cottonwood is by far the most plentiful of these species, and 75% of its distribution lies east of the Continental Divide, mostly in scattered islands and along stream courses.

Private Forest Landowners

Montana's forest lands comprise an estimated 22.4 million acres. Approximately 3.4 million of those acres are public lands reserved from timber management. These reserved forest lands have been set aside as National Forest Wilderness Areas, National Parks and Monuments, and other similar areas.

Timber harvesting is permitted on the remaining 19 million acres of nonreserved forest land.

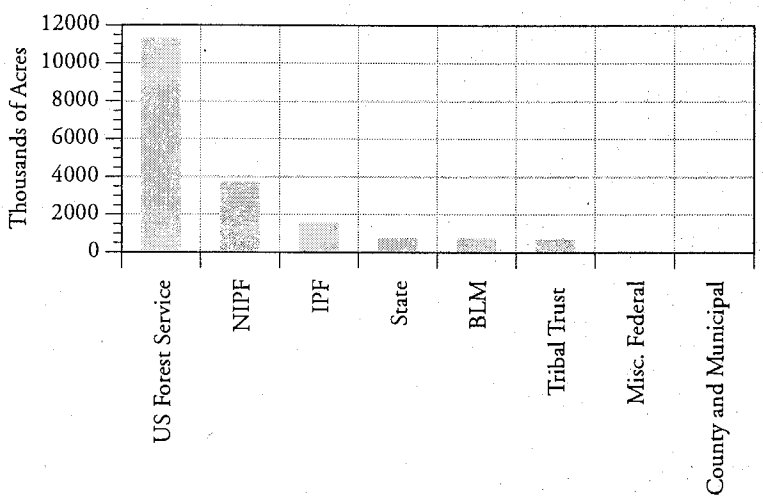

Figure 2. Nonreserved Montana forest lands acres by ownership.

An estimated 23% of these non-reserved forest lands, or timberlands, are held in private ownership. Industrial private forests (IPF) are forests owned by timber-industry corporations. They comprise 7% of the state's total. Non-industrial private forests (NIPF), which are held by individuals and private corporations, account for 16% of the state's timberlands.

Land use objectives for IPF lands are clear. Land managers of these properties are responsible to company owners or shareholders to produce net profits from corporate assets. Although most land-management decisions are resource driven, all are revenue-based. Timber is usually king on IPF lands, but industrial managers have been willing to forego short-term profits in some cases in order to better manage for other forest resources, such as soil productivity, hydrology, scenic aesthetics, wildlife habitat, and recreational use. As seen in Figure 3, harvests from IPF lands have been relatively constant during the last two decades, providing about one-third of the state's total harvest of forest products.

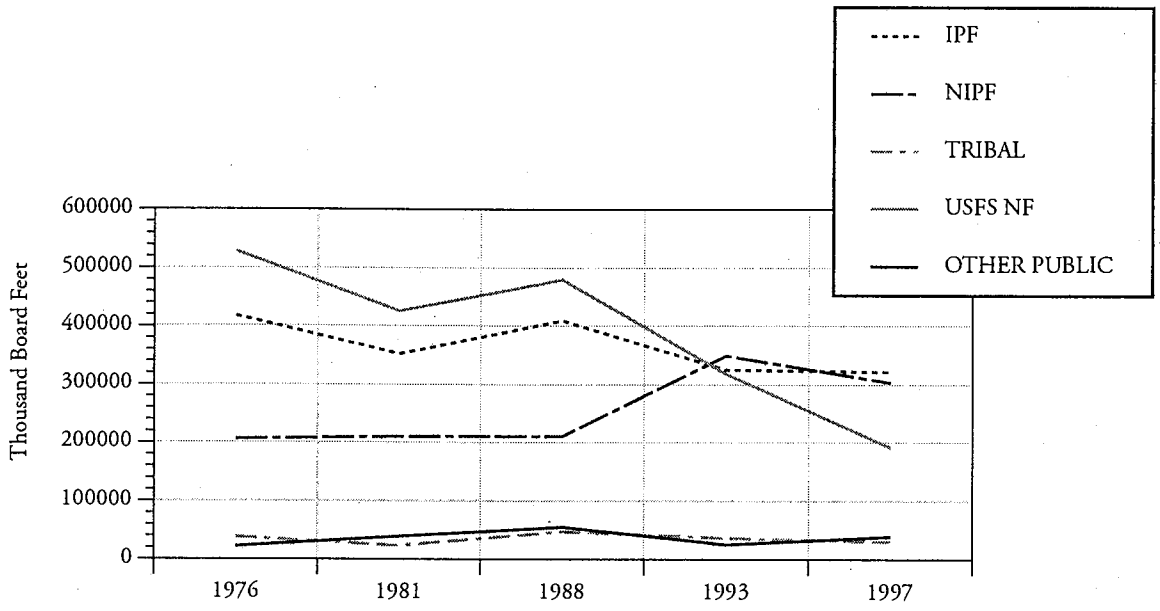

Figure 3. Harvest volume by ownership, 1976 to 1993.

The 3.8 million acres of timberlands known as non-industrial private forest lands (NIPF) are comprised of an estimated 83,000 individual parcels owned by private corporations or individuals. Of these, approximately 17,000, or about 20%, are greater than 15 acres. Many of the remaining 66,000 properties are residential and traditionally have provided mostly aesthetic values and wildlife habitat; however, elevated stumpage prices in the early 1990s prompted owners of many of these parcels to harvest sawlogs from their property.

The owners of the 17,000 larger parcels of NIPF lands have more diverse land objectives than do the owners of the IPF lands. Some desire periodic harvests on a sustained basis, while others refrain from any timber removals. Some enjoy the solitude of timbered acreages and are not interested in allowing use by recreationists, while others are pleased to share their properties for recreational access and enjoyment by neighbors and those who ask. Some want park-like stands to provide shade and water for their cattle; others want an "old-growth" feel provided by dense stands of trees depauperate of forage.

Timber harvests from NIPF lands have increased dramatically during the late 1980s and through the 1990s. Even though NIPF lands comprise less than 20% of the state's forest lands, annual harvests from these lands have increased from less than 20% of the state's entire harvests in the early 1980s to well over one-third, and are projected to continue at that level. Unfortunately,

Stewardship Plans, which outline future management direction for NIPF parcels, have been completed on only 416,273 acres, or just 11% of the total NIPF landbase.

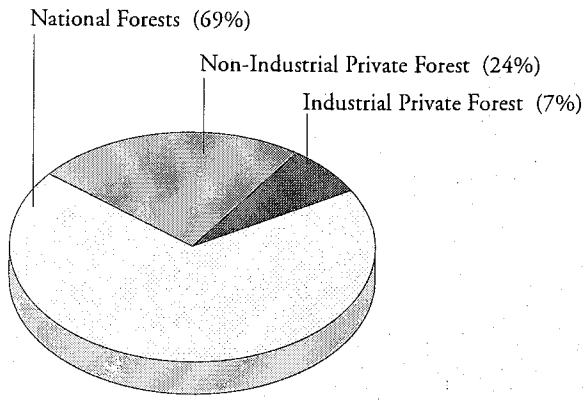

Figure 4. Percentage of board-foot timber inventory growing on various ownerships of nonreserved Montana forest lands.

Very high stumpage prices—the money paid to the timber owner by processors for trees "on the stump"—have prompted these increased harvests. Elevated prices are a result of a decrease in the timber supply available from public lands, particularly the National Forests, as well as steady or increasing lumber demands nationally and internationally. In fact, the lack of timber available for harvest in the state has converted Montana into a net importer of raw logs.

The harvest of forest products has shifted somewhat away from the traditional northwestern and west-central regions of the state to include significant harvests from farms and ranches east of the Continental Divide. These farms and ranches comprise 14% of the entire state's timberlands.

Timber and Wood Products

Montana's forest products industry includes activities associated with the harvest and processing of sawlogs, pulpwood, chips, house logs and other fiber products from the forest.

The industry is concentrated in nine contiguous counties in western Montana. Those nine counties account for over 80% of the industry's labor income. The industry represents 41% of western Montana's local economic base, down from 50% in 1978.

In the 1990s, the forest products industry was the third largest basic industry sector in Montana, exceeded only by federal government employees and the agriculture sector. It accounted for about 14% of the state's wages and 10% of the state's jobs. In 1994, the 11,100 workers

employed in the forest products industry earned $369 million for an average per capita earning of over $33,000 per year.

Timber harvesting in the state has averaged a little over one billion board feet per year.

Gross growth of the state's forests in 1988 was estimated at 857.4 million cubic feet (MMCF). Losses due to mortality that year were 199.4 MMCF. Harvest removals of live growing stock—mostly Douglas fir, lodgepole pine and ponderosa pine—were 214 MMCF. Therefore, the state's forests accumulated 444 MMCF or 207% more timber than was harvested.

Removal of timber on IPF lands in western Montana, however, exceeded growth during the last two decades as industrial processors pursued the management objective of capital liquidation of older timber and their goal of younger, faster growing stands of managed timber.

II. Montana's Forest Resources

Geologic Features and Mineral Resources[3]

The general rule is, wherever there are mountains in Montana there is snow, and wherever there is snow and the rivers and streams that carry the runoff, there are forests. Therefore this brief description of geologic features focuses on the state's principal mountain ranges.

Montana has over forty individually named mountain ranges, the result of a complex geologic history of sedimentation, deformation caused by compression, igneous activity, and most recently, extensional block faulting. Figure 5 shows the major ranges. One of the state's more famous geologic features and one that has given rise to some of its most spectacular geology is the Lewis Thrust Fault. Ever since Bailey Willis, an intrepid geologist and early explorer of northwestern Montana, discovered the Lewis Thrust Fault in 1901, geologists have considered it one of the world's classic geologic structures. In a thrust fault, a fracture forms in the earth's crust nearly parallel to the surface of the earth. The rock on one side then begins to ride up and over the rock on the other side. The Lewis Thrust Fault sliced slightly diagonally through thick layers of sedimentary rocks. All the layers on top of that fault line slid as a series of slabs as much as 50 miles across western Montana, pushed along by the same compressive forces that caused the fracture. They came to rest where Glacier National park and the Great Bear, Bob Marshall, and Scapegoat Wilderness Areas are today. Viewed from above, the Lewis Thrust Fault surfaces along a line that runs from Mount Kidd, British Columbia in the north to Steamboat Mountain in west-central Montana in the south. West of it are Belt sedimentary rocks and the start of the Rocky Mountains. East of it are Cretaceous shales and sandstone hills and the beginnings of the northern Great Plains. The mountains along the fault line—known collectively as the Overthrust Belt—consist of long, north-south ridges. The ridges are the upturned edges of the chunks of sedimentary rock that slid eastward and overlapped the ones before them like the shingles on a roof. They stand like a parapet against eastern Montana, but are rootless in the sense that they are not anchored, not sunk into the earth like most mountains. Rather they perch on top of it, unconnected except by juxtaposition to the rock beneath. Geologists from around the world come to visit the Lewis Thrust Fault because of its size (it is as long as Colorado is wide, which makes it one of the largest thrust faults in the world) and because of the difference between the ages of the rocks on either side of it. The rock on top is 1,300 million years older than

[3] Sources include: Rockwell, David, Glacier National Park: A Natural History Guide; Kendy, E. and R. E. Tresch Geographic, Geologic, and Hydrologic Summaries of Intermountain Basins of the Northern Rocky Mountains, Montana; and Alt, Dave, Montana Mountain Geology in Montana Mountain Ranges.

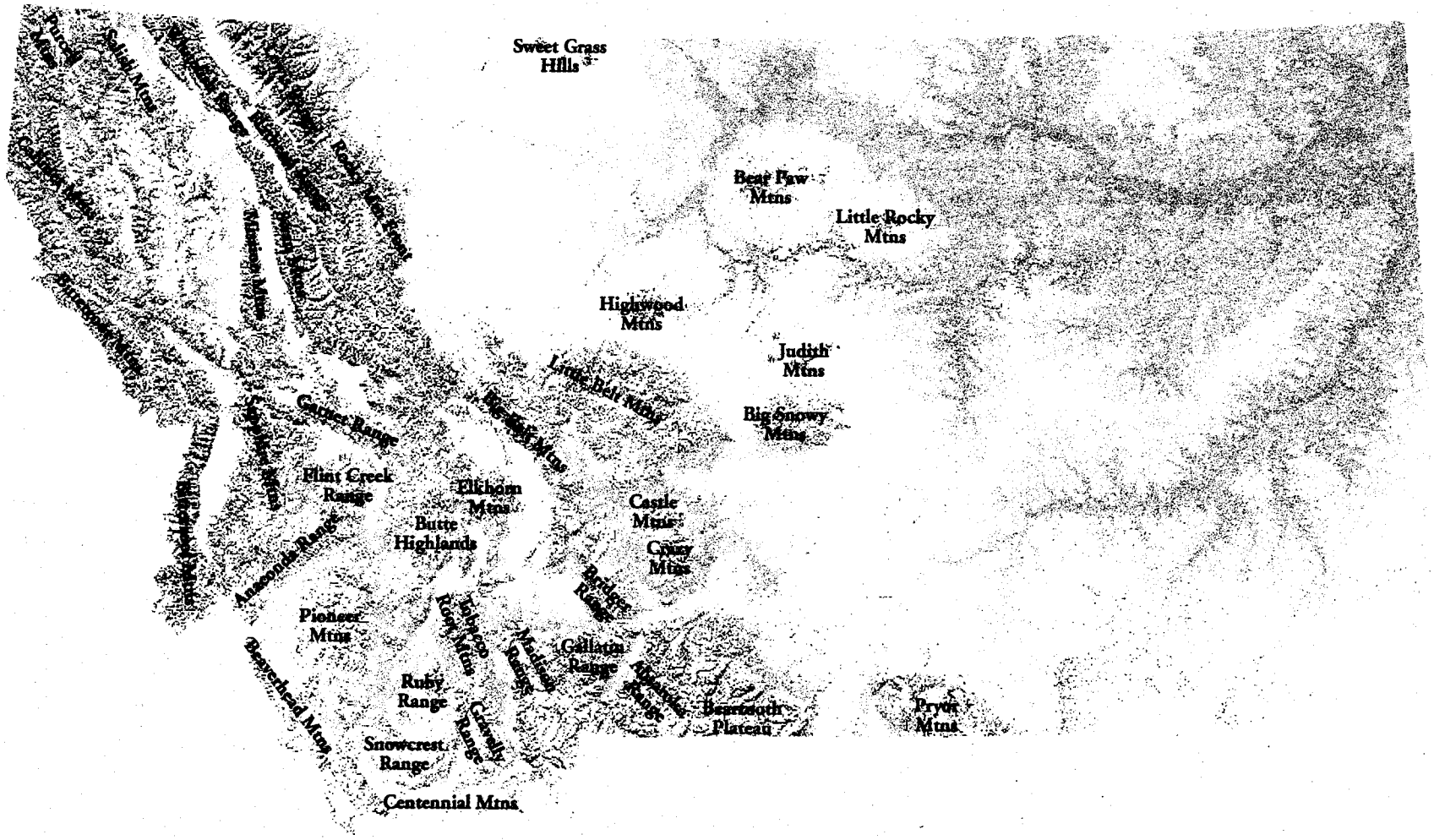

Figure 5. Montana's major mountain ranges

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the rock underneath, violating the natural law that says rock gets older as you move down through the earth's strata.

To the south of these mountains, the rugged, 470-mile long Bitterroot Range winds along the Montana-Idaho border. The Bitterroots are Montana's longest mountain range and include three groups of mountains: the Bitterroots, the Beaverheads, and the Centennials. They are also part of one of North America's best known batholiths, the Idaho Batholith of central Idaho and western Montana. A batholith is a large intrusion of solidified magma that does not reach the earth's surface as it cools. Later, with erosion, it can become exposed which is what has happened in the Bitterroots. So unlike the mountains of northwestern Montana, which are composed of sedimentary rock, this range is mostly granite. The rock is roughly 75 million years old.

One theory is that the emplacement of Idaho Batholith raised the earth's crust like a blister. The bulging caused another large block of rock—the Sapphire Block—to gradually start sliding downslope in an easterly direction. According to the theory, this block of rock, like the mountains of northwestern Montana, slid about 50 miles. When it finished sliding, it had pushed up, bulldozer fashion, the semi-circular arc of isolated mountains we call the Garnet, Flint Creek, and Anaconda-Pintler Ranges.

Another batholith—the Boulder Batholith—makes up the jumble of mountains along the Continental Divide between Helena and Butte, mountains well-known for their striking and strangely shaped rocks, some of which are the result of related volcanic activity. At the time of the batholith's doming, it is believed that this region of Montana was a geologic hot spot similar to today's Yellowstone Park.

A different sort of geologic activity built the mountains of southwestern Montana: the Ruby, Snowcrest, Gravely, Blacktail, Madison, and Gallatin Ranges, and the Beartooth Plateau. These ranges are the result of block faulting—blocks of the earth's crust pushed up along faults. The mountains contain sedimentary, metamorphic, and igneous rock, the latter of which—pink granites and streaky gneisses and schists—are exposed across large areas. Over three billion years old, these ancient crystalline rocks are part of the body of rock that makes up most of the continent's crust. In this same area, the Absaroka Mountains tell yet another geologic story. The Absarokas are the result of volcanic activity similar to that that created the Cascades. A chain of volcanoes erupted about 50 million years ago as a subducting ocean plate dived beneath the continent's western edge.

Volcanic activity also created mountains in west-central Montana—the Adel, Highwood, Judith, and Bearpaw Ranges. Some of the magma never made it to the earth's surface but formed igneous intrusions. One such intrusion is responsible for Montana's much-loved Sweetgrass Hills. Geologists know these mountains for their rare rocks composed of potassium and sodium.

Finally, there are Montana's island ranges: the Little Rocky, Big Belt, Little Belt, Big Snowy, Little Snowy, and Pryor Mountains. These relatively small and isolated ranges are domes of rock, anticlines that dip outward equally in all directions. The highest parts of these ranges are the oldest; younger rocks make up the margins. The core of the Big Belt Mountains, for example, is composed of billion-year quartzites, dolomites, and limestones, while the margins are sedimentary rocks 500 to 200 million years old. Extremely rugged canyons cut through the limestone.

Table 1 lists some of Montana's outstanding geologic features.

Table 1. Selected geologic features in Montana.

Geologic Feature	Description
Alder Gulch near Virginia City	Alder Gulch is one of the richest gold strikes in history. The site gave birth to two of Montana's most famous towns: Virginia City and Nevada City.
Big Ice Cave, Pryor Mtns.	Well-known limestone ice cave.
Bighorn Canyon, Bighorn Canyon National Recreation Area	One of the deepest and most dramatic canyons in North America. Walls are half a mile high.
Boulder Batholith, Butte	Forty-mile wide blister of granite that stretches from Helena to the Big Hole River. Rich in minerals. Mines in Helena, Boulder, Butte, and Silver Star.
Capitol Rock, Custer NF (NF)	A National Natural Landmark, this chunk of sandstone resembles the capitol building.
Chinese Wall, Flathead and Lewis and Clark NFs	Reef of limestone 1,000 feet high that follows the Continental Divide and stretches for twelve miles through the Bob Marshall Wilderness.
Continental Divide, Western Montana	Waters on the west side of this divide flow to the Pacific, waters on the east flow to the Atlantic. Roughly 800 miles of the Continental Divide are in Montana. Portions are a designated National Scenic Trail.
Crazy Mountains, Gallatin NF	Up-thrust of rugged rocks that rise over 7,000 feet above the plains. The range served as a landmark for early travelers.
Devil's Slide, Corwin Springs	200-million-year-old formation of sedimentary rocks at the base of Cinnabar Mt.
Flathead Lake, Flathead Indian Res. and Lake and Flathead Co.	Largest freshwater, natural lake west of the Mississippi. Located within the southern end of the Rocky Mountain Trench in northwestern Montana.
Gallatin Petrified Forest, Gallatin NF	Petrified wood and fossils from 35 to 55 million years ago. Some trees petrified in upright positions.
Giant Springs, Giant Springs State Park	One of the world's largest springs with a flow of 7.9 million gallons per hour. Spring was observed by Lewis and Clark.
Granite Peak, Custer NF	At 12, 799 feet above sea level, Granite Peak is the state's highest mountain.
Grasshopper Glacier, Custer NF	One of the largest glaciers in the U.S. It contains layers of Rocky Mountain grasshoppers, a now-extinct species that 100 years ago formed enormous swarms in much of the west.
Hell Creek Fossil Area, C. M Russell National Wildlife Refuge	Site where two skeletons of *Tyrannosaurus rex* and other dinosaurs (including the oldest known alligator) were unearthed.
Humbug Spires near Melrose	White granite spires rise 600 feet above surrounding trees.
Kootenai Falls near Libby	200-foot high waterfall on the Kootenai River; one of only a few large waterfalls left in the Northwest.
Lewis and Clark Caverns, Lewis and Clark Caverns State Park	One of the largest caverns in the U.S. Carved out of limestone, the caverns are famous for their colorful formations.
Madison River Canyon Earthquake Area, Gallatin NF	Site of 1959 earthquake measuring 7.1 on the Richter Scale. Quake generated a landslide that blocked the Madison River and created Quake Lake.
Medicine Lake Site, Medicine Lake National Wildlife Refuge	Excellent place to see evidence of Continental Glaciation—till, outwash, eskers, kames, and terrace deposits. Site is a National Natural Landmark.
Medicine Rocks, Medicine Rocks State Park	Large, oddly shaped sandstone rocks stand out in a spectacular way on the Great Plains.
Refrigerator Canyon, Helena NF	Temperatures at the base of this narrow, steep canyon are often 20° F cooler than outside the canyon.
Shonkin Sag near Shonkin	During the last ice age, a giant ancient river cut a deep, mile-wide valley.
Square Butte near Square Butte	A National Natural Landmark visible for 100 miles, this granite butte rises 2,500 feet above the valley floor.

Some twenty-three products are mined in Montana. The state ranked 24th in the nation in nonfuel mineral value produced and first in the production of talc, pyrophillite, platinum and palladium; the latter two are only produced in Montana. It ranked fifth in copper, gold, zinc, molybdenum, and phosphate rock. Two percent of the total value of U.S. mineral production is attributed to Montana.

There are 2,192 permitted mines in Montana. The number includes 89 large hardrock and 2,085 opencut mines. Hardrock operations occupy about 38,600 acres, opencut occupy another 30,000. Table 2, arranged by intermountain basin, summarizes mineral resources, mining, and exploration activity in these mountainous areas. Small hardrock operations, of which there are 659, cover 1,600 acres. The state of Montana is currently reviewing permits that would add another 12,000 acres to the total permitted acres. (In addition to the expansion of existing mines, 8 new hardrock mine proposals and 30 new opencut mines are being reviewed).

Table 2. Mining activity in Montana's forested regions.

Valley	Activity
Avon Valley	Exploration for placer gold in the mountains east, north east and north of Avon and for gold and silver southeast of Elliston.
Beaverhead Valley	Two cyanide-heap-leach operations produce gold, silver, and led in the southern Pioneer Mountains and two open pit mines produce talc in the Rubys. Vermiculite was recently produced from an open pit mine in the Blacktail Deer Creek drainage and exploration for gold and copper is underway there.
Bighole Valley	Gold is placer mined in the Trail Creek drainage.
Bitterroot Valley	Gold and tin are placer mined and underground mined in the West Fork and Bluejoint Creek drainages.
Blackfoot-Clearwater Valley	Barite is underground mined southeast of Greenough. Gold is placer mined in several locations. A major gold mine is proposed for the upper reaches of the Blackfoot drainage.
Boulder Valley	Current activity limited to exploration for gold.
Helena Valley	Recently gold and silver were extracted from a mine in the Tenmile Creek drainage and lead, silver, gold, and zinc are extracted from a mine in the Prickly Pear drainage. Both mines use(d) open-pit and cyanide heap-leaching methods. Exploration is ongoing for three proposed placer gold mines northwest of Helena.
Jefferson River Valley	A large open-pit cyanide-heap-leach gold and silver mine operates at the south end of Bull Mountain north of Whitehall and an open-cut placer gold operation recently closed in the Highland Mountains. Limestone is quarried in the Pipestone Creek drainage and an open-pit chlorite mine operates intermittently south of Silver Star.
Lake Creek Valley	Copper and silver are extracted from an underground mine near the southern end of the Lake Creek Valley.
Libby Creek Valley	Exploration and permitting are underway for copper, silver, and gold mines in the headwater areas of Libby and Flower Creeks and for a gold, lead, zinc, and silver mine in the Big Cherry Creek drainage area.
Lower Clark Fork Valley	Mining is a major land use in the surrounding mountains. In the Cabinet Mountains, gold is mined east of Trout Creek. Exploration and permitting are in progress for proposed silver and copper mines northeast of Noxon. In the Cour D'Alene Mountains, exploration is underway for copper and silver west of Trout Creek, and for reopening old lead and zinc mines west of Thompson Falls.
Madison River Valley	Two open pit mines produce talc from the Gravelly Range southwest of Ennis.
Missoula Valley	Gold is placer mined in the Ninemile Creek drainage area.
Red Rock Valley	Gold and copper exploration is ongoing in the Sage Creek drainage.
Silver Bow Valley	Copper and molybdenum mines.

Valley	Activity
Townsend Valley	A few placer operations currently produce gold from the Big Belt and Elkhorn Mountains. Limestone is quarried in the Indian Creek drainage west of Townsend. Several companies explore for gold, limestone, and graphite in the Indian Creek area.
Upper Blackfoot River Valley	Gold and lead are mined in the Poorman Creek drainage southeast of Lincoln. Exploration and permitting are underway for gold, silver, and copper in the Blackfoot River headwater area. If permitted, a proposed mining operation near the confluence with Landers Fork would use cyanide heap-leaching to extract an estimated 3.7 million ounces of gold from about 400 million tons of rock. Montana recently passed a citizen initiative that would ban any new mines using this technology. A moderate to high potential for the occurrence of undiscovered gold deposits in or adjacent to the Helena National Forest is indicated by historical mining, past and present exploration activities, and geologic, geochemical, and geophysical data from USGS regional studies.
Upper Clark Fork Valley	Among the minerals recently mined are gold, lead, zinc, silver, silica, copper, molybdenum, and phosphate. Currently exploration is underway for gold, silver, platinum and sapphires. Open-stope, open-pit, placer, and underground mining methods are used.
Upper Ruby Valley	Two open pit mines produce talc from the crest of the Ruby Range and exploration for gypsum is ongoing in the Gravelly Range.
Western Three Forks Valley	Exploration for gold is underway near Pony.
Yellowstone	A gold mine is proposed near Cooke City and Yellowstone National park in the headwaters of the Stillwater and Clark's Fork rivers and of Soda Butte Creek, which flows into another tributary of the Yellowstone. The Stillwater and Boulder rivers drain an area of the Beartooth/Absaroka Wilderness that contains the largest deposit of platinum and palladium in North America. The largest coal producing region in the United States spans the basins of the Powder and Tongue rivers.
Other	The Stillwater Mining Company plans to tap into the largest known platinum and palladium deposit in the Western Hemisphere through an underground mine in Sweet Grass County, south of Big Timber. The Zortman Mine in Phillips County is the state's largest gold mine at present. Meagher County produces iron, Park County produces gold. The Bull Mountain Coal Mine near Roundup is the first full-scale underground coal mine to operate in Montana since the 1970s. Coal underlies 35% of Montana's surface area, all in eastern Montana.

Petroleum deposits also occur in association with some forest areas. The Overthrust Belt is a region of highly deformed strata from which petroleum is produced; it underlies parts of northwestern Montana just east of Continental Divide. The primary forests there are aspen parklands and coniferous forests of Douglas-fir, Engelmann spruce, limber pine, and subalpine fir. Eastern Montana is underlain by part of the Williston Basin, which is a major petroleum-producing basin in the upper Central United States. This area is not forested, however.

Forest Soils and Productivity

Four soil orders underlie most of Montana's forests[4].

Alfisols, found primarily in forested intermountain valleys, mountains, and foothills, formed under coniferous or mixed forests with low to high precipitation and cool to cold climates. They are comparatively fertile soils and slightly to moderately acid with a clay-rich B-horizon.

[4] Source: Munn, L.C. et al. Soils of Montana and Veseth, R. and C. Montagne, Geologic Parent Material of Montana Soils.

Inceptisols, immature soils that resemble their parent materials, are found in the valleys and mountains of western Montana, often in association with surface deposits of silty volcanic ash. In northwestern Montana, Inceptisols formed under the influence of high precipitation, cold temperatures, and coniferous forest.

Mollisols are found throughout Montana. Some formed under open forests and woodlands, others under grass. They are fertile, dark soils rich in humus. Those found on foothills and mountains have the thickest and darkest surface horizons. All occur in areas with moderate to low precipitation and cool to cold temperatures.

Aridsols occur in some the driest parts of Montana. They can be found under juniper and stunted ponderosa pine forests in southeastern and southwestern Montana. Light in color, aridsols typically have high accumulations of calcium carbonate or mineral salts that tend to inhibit plant growth. They are also nearly depleted of plant-available moisture for most of the summer.

Two other soil orders cover small parts of Montana. Spodosols are light colored brownish soils found beneath a few wet, cold, coniferous forests in the mountains of western Montana. Their A-horizon tends to be infertile because of leaching. Histosols are richly organic soils formed in bogs, wet meadows, and some backwater floodplain areas where the water table is high.

On average, Montana's forest lands[5] are moderately productive. Only about 13% of the land base (3 million acres) has the potential of producing over 85 cubic feet per acre per year (ft^3/ac/yr). Another 14 million acres have the potential of producing between 20 and 84 ft^3/ac/yr. Potential productivity varies across the state and by ownership status, as Figures 6 and 7 indicate. Productivity is much higher west of the divide due to the moisture associated with the Pacific maritime air masses that dominate the climate over that part of the state.

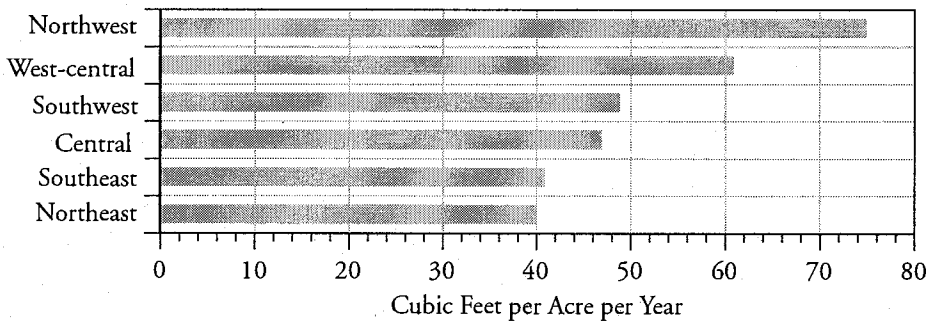

Figure 6. Average productivity of Montana's forest lands by Forest Legacy Area.

[5] Timberland is the same as commercial forest land—areas where timber species make up at least 10 percent stocking. It includes virtually all of Montana's forest land. (Timber species are defined as those tree species traditionally used for industrial wood products.)

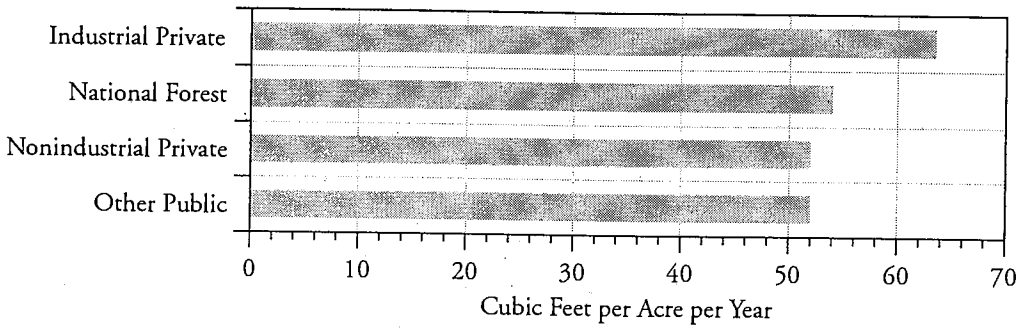

Figure 7. Productivity of Montana's forest lands by ownership.

Watershed Resources[6]

In Montana, surface water—lakes, rivers, reservoirs, wetlands—cover about one percent of the land. The total supply of surface water is just over 53 million acre-feet. The mountains of western Montana are the source for much of this water. The headwaters of the major rivers of the state all begin in the mountains where the climate is characterized by cold winters and mild summers. In most mountainous areas, a thick snowpack accumulates in winter. Annual precipitation in the western part of the state ranges from 10 to 30 inches in the basins (more than half falling in winter and spring) to about 100 or more inches in the mountains of northwestern Montana. The large winter snowpacks gradually melt, maintaining streamflow well into the summer and fall. In eastern Montana, several island mountain ranges rise above the plains, but the eastern part of the state is primarily a broad, sloping plain carved by river valleys and deeply cut by the Missouri and Yellowstone rivers. Much less precipitation falls here than in the western part of the state—as little as six inches of rain in some areas. Reflecting this arid climate, many smaller waterways dry up during the summer.

Montana's water is important not only in Montana, but supplies much of the North American continent. Montana contains the headwaters for three continental watersheds—the St. Mary's River which drains into Hudson Bay, the Columbia River which drains into the Pacific, and the Missouri River which drains into the Gulf of Mexico. The St. Mary's drains only a small portion of the state. The major watersheds of Montana are those carved by the Columbia River's tributaries (the Clark Fork and the Kootenai), the Missouri River, and the Yellowstone River (Figure 8). The Yellowstone basin is considered separately from the Missouri watershed because the rivers merge outside the state.

[6] Adapted from Higgins, Susan. Headwaters To A Continent: A Reference Guide to Montana's Water. Montana Watercourse, Montana State University, Bozeman.

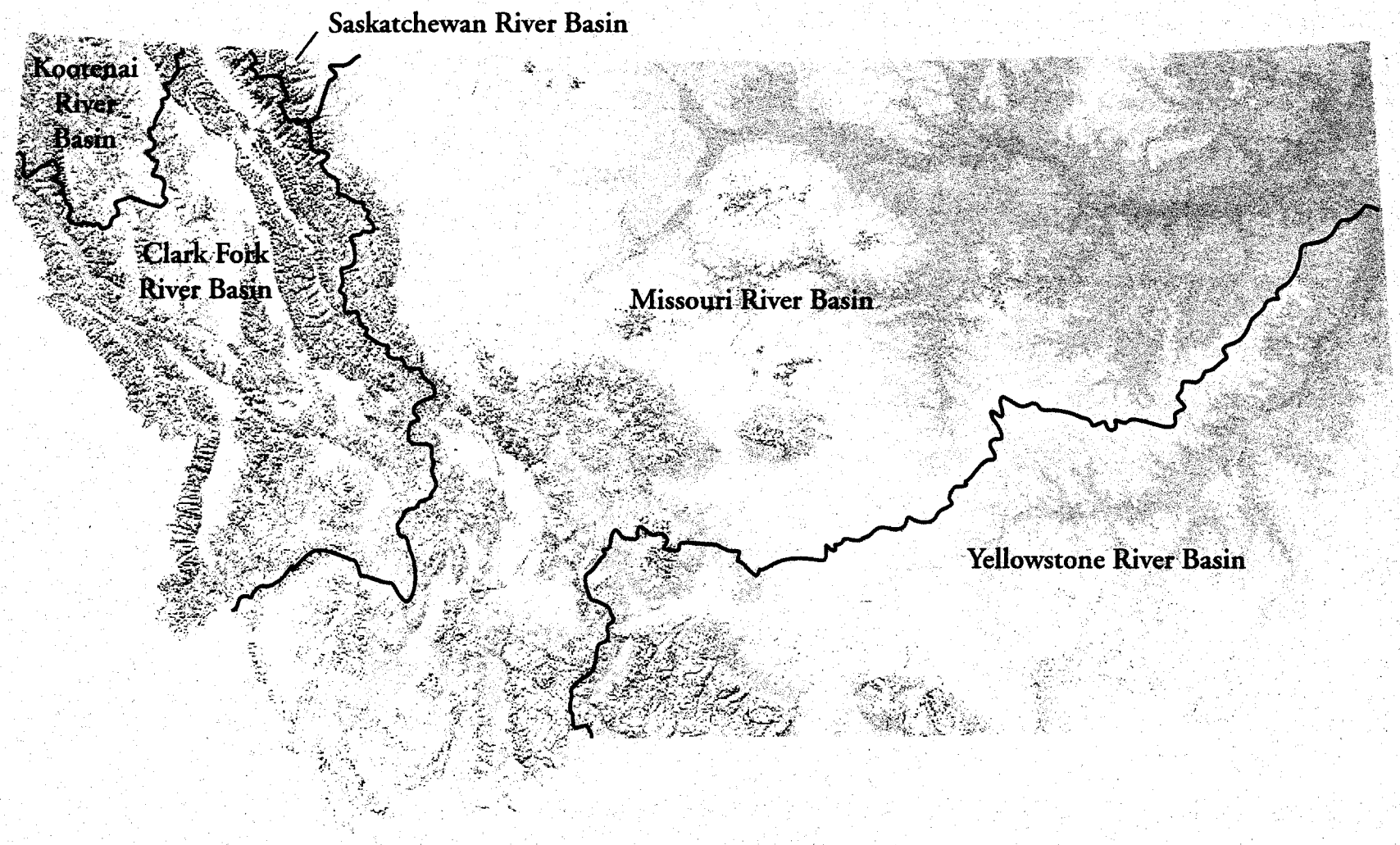

Figure 8. Montana's major river basins.

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The Missouri. The Missouri River basin—the largest in Montana—drains more than one half of the state's land area, but carries less than one-fifth of the water. The river rises in the forests of southwestern Montana from the confluence of the Madison, Jefferson, and Gallatin Rivers near Three Forks. It flows north, turns east at Great Falls, and exits the state 400 miles downstream near Fairview. Major tributaries include the Big Hole, Dearborn, Judith, Marias, Milk, Musselshell, Smith, Sun, and Teton Rivers.

Fifty reservoirs in the basin each have a capacity of 5,000 acre-feet or more. The largest is Fort Peck Reservoir, a huge, multi-purpose project constructed on the Missouri River by the federal government. It normally stores 15 million acre-feet but has a capacity of more than 19 million, which makes it one of the largest reservoirs in the United States.

In the Missouri basin, irrigation is the major offstream use of water. Surface water from the major tributaries irrigates almost 1.5 million acres of alfalfa, pasture, wheat, and barley. Where surface water is unavailable, ranchers pump ground water for their livestock and other needs. Municipal drinking water systems use only about 1.5% of the water consumed in the basin, but they provide water for more than 275,000 people. This public water supply draws from both surface and ground water. Most rural residents rely solely on ground water for their domestic needs. Instream flows support electrical generation, fisheries, and recreation. Ten percent of Montana's electrical generating capacity comes from hydroelectric facilities along the Missouri and its tributaries. The entire length of the Madison and parts of the West Gallatin and Missouri are rated as Class I fisheries for trout. The lower Missouri is also rated Class I for paddle-fish and sturgeon. Reservoirs in the north and east support excellent walleye and northern pike fisheries and recreational pursuits such as boating, wind-sailing, and wildlife watching. In 1976, Congress designated 149 miles of this stretch as a National Wild and Scenic River. Water quality within the Missouri River basin varies from excellent to highly impaired. Generally, surface-water quality is good in the upper basin.

The Yellowstone. The Yellowstone River is free of dams for its entire 671 miles, making it the longest free-flowing river in the lower 48 states. Its headwaters originate in the forests of Wyoming and Montana, and its huge watershed drains one-third of Montana. The river winds north through mountains, then turns east at Livingston, flows through Billings, and meanders through the flatter terrain of eastern Montana before joining the Missouri just beyond the state boundary. Tributaries include the Bighorn, Boulder, Clark's Fork, Powder, Shields, Stillwater, and Tongue Rivers. The Yellowstone River basin includes areas of high annual precipitation and snowpack in its upper reaches. It also embraces Montana's driest valley, the Clark's Fork of the Yellowstone near Belfry, which receives six inches of precipitation a year.

Surface water in the basin is collected in reservoirs, seven of which exceed a 5,000 acre-feet capacity. The largest is Bighorn Lake, a multipurpose reservoir on the Bighorn River. Irrigation is the major off-stream use of water. Water from tributaries irrigates more than 680,000 acres. Ground water, found in both near-surface and deep aquifers, irrigates a small proportion of the agricultural land and provides an important source of water for livestock. Municipal water supplies also consume surface and ground water in the basin, mostly for the city of Billings. Most rural residents rely exclusively on ground water for domestic supplies. Other offstream uses, such as industrial and cooling water for thermoelectric power generation, consume relatively less water. Instream flows support electrical generation, fisheries, and recreation. World famous trout fisheries like the Shields, Boulder, and Stillwater Rivers are known for their annual caddisfly and salmon fly hatches. Small tributaries upstream of Livingston in the Paradise Valley annually attract visitors from around the world. The Beartooth Plateau, an alpine expanse northeast of Yellowstone Park, features 400 alpine lakes filled with species such as cutthroat, rainbow, and brook trout. Downstream of Billings, warm water species like sauger and walleye thrive. The Bighorn River, with cold water discharges from Yellowtail Dam, harbors a renowned rainbow and brown trout fishery.

Water quality varies within the Yellowstone River basin. Many of its upper basin tributaries are prized for their pristine quality, but some have been degraded by metals and acid mine drainage. Arsenic levels are elevated from geologic materials in some of the upper basin waters and in the Powder and Tongue River drainages. In the middle and lower basin, land-use practices impair water quality through habitat alterations, high salinity, and addition of sediment, nutrients, and chemicals. Near Billings, bacterial contamination indicates potential pollution from industrial and municipal discharge.

The Clark Fork. Montana's portion of the Columbia River basin is drained by the Clark Fork of the Columbia and Kootenai River systems. Their combined watersheds drain all the land in Montana west of the Continental Divide, about one-fifth of the state.

The Clark Fork of the Columbia, known locally as the Clark Fork River, originates near Butte. As it flows through northwestern Montana, the Clark Fork drains about 22,000 square miles. Although it is smaller than either the Yellowstone or Missouri River basins, it discharges substantially more water—almost 16 million acre-feet annually at the state line. Major tributaries include the Bitterroot, Blackfoot, and Flathead Rivers. The Flathead River watershed drains the northern part of the Clark Fork basin. Its headwaters arise in Glacier National Park, the Bob Marshall Wilderness, and Canada. Most of the drainage is rugged and forested. The terrain opens up along the glacially-formed trough that confines Flathead Lake, the largest freshwater lake in the United States west of the Mississippi. The Upper Clark Fork basin, which extends from Butte to Missoula, contains heavily forested mountains and broad valleys. This part of the basin includes the driest area, the rain shadow east of Anaconda where less than ten inches of precipitation falls each year. The Lower Clark Fork basin is also mountainous and forested, and contains the long, broad Bitterroot Valley. In the mountains of this far western part of the state, 100 inches of precipitation may fall each year. More than twenty large reservoirs, including natural lakes, collect water in the Clark Fork River basin. Each has greater than 5,000 acre-feet storage capacity. The largest natural water body is Flathead Lake. Its capacity was increased by the construction of Kerr Dam at the south end.

Irrigation is the major offstream use of water in the Clark Fork basin. Surface water irrigates fields of alfalfa, hay, and wheat, and produce such as cherries, mint, and seed potatoes. Irrigation consumes about 95% of the total amount of offstream water that is used in the basin. Public drinking water supplies use less than three percent and draw from both surface and ground water, depending on the location. Most rural residents rely on ground water for their domestic needs.

Instream flows support electrical generation, fisheries, and recreation. About 25% of Montana's electric generating capacity comes from hydroelectric power generation in the Clark Fork basin. The region's six blue ribbon streams lure fly-fishing enthusiasts from around the world. Boaters, floaters, and swimmers enjoy the rivers, lakes, and reservoirs of the Clark Fork basin.

Water quality ranges from very good in the blue ribbon trout streams to poor in the nation's largest complex of Superfund sites along the Clark Fork. The upper Clark Fork, from Butte to Missoula, was a world-famous mining area from the late 1800s to the 1970s. Waste products from these mining and smelting operations resulted in heavy metals such as copper and zinc accumulating in the sediments. When the rivers are running high, they can disturb the sediments and release toxic contaminants that can kill fish and other aquatic life. The contaminants are also migrating into the ground water.

The Kootenai. Located in the northwest corner of Montana, the Kootenai River basin carries huge amounts of water on its brief ninety-five-mile journey through the state. Its headwaters originate in British Columbia, and the river loops through Montana and Idaho and back into Canada before discharging into the Columbia River. The basin drains less than three percent of Montana, but it discharges more than the Yellowstone or Missouri rivers. Three-fourths of this water originates in Canada. Warm, wet air masses from the Pacific contribute to this volume of water. They bring abundant rain and from 40 to 300 inches of snowfall each year. Montana's portion of the Kootenai basin is narrow with steep, densely-wooded mountains and slender flood plains along the river and its two major tributaries—the Fisher and Yaak Rivers. The upstream portion of the Kootenai River is dominated by Libby Dam and its reservoir, Lake Koocanusa, which impounds 48 miles of the river in Montana and extends an additional 43 miles into Canada. The reservoir's storage capacity is exceeded only by Fort Peck in the Missouri basin. Downstream of Libby Dam is Kootenai Falls, a 700-foot-wide, 30-foot-high natural falls.

Although little agriculture occurs here compared to other parts of Montana, irrigation is still the dominant use in the Kootenai River basin. Most irrigation water is drawn from surface supplies. Mining and the wood products industry also use significant amounts of water. Public and rural water supplies—drawn almost equally from surface and ground water—account for about three percent of the water used. As in the other major river basins, instream flows in the Kootenai River basin support electrical power generation, fisheries, and recreation. Hydroelectric generation at Libby Dam, which provides one-tenth of Montana's electrical generating capacity, uses the most instream water. Rainbow trout, mountain whitefish, and Montana's only population of white sturgeon also depend on instream flows of the Kootenai and its tributaries. Their presence attracts people to this region for fishing and boating. Water quality in the Kootenai River basin depends on the type of human activities occurring nearby. Overall, most alluvial aquifers in the basin contain good quality water with lower concentrations of dissolved chemicals than elsewhere in the state.

Wildlife and Fish Habitat

Montana's scenic splendor, bountiful fish and wildlife resources, and outstanding recreational opportunities are second to none. Our forests, prairies, valleys, and waterways are home to over 600 species of mammals, birds, fish, reptiles, and amphibians. The state is dissected by 179,000 miles of streams and contains more than 10,000 lakes, reservoirs, and ponds that occupy nearly 980,000 acres. In some of the more remote areas of the state, such as northwestern Montana, the diversity of species is similar to what it was at the time of European-American settlement.

Opportunities for outdoor recreation such as hunting, fishing, wildlife viewing, are an important reason why many people choose to live in the state. Consequently, fish and wildlife populations are a major part of our culture and an equally important component of the economy. An estimated 32% of Montana residents go hunting each year. In 1996, hunting generated an estimated $334 million in hunter-related direct expenditures. Approximately 83% of Montana residents participate in some form of wildlife recreation other than hunting each year. This activity generates nearly $219 million annually in direct expenditures. Fishing is even more popular than hunting; 44% of adults in Montana go fishing each year. The activity generates $243 million annually to the state's economy.

Different forest types are used by different species of wildlife, as Table 3 shows.

Table 3. Wildlife use of major Montana forest habitat types.

Habitat Type	Distribution in Montana	Wildlife Use
Ponderosa Pine-Bluebunch Wheatgrass	Widespread, driest sites	Deer winter range, occasional elk use.
Douglas-fir-Snowberry	Common, warm slopes	Moderate deer use year round, occasional elk, moose.
Douglas-fir-Pinegrass	Ubiquitous, moderately dry slopes	Moderate big game use
Douglas-fir-Ninebark	Moderate to high in northwestern, west-central, and southwestern regions	Heavy big game use in winter
Ponderosa Pine-Idaho fescue	Widespread	Deer year round, elk winter range
Douglas-fir-Bluebunch Wheatgrass	Central, west-central; warm and dry	Frequently used big game winter range
Douglas-fir-Twinflower	Major type in northwestern, west-central, central; moist sites	Moderate big-game use year round
Douglas-fir-dwarf huckleberry	Common in northwestern, west-central, central; warm, moist sites.	Moderate big-game use
Douglas-fir-globe huckleberry	Prominent in central; cold sites	Moderate big-game use
Subalpine fir-Clintonia	Extensive in northwestern; moist, warm sites	Good big-game forage production, early successional stages

While the populations of most of Montana's wildlife species are stable, a few have declined to dangerously low levels and are in need of special management. Endangered species that use forest areas include the peregrine falcon and gray wolf. Threatened species include the bald eagle and grizzly bear. Habitat loss and degradation, environmental contaminants, and impacts from nonnative species are some of the many factors that can place species in jeopardy. The status of the wolf, grizzly bear, and bull trout, three of Montana's better known listed species, is summarized in the paragraphs that follow.

More grizzly bears live in Montana than any other state in the lower 48. One estimate is that between 549 and 813 bears live in northwest Montana in what's termed the Northern Continental Divide Ecosystem. Perhaps another 250 grizzly bears reside in and around Yellowstone National Park in southwest Montana. The recovery plan for this species focuses on six ecosystems, four of which—the Cabinet-Yaak, North Continental Divide, Selway-Bitterroot, and Yellowstone—fall within or substantially within Montana.

Recently, the Fish and Wildlife Service successfully negotiated an agreement for the conservation of grizzly bears in the Swan Valley where intermingled land ownerships between Plum Creek Timber Co., Montana Department of State Lands, the U.S. Forest Service, and small private landowners created long-standing and unique management problems. Major elements of the agreement include protection of grizzly bear "linkage zones" in the valley, seasonal limitations on commercial timber harvest, protection of streamside riparian areas, and road-access management.

In 1975, the Bitterroot ecosystem, located on the Idaho and Montana border, was identified as a potential recovery zone for grizzly bears by the Fish and Wildlife Service. An international interagency team of bear biologists recently concluded that habitat in the Bitterroot ecosystem could probably support 200-400 bears. There is currently a proposal to reintroduce grizzlies to the area.

In 1986 wolves returned on their own to the North Fork of the Flathead drainage in Northwest Montana. Since then, they have populated other parts of western Montana. In 1994, after years of comprehensive study and planning, the U.S. Fish and Wildlife Service began an effort to reintroduce gray wolves into Yellowstone National Park and central Idaho. Wolf populations are expected to recover there by 2002.

Montana is probably more famous for its trout fishing than its wildlife. Rivers such as the Madison, Yellowstone, Big Hole, Bighorn, Beaverhead, Missouri, Jefferson, Rock Creek, Clark Fork, Bitterroot, Flathead and Kootenai are known to trout anglers throughout the nation. Numerous reservoirs and natural lakes—for example, Canyon Ferry, Clark Canyon, Hebgen, Flathead, and Koocanusa—also provide excellent trout fisheries. Along with trout, the state's lakes contain kokanee salmon, yellow perch, largemouth bass, walleye, and northern pike. In addition, Montana's mountains hold countless high-country lakes accessible only by foot or horseback.

While Montana once hosted a diverse native fishery, a number of fish populations have been placed in jeopardy by dams and other habitat alterations, the introduction of non-native fish, and over-harvesting. State fishery biologists have also listed 16 fish as "species of special concern." Research and management programs are now being developed to protect and enhance these critical populations. The westslope cutthroat trout, yellowstone cutthroat trout, and grayling once found in many western Montana waters, are now scarce in most of their native ranges. The white sturgeon, native to the Kootenai River, is classified as endangered in Montana, and the bull trout, once found throughout western part of the state, is threatened. Westslope cutthroat trout, native to much of western Montana and to the Upper Missouri, have been petitioned to be placed on the threatened and endangered list. In the Upper Missouri, nonhybridized populations occupy only one percent of the subspecies' historic range. Of the 144 known populations of westslope cutthroat trout in that drainage, all are at moderate to very high risk of extinction. The subspecies is doing somewhat better west of the Continental Divide. Nearly 11,000 miles of stream have been surveyed in western

Montana and westslope cutthroat trout were found to occupy 7,612 miles. Fish have been genetically tested and found to be pure-strain westslope cutthroat trout in 2,029 miles of stream. The remaining populations have not been tested for genetic purity.

The river-dwelling form of arctic grayling were historically found throughout the upper Missouri drainage, upstream from Great Falls. Most major tributaries supported grayling populations. Currently, the only native population is found in the Big Hole River. This subspecies is a candidate for listing under the Endangered Species Act, but Montana is working to recover the population and avoid listing. Arctic grayling have recently been reintroduced in the Sun and Ruby Rivers. The restoration program also calls for reintroductions in five other locations in the upper Madison, lower Beaverhead, Missouri, Gallatin, and Jefferson Rivers.

Whirling disease has now been detected throughout the headwaters of the Missouri River and Clark Fork River at roughly 60 different sites. Most recently it has been detected in the Swan River. The disease appears to be having a significant effect on wild rainbow trout populations within the Madison River. It also affects native grayling, bull trout, and westslope cutthroat trout. A number of groups and agencies have begun to address the issue. The *Tubifex* worm is the intermediate host for whirling disease. Recent scientific evidence suggests that habitat alterations which increase water temperatures can increase *Tubifex* populations and thereby increase whirling disease infection rates.

Recreational, Cultural, and Scenic Resources

Largely because of the scenery, recreation is one of the primary uses of Montana's forests. Of the 22.5 million acres of forest land, over 16 million are public, managed by the U.S. Forest Service, National Park Service, Bureau of Land Management, State of Montana, or counties and municipalities. The state has over 3 million acres of designated wilderness and another 4 million acres that are specially managed for resource protection (Figure 9).

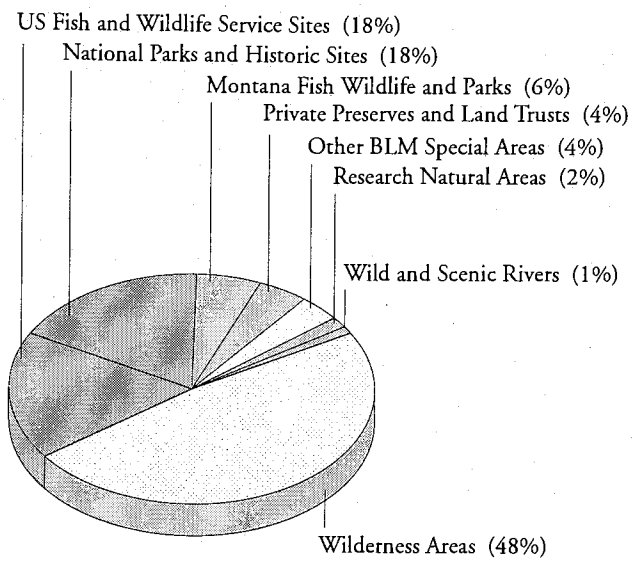

Figure 9. Special use areas in Montana by ownership.

Seven percent of Montana's private land—about 4 million acres—is officially open (through agreements with the state) to public recreation. The primary uses of forest land in the state are hunting, fishing, hiking, camping, wildlife viewing, skiing, biking, horseback riding, rock climbing, mountaineering, picnicking, boating, swimming, and rock hounding. The people engaged in these activities come from across the nation and beyond. In 1994, about 9 million people visited Montana. The figure is over ten times the number that actually live in the state.

Some 14,600 miles of trails crisscross Montana's backcountry; most pass through forest land. Eighteen of the state's trails are listed as National Recreation or Scenic Trails. The state encompasses 900 miles of the Continental Divide National Scenic Trail, for example. Other National Trails are listed in Table 4.

Table 4. National Trails in Montana.

Trail	National Forest
Basin Lakes	Custer
Big Hole Battlefield	Bitterroot
Crystal lake Shoreline	Lewis and Clark
Danny On Memorial	Flathead
Hanging Valley	Helena
Holland Falls	Flathead
Loise Lake	Deerlodge
Morrell Falls	Lolo
Mortimer Gulch	Lewis and Clark
Palisade Falls	Gallatin
Pioneer Loop	Beaverhead-Deerlodge
Skyline	Kootenai
Stateline-CC Divide	Lolo

Many forest trails in the state are open to mountain bikes. The sport also makes use of paved and backcountry roads that travel through forest country. In winter, cross-country skiers take to the forest, and while Montana has 27 designated cross-country ski areas within National Forests, many skiers prefer the solitude of undeveloped sites—trails, logging roads, meadows and open slopes. In addition, sixteen of the state's wildlife viewing areas have cross-country ski trails. Montana also has 14 downhill ski resorts that draw hundreds of thousands of visitors each year. Some 4,100 miles of groomed snowmobile trails and millions of acres of forest land are open to snowmobile use.

For campers, Montana offers hundreds of official campgrounds accessible by car—120 on lakes and 170 along streams. In addition, thousands of undesignated campgrounds in backcountry areas provide camping opportunities. Over 120 private campgrounds along the state's roads serve motorists.

Many of Montana's rivers and mountain lakes that are accessible by road have boat-launch sites. Motor boating is popular, but so is kayaking, canoeing, and rafting. Two dozen wildlife viewing areas are accessible by paddle or oar.

Hunting is one of the most popular recreational uses of the forests. Half of the adult males and one fifth of the females that live in the state buy hunting licensees. In addition to several species of grouse that can be hunted, the state has the largest big-game selection in the lower 48 states. Species include mule deer, white-tailed deer, elk, antelope, bighorn sheep, mountain goats, Shiras moose, black bears, and mountain lions. Out-of-state hunters spend roughly $50 million a year on outfitter services and equipment.

Fishing is perhaps the state's favorite pastime with 44% of resident adults participating. In 1994, anglers enjoyed 2.6 million days on Montana waters. Much of that time was spent on the 15,000 miles of cold-water streams and 4 million acres of cold-water lakes that are found in Montana's forested mountain country. In terms of dollars, the net value of fishing is put at $243 million a year. Hunting and fishing license sales from 1988 to 1998 are shown in Figure 10.

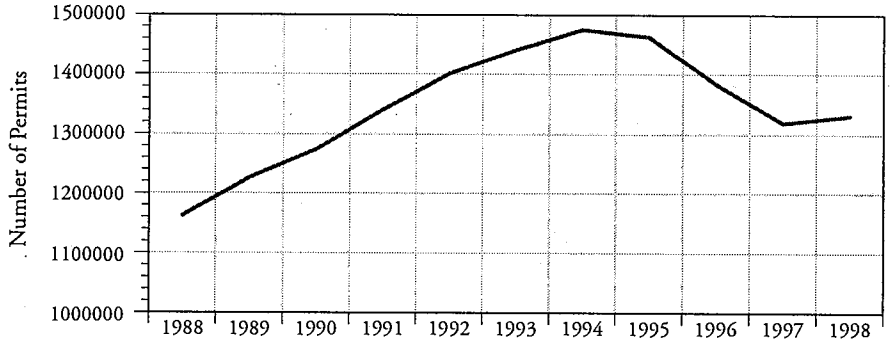

Figure 10. Sales of Montana hunting and fishing licenses from 1988 to 1998.

Dozens of landmarks across the state record the major events of the state's colorful history. Montana's plains were the home to Native Americans—the Crow, Assiniboine, Blackfoot, Sioux, Shoshone, Gros Ventre, Arapaho, Northern Cheyenne, Nez Perce, Kalispel, Pend d'Oreille, Salish, and Kooteani—many of whose descendants live on reservations in the state today. The U.S. gained possession of the region through the Louisiana Purchase in 1803, and soon after that Lewis and Clark traversed the state. They were followed by trappers. The first large-scale influx of settlers came after gold was discovered in 1858 and after ranching started in the 1860s. In the decades that followed many towns were established; some became ghost towns and are now visited by thousands of tourists every year. Meanwhile, the indigenous tribes of Montana resisted encroachment on their lands; the era was marked by the construction of forts and battlefields. The Little Big Horn, where Custer's forces were annihilated in 1876, is among them. The discovery of copper around 1880 at Butte ushered in a period of struggle among copper companies for control of the mines. From 1909 to 1918 the open range was fenced in, as homesteaders began to farm. Both farmers and miners were hit by the Great Depression, but the economy showed great gains during and after World War II. The national energy crisis of the 1970s resulted in a boom in Montana's energy industries, especially coal mining. Montana's rich historical heritage complements its outstanding scenery. Montana also has an impressive number of museum collections and cultural sites, especially for a state of such small population. Table 5 lists and briefly describes some of the most important of the state's cultural and historic sites.

Table 5. Selected Montana cultural and historical sites.

Cultural Site	Description
Bannack, Bannack State Park	Montana's first territorial capitol an site of one of the first gold strikes in Montana is now one of the state's best-preserved ghost towns.
Bear's Paw Battlefield south of Chinook	This is where Chief Joseph and the Nez Perce Tribe surrendered to the U.S. Army in 1877. Site marks the end of the 1,170 mile National Historic Trail—the route taken by the Nez Perce in their attempt to flee to Canada.
Big Hole Battlefield near Wisdom	Site of August, 1877 battle between the Nez Perce and U.S. soldiers. Many Indian women and children killed.
Fort Owen, Fort Owen State Park	Founded in 1850, this was the first permanent frontier settlement in Montana and site of the first Catholic church in the Northwest. Now it is a National Historic Site.
Garnet, Garnet	Now a popular ghost town, this mining settlement lasted from the late 1800s to the 1930s.
Grant-Kohrs Ranch near Deerlodge	One of the state's first ranches, this site encompasses 1,500 acres and some 88 historic structures. Now a National Historic Site.
Fort Missoula, Missoula	Historical structures from Missoula's early days and museum established to preserve western Montana's history.
Lewis and Clark National Historic Trail	1,600 mile segment of Lewis and Clark's 1805 trek across the continent.
Nevada City near Ennis	This famous ghost town from the 1860s was once populated by thousands of miners.
Nez Perce National Historic Trail	This 1,170-mile-long route marks the trek across Montana taken by Nez Perce Indians as they attempted to escape to Canada.
Pictograph Cave, Pictograph Cave State Park	Pictographs and rock paintings by Native Americans that depict both modern and prehistoric animals.
Chief Plenty Coups State Park	Home of Plenty Coups, last chief of the Crow.
Virginia City, Virginia City	Ghost town that in the 1860s was home to thousands of gold miners and was once the capitol of Montana Territory.

III. Trends and Threats in Forest Management

Montana's Economy and Demographics

Montana is the fourth largest state in the Union and one of the three least densely populated. For most of its statehood, the economy has revolved around natural resources, specifically agriculture, mining, and timber.

Although it seems that Montana's greatest attributes are its natural resources, many residents believe that it is the state's residents and unique culture which are most important. In a recent survey of Montanans conducted by the Liz Claiborne and Art Ortenburg Foundation, 55% of respondents felt that newcomers are the biggest threat to the traditional Montana way of life. Fifty seven percent believe that newcomers bring more problems to the area than benefits. Respondents said that they felt newcomers were a threat to the Montana way of life because they:

- drive up cost of living (24%)
- bring in crime (17%)
- reduce the quality of life through uncontrolled growth (17%)
- bring in a different set of values (14%)
- increase competition for jobs (14%)

Interestingly, 60% of "newcomers" are former Montanans, and most newcomers are younger and better educated on average than Montana's general population.

Montana's economy is not as healthy and vibrant as that of the remainder of the nation. Census information indicates that in 1997 Montana was ranked 46th in the nation in per capita income, a significant drop from its position of 34th in 1970. Montana also ranks first in number of people who hold more than one job. The positive side of those two statistics is that Montanans are willing to do what it takes to remain in Montana. The survey indicated that 82% of the respondents felt that they would have better job opportunities if they lived outside Montana. While Montanans with the least amount of education earn as much as they would elsewhere in the country, Montanans with the greatest amount of education earn much less than they could in large metropolitan areas. Montana workers are evidently settling for lower wages in order to live in state.

When asked to describe the most important reasons they decided to live in Montana, participants in the Claiborne-Ortenburg survey cited the following:

- Scenic beauty and open space (76%);
- Safe place to raise a family (67%);
- Good place for children to learn values (64%);
- Close-knit, neighborly communities (54%);
- Opportunities for outdoor recreation (46%)

The Changing Face of the Montana Economy[7]

The structure of Montana's economy has changed in recent decades, mostly due to different rates of employment growth and shifts in the share of employment among the various sectors of the economy. While agricultural employment remained constant and the non-farm goods producing sector (which includes logging, mining, construction, and manufacturing) increased by 25% over the last two decades, employment in the service industries increased by 113% (service industries include economic activities such as medicine, law, and automobile repair). Employment in the non-goods producing sector (which includes the service industries, as well as utilities, government, and retail trade, grew 56%. These shifts explain why in 1970, roughly half of Montana's workers were employed in basic industries such as agriculture, manufacturing, mining, and forest products, whereas by 1997, employees in these industries made up only one-fourth of statewide employment. Montana is a state in transition struggling to maintain the best of what makes it Montana, while attempting to reconcile those features with a desire to provide economic incentives for its young graduates to remain in the state.

The 1970s was a decade of growth in Montana. The early 1970s was a very prosperous period for Montana farmers and ranchers, many of whom have forests or woodlands on their property. The years 1972 through 1974 saw the highest three-year period of constant-dollar farm-labor income since data collection began in 1929. The international market was very favorable for wheat. Beef prices were also high.

Although timber harvests actually declined relative to the 1960s, forest industry employment grew by 30% in the 1970s. Structural changes and strong markets led to a more labor-intensive industry.

The 1980s was a decade of disasters with an actual contraction of the Montana economy. Overall adjusted non-farm labor in 1990 was 5.5% less than it was in 1980. The double recession of the early 1980s hit the forest products industry hard. Timber sale contracts were in wholesale default, and many mills filed for bankruptcy. Other industries also suffered permanent closures of major operations—the Milwaukee Road, the Anaconda refineries in both Anaconda and Great Falls, and mining operations in Butte.

[7] Adapted from Keegan, Charles E. III, et al, Montana's Forest Products Industry a descriptive analysis 1969-1994.

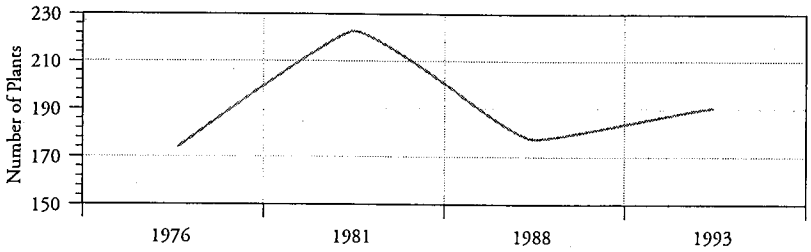

Figure 11. Number of wood processing plants in Montana, 1976 to 1993.

By the end of the 1980s, however, the forest products industry had made a recovery. In the late 1980s, most of the basic industries were relatively stable with increases in non-resident travel and non-fuels mineral mining offsetting declines in oil and gas exploration and railroads. Several new mines opened, and Montana Rail Link took over much of Burlington Northern's lines and significantly reduced railroad employment.

The state's economy turned upward in the early 1990s. Montana led all states in economic increases, but this award was dubious as it reflected the status of a nation mired in recession. Nevertheless, these increases did signal an end to the economic disasters of the 1980s. Montana agriculture in 1993 had its best year since the early 1970s. A backlog of housing starts leftover from the 1980s as well as migration into the state resulted in a construction boom, especially in western Montana. The labor income of Montana's federal employees rose sharply as well between 1991 and 1994. Non-resident travel and tourism grew rapidly in the late 1980s and has continued to grow steadily. Although no new sawmills began operations during the 1990s, 14 house-log plants utilizing dead timbers were founded.

Demographics

Total state population increased during the inter-measurement periods of 1980 to1990 and 1990 to 1997. Population growth occurs in two ways, births and immigration. Migration trends are perhaps a more telling indicator of regional demographics.

During the 1980s, 53,084 more people moved out of the state than moved into it. During the 1990s net migration has been a positive 51,578. These data are reflective of the poor regional economy of the 1980s and the recovery and boom of the early 1990s. Net migration during the 1990s would have been even greater except that there was a net emigration in the second half of the decade.

Emigration exceeded immigration for nearly all of the counties east of the Continental Divide during the 1980s. This trend has slowed somewhat, but net migration remained negative

through the 1990s for nearly two-thirds of these same counties. Eastern counties which evidenced positive immigration during both decades are montane areas lying in the upper Yellowstone drainage or along the Rocky Mountain Front.

Although net migration was also negative for much of western Montana during the 1980s, positive immigration occurred in one-third of all western counties during that decade. All but one of the thirteen western counties experienced positive migration during the 1990s.

The primary destinations of migrants, whether they come from elsewhere in Montana or from other states, is western Montana, the Rocky Mountain Front, and the upper Yellowstone drainage (including Billings). These three areas contain the majority of the state's forests. Seven counties—Flathead, Ravalli, Gallatin, Yellowstone, Missoula, Lewis & Clark, and Lake—accounted for 82% of the state's growth in the 1990s. Most out-of-state migrants came to Montana from other western states, primarily Washington and California.

Within the state, more households seem to be departing from Cascade County than any other area (Cascade County includes Great Falls).

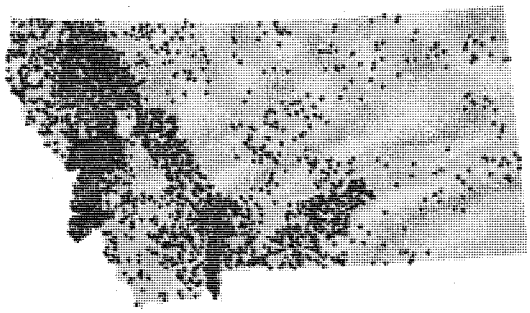

Figure 12. Destinations of households moving to Montana from other states in 1994 (after Murtaugh 1999).

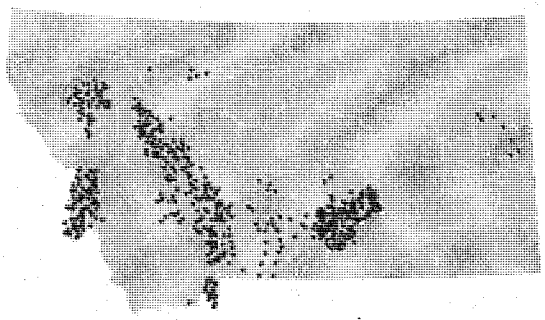

Figure 13. Destinations of Montana households moving within the state in 1994 (after Murtaugh 1999).

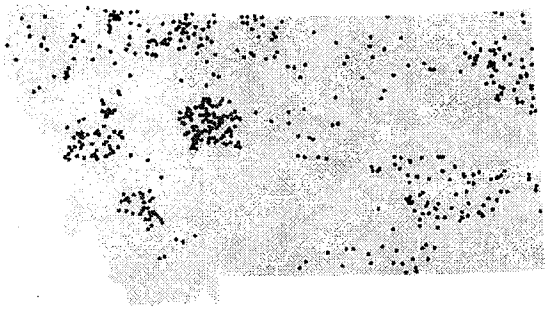

Figure 14. Origins of Montana households moving within the state in 1994 (after Murtaugh 1999).

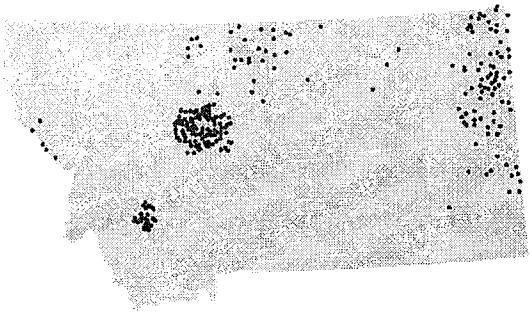

Figure 15. Origins of households leaving Montana in 1994 (after Murtaugh 1999).

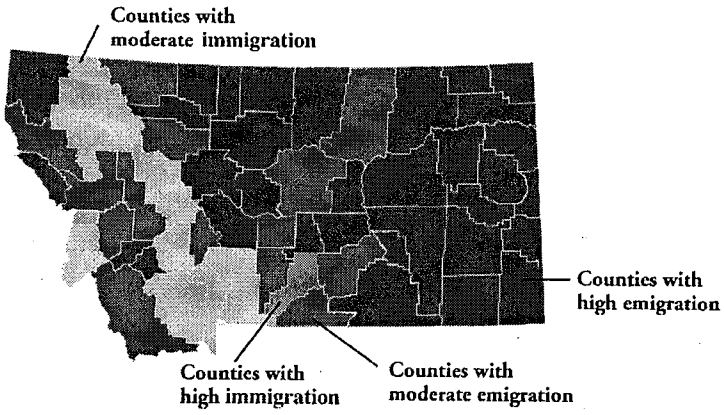

Figure 16. Net migration by county 1980 through 1990 as a percentage of county population.

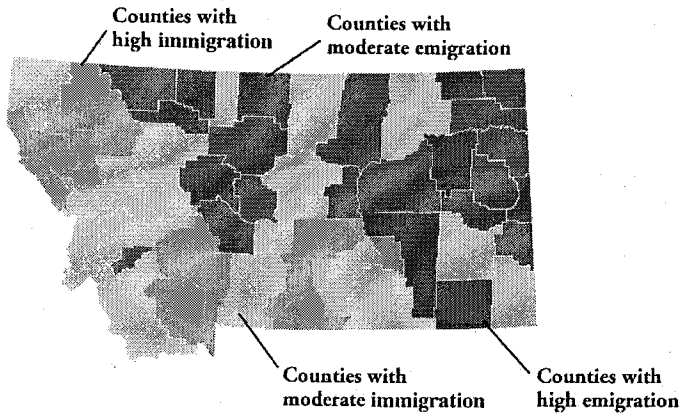

Figure 17. Net migration by county 1990 through 1997 as a percentage of county population.

Forest Land Conversion

The changing face of the Montana economy and the expanding population has increased the demand for residential homesites in Montana. That demand and the associated escalation in land prices has prompted many landowners to consider subdividing their property.

Average residential property values increased dramatically in Montana during the 1990s. The greatest increase occurred in 16 rapidly growing western and southwestern forested counties that are now home to 60% of Montana's population. After remaining unchanged from 1982 to 1990, property values in these counties increased an average of 88% between 1990 and 1996, well above the national average for that time.

More residential and commercial subdivision has occurred in the montane regions of western and southwestern Montana than in the remainder of the state (Figure 18). Although many subdivisions occur in grasslands and not in the timbered portions of these areas, the nearby existence of forests, streams, and mountains are attractive to these residents. Most homebuilders would select a timbered property upon which to build over a non-timbered one, all other factors being equal. Additionally, most would select a property which contained water frontage, all other factors being equal. Properties with timber or water frontage present the most lucrative parcels in the state for land development profits.

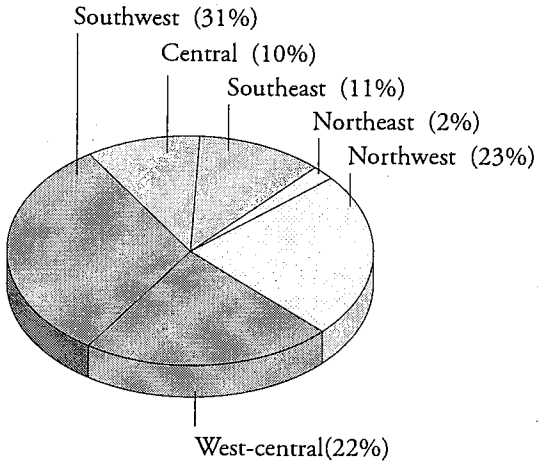

Figure 18. Residential lots reviewed in 1996 by Forest Legacy Area.

Of forest lands cleared in 1989 for nonforest uses (including subdivision), 99.6% were non-industrial private forests. Additionally, NIPF ranches are being sold for homesite development. The few remaining timbered ranches in western and southwestern Montana are more likely to be developed than are those in the eastern two-thirds of the state.

Forest conversion to residential use is evident along Montana's major waterways. Developments that front on Montana lakes, rivers, and streams can diminish some of the ecological functions across those lands.

Recently, the parcelization of industrial private forests has also become an issue. Of major concern is a proposal by Plum Creek Timber Company to sell 110,000 acres of commercial forest lands in the valley bottoms and foothills of western Montana for real estate development. These lands include some of the most productive forests and the most important big-game winter range and wildlife corridors in western Montana, lands that Montana sportsmen have used for generations to access hunting and fishing opportunities.

Fragmentation

A significant portion of Montana's forest land has been fragmented since statehood. Much of Montana's early economic infrastructure was built on mining, and railroads were instrumental in settling the west. Thousands of acres were deeded to representative industries as economic incentives for their capital investment into the state. The Anaconda Copper Company and the Great Northern (Burlington Northern) Railroad received scores of one-square mile sections of properties in a "checkerboard" fashion across large portions of western Montana. The checkerboard was made more

complex when the State of Montana was granted almost every Section 16 and 36—roughly 5% of the state to support the state's schools.

Although the checkerboard pattern has not resulted in deforestation or wholesale conversion to nonforest uses, differing forest management objectives and practices have expressed themselves along ownership boundaries rather than ecological ones.

Resources Most Vulnerable to Forest Management Practices

Certain forest resources are vulnerable to long-term negative consequences from inappropriate forest management practices, while other resources are more resilient and durable. The resources outlined in this report are limited to those that may suffer irreplaceable or irreversible commitment or loss from poor forest management practices.

Soils and Water. Forest soils are the medium of forest growth. Soils are formed very slowly and the displacement, compaction, or loss of soils caused by improper timber harvest, yarding, or slash disposal techniques will not be overcome by natural means. Skid trail dispersal, the banishment of straight blades on skidders and of "go-back" trails, the use of cable-yarder machines on steep slopes, and the cessation of mechanized operations when soil moisture increases above approved thresholds are some of the means of minimizing soil disturbance. Recommended techniques for minimizing damage by management operations are detailed in a Montana Department of State Lands' booklet entitled *Forestry Best Management Practices: Forest Stewardship Guidelines for Water Quality.*

The greatest threats to water quality from forestry operations generally result from the displacement of soils into streams or from the direct or indirect discharge of vehicular fluids into surface waters. Water quality degradation by forest road-building or timber harvests are subject to the Federal Clean Water Act of 1990 and state laws. Loggers, heavy equipment operators, and landowners voluntarily subscribe and adhere to the State's "Best Management Practices," (BMPs) which were designed to reduce the potential for such water quality degradation. As illustrated in Figure 19, field audits of representative forest operations indicate that adherence to, application of, and effectiveness of BMPs statewide is outstanding.

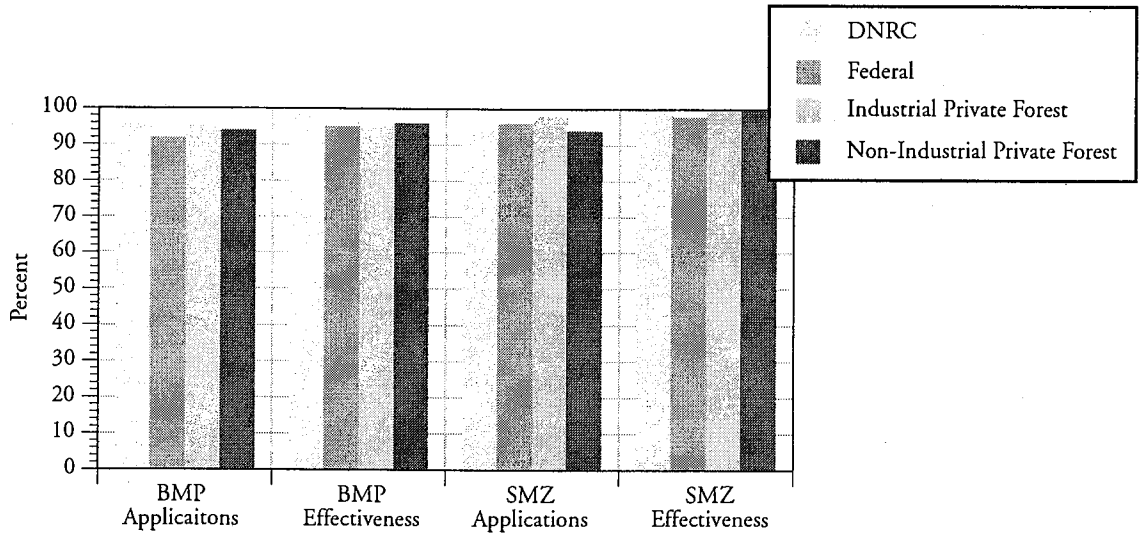

Figure 19. Results of field audits of BMPs for representative forest operations.

Threatened or Endangered Species. Wildlife species listed as threatened or endangered with extinction under the Federal Endangered Species Act require recognition in the planning and implementation of forest management activities. In general, threatened and endangered species have not significantly affected forest management (or vice versa), in the state of Montana. Good forest planning and management can generally meet the habitat requirements of these species.

Forest Genetics. The harvest practice known as "diameter limit cuts" can be appropriate in timber stands with an uneven-aged structure wherein the largest trees are often the oldest ones. However, many of the state's forests are even-aged in origin, and the largest trees often represent the best phenotypes of the stand's population. Diameter-limit cuts, common in the earlier part of the century, are still being utilized on some lands in the state and threaten to reduce the quality of the timber gene pool by "harvesting the best and leaving the rest." Such harvest prescriptions are subject to public review through the NEPA/MEPA process on public lands. However, no regulation currently prohibits any such forest practice on private lands.

Forest Health. The exclusion of forest disturbances since 1910, particularly the exclusion of wildfires, has had significant impacts on Montana's forests. Forest disturbances in the form of Twentieth Century timber harvests have not correctly simulated or closely approached historical levels of natural disturbances, and Montana's forests have drifted towards unnaturally high levels of stocking density. There have also been species composition shifts from shade-intolerant species such as ponderosa pine

to tolerant ones like Douglas fir. These unstable conditions cannot be maintained indefinitely. If timber harvesting or wildfires do not reduce density and shift species composition toward more historic norms, forest pests and diseases will. The deferment or banishment of forest disturbances must be considered a poor forest practice.

Poor forest genetic and forest health practices could be improved as the management of more lands are brought under stewardship plans.

IV. Conserving the Land Base

Montana has been discovered. The big sky, open spaces, and scenic splendor draw ten times more people to Montana than actually live in the state. Some of these visitors end up buying property. Between 1990 and 1997, Montana's population grew by almost ten percent. It is expected to increase 6.3 to 9.5% during the next five years. This growth is occurring mostly in the intermountain valleys of western Montana. Counties in eastern Montana are actually shrinking in population. Much of the growth within the counties increasing in population is occurring in rural areas or on the outskirts of towns, often in sensitive wildlife habitats or areas long viewed as important to towns and cities for the open space they offer.

Gallup pollsters tell us that 60% of Americans over 50 years of age dream of retiring in a small town or rural county. These population changes, along with declining commodity prices for crops and livestock are putting increasing pressure on some of the most productive lands; many are being converted to subdivision developments. The state is currently losing productive agricultural land at a rate of about 28 acres a day. Montana's rich heritage of agricultural-based enterprises fosters and promotes economic and cultural values, open space, diversity of wild species, and important natural and aesthetic qualities.

In addition, our farm, range, and forest lands provide income for local governments. Although property tax rates are lower for these undeveloped lands, the governmental services they require are not as costly as that for other lands. For example, a Gallatin County study in 1996 found that undeveloped lands provide roughly $1.00 of tax revenue for every $0.25 spent in governmental services. In contrast, rural developments cost $1.45 in governmental services for every dollar generated in taxes. Wildland fire suppression is also becoming an increasing concern in the wildland-urban interface zone, both in terms of threats to life and property as well as fire suppression costs.

There are a number of tools available to assist Montana communities in preserving open space and protecting wildlife habitat, scenic values, recreational resources, productive forest land, historic sites, or ecologically sensitive areas. For example, a master plan can be used to establish policies and priorities related to preserving areas important to the community. Sensitive land can also

be acquired outright, or its use can be restricted through conservation easements, the transfer of development rights, the dedication of park lands, or private and public land banking.

Conservation Efforts in Montana

Montana law authorizes government agencies and qualified private organizations to acquire conservation easements. Both term easements and perpetual easements are permitted. Conservation easements must be reviewed by local planning authorities prior to recording. The loss of forest and agricultural land to various developments has motivated Montanans to protect open space, wildlife, wetland, riparian, recreational, or historic values by placing land in conservation easements. Between 1978 and 1999, state acreage in conservation easements increased from 840 acres to over 600,000 acres. Over half of the increase occurred in the last seven years. According to the Land Trust Alliance in Washington D.C., Montana now leads the nation in acreage in conservation easements. All but one of the other states that rank in the top ten are in the northeast. A number of organizations in Montana work for forest land protection and preservation through conservation easements and other mechanisms.

State Programs

In 1999, the governor signed into law the Agricultural Heritage Program, which authorizes the state and approved agricultural organizations to acquire and hold agricultural and forest easements to protect the state's family-based agricultural and silvicultural traditions and to secure the long-term conservation and productive use of agricultural lands and family forests for future generations.

Habitat Montana is an umbrella name that encompasses all Montana Department of Fish, Wildlife and Park's habitat conservation programs. Habitat Montana consists of four habitat programs: House Bill 526, Bonneville Power Administration mitigation, Moose and Sheep Auction; and Duck Stamp. In 1998, Fish, Wildlife and Parks conservation easements were used to protect wildlife habitat on 28,536 acres of land. Over the last five years they have obtained conservation easements on over 145,500 acres in Montana.

House Bill 526 generates $2.8million per year from hunting license sales to acquire interest in land through fee title, conservation easements, or leases. At present, focus is on the intermountain grassland, shrub-grassland and riparian habitat types. Bonneville Power Administration mitigation is designed to compensate for habitat losses resulting from construction of two hydropower facilities in northwestern Montana by enhancing or purchasing interest in lands with important wildlife habitats. The Moose and Sheep Auction sells one moose and one bighorn sheep hunting license to use the money for projects such as buying or improving habitat for these two species. The Duck Stamp generates money from State Duck Stamp sales to buy or improve waterfowl habitat.

Federal Programs

The Wetland Reserve Program is a land-retirement program designed to restore and protect wetlands that have been farmed or grazed. The Farm Protection Program helps farmers keep their land in agriculture by purchasing conservation easements or other interests on their property. Both are voluntary programs administered by the USDA Natural Resource Conservation Service. The U.S. Fish and Wildlife Service also has active land conservation programs in Montana.

The Nature Conservancy

The mission of Nature Conservancy is to preserve plants, animals, and natural communities that represent the diversity of life by protecting the lands and waters they need to survive. The techniques used by the Conservancy include direct fee acquisition, conservation easements, and voluntary landowner agreements. Frequently its activities involve coordination between landowners and state and federal land agencies. The Conservancy also functions effectively as a third party in the management and maintenance of conservation easements. The Nature Conservancy's Montana's preserves include:

- The Swan River Oxbow Preserve in the Swan Valley. This preserve encompasses 392 acres of a long, curving oxbow through which the Swan River used to flow.
- The Crown Butte Preserve just south of Simms. Crown Butte rises 900 feet above the foothill prairies just east of the Rocky Mountain Front and harbors an undisturbed grassland ecosystem and rich habitat for wildlife.
- The Dancing Prairie Preserve north of Eureka. This remnant "island" of prairie lies within the Tobacco Plains and contains a complex mosaic of native prairie grasses and the last known dancing ground in Montana for the Columbian sharp-tailed grouse.
- The Safe Harbor Marsh. This 132-acre low elevation marsh is connected by a narrow channel to Flathead Lake and supports a variety of habitats and a diversity of plants and animals.

In addition, the Conservancy's Statewide Conservation Plan has identified seven biologically significant areas in Montana in which The Nature Conservancy will concentrate its work over the next 5 to 10 years. Those areas are; the North Fork of the Flathead River, the Blackfoot River, the Rocky Mountain Front, the Centennial Valley, the Pryor-Beartooth Site, the Montana Glaciated Plains, and the Comertown Pothole Prairie.

Trust For Public Land

The Trust For Public Land's (TPL) mission is to conserve land for recreation and spiritual nourishment and to improve the health and quality of life of American communities. TPL's legal and real estate specialists work with landowners, government agencies, and community groups to:

- create urban parks, gardens, greenways, and riverways
- build livable communities by setting aside open space in the path of growth
- conserve land for watershed protection, scenic beauty, and close-to-home recreation
- safeguard the character of communities by preserving historic landmarks and landscapes.

TPL pioneers new ways to finance parks and open space, promotes the importance of public land, and helps communities establish land-protection goals.

TPL is often invited into a conservation project by a federal, state, or local land-protection agency. As an independent nonprofit, TPL is able to function in the marketplace in ways public agencies cannot—optioning important conservation properties before funding is approved by lawmakers or voters. Often TPL is able to structure transactions that meet a public agency's financing needs and to help raise funds and generate public support for park creation and open space conservation. TPL's Montana projects include:

- Lindbergh Lake. The Trust For Public Land is working to convey 2,500 acres of lakefront and adjacent forest from Plum Creek, the current owner, to the U.S. Forest Service. In that way this spectacular property, which harbors some of the best grizzly bear habitat in the state, can remain undeveloped and be managed permanently as part of the Flathead National Forest.
- Blasdel Waterfowl Refuge. Located between the Flathead National Forest and Glacier National Park, this 467-acre area is prime habitat for waterfowl. TPL forged an agreement that transferred the property into public ownership and secured an additional 78 adjacent acres.
- Garnet Ghost Town. In 1976, TPL engineered a complicated transaction involving five landowners and structured a land exchange that transferred six key parcels into public ownership ensuring that this popular ghost town near Missoula is protected.
- Little Bighorn National Monument Addition. In 1984, the Custer Battlefield Preservation Committee asked TPL to purchase and hold 78 acres adjacent to the Custer Battlefield National Monument. TPL acquired the land and held it until the Preservation Committee could raise funds for acquisition.
- Six Mile Creek. Only 15 miles north of Yellowstone Park, land along Six Mile Creek is key habitat for grizzlies, elk, moose, and deer. TPL negotiated a land exchange that added 500

acres of creek floodplain, meadows, and forest to the Gallatin National Forest. The transaction also included right-of-way easements to other public lands.

Most recently, TPL announced it has secured an option to purchase 10,930 acres of mostly Darby Lumber Company property located within critical wildlife habitat. Under the agreement, more than 17 sections of forest land could become part of the Bitterroot National Forest if Congress appropriates an estimated $7.5 million from the Federal Land and Water Conservation Fund later this year.

Montana Land Reliance

The mission of the Montana Land Reliance is to provide permanent protection for private lands that are ecologically significant for agricultural production, fish and wildlife habitat, and open space. The immediate goals of MLR's conservation work are measured in miles of streambank and acres of land protected from unsuitable and irrevocable development.

Using a variety of private conservation tools, MLR works with Montana land-owners individually and in groups to provide long-term, legally sustainable conservation of the productive and natural elements of their land and their neighborhoods. MLR provides stewardship assistance and rehabilitation for conservation easement lands at the request of landowners. Conservation easements are the primary tool used by MLR to achieve its protection goals. To date the MLR has protected well over 300,000 acres in conservation easements. Figure 20 shows the sites protected by the Montana Land Reliance as of 1998.

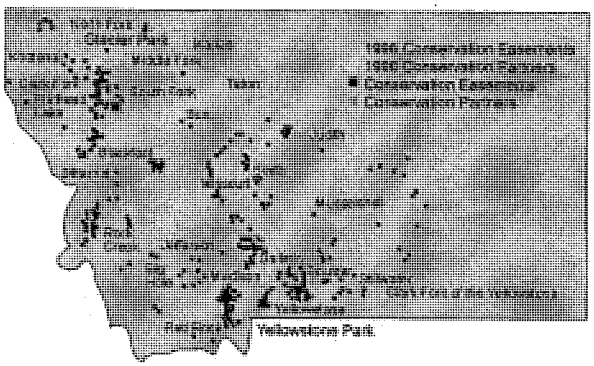

Figure 20. Montana Land Reliance conservation easements and partners in Montana as of 1998.

The Conservation Fund

The Conservation Fund seeks sustainable conservation solutions for the 21st century, emphasizing the integration of economic and environmental goals. Through real estate transactions, demonstration projects, education and community-based activities, the Fund designs long-term measures to conserve land and water resources. In Montana, many of the Conservation Fund's projects have focused on key acquisitions of wildlife areas and forest lands. Successful partnership initiatives have protected lands along the Rocky Mountain Front (expansion of the Pine Butte Preserve), the Beaverhead Ranch (two miles of the Beaverhead River with extensive wetlands, and Devil's Elbow and the Ward Ranch on Hauser Lake (over three miles of shoreline and Missouri River frontage critical for recreational opportunities in the area).

Five Valleys Land Trust

The Five Valleys Land Trust (FVLT) is a not-for-profit, regional community-based and community-supported organization dedicated to protecting wildlife habitat, riparian areas, agricultural lands, and scenic and historic places throughout Missoula, Ravalli, Mineral, Sanders, Lake, and Granite Counties. FVLT encourages and accepts conservation easements on property with natural or historic values. Once obtaining a conservation easement, FVLT provides long term stewardship of the protected land so the natural or historic values are preserved in accordance with landowner wishes. The FVLT also helps provide focus for grass-roots conservation initiatives which seek to protect open space and natural areas at the community level.

To date FVLT has protected more than 10,000 acres in six counties.

Gallatin Valley Land Trust

The Gallatin Valley Land Trust (GVLT) is a non-profit, membership organization dedicated to the conservation of open space, agricultural land, wildlife habitat, and the creation of public trails in and around Gallatin County. GVLT assists private landowners seeking to permanently protect their land from inappropriate development. Using conservation easements, GVLT preserves working farms and ranches, winter range for deer and elk, blue ribbon trout streams, scenic ridgelines, and public access to Gallatin Valley rivers. GVLT also works with other local groups to build "Main Street to the Mountains," Bozeman's community trail system. This public trail will eventually link downtown with the Bridger Mountains to the north and the Hyalite Mountains to the south. Finally, the GVLT provides a format for Gallatin County communities to grapple with conservation and development issues and learn about local natural history through presentations, meetings, and newsletters.

Rocky Mountain Elk Foundation

The Rocky Mountain Elk Foundation (RMEF) permanently protects critical wildlife habitat by using acquisitions, leases, exchanges or conservation easements. The Foundation is most interested in easements that are fully donated, offer good habitat for elk and other wildlife, and are large enough or adjacent to a large enough tract of protected land to ensure the property's long-term value to wildlife. Recent Elk Foundation projects in Montana include the following:

- Porcupine Drainage Acquisition. In 1996, the RMEF sold the final 1,840 acres of the Porcupine drainage lands to the U.S. Forest Service, completing the third phase of the $14 million Porcupine drainage acquisition. In phase I of Porcupine, the U.S. Forest Service purchased 3,941 acres in the drainage, followed by the phase II purchase of 400 acres by the Montana Department of Fish, Wildlife and Parks. To protect this critical habitat from potential development, the RMEF purchased the Porcupine lands in 1995.
- Upper Gallatin Drainage. The Porcupine acquisition is part of a larger effort to conserve critical habitat in the Upper Gallatin drainage northwest of Yellowstone National Park. The Gallatin Range Consolidation and Protection Act passed by Congress in 1993 provides for the acquisition and consolidation of more than 83,000 acres of checkerboarded Big Sky Lumber inholdings in the Gallatin National Forest.
- Wildlife Migration Corridor. This tract of land between the Rattlesnake Wilderness Area just north of Missoula and the Ninemile area west of the city is a travel corridor for a variety of wildlife, including elk, bears, lions and deer. Richard and Marit Marceau of St. Paul, recently gave this undeveloped 40-acre private inholding to the RMEF. The organization will convey the land to the U.S. Forest Service which will open it to the public. The Lolo National Forest borders the land on three sides, and state land adjoins it on the other side.
- Deer Creek Conservation Easement. Bordered on the west by the wildlife-rich Wall Creek Wildlife Management Area, the 7,527-acre Carroll Brothers Ranch provides excellent wintering grounds for more than 1,000 elk and year-round habitat for mule deer, antelope and blue, ruffed, and sharptail grouse. Black bears and an occasional grizzly wander the lush grasslands, and mountain lions slip through the pockets of fir, pine, and aspen on the flanks of the Madison Range and the Lee Metcalf Wilderness Area on the property's eastern boundary. This conservation easement shields critical habitat from ever being subdivided or developed, protects creeks and wetlands, and prohibits commercial timber harvesting.

Vital Ground

The Vital Ground Foundation was founded in 1991 to protect habitat for wild grizzlies. It attempts to protect the bears and their habitat through acquisition, conservation easements, and other

arrangements with landowners. It includes the Habitat Preservation Campaign, "The Great Bear on the Great Plains", which was launched with the purchase of 240 acres of prime grizzly habitat and unique fen wetlands along the Rocky Mountain East Front in Montana. This land adjoins The Nature Conservancy's Pine Butte Preserve. In 1996, Vital Ground joined The Nature Conservancy to acquire 2,000 acres of deeded land and conservation easements for an adjacent 4,000 acres of habitat for grizzly bears and other wildlife north of Pine Butte. The goal of the campaign over the next five years is to secure protection for the bear and the habitat it shares with hundreds of other species on 10,000 acres along the East Front. Vital Ground is in the process of raising money to buy 6,600 acres of land near Dupuyer, Montana.

Rock Creek Trust

Since 1986 the Rock Creek Trust (RCT), along with a variety of partners, has worked with ranchers and other landowners for the long-term protection of open lands, family lands, clean water, and wildlife habitat in the Rock Creek Drainage. The major tool used by the RCT is the conservation easement. To date the RTC has protected 7,673 acres. Some of RCT's accomplishments include:

- The RTC arranged the sale of a key piece of property, the Rock Clark Ranch, to a buyer who put it in a conservation easement to keep it whole.
- An innovative real estate with the Handley Ranch involved the RTC in a trade, a purchase, the creation of a life-estate in a conservation easement, and the resale of the land to a private buyer.
- The RTC helped create a public access trail and a wildlife viewing site along a property boundary.
- The Rock Creek Land Exchange between the U.S. Forest Service and Plum Creek Timber Company ensures that 3,000 acres in lower Rock Creek will now be in the public domain, creating a buffer for the Welcome Creek Wilderness and enhancing habitat for 250 bighorn sheep.

Prickly Pear Land Trust

Established in 1996, the Prickly Pear Land Trust (PPLT) was formed to work voluntarily and cooperatively with area landowners to perpetuate the historic, scenic, recreational, wildlife and agricultural values of Lewis and Clark and Jefferson counties. The organization's goal is to identify and protect significant lands by acquiring title or conservation easements; to secure, preserve, and protect access to public lands; to foster an appreciation and understanding of our natural surroundings; to ensure that PPLT stewardship responsibilities are carried out in perpetuity; to obtain and manage funds to carry out the land trust work in a fiscally responsible manner; and to promote

the involvement of members and the general public in land trust activities. The PPLT has 250 members and a nine-member board of directors. Their inaugural project in 1996 involved purchasing land on the Water Line Trail. To date the organization has acquired 270 acres in easements and is in the process of transferring 120 acres from the Bureau of Land Management to the City of Helena. They have purchased 15 acres of fee land and oversee 8 miles of trail. Goals for 1997 include establishing a minimum of five conservation easements.

Bitterroot Land Trust

The Bitterroot Land Trust (BLT) formed two years ago to fulfill the need for a local land trust that would meet local needs and conservation desires. The goals of the BLT are to help private landowners protect open space through voluntary conservation easements; to develop, promote, and publicize innovative land preservation and low-impact development techniques; and to provide long-term stewardship of lands protected by conservation easements. Because the organization is new, it does not yet hold any conservation easements. The organization has been providing landowners with information about the land-protection tools available, and it is actively working with several landowners on conservation easements.

Flathead Land Trust

The mission of the Flathead Land Trust (FLT) is to help protect the wildlife, scenery, and traditional way of life in the Flathead Valley through the purchase of property, the acquisition of conservation easements, and the wise use of land. The FLT has been in existence for 14 years and currently has 415 acres in conservation easements. It has partnered with other organizations such as The Trust for Public Land, The Nature Conservancy, and the Conservation Fund on easements on an additional 1,200 acres and received as a donation 73 acres, which it sold at a bargain price to Montana Fish, Wildlife, and Parks.

Save Open Space

Save Open Space (SOS) is a small, urban land trust formed in 1993 to facilitate the preservation of open space located in and around urban Missoula. SOS, which is run by an all-volunteer board, promotes an awareness of open space and its value to the community through education and advocacy. SOS currently holds seven conservation easements on 140 acres with another 35 acre easement expected in July of 1999. It recently facilitated the exchange of a three-acre urban marsh from private to public ownership.

River Network

River Network's mission in Montana is riverland conservation. They acquire and conserve riverlands that are critical to the services that rivers perform for human communities: drinking water supply, floodplain management, fish and wildlife habitat, recreation, and open space. River Network is currently working on a land exchange that would place 7 miles of Alberton Gorge, along the Clark Fork River, into public ownership. They are also working with BLM to acquire conservation easements along the upper Missouri Wild and Scenic River and land trades to acquire 1,200 acres on the Sun River.

V. Montana's Forest Legacy Program

Montana's Forest Legacy Program is designed to conserve forest lands and to maintain natural and public values by assisting with the purchase of conservation easements or fee-title on private forest lands. A conservation easement is a legal means that allows land to remain in private ownership while ensuring natural resource values of the land will not be compromised by incompatible development. The program offers a unique opportunity for private, local, state, and federal interests to cooperatively furnish forest landowners with new incentives to voluntarily protect their forest resources. It is an important tool for private landowners to achieve conservation within the context of working landscapes.

Landowner participation in the program is completely voluntary. The landowner must be a willing seller of the parcel, to which he or she must hold a clear and unencumbered title. The landowner must clearly understand the conservation easement concept. Landowners who wish to include their lands in the program may submit an application to Montana Fish, Wildlife, and Parks. Their lands must be forested, must fall within designated forest legacy areas, and must conserve forest resources. A 25% cost-share match of purchase funds in the form of cash and/or in-kind contributions must also be available. Montana intends to use the State grant option throughout the state to acquire interests in important forest lands.

The National Program

The Forest Legacy Program is one of several national programs established to promote the long-term integrity of forest lands. Specifically, the intent of the Forest Legacy Program is to identify and protect environmentally important private forest lands that are threatened by conversion to nonforest

uses. Recent legislation provides for grants to states to carry out the program. The U.S. Congress, in amending the Cooperative Forestry Assistance Act, recognized that the majority of the nation's productive forest lands are in private ownership and that private landowners are facing increased pressure to convert the forest lands to other uses. They recognized that increasing population densities are placing growing pressures on private lands to provide fish and wildlife habitat, aesthetic qualities, timber and recreational opportunities, and that good stewardship requires a long-term commitment that can be fostered through a partnership of Federal, State, and local government efforts.

The U.S. Forest Service implements the program through close cooperation with a lead state agency as designated by the Governor. Montana Fish, Wildlife, and Parks is the lead agency in Montana.

Goals and Objectives of the Montana Forest Legacy Program

The over-all goal of the Montana Forest Legacy Program is to conserve and enhance land, water, wildlife, and timber resources while providing for the continued working of Montana's forest lands and maintenance of natural and public values. Specific objectives include the following:

- Identify and protect environmentally important, privately owned forest lands threatened with conversion to uses that are inconsistent with traditional forest uses including but not limited to, residential subdivisions, commercial development, extensive pasture, cultivated farmland, and mining that causes extensive surface disturbance;
- Reduce forest fragmentation caused by development;
- Provide environmental benefits through the protection of riparian areas, native forest plants and animals, remnant forest types, and natural ecosystem functions;
- Enhance recreational opportunities;
- Provide watershed and water supply protection;
- Provide employment opportunities and economic stability through the maintenance of traditional forest uses;
- Maintain important scenic resources;
- Provide links to public and other privately owned protected areas;
- Protect rare, threatened, endangered, and sensitive species;
- Protect or enhance habitat connectivity and related values needed to ensure biodiversity;
- Protect important historical and cultural sites;
- Promote forest stewardship;
- Provide buffer areas to already protected areas.

Guidelines to be Used by Montana in Determining Priority of Interests in Lands to be Acquired

Eligible areas in Montana represent a rich and varied assortment of forest lands. To be eligible for inclusion in the Forest Legacy Program, the proposed area must be an environmentally important forest area that is threatened by conversion to nonforest uses. Many forest lands across Montana will meet the national eligibility criteria for the Forest Legacy Program. Environmentally important forest areas must contain one or more of the following important public values:

- Scenic resources;
- Public recreation opportunities;
- Riparian areas;
- Fish and wildlife habitat;
- Known threatened and endangered species;
- Known cultural resources;
- Other ecological values; and/or
- Provide opportunities for the continuation of traditional forest uses such as forest management, timber harvesting, other commodity use, and outdoor recreation.

To determine the outstanding ones, each area will be evaluated within its regional context in addition to the documentation of important values within its boundaries. Regional values may be expressed in terms of regionally distinctive scenic, geologic, or biological resources and societal benefits. Ideally, areas selected will embody multiple public values of a regional scale, be acquirable and manageable, enjoy public support for that purpose, be threatened with conversion in the short term, and contribute to biodiversity.

Eligibility Criteria

In order for a property to be eligible for inclusion it must be forest land, be at least five acres in size, and meet all of the following four eligibility criteria[8]. No ranking is implied by the order in which any of the criteria or subsets are listed.

1. Threat

In order for this criterion to be met, the property must be threatened by one of the following:

[8] Forest land is defined as any land with trees that has at least ten percent canopy cover or that formerly had such tree cover and is not currently developed for nonforest use. Lands that had formerly been forested, but that have been converted to nonforest use may be considered as forest lands if the property is covered by an approved Forest Stewardship Plan that

- Conversion to nonforest uses,
- Further subdivision into smaller parcels, or
- Other detrimental impacts to a remnant forest type in Montana

2. Public Values

In order for this criterion to be met, the property must possess one of the following public values:

- Social and economic values;
- Natural aesthetic or scenic values;
- Public education opportunities;
- Public recreation opportunities;
- Riparian areas;
- Fish and wildlife habitat;
- Threatened or endangered species;
- Cultural and historical resources;
- Traditional forest uses; and/or
- Other ecological values

3. Planning

In order for this criterion to be met, the property must meet one of the following:

- Have a Forest Stewardship Plan approved by the State Forester or his or her designated representative in accordance with National Forest Stewardship Program criteria, or
- In the case of a corporate forest landowner, have a multi-resource management plan that achieves long-term stewardship of forest land.
- Where land is acquired in fee or timber management rights are transferred in the conservation easement, a management plan will be developed by the organization acquiring those rights.

4. Funding

In order for this criterion to be met, there must be non-federal matching funds of at least 25% available in the form of cash and/or in-kind contributions.

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intends to re-establish forest cover. The parcel qualifying for Forest Legacy must be at least 90% forested under this definition to qualify for funding.

Selection Criteria

Once a parcel has met the test for eligibility, the following selection criteria will be used to compare multiple competing parcels (there is no ranking implied by the order in which the criteria are listed):

Social and Economic Values:

- Parcel helps to insure that historic forest uses will continue;
- Project is accessible to markets and will contribute to local economies;
- Parcel maintains local tax base while demonstrating that conservation and utilization of forest ecosystems are compatible with other land uses, lifestyles, and local cultures;
- Parcel is in conformance with local plans or other jurisdictions;
- Neighbors and the local community support the project.

Ecological values:

- Parcel contains all or a portion of a unique biological or ecological community,
- Project will help maintain and restore natural ecosystem functions,
- Area contains tree species whose range or abundance is threatened by pathogens,
- Area contains tree species that are rare or unique to the state of Montana.

Management of surrounding lands and manageability:

- Adjacent land use is compatible with the objectives of the Forest Legacy Program,
- Parcel is of sufficient size that its natural or public values will remain intact regardless of surrounding land management,
- Intensity and expense of management activities to protect the property's values is economically feasible,
- Property can accommodate proposed priority uses or management activities without endangering or degrading its natural values.
- Noxious weed control is addressed in the stewardship or management plan.

Urgency:

- High risk: Conversion to nonforest use is likely to occur within 3 years.
- Moderate risk: Conversion to nonforest use is likely to occur within 3 to 5 years.
- Low risk: Conversion to nonforest use is likely to occur within 5 to 10 years.

Partnership potential:

- Project includes partnerships with one or more groups or individuals to decrease the cost and/or increase the effectiveness of the project.

Natural Aesthetic and Scenic Resources:

- Area is listed in local, state, or federal landscape inventory as distinctive or noteworthy;
- Area includes locally or regionally important panoramic views and or exceptional short views;
- Area is situated along a designated scenic travelway.

Public recreation opportunities:

- Water-based recreation is present (boating, swimming, fishing, rafting, canoeing);
- Trail-based and or day-use recreational opportunities exist (hiking, picnicking, horseback riding, birding, cross-country skiing, etc.;
- Natural resource recreational activities are available (camping, hunting, berry picking, rock hounding, etc.)

Public education opportunities:

- Rare and/or important educational opportunities are present;
- Parcel is accessible to population center(s).

Riparian resources:

- Parcel includes important wetlands (especially isolated wetlands) or is adjacent to watershed protection areas,
- Project can maintain or increase the quality or quantity of water,
- Area is situated on major river or stream;
- Area has more than 300 lineal feet of river or wetland shoreline;
- Area includes floodplain and natural valley storage components;
- Area contains a minimum 80-foot strip of native trees and shrubs as a natural buffer and sediment filter;
- Area contributes to a public or private drinking water supply;

Fish, wildlife, and plant habitat encompassed:

- Area contains habitat for forest-interior or forest-nesting birds;

- Area harbors significant populations of high priority resident bird species and/or Neo-tropical migrant species, as designated by the Montana Partners In Flight Landbird Conservation Plan;
- Area is home to significant populations of forest inhabiting mammals, reptiles, amphibians and invertebrates;
- Area exhibits connective habitats, corridors, habitat linkages, and other areas that reduce biological isolation;
- Area provides habitat for threatened, endangered, or sensitive species;
- Area contains plant species listed as threatened, endangered, or of special concern.
- Area encompasses all or part of an Important Bird Area as identified by Montana Partners in Flight.

Cultural and historical resources:

- Area contains recorded archaeological site(s);
- Area includes historic structures or site(s).

Opportunities for the continuation of traditional forest uses:

- Area will provide opportunities for the continuation of traditional forest uses such as forest management, timber harvesting, other commodity use, and outdoor recreation.

PROJECT DEVELOPMENT PROCESS

Step 1. Public Outreach

Contact landowners to make them aware of Forest Legacy Program

Action by: Montana Fish, Wildlife, and Parks (FWP), Montana Department of Natural Resources and Conservation (DNRC), U.S. Forest Service (FS), Stewardship Committee and cooperating partners.

Through: Stewardship program and personal contacts

Provide information, help landowner find a potentially interested easement holder

FWP, DNRC, other state or local government for purchases.

Private conservation group for donated easements.

FWP to develop information on their web page, other groups link to information

Step 2. Written statement of interest from landowner to FWP

FWP replies with application materials to landowner.

Assistance available with application from:

Organization to acquire the easement, consultants, stewardship advisors

Step 3. Formal application submitted to FWP

Review against **ELIGIBILITY CRITERIA**:

2 Stewardship Committee representatives

1 DNRC

1 FWP

1 Forest Service

FWP notifies landowner regarding eligibility for Forest Legacy

Step 4. Comparative ranking of projects by Stewardship Subcommittee, FWP and Forest Service

Project proponent makes formal presentation of their proposed project

Group confirms eligibility & ranks projects based on **SELECTION CRITERIA**:

Review general monitoring protocol developed by conservation easement holder

Decide on recommendations for which projects to include in Forest Legacy Program

Step 5. Stewardship Subcommittee presents recommendations to full committee

Full Stewardship Committee prioritizes projects to recommend for approval

Full committee submits prioritized recommendations in writing to FWP

Step 6. FWP selects projects for enrollment into Forest Legacy Program

Forest Service regional office has final approval of projects submitted by FWP

FWP notifies all landowners and Stewardship Committee of final decisions

Step 7. Conservation Easement developed following easement holder's procedures

Federal Forest Legacy money available at closing

Government agency or private organization close & record easement

Land enrolled in Legacy Program, FWP reports accomplishments to Stewardship Committee.

Step 8. Monitoring and Enforcement

For purchased easements with Forest Legacy Funds:

Easements held by government agency, responsible for enforcement

Monitoring by easement holder or contracted to a private land trust

For donated easements with Forest Legacy Funds used for some fixed costs:

Easements held by private land trust, they monitor & enforce

VI. Montana's Forest Legacy Areas

Montana's Forest Legacy Areas (FLAs) are based upon forest regions of Montana as developed by Steve Arno of the Intermountain Forest and Range Experiment Station. Arno's eight regions emphasize patterns in species composition (both trees and undergrowth) and the relationship of those patterns to climate and topography. The Montana Forest Legacy Program delineates six regions[9] that encompass the entire state. Arno's boundaries were adjusted slightly along county lines to facilitate data compilation and future administration of the Forest Legacy Program. The areas are shown in Figure 21. The entire state is included because even though some areas are more prone to development, all parts of the state have important forest lands potentially threatened with conversion to nonforest uses, and the Montana Forest Stewardship Steering Committee wanted to leave open the possibility of protecting valuable properties wherever they occur within the state. Montana now leads the nation in acreage in conservation easements. A number of land trust organizations in Montana work for forest land protection and preservation through conservation easements and other mechanisms. The Forest Legacy Program can work in partnerships with these organizations on monitoring and other aspects of the program. Their assistance should facilitate the administration of a Montana-wide Forest Legacy initiative.

The potential exists to do Forest Legacy projects on private lands that occur within National Forest boundaries. On these projects, there will be coordination with Forest Service local offices and Forest Service concurrence.

[9] Arno's north-central and northeastern regions have been lumped into one. His southwest, south-central, and southeastern regions have been divided between two FLAs.

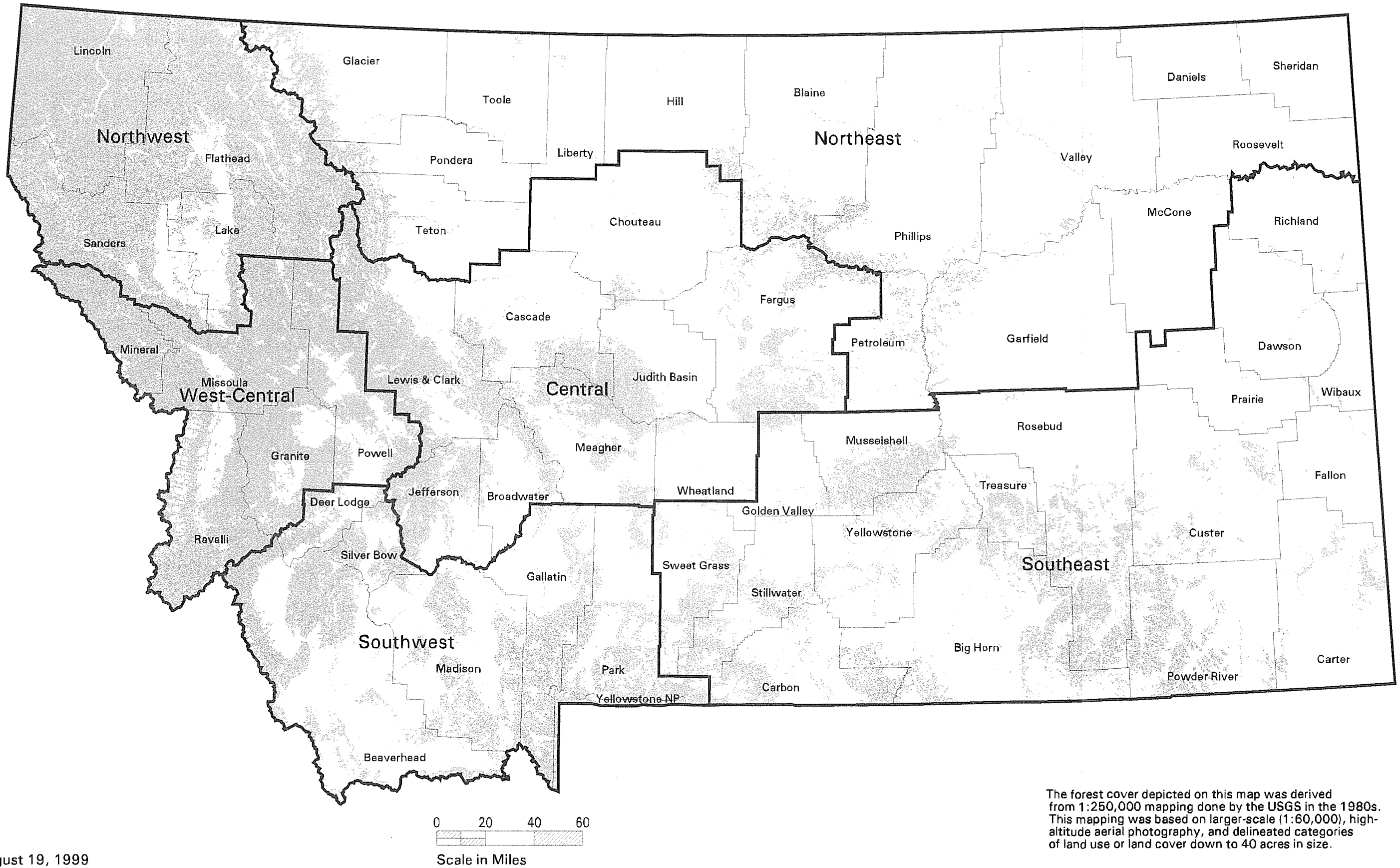

Figure 21. Montana's Forest Legacy areas and forested areas.

Northwest Forest Legacy Area

General Description

The Northwest Forest Legacy Area encompasses Lincoln, Flathead, Sanders, and Lake Counties and includes the Kootenai, Flathead, and lower Clark Fork River drainages. It includes all of the Flathead and Kootenai National Forests, portions of the Lolo National Forest, the Flathead Indian Reservation, and the west slope of Glacier National Park. Land ownership is shown in Figure 22. Figure 22a shows counties and lakes and rivers in the FLA. Figures 23 and 24 show the distribution of all forest land in the FLA and the distribution of private forest land, respectively.

The dominant climate in this rugged area is classified as modified maritime, which means the region is dominated by moist air from the Pacific. Because a large amount of moisture falls and because the area has a relatively long growing season and good soils, the Northwest FLA is the most productive FLA in the state; the weighted average for the area is 75 ft^3/acre/year. About 90% of the area is forested, although semi-arid grasslands can be found in the valleys that fall in the rain shadows of the larger mountain ranges. Many of the wetter valleys are forested, even to elevations as low as 1,800 feet, which is unusual for Montana. The alpine treeline occurs at about 8,000 feet. The average frost free season in lower elevation forests is 70 to 110 days. The potential timber productivity is shown in Table 6.

Table 6. Area of forest land by site class in thousands of acres.

	SITE CLASS (cubic feet/acre/year)				
	>165	120-165	85-120	50-85	20-49
Flathead	0	55.2	467.1	1035.9	656.9
Lake	0	14.6	114.2	264.6	45.1
Sanders	19.6	111.8	257.5	404.1	106.0
Lincoln	0	143.4	719.6	1039.5	278.2
Totals	19.6	325	1558.4	2744.1	1086.2

Pacific Coast species, rare or absent from other parts of Montana, are common over a large part of the area. Among the species of trees generally restricted to this FLA are western and mountain hemlock, western redcedar, grand fir, Pacific yew, and western white pine. Undergrowth species generally unique to the area include queen's cup, wild sarsaparilla, oak fern and other Pacific Coast ferns, Hooker's fairy bell, trefoil-foamflower, stream violet, and devil's club. The area occupied by forest is shown in Table 7.

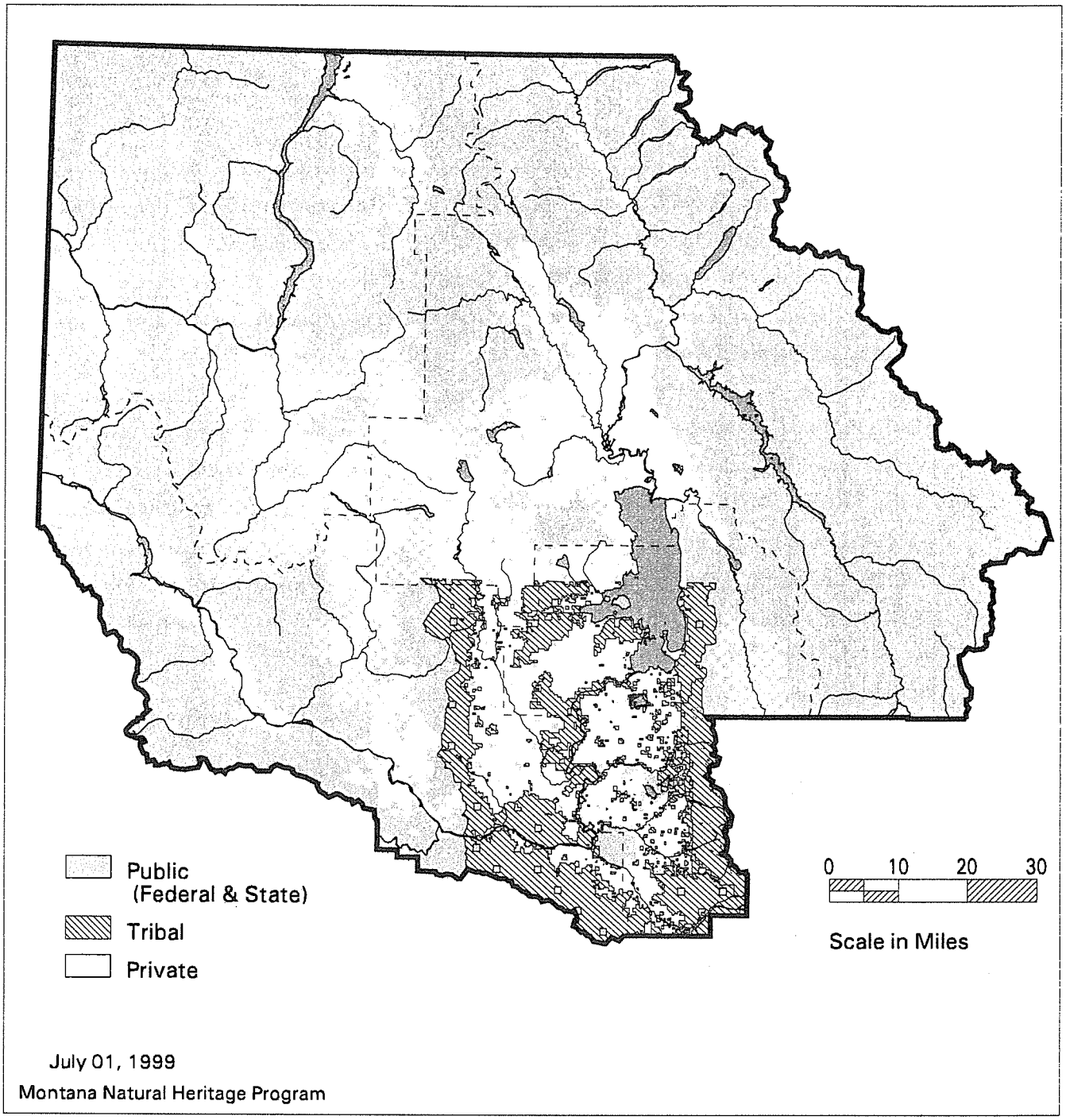

Figure 22. Land Ownership: Public, Tribal, and Private, Northwest Forest Legacy Area.

Figure 22a. Counties and Major Lakes & Rivers, Northwest Forest Legacy Area.

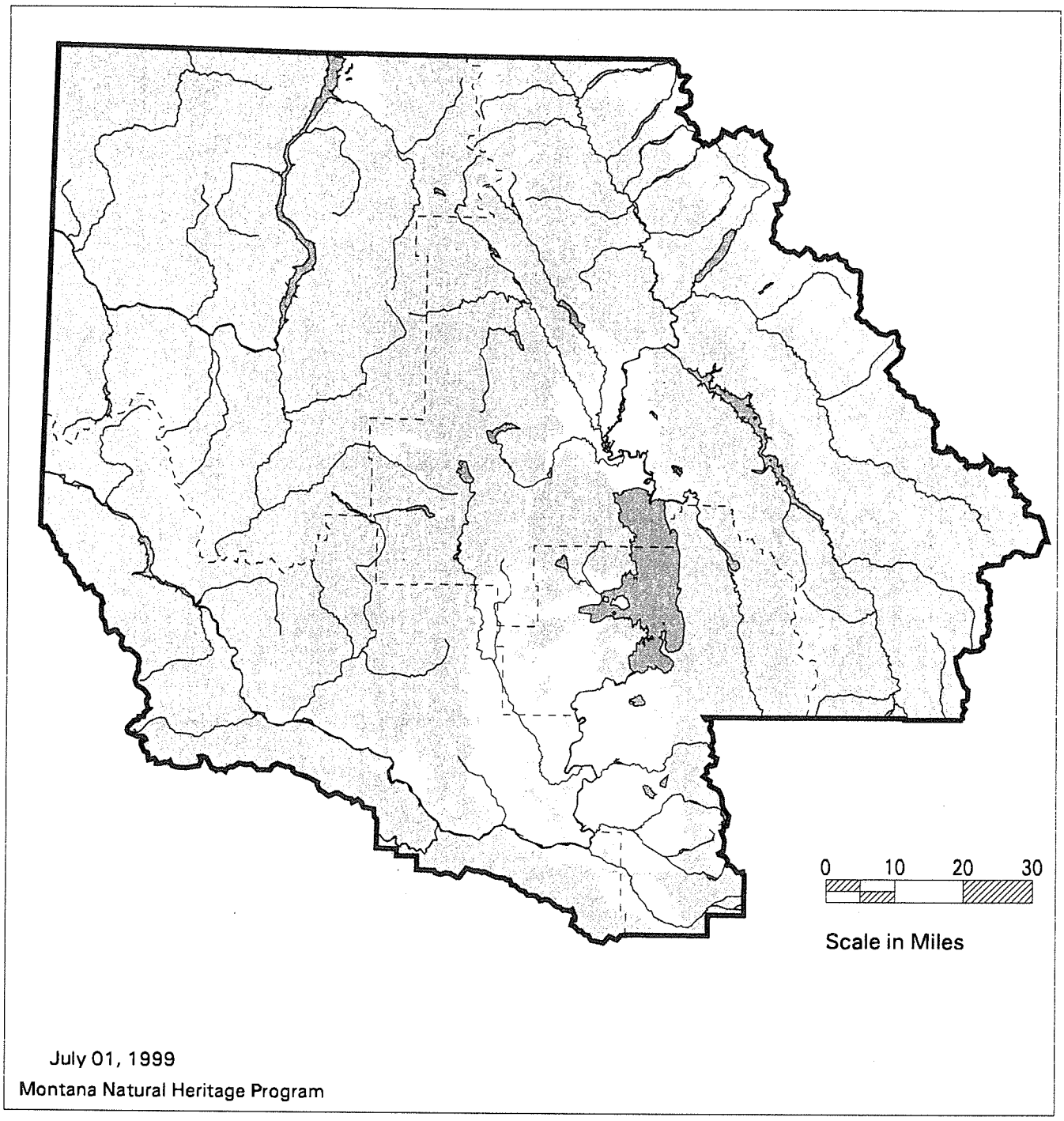

Figure 23. Forested Areas, Northwest Forest Legacy Area.

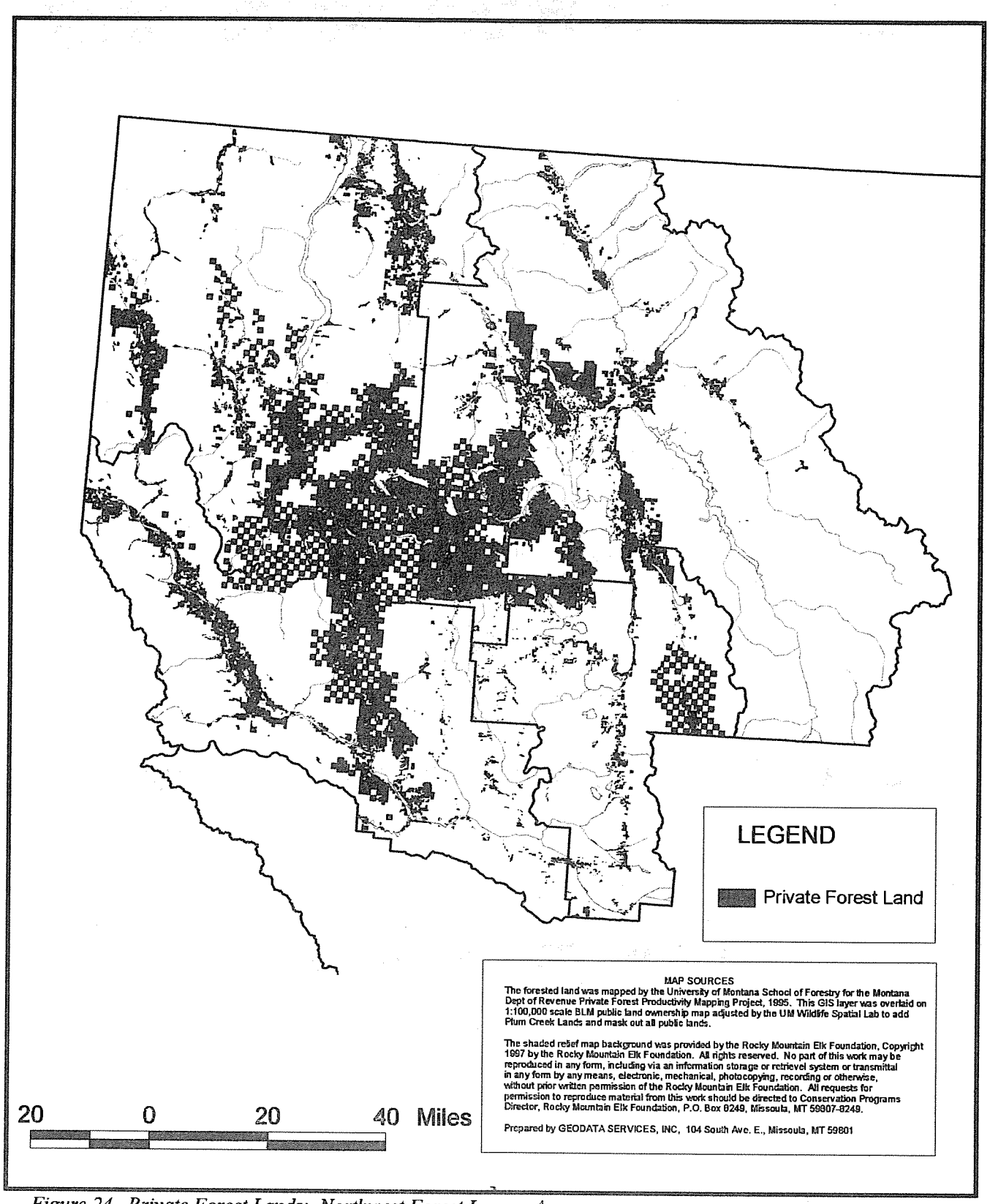

Figure 24. Private Forest Lands: Northwest Forest Legacy Area.

Table 7. Area of forest land by forest type group in thousands of acres.

	Total	Spruce/ Fir	Douglas-fir	Ponderosa pine	Hemlock/ Western white pine	Sitka spruce	Western larch	Lodgepole pine	Other pines	Aspen/ Birch
Flathead	2215.2	979.0	628.8	23.3	0	0	120.9	362.2	49.1	33.1
Lake	438.5	128.3	205.9	18.1	0	4.7	32.7	40.6	0.0	8.1
Lincoln	2180.7	513.0	831.5	57.6	6.3	143.3	275.5	332.9	6.3	14.3
Sanders	899.0	115.3	405.4	112.6	0	79.3	37.4	149.1	0	0.0
Total	5733.4	1735.6	2071.6	211.6	6.3	227.3	466.5	884.8	55.4	55.5

Within this FLA, the Kootenai drainage is generally the wettest. It supports forests similar to those of northern Idaho. As one moves eastward, toward Flathead Lake, moisture levels drop off and the influence of Arctic air increases. The two hemlock species, which are sensitive to frost damage, become less common.

Growth and Development Patterns

Population grew during the 1980s in the Northwest FLA at an annual rate of 0.9% with a net annual migration of 0.1%. Growth accelerated during the period 1990 through 1997 to 2.6% annually with a net migration increase of 2.2% per year.

Population growth of each of the four counties in the Northwest FLA over the last 17 years is shown in the Table 8. Over the last seven years, Flathead County saw a 21.1% increase, which makes it one of the fastest growing counties in the state (and nation). Lake, Lincoln, and Sanders Counties grew by 20.4%, 7.4%, and 18.3%, respectively, making the region one of the fastest growing in the state.

Twenty-three percent of all lots proposed for subdivision in the state in 1996 were in this FLA. The number of subdivision lots requested that year are shown in Table 9.

Table 8. Population of Northwest Legacy Counties, 1980-1997

County	1980 Population	1997 Population	Area (sq mi)	People/sq mi
Flathead	51966	71,707	5,099	14.1
Lake	19,056	25,341	1,494	17
Lincoln	17,752	18,772	3,612	5.2
Sanders	8,675	10,253	2,762	3.7
Totals	97,449	126,073	12,967	9.7

Table 9. Number of subdivision lots requested in 1996[10]

	Minors	Majors	Condos	Trailer Courts	All Lots
Flathead	515	259	26	100	900
Lake	173	47	1	71	292
Lincoln	290	47	0	0	373
Sanders	105	91	0	10	206
Totals	1083	444	27	181	1735

As mentioned previously, the parcelization of industrial private forests is an issue in this FLA. Plum Creek Timber Company has proposed to sell up to 70,000 acres of commercial forest land in the Thompson and Fisher River basins for real estate development. These lands include some of the most productive forests, recreational lands, and most important big-game winter range and wildlife corridors in northwestern Montana.

Summary of Important Environmental Values and How they will be Protected

Figure 25 shows the winter range areas in the Northwest FLA for moose, elk, mule deer, white-tailed deer, mountain goat, and bighorn sheep and the occurrence of species that are threatened, endangered, or rare throughout their range or in Montana. A number of big game populations in the Northwest FLA depend on private forest lands for their continued survival. In fact, there is a greater dependence by big game animals on private forests in the Northwest FLA than any other region of Montana.

Montana intends to use the State grant option in this FLA to acquire interests in important forest lands. The Northwest Forest Legacy Area encompasses the following environmental values:

- Some of the most important big-game winter range and wildlife corridors in Montana, as well as an array of other complex habitats that support key wildlife species.
- High quality and intact forest riparian and wetland habitats that support Pacific coast species not found elsewhere in Montana. The area also includes wet upland forest types and low elevation forests that are unique in Montana.
- Intact watersheds with excellent water quality that support bull trout, westslope cutthroat trout, native redband trout, harlequin ducks, bald eagles, and other species of special concern.
- Intact large-mammal predator-prey relationships generally absent from the rest of Montana and that are of international significance. (The full complement of wildlife species present in pre-Columbian times are present in places like the North Fork of the Flathead River ecosystem. The list includes species like grizzly bear, wolf, mountain lion, lynx, black bear, wolverine, and Selkirk caribou.)
- Connectivity between habitats and core biological reserves in the Montana Rocky Mountains and the British Columbia Rockies.
- Large blocks of contiguous forest with little development.

[10] A minor subdivision is one which includes five or fewer proposed lots. A major subdivision proposes six or more.

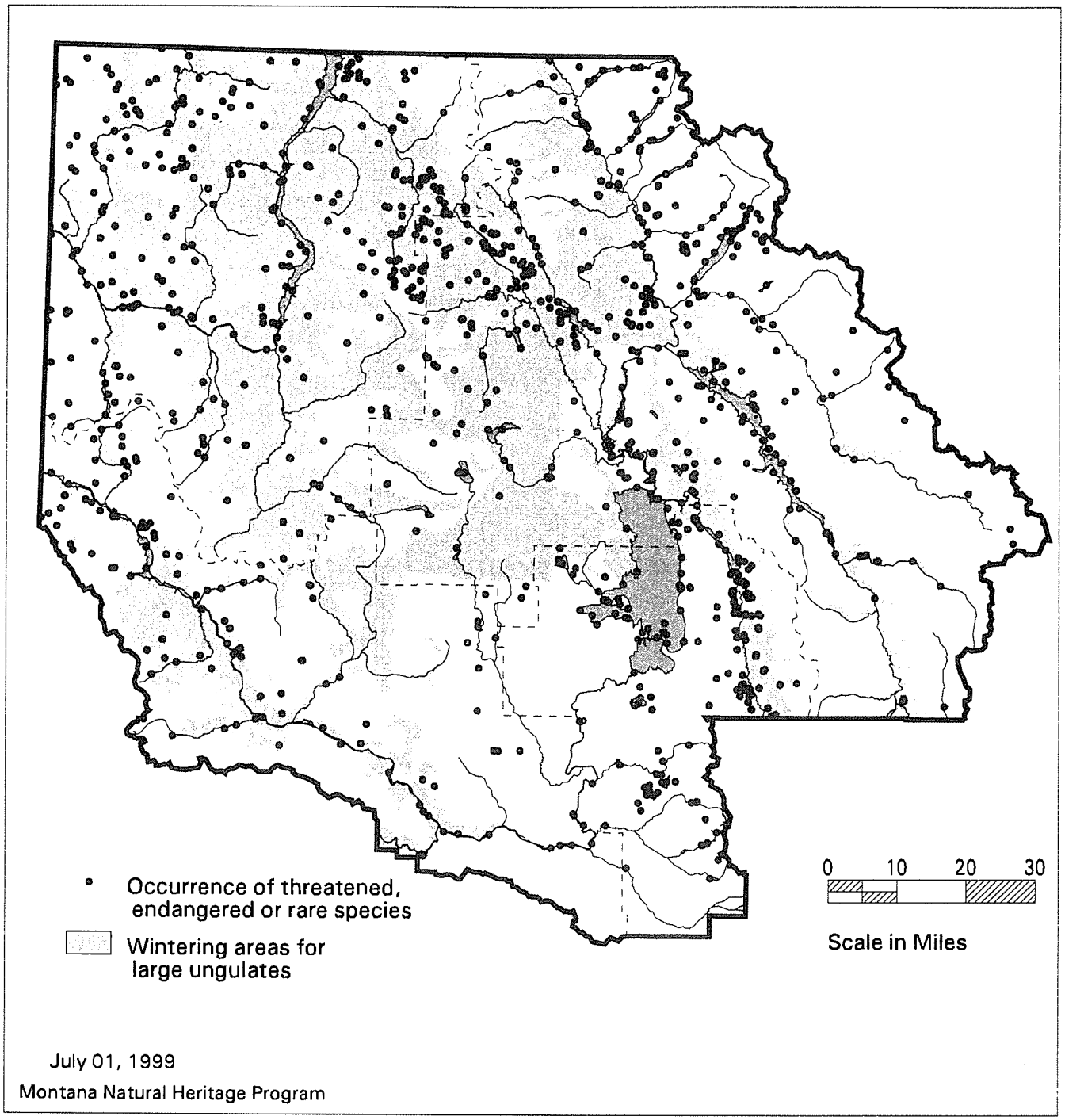

Figure 25. Winter Range and Sensitive Species Locations, Northwest Forest Legacy Area.

- Extremely rugged terrain with an unusual array of habitats and accompanying vegetation from semiarid grasslands (in the rain shadows of the mountain ranges) to moist mountain valleys, subalpine forests, and alpine areas.
- Excellent hunting, fishing, and recreational opportunities.

These values will be protected through:

- The development of a community-supported conservation easement program that will target vulnerable areas;
- The establishment of conservation partnerships to facilitate easement acquisition;
- The encouragement of private forest owners to complete Stewardship Management Plans or multi-resource management plans;
- The reduction of wildlife habitat/human use conflicts and the protection of key habitats through education, easement restrictions, and the direct conservation of habitat.

Conservation easements should focus on the following issues:

- Threats of conversion;
- Continuation of traditional forest uses;
- Quality and integrity of aquatic, riparian, and upland habitats;
- Sustainable timber harvest and forest practices;
- Restoration and maintenance of proper ecosystem function;
- Public access for recreational purposes.

List of Public Benefits to be Derived

- Sustainable timber industry;
- Maintenance of traditional forest uses and cultures;
- Protection of valuable wildlife and fish habitat;
- Protection of water quality for human uses;
- Protection of healthy ecosystem functions;
- Access to and protection of year-round recreational opportunities;
- Protection of scenic qualities.

Entities that may Participate in Monitoring and Management

Montana Fish, Wildlife, and Parks and, on a case by case basis, other participating entities will be involved in monitoring and management.

Public Involvement Process

See Chapter VII.

West-central Forest Legacy Area

General Description

The West-Central Forest Legacy Area encompasses Mineral, Missoula, Granite, Powell, and Ravalli Counties and includes the Clark Fork River drainage from just upstream of Deer Lodge to just north of St. Regis. It takes in portions of the Lolo, Bitterroot, and Deerlodge National Forests. Land ownership is shown in Figure 26. Figure 26a shows counties and lakes and rivers in the FLA. Figures 27 and 28 show the distribution of all forest land in the FLA and the distribution of private forest land, respectively.

The Bitterroot Mountains lie along the western margin of this FLA and form a significant barrier to Pacific Coast moisture, hence coastal plants are less common here than in the Northwest FLA. Rather, the area has a Pacific-influenced climate and is dominated by drier intermountain species. Forests occupy about 80% of the area. Only small amounts of Pacific Coast forest occur here and only in moist canyon-bottom sites or seepage areas. Many of these species are at the southwest limit of their range. Grand fir is locally common but not nearly as abundant as in the northwest part of the state. Generally, the area is less diverse than the Northwest FLA. Species include western larch, alpine larch, ponderosa pine, Douglas-fir, beargrass, menziesia, and wood rush. The average frost free season in lower elevation forests is 70 to 110 days. The potential timber productivity is shown in Table 10. The average for the area is 61 ft^3/acre/year.

Table 10. Area of forest land by site class in thousands of acres.

	SITE CLASS (cubic feet/acre/year)				
	>165	120-165	85-120	50-85	20-49
Granite	0	0	0	102	86
Mineral	0	0	17	77	24
Missoula	0	11	105	505	216
Powell	0	6	49	235	291
Ravalli	6	6	187	583	390
	6	23	358	1502	1007

Most of the nonforest areas are grassland. Lower timberline generally occurs between 3,200 and 5,500 feet above sea level. Alpine treeline averages about 8,800 feet.

Table 11. Area of forest land by forest type group in thousands of acres.

	Total	Spruce/ Fir	Douglas-fir	Ponderosa pine	Sitka spruce	Western larch	Lodgepole pine	Other pines	Cotton-wood	Aspen/ Birch
Granite	187.8	4.2	139.5	12.2	0	0	27.8	4.2	0	0.0
Mineral	117.9	0	47.1	33.6	0	11.8	25.4	0.0	0	0.0
Missoula	837.6	161.3	384.6	70.9	7.7	86	121.7	0.0	5.5	0.0
Powell	580.5	111.2	274.6	22.1	0	11.6	125.7	12.8	5.4	17.2
Ravalli	1172.7	253.3	464.9	164.1	0	27.1	221.7	35.8	5.9	0.0
Totals	2896.5	530	1310.7	302.9	7.7	136.5	522.3	52.8	16.8	17.2

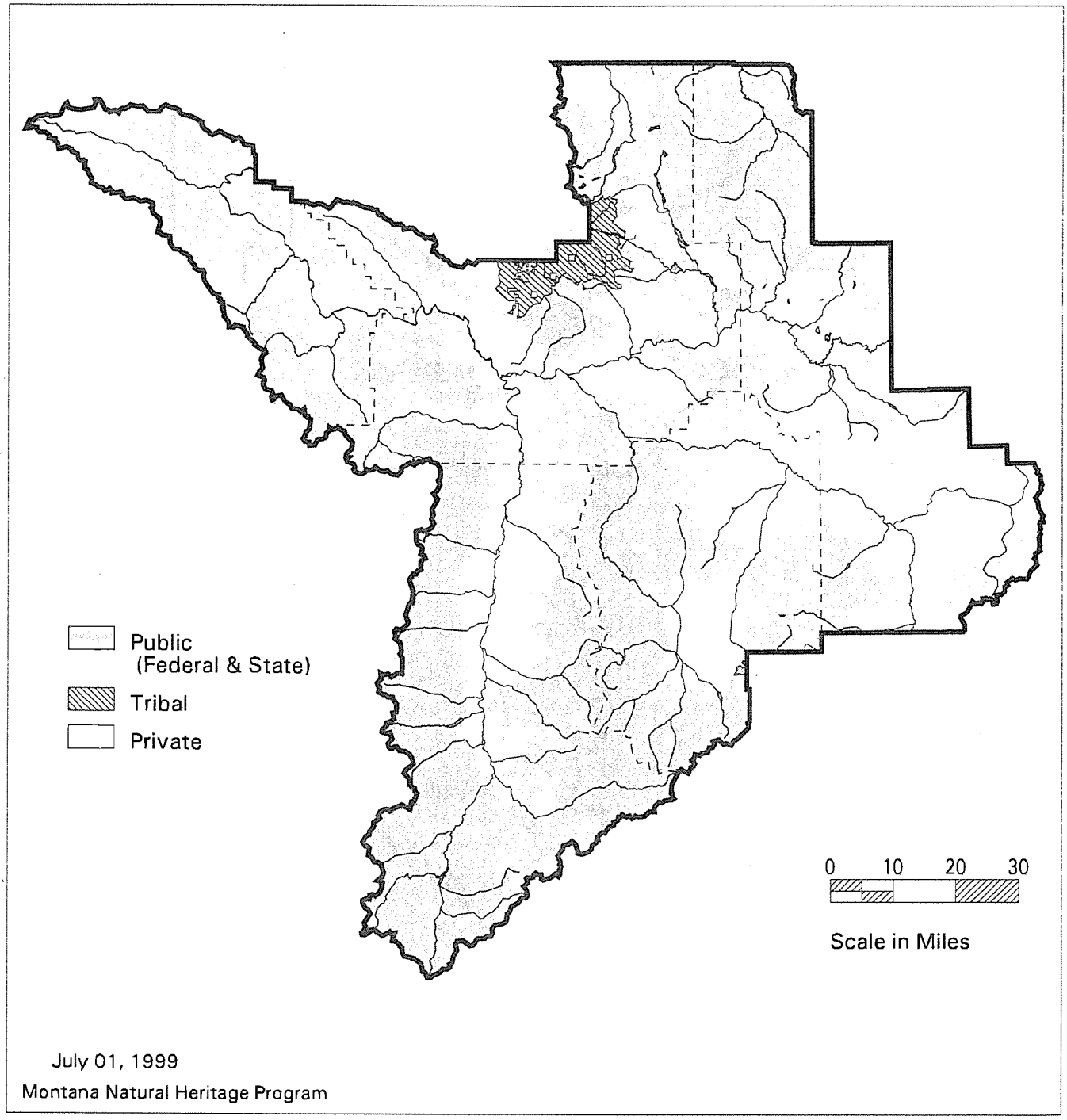

Figure 26. Land Ownership: Public, Tribal, and Private, West-Central Forest Legacy Area.

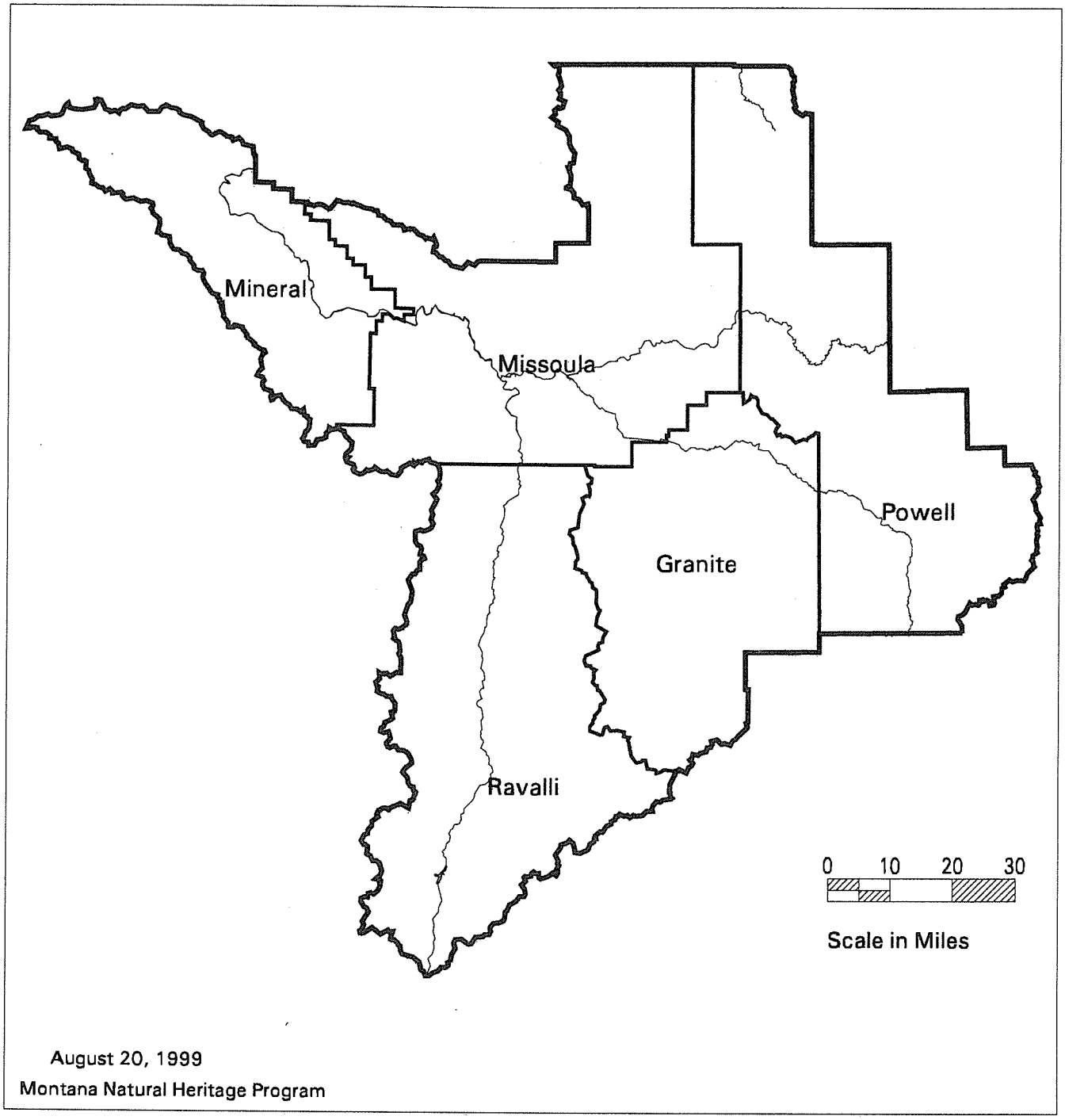

Figure 26a. Counties and Major Lakes & Rivers, West-Central Forest Legacy Area.

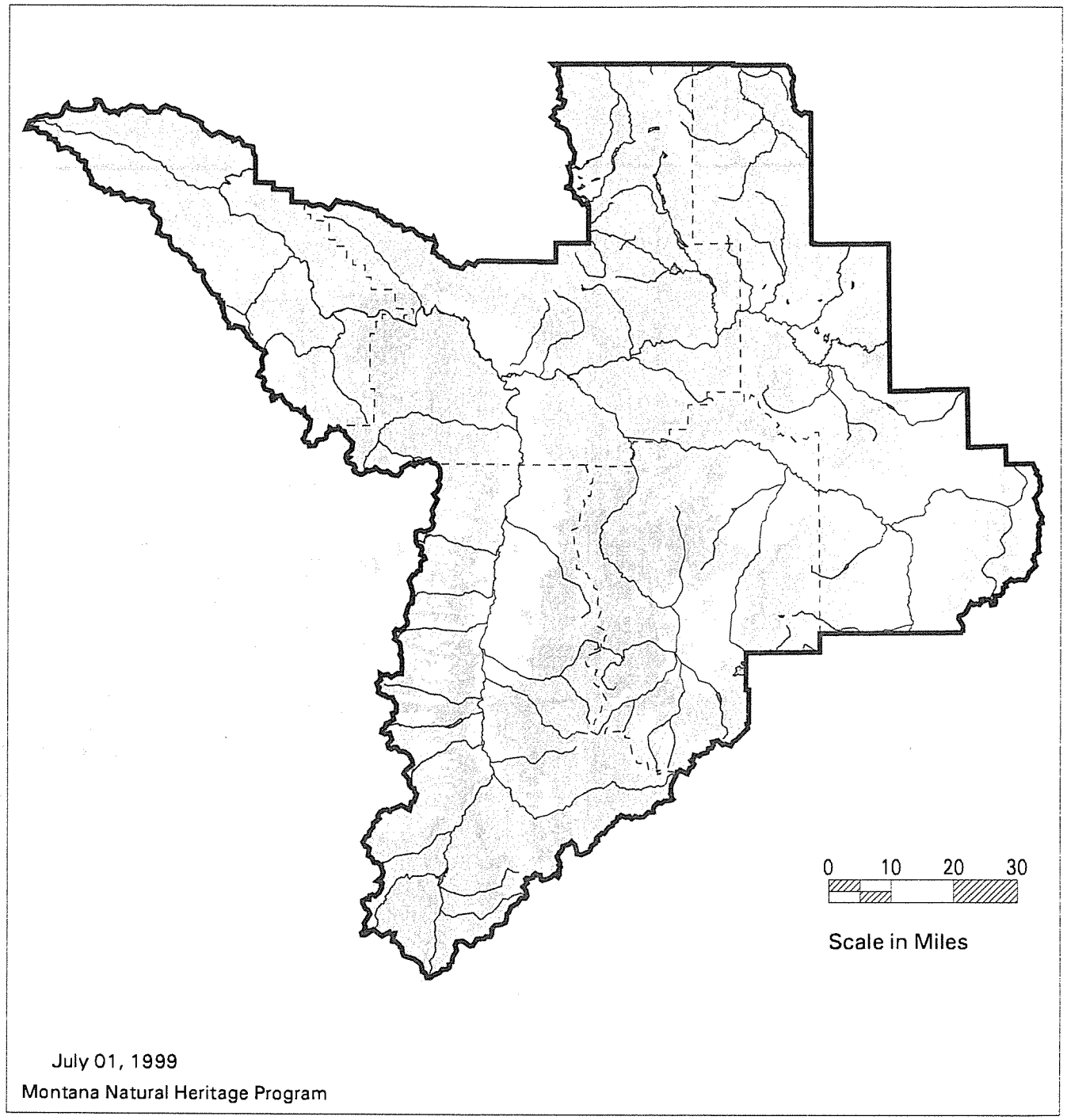

Figure 27. Forested Areas, West-Central Forest Legacy Area.

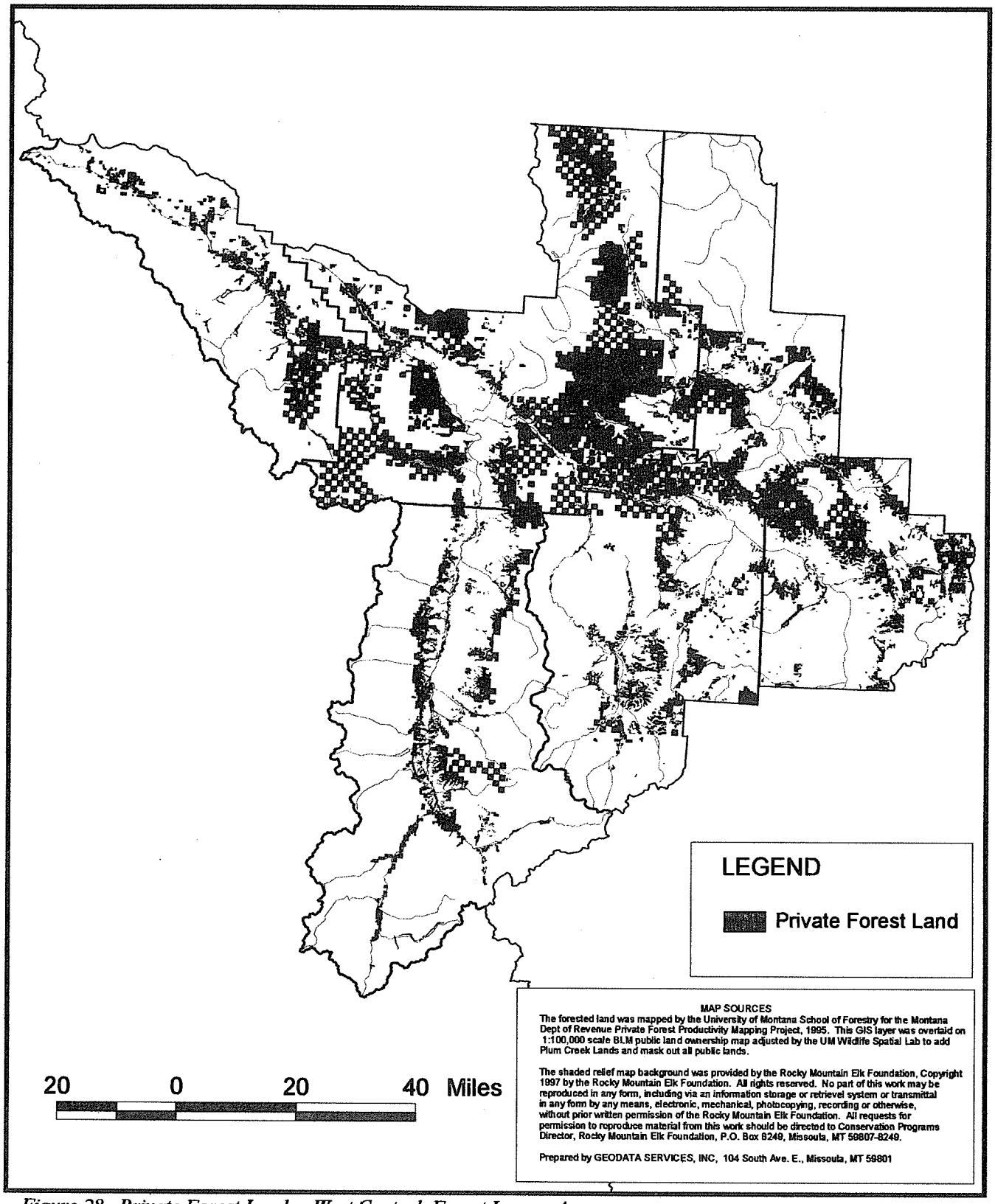

Figure 28. Private Forest Lands: West Central Forest Legacy Area

Growth and Development Patterns

Population grew during the 1980s in the West-central FLA at an annual rate of 0.4% with a net annual migration of -0.4%. Growth accelerated during the period 1990 through 1997 to 2.5% annually with a net migration increase of 2.0% per year.

Population changes in each of the counties in the West-central FLA over the last 17 years is shown in the Table 12. Over the last seven years, Missoula County saw a 12.9% increase, and Ravalli County saw an 38.2% increase. Mineral, Powell, and Granite increased by 12.4%, 6.8%, and 3.3%, respectively.

Twenty-two percent of all lots proposed for subdivision in the state in 1996 were in this FLA. The number of subdivision lots requested that year are shown in Table 13.

Table 12. Population of West-central Forest Legacy Counties, 1980-1997

County	1980 Population	1997 Population	Area (sq mi)	People/sq mi
Granite	2,700	2,632	1,727	1.5
Mineral	3,675	3,725	1,220	3
Missoula	76,016	88,818	2,598	34
Powell	6,958	7,072	2,326	3
Ravalli	22,493	34,554	2,394	14.4
Totals	**111,842**	**136,801**	**10,265**	**13.3**

Table 13. Number of subdivision lots requested in 1996

	Minors	Majors	Condos	Trailer Courts	All Lots
Granite	29			25	54
Mineral	28	86		140	254
Missoula	157	554	7	83	801
Powell	5				5
Ravalli	293	226		14	533
	512	866	7	262	1647

Summary of Important Environmental Values and How they will be Protected

Figure 29 shows the winter range areas in the West-central FLA for moose, elk, mule deer, white-tailed deer, mountain goat, and bighorn sheep and the occurrence of species that are threatened, endangered, or rare throughout their range or in Montana.

Montana intends to use the State grant option in this FLA to acquire interests in important forest lands. The West-central Forest Legacy Area encompasses the following environmental values:

- Big-game winter range and wildlife corridors and a variety of other complex wildlife habitats. Portions of the area are at the southern edge of the Northern Continental Divide Ecosystem

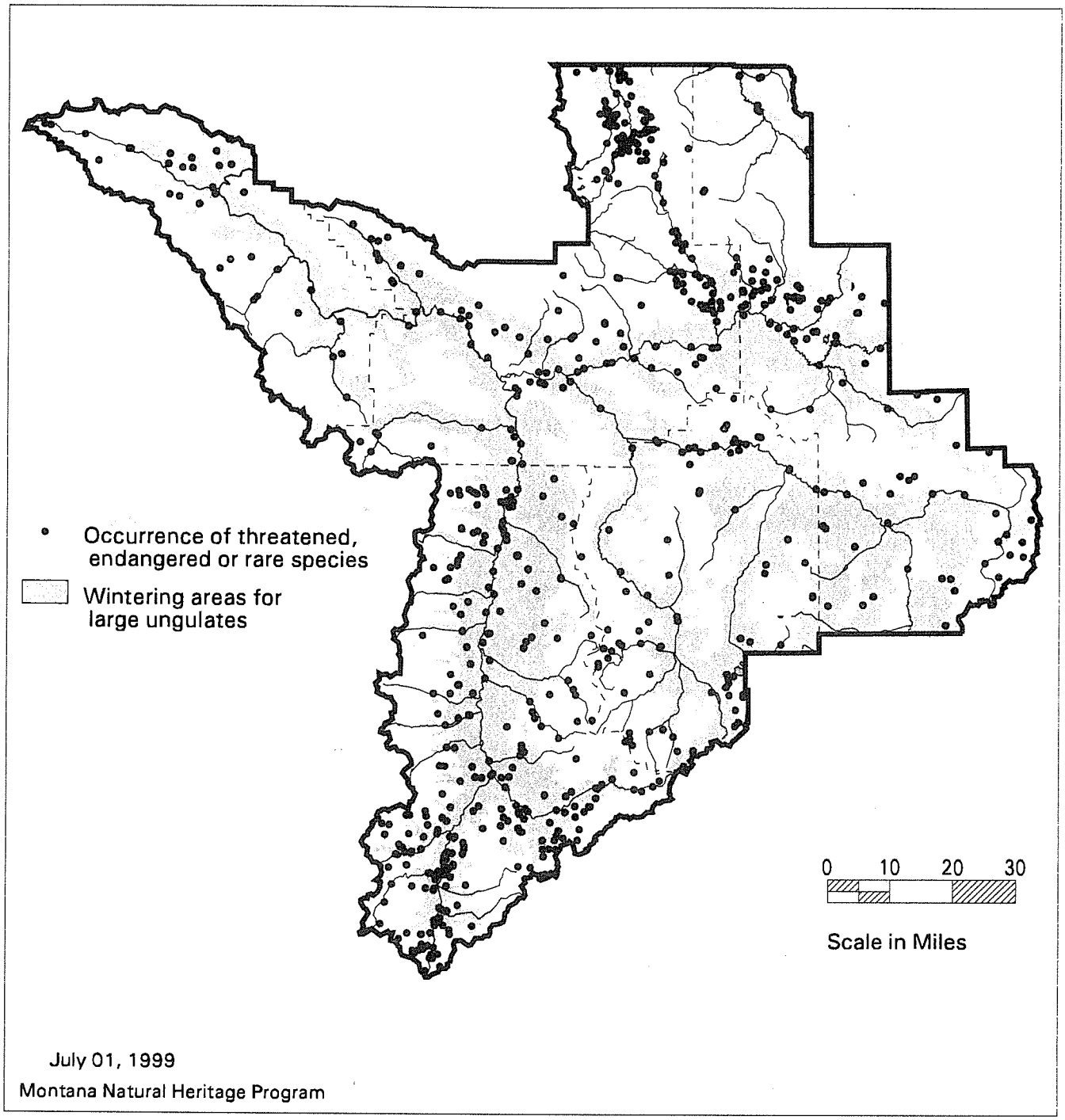

Figure 29. Winter Range & Sensitive Species Locations, West-Central Forest Legacy Area.

- (NCDE) which supports the largest population of grizzly bears in the lower 48 states. It encompasses the Selway-Bitterroot Grizzly Bear Recovery Area (SBGBRA), and zones within it serve as corridors linking the NCDE with the SBGBRA.
- High quality and intact forest-riparian and wetland habitats.
- Intact watersheds with excellent water quality that support bull trout and westslope cutthroat trout. Several spring creeks provide spawning and rearing habitat for both species. Rivers and surrounding upland forests provide year round habitat for bald eagles.
- Rare and sensitive plant species.
- Connectivity between habitats within Montana.
- Large blocks of contiguous forest with little development.
- Outstanding hunting, fishing, and recreational opportunities.
- Rugged terrain with an unusual array of habitats and accompanying vegetation from semiarid grasslands to alpine areas.

These values will be protected through:

- The development of a community-supported conservation easement program that will target vulnerable areas;
- The establishment of conservation partnerships to facilitate easement acquisition;
- The encouragement of private forest owners to complete Stewardship Management Plans or multi-resource management plans;
- The reduction of wildlife-human conflicts and the protection of key habitats through education, easement restrictions, and the direct conservation of habitat.

Conservation easements should focus on the following issues:

- Threats of conversion and habitat fragmentation from residential subdivision and second home development;
- Continuation of traditional forest uses;
- Quality and integrity of aquatic, wetland, riparian, and upland habitats;
- Sustainable timber harvest and forest practices;
- Restoration and maintenance of proper ecosystem function;
- Public access for recreational purposes.

List of Public Benefits to be Derived

- Sustainable timber industry;

- Maintenance of traditional forest uses and cultures;
- Protection of valuable wildlife and fish habitat;
- Protection of water quality for human uses;
- Protection of healthy ecosystem functions;
- Access to year-round recreational opportunities;
- Protection of scenic qualities.

Public Involvement Process

See Chapter VII.

Entities that may Participate in Monitoring and Management

Montana Fish, Wildlife, and Parks and, on a case by case basis, other participating entities will be involved in monitoring and management.

Southwest Forest Legacy Area

General Description

The Southwest Forest Legacy Area encompasses Deer Lodge, Silver Bow, Beaverhead, Madison, Gallatin, and Park Counties and includes the Jefferson, Madison, and Gallatin River drainages as well as the upper Yellowstone. It encompasses the Beaverhead and Gallatin National Forests, part of the Deerlodge National Forest, and parts of Yellowstone National Park. Land ownership is shown in Figure 30. Figure 30a shows counties and lakes and rivers in the FLA. Figures 31 and 32 show the distribution of all forest land in the FLA and the distribution of private forest land, respectively.

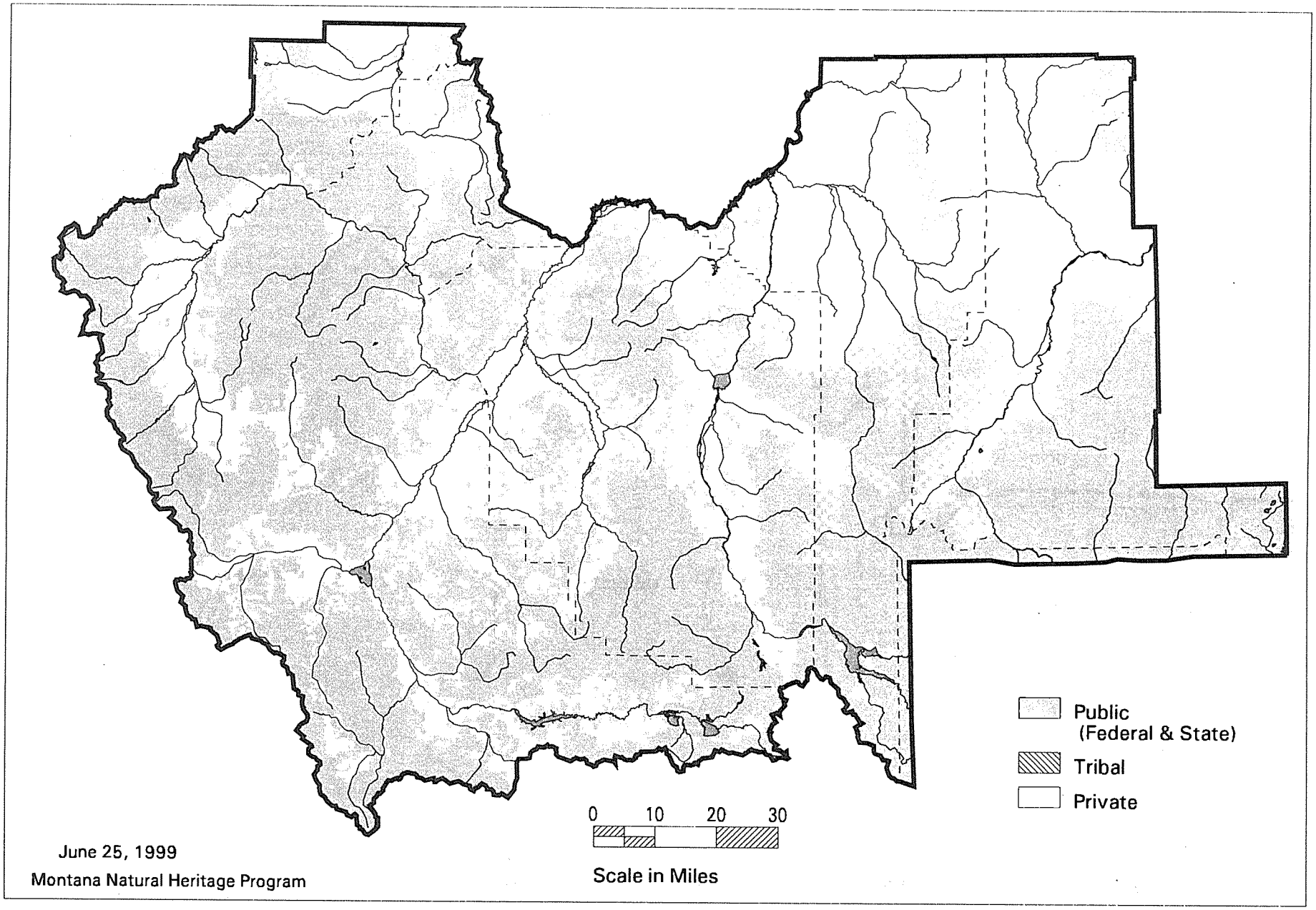

Figure 30. Land Ownership: Public, Tribal, and Private, Southwest Forest Legacy Area.

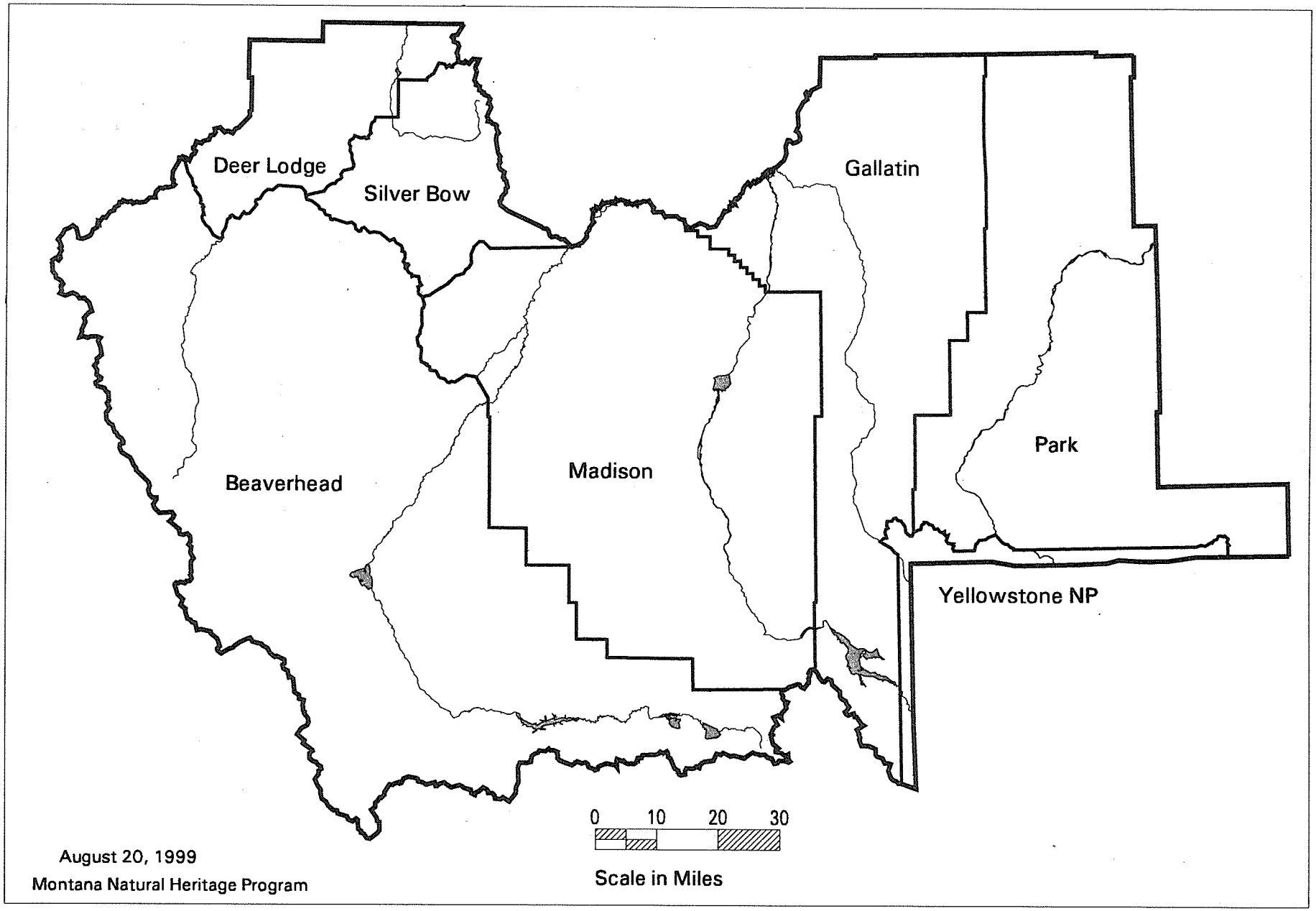

Figure 30a. Counties and Major Lakes & Rivers, Southwest Forest Legacy Area.

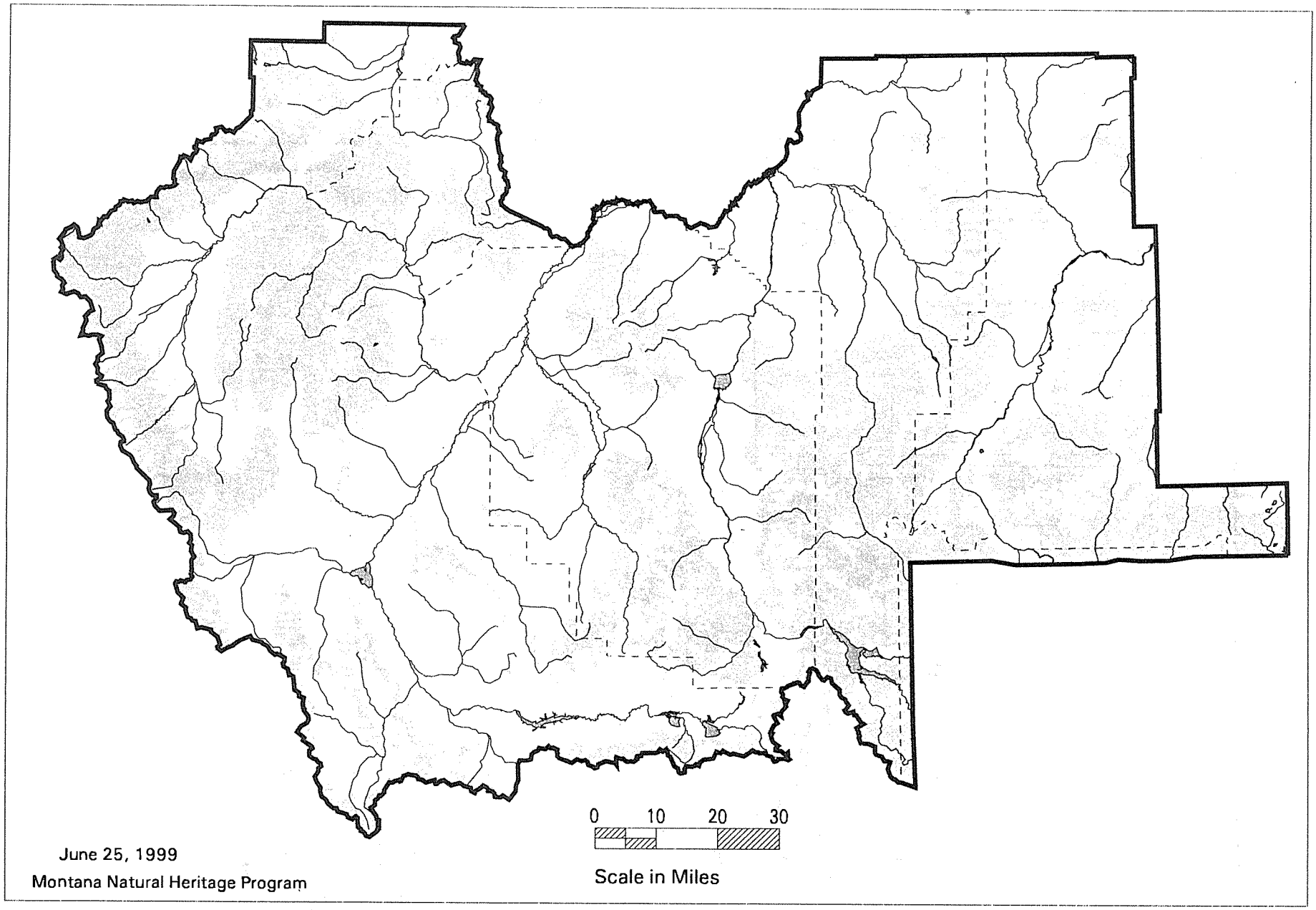

Figure 31. Forested Areas, Southwest Forest Legacy Area.

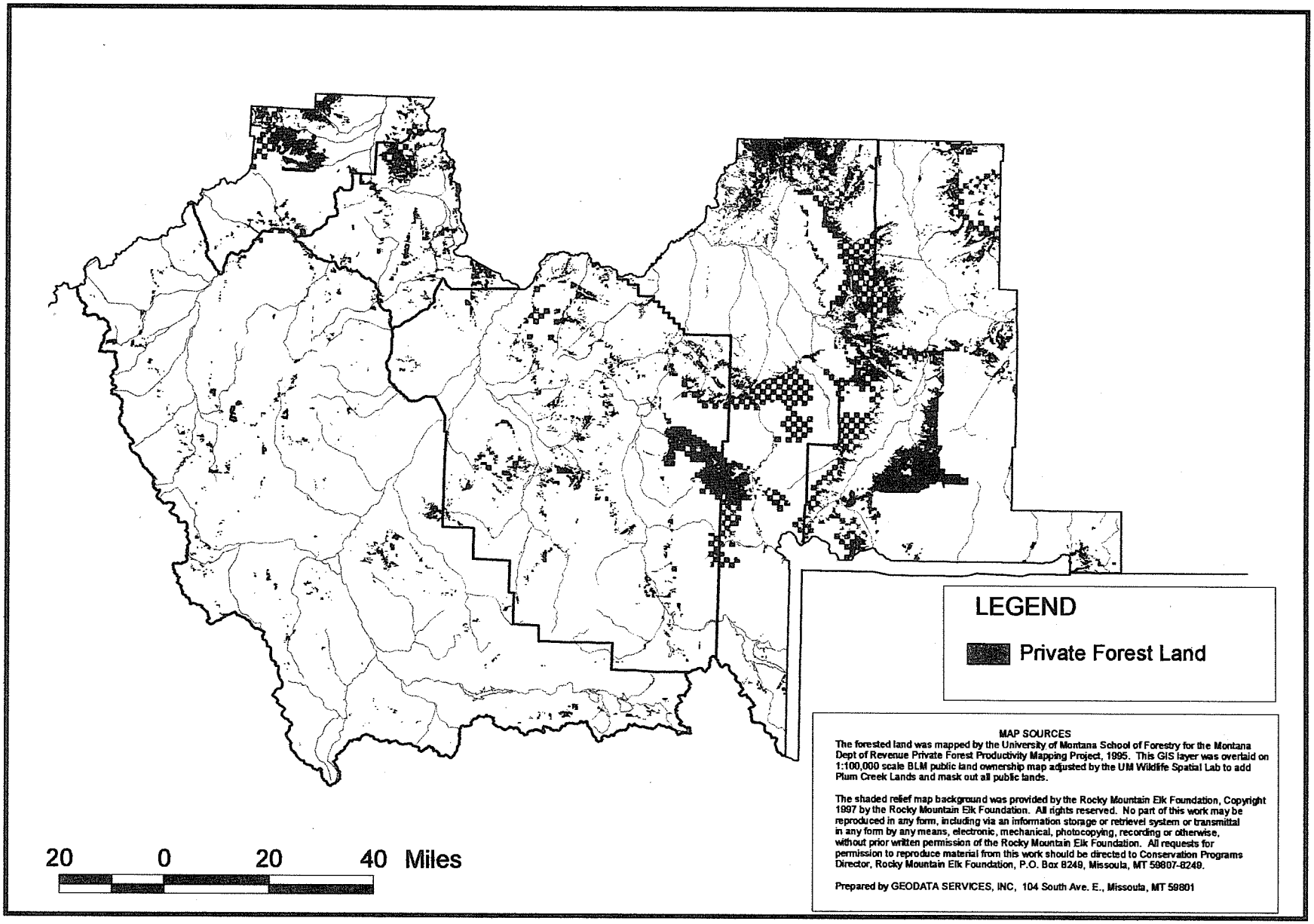

Figure 32. Private Forest Lands: Southwest Forest Legacy Area.

The Southwest Forest Legacy Area has a continental climate. This FLA, except for Park and Gallatin counties, is generally classified as a cold, dry forest region. Park and Gallatin Counties tend to be cold as well, but support a moister climate with corresponding forest communities.

Pacific Coast forest elements are absent from this FLA, and intermountain elements are scarce. In Park and Gallatin Counties, forests occupy about 50% of the area, west of there, only about 25%. The average frost free season in lower elevation forests varies from 50 to 100 days in the east to 40 to 70 days in the west. The potential timber productivity is shown in Table 14. The average for the area is 49 cubic feet/acre/year.

Table 14. Area of forest land by site class in thousands of acres.

	SITE CLASS (cubic feet/acre/year)				
	>165	120-165	85-120	50-85	20-49
Beaverhead	0	0	0	49	76
Deer Lodge	0	0	7	25	62
Gallatin	0	0	10	86	83
Madison	0	0	0	53	137
Silver Bow	0	0	0	21	43
Park	0	0	9	52	79
Total	0	0	26	286	480

In the west, Douglas-fir and limber pine occupy the warmest sites. Idaho fescue and big sagebrush grow in the understory. Higher up, an overstory of lodgepole pine with an understory of grouseberry dominate. In the east, Douglas-fir, lodgepole pine, spruce, and subalpine fir dominate. Understory species are denser in this part of the FLA and include ninebark, fragrant bedstraw, bluejoint reedgrass, and some beargrass and menziesia, species that attest to the increasing moisture.

In the west, lower timberline occurs between 5,700 and 7,000 feet above sea level. Alpine treeline is about 8,800 feet. In the east, lower treeline is at about 5,500 feet and alpine treeline is at 9,500.

Table 15. Area of forest land by forest type group in thousands of acres.

	Total	Spruce/ Fir	Douglas-fir	Lodgepole pine	Other pines	Cotton-wood	Aspen/ Birch
Beaverhead	125.1	25.5	59.9	22.9	11.9	0	5.1
Deer Lodge	94.2	21.5	13.4	45.1	14.3	0	0.0
Gallatin	178.7	52.2	95.5	26.4	0.0	4.5	0.0
Madison	190	10.3	127.8	41.6	10.3	0	0.0
Silver Bow	63.2	0	49	14.3	0.0	0	0.0
Park	140	37	78.6	9.1	0.0	6.3	9.1
Totals	791.2	146.5	424.2	159.4	36.5	10.8	14.2

Growth and Development Patterns

Population grew during the 1980s in the Southwest FLA at an annual rate of 0.3% with a net annual migration of -0.2%. Growth accelerated during the period 1990 through 1997 to 1.6% annually with a net migration increase of 1.2% per year.

Population changes in each of the counties in the Southwest FLA over the last 17 years is shown in the Table 16. Over the last seven years, Gallatin County saw a 21.1% increase, and Madison County saw a 15.2% increase. Beaverhead, Deer Lodge, Silver Bow, and Park increased (or decreased) by 7%, -3.5%, 1.5%, and 9.8%, respectively.

Thirty-one percent of all lots proposed for subdivision in the state in 1996 were in this FLA. The number of subdivision lots requested that year are shown in Table 17.

Table 16. Population of Southwest Forest Legacy Counties, 1980-1997

County	1980 Population	1997 Population	Area (sq mi)	People/sq mi
Beaverhead	8,186	9,012	5,543	1.6
Deer Lodge	12,518	9,995	737	13.5
Gallatin	42,865	61,111	2,506	24.4
Madison	5,448	6,899	3,569	1.9
Silver Bow	38,092	34,441	718	47.9
Park	12,869	15,910	2,656	6
Totals	**119,978**	**137,368**	**15,729**	**8.7**

Table 17. Number of subdivision lots requested in 1996

	Minors	Majors	Condos	Trailer Courts	All Lots
Beaverhead	37	58			95
Deer Lodge	14	29			43
Gallatin	143	908	38	177	1266
Madison	66	109	85		260
Silver Bow	48	54		65	167
Park	75	287	48	48	458
Totals	**383**	**1445**	**171**	**290**	**2289**

Summary of Important Environmental Values and How they will be Protected

Figure 33 shows the winter range areas in the Southwest FLA for moose, elk, mule deer, white-tailed deer, mountain goat, and bighorn sheep and the occurrence of species that are threatened, endangered, or rare throughout their range or in Montana.

Montana intends to use the State grant option in this FLA to acquire interests in important forest lands. The Southwest Forest Legacy Area encompasses the following environmental values:

- Big-game winter range and wildlife corridors and a variety of other complex wildlife habitats. The area around north and west of Yellowstone Park provides vital habitat for grizzly bears,

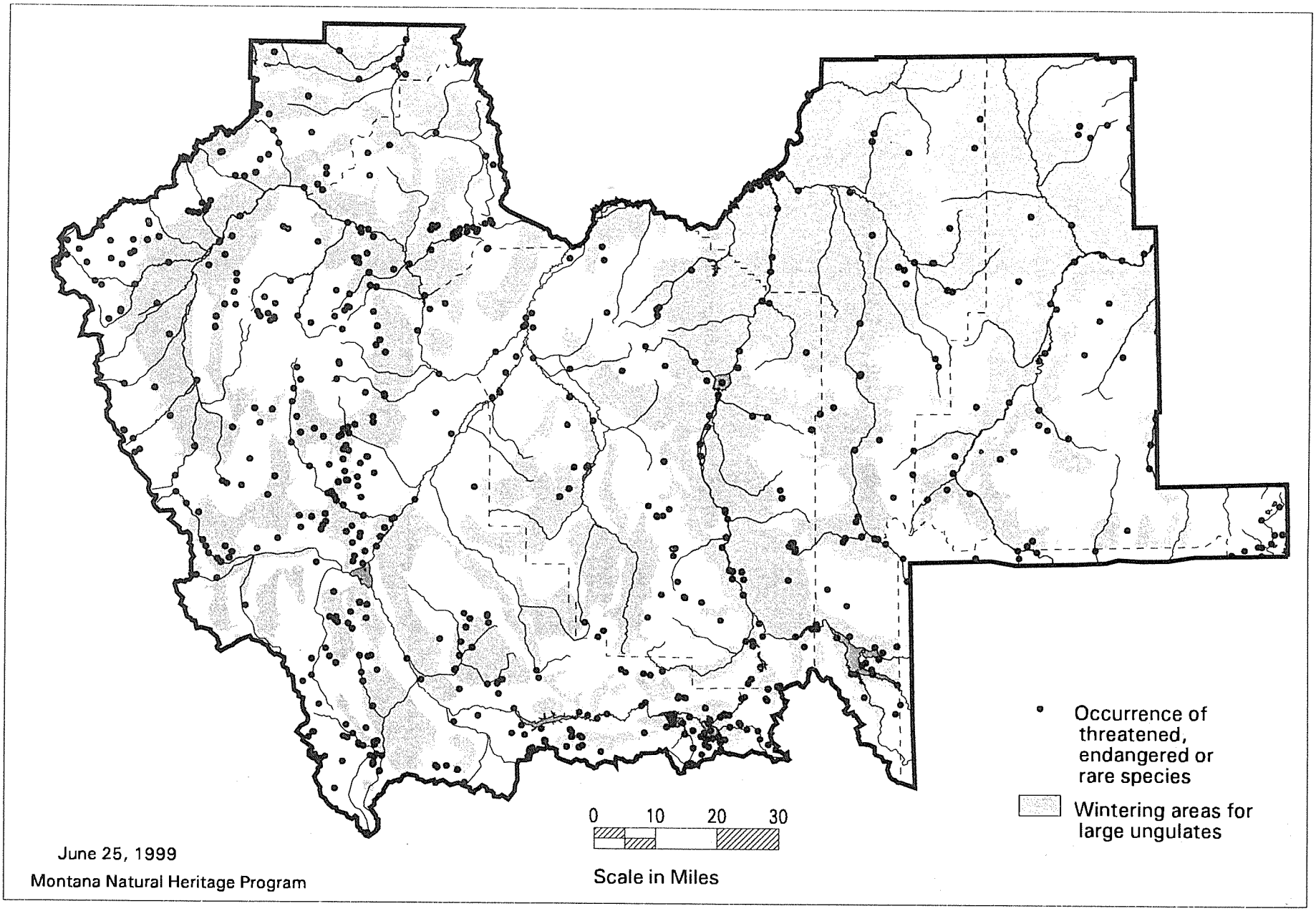

Figure 33. Winter Range & Sensitive Species Locations, Southwest Forest Legacy Area.

wolverine, wolf, and lynx. Moose and elk also populate the area. The area in and around the Centennial Valley is the last refuge for the breeding trumpeter swans in the lower 48 states and harbors the densest breeding population of peregrine falcons and ferruginous hawks.

- High quality and intact forest-riparian and wetland habitats.
- Intact watersheds with excellent water quality that support westslope cutthroat trout, Yellowstone cutthroat trout, and arctic grayling. Rivers and surrounding areas provide habitat for bald eagles and osprey.
- Rare and sensitive plant species.
- Connectivity between habitats within Montana.
- Large blocks of contiguous forest with little development.

Outstanding hunting, fishing, and recreational opportunities (camping, hiking, horseriding, boating, and snowmobiling).

- Rugged terrain with an unusual array of habitats.

These values will be protected through:

- The development of a community-supported conservation easement program that will target vulnerable areas;
- The establishment of conservation partnerships to facilitate easement acquisition;
- The encouragement of private forest owners to complete Stewardship Management Plans or multi-resource management plans;
- The reduction of wildlife-human conflicts and the protection of key habitats through education, easement restrictions, and the direct conservation of habitat.

Conservation easements should focus on the following issues:

- Threats of conversion and habitat fragmentation from residential subdivision and second home development;
- Continuation of traditional forest uses;
- Quality and integrity of aquatic, wetland, riparian, and upland habitats;
- Sustainable timber harvest and forest practices;
- Restoration and maintenance of proper ecosystem function;
- Public access for recreational purposes.

List of Public Benefits to be Derived

- Sustainable timber industry;
- Maintenance of traditional forest uses and cultures;
- Protection of valuable wildlife and fish habitat;
- Protection of water quality for human uses;
- Protection of healthy ecosystem functions;
- Access to year-round recreational opportunities;
- Protection of scenic qualities.

Entities that may Participate in Monitoring and Management

Montana Fish, Wildlife, and Parks and, on a case by case basis, other participating entities will be involved in monitoring and management.

Public Involvement Process

See Chapter VII.

Central Forest Legacy Area

General Description

The Central Forest Legacy Area encompasses Broadwater, Cascade, Chouteau, Fergus, Jefferson, Judith Basin, Lewis and Clark, Meagher, and Wheatland Counties and includes the Boulder River, the upper Missouri River basin, and part of the Marias, Milk, middle Missouri, and Musselshell River basins. It includes most of the Lewis and Clark and Helena National Forests, and part of the Deerlodge National Forest. In addition to ranges along the Continental Divide, isolated mountain ranges found within this FLA include the Elkhorns, Castles, Big Belts, Little Belts, Highwoods, Judiths, and Big Snowys. It also includes relatively extensive lowland ponderosa pine forests in the vicinities of Helena and Lewistown and in the Missouri River Breaks. Land ownership is shown in Figure 34. Figure 34a shows counties and lakes and rivers in the FLA. Figures 35 and 36 show the distribution of all forest land in the FLA and the distribution of private forest land, respectively.

The Central Forest Legacy Area has a cold and dry continental climate. Lower timberline on the mountain ranges is between 4,000 and 5,500 feet. Alpine treeline is about 8,500 feet. Trees seldom attain 80 feet in height except on sheltered sites and in some areas along the Continental Divide. At high elevations in the mountains, red belt damage is not uncommon. Red belt damage is caused by extreme temperature changes and strong winds that desiccate needles and kill or injure trees.

Coastal and intermountain species are absent across much of this FLA. Eastside species and subspecies, including east-side ponderosa pine, limber pine, and creeping juniper are prominent. Great Plains grassland elements—blue grama, sideoat grama, yucca, prickly-pear cactus—are common beneath the driest stands of ponderosa pine and limber pine. Many of the central mountain ranges have limestone substrates that support drier communities than they would otherwise because they are so well drained. Approximately 20% of the land in this FLA is potential forest land. The average frost free season in lower elevation forests ranges from 90 to 130 days. The potential timber productivity is shown in Table 18. The average for the area is 47 cubic feet/acre/year.

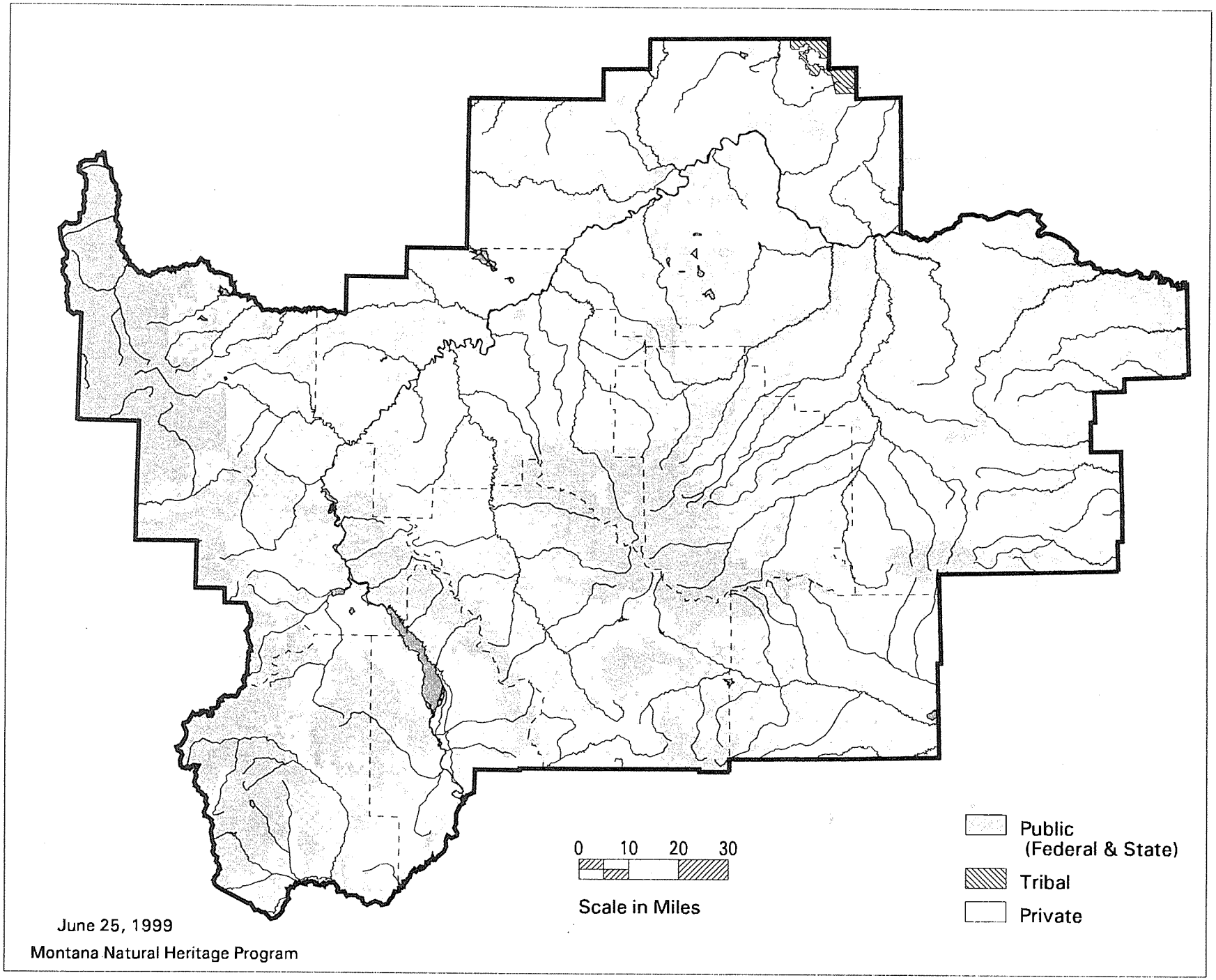

Figure 34. Land Ownership: Public, Tribal, and Private, Central Forest Legacy Area.

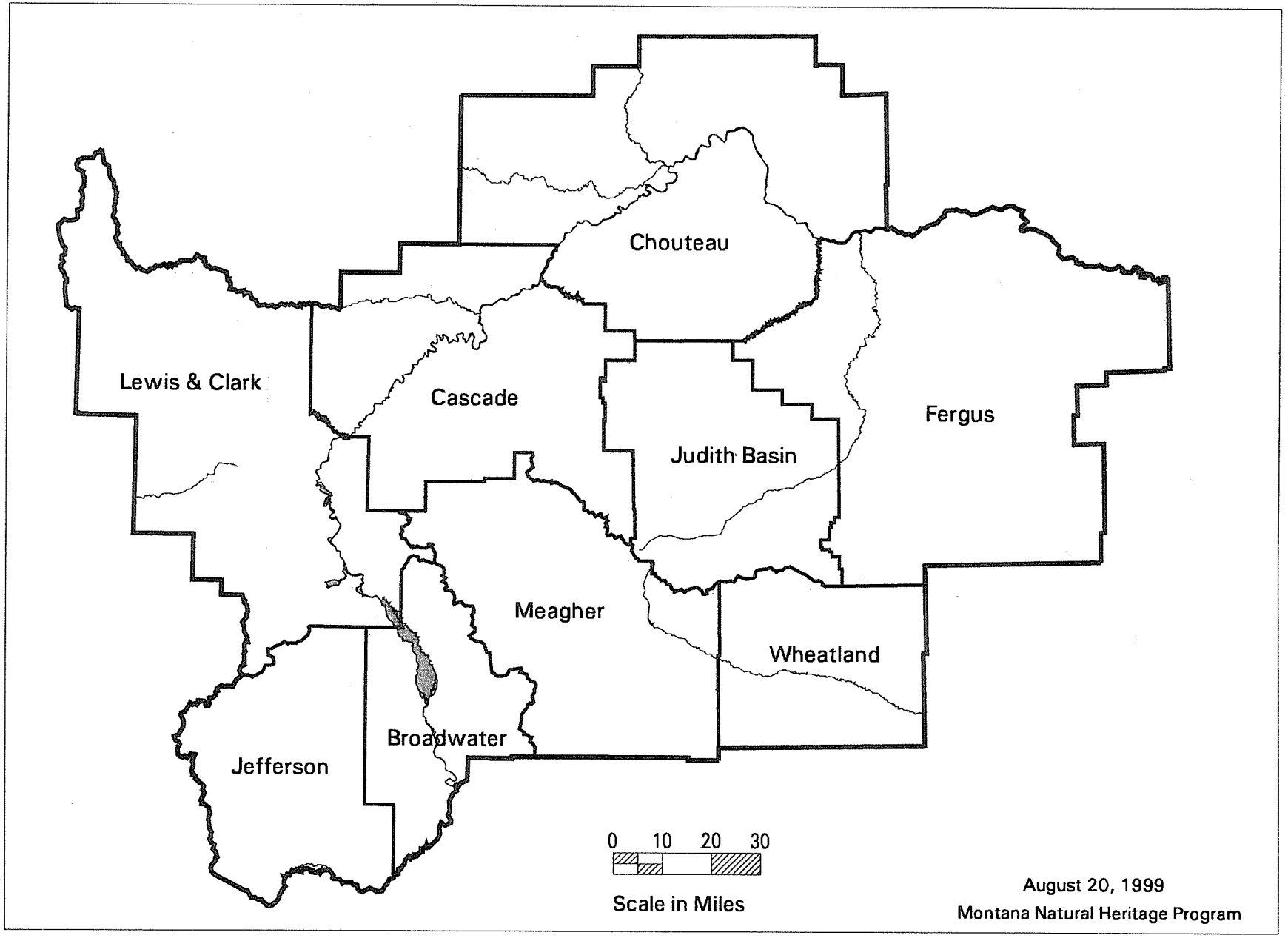

Figure 34a. Counties and Major Lakes & Rivers, Central Forest Legacy Area.

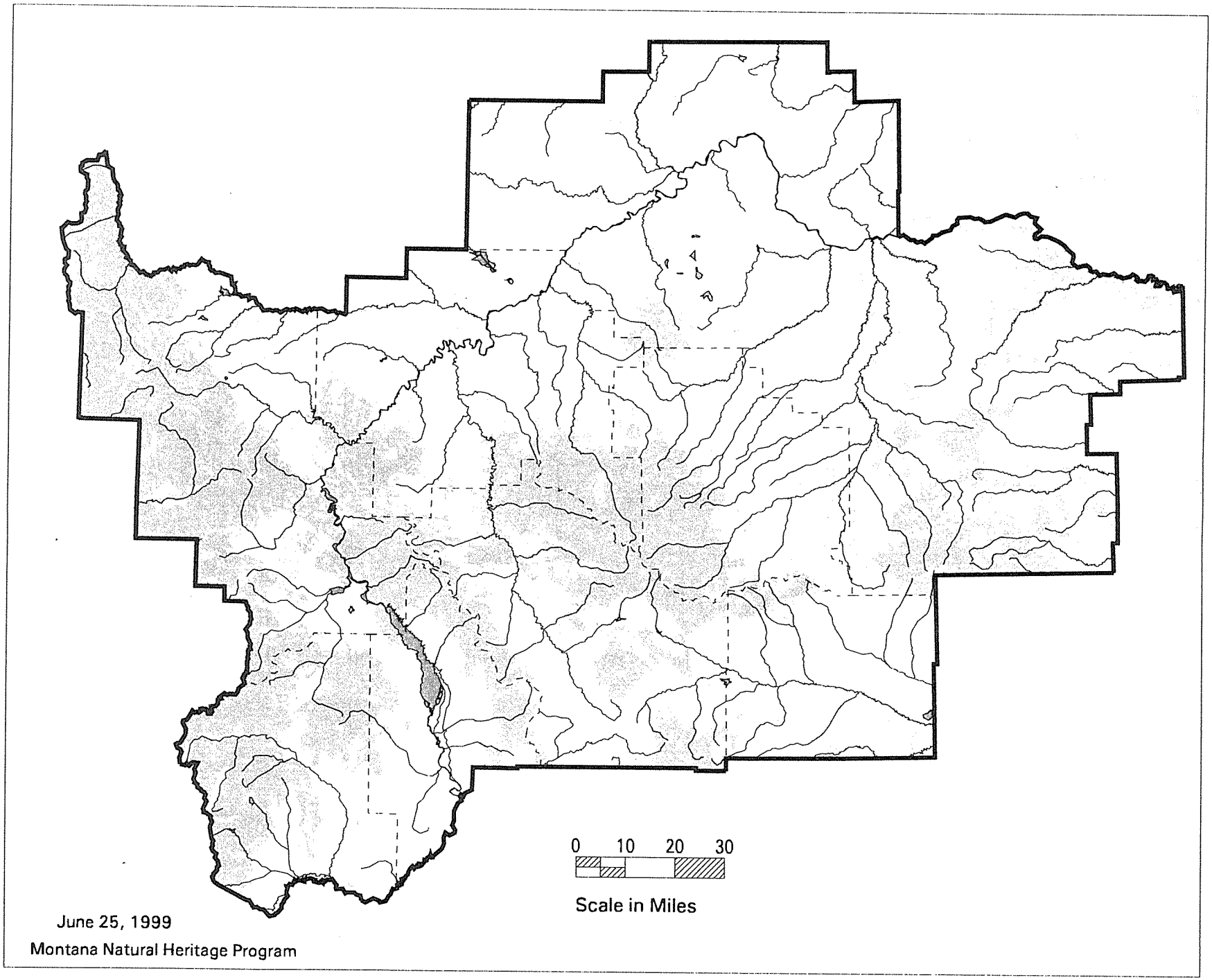

Figure 35. Forested Areas, Central Forest Legacy Area.

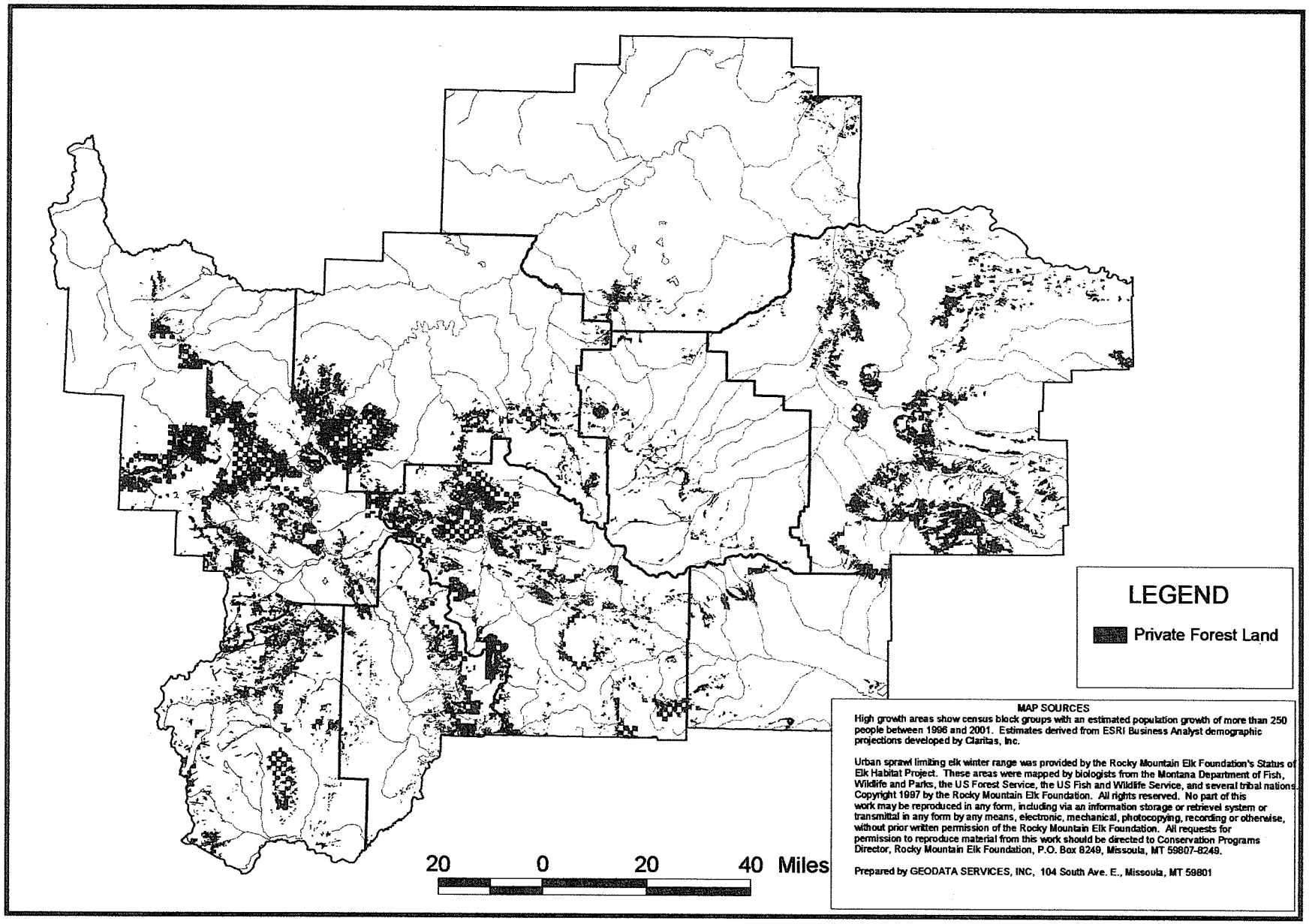

Figure 36. Private Forest Lands: Central Forest Legacy Area.

Table 18. Area of forest land by site class in thousands of acres.

	SITE CLASS (cubic feet/acre/year)				
	>165	120-165	85-120	50-85	20-49
Broadwater	0	0	0	20	39
Cascade	0	9	0	57	76
Chouteau	0	0	5	5	67
Fergus	0	0	17	115	149
Jefferson	0	0	0	35	93
Judith Basin	0	0	0	0	17
Lewis & Clark	0	0	6	110	285
Meagher	0	0	6	39	128
Wheatland	0	0	0	7	10
Total	0	9	34	388	864

Table 19. Area of forest land by forest type group in thousands of acres.

	Total	Spruce/ Fir	Douglas-fir	Ponderosa pine	Lodgepole pine	Other pines	Elm/Ash Cotton-wood	Aspen/ Birch
Broadwater	59.4	0	49.2	0	5.1	0.0	5.1	0.0
Cascade	141.9	0	68.1	44.3	23.3	6.2	0	0.0
Chouteau	75.7	0	23.5	9.2	0	0.0	14.3	28.6
Fergus	280.3	0	69	165.7	11.5	0.0	0	34.2
Jefferson	127.8	0	98.9	16.9	6.2	0.0	0	5.6
Judith Basin	17	0	8.5	0	0	8.5	0	0.0
Lewis & Clark	399.8	5.3	204.1	137.2	30.7	0.0	5.6	16.9
Meagher	172.1	5.5	99.9	22.7	27.5	11	0	5.5
Wheatland	17.4	0	0	7	0	0.0	10.4	0.0
Totals	1291.4	10.8	621.2	403	104.3	25.7	35.4	90.8

Growth and Development Patterns

The population declined slightly during the 1980s in the Central FLA with a net annual migration of -0.1%. Growth occurred during the period 1990 through 1997; the population increased 0.9% annually with a net migration of 0.3% per year.

Population changes in each of the counties in the Central FLA over the last 17 years is shown in the Table 20. Over the last seven years, Lewis and Clark County saw a 12.1% increase, Broadwater County a 23.1% increase, and Jefferson County a 24.4% increase. Other counties saw only slight increases or, in the case of Chouteau and Meagher Counties, slight decreases.

Ten percent of all lots proposed for subdivision in the state in 1996 were in this FLA. The number of subdivision lots requested that year are shown in Table 21.

Table 20. Population of Central Forest Legacy Counties, 1980-1997

County	1980 Population	1997 Population	Area (sq mi)	People/sq mi
Broadwater	3,627	4,083	1,191	3.4
Cascade	80,696	79,134	2,698	29.3
Chouteau	6,092	5,236	3,973	1.3
Fergus	13,076	12,498	4,339	2.9
Jefferson	7,029	9,878	1,657	6
Judith Basin	2,646	2,316	1,870	1.2
Lewis & Clark	43,039	53,251	3,461	15.3
Meagher	2,154	1,805	2,392	.7
Wheatland	2,359	2,333	1,423	1.6
Totals	**160,718**	**170,534**	**23,004**	**7.4**

Table 21. Number of subdivision lots requested in 1996

	Minors	Majors	Condos	Trailer Courts	All Lots
Broadwater	32	43			75
Cascade	87	64		1	152
Chouteau					0
Fergus	31				31
Jefferson	97	14		53	164
Judith Basin					0
Lewis & Clark		153	103	70	326
Meagher	1	14			15
Wheatland	6				6
Totals	**407**	**238**	**0**	**124**	**769**

Summary of Important Environmental Values and How they will be Protected

Figure 37 shows the winter range areas in the Central FLA for moose, elk, mule deer, white-tailed deer, mountain goat, and bighorn sheep and the occurrence of species that are threatened, endangered, or rare throughout their range or in Montana.

Montana intends to use the State grant option in this FLA to acquire interests in important forest lands. The Central Forest Legacy Area encompasses the following environmental values:

- Big-game winter range and a wide diversity of other wildlife habitats.
- High quality and intact forest riparian habitats.
- Rare and sensitive plant species.
- Outstanding hunting, fishing, and recreational opportunities.
- Important unroaded watersheds that provide high quality water in a relatively dry region.
- Outstanding aesthetics and scenic qualities.
- Traditional agriculture and ranching lifestyles complementing wildlife an sound land management values.

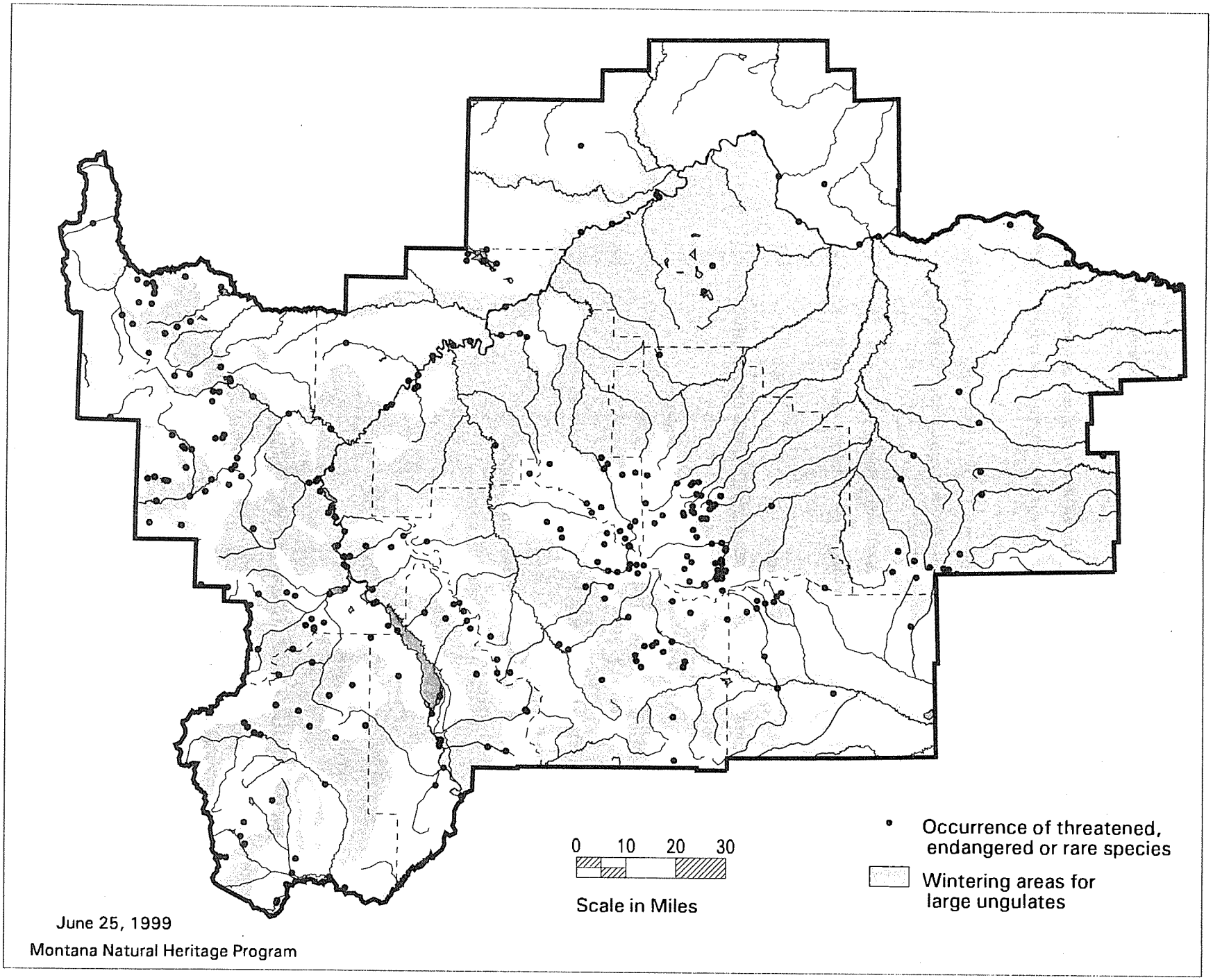

Figure 37. Winter Range & Sensitive Species Locations, Central Forest Legacy Area.

These values will be protected through:

- The development of a community-supported conservation easement program that will target vulnerable areas;
- The establishment of conservation partnerships to facilitate easement acquisition;
- The encouragement of private forest owners to complete Stewardship Management Plans or multi-resource management plans;
- The reduction of wildlife-human conflicts and the protection of key habitats through education, easement restrictions, and the direct conservation of habitat.

Conservation easements should focus on the following issues:

- Threats of conversion and habitat fragmentation from residential subdivision and second home development;
- Continuation of traditional forest uses;
- Quality and integrity of aquatic, wetland, riparian, and upland habitats;
- Sustainable timber harvest and forest practices;
- Restoration and maintenance of proper ecosystem function;
- Public access for recreational purposes.

List of Public Benefits to be Derived

- Sustainable timber industry;
- Maintenance of traditional forest uses and cultures;
- Protection of valuable wildlife and fish habitat;
- Protection of water quality for human uses;
- Protection of healthy ecosystem functions;
- Access to year-round recreational opportunities;
- Protection of scenic qualities.

Entities that may Participate in Monitoring and Management

Montana Fish, Wildlife, and Parks and, on a case by case basis, other participating entities will be involved in monitoring and management.

Public Involvement Process

See Chapter VII.

Northeast Forest Legacy Area

General Description

The Northeast Forest Legacy Area encompasses Glacier, Pondera, Teton, Toole, Liberty, Hill, Blaine, Phillips, Petroleum, Valley, Garfield, McCone, Daniels, Roosevelt, and Sheridan Counties and includes the Saskatchewan, Milk, and Marias River basins and portions of the lower Missouri, middle Missouri, and Musselshell River basins. It includes portions of the Lewis and Clark National Forest, the Blackfeet, Fort Belknap, Rocky Boy, and Fort Peck Indian Reservations, and the Charles M. Russell National Wildlife Refuge. Land ownership is shown in Figure 38. Figure 38a shows counties and lakes and rivers in the FLA. Figures 39 and 40 show the distribution of all forest land in the FLA and the distribution of private forest land, respectively.

The Northeast FLA has a continental climate more severe than that of the Central FLA. On the west side of this FLA, severe chinook winds are common. They often cause dramatic fluctuations of winter temperatures that can injure forest trees. Trees that are exposed to the wind are stunted by "red-belt" conditions brought on by the chinooks. Sometimes entire stands succumb. On lower elevation forest sites in the west, the growing conditions are short and cool, and trees rarely exceed 70 feet in height. In the east winters are extremely cold. Severe desiccating winds limit the distribution of ponderosa pine in this part of the FLA.

The western part of this FLA supports extensive groves of quaking aspen and patches of limber pine woodlands along the lower parts of the mountains. Ponderosa pine does not grow here because the species is susceptible to red belt damage. Subalpine fir forests form a narrow belt along the Rocky Mountain Front. In the eastern part of the FLA, cottonwood stands line the principal rivers. A few, widely scattered stands of stunted ponderosa pine occur with Rocky Mountain juniper as well; the largest is at the Pines Recreation Area on Fort Peck Reservoir. About 10% of the western part of this FLA is potential forest, and most of that occurs in a band along the eastern skirts of the Continental Divide or Front Range of the Rockies. The Sweet Grass Hills also have a small forest area. In the east the percentage of the area that is potentially forested is near zero. The average frost free season in lower elevation forests ranges from 60 to 80 days in the west. The potential timber productivity is shown in Table 22. The average for the area is 40 ft^3/acre/year. Lower timberline on the mountain ranges is between 4,500 and 5,000 feet. Alpine treeline is about 8,000 feet.

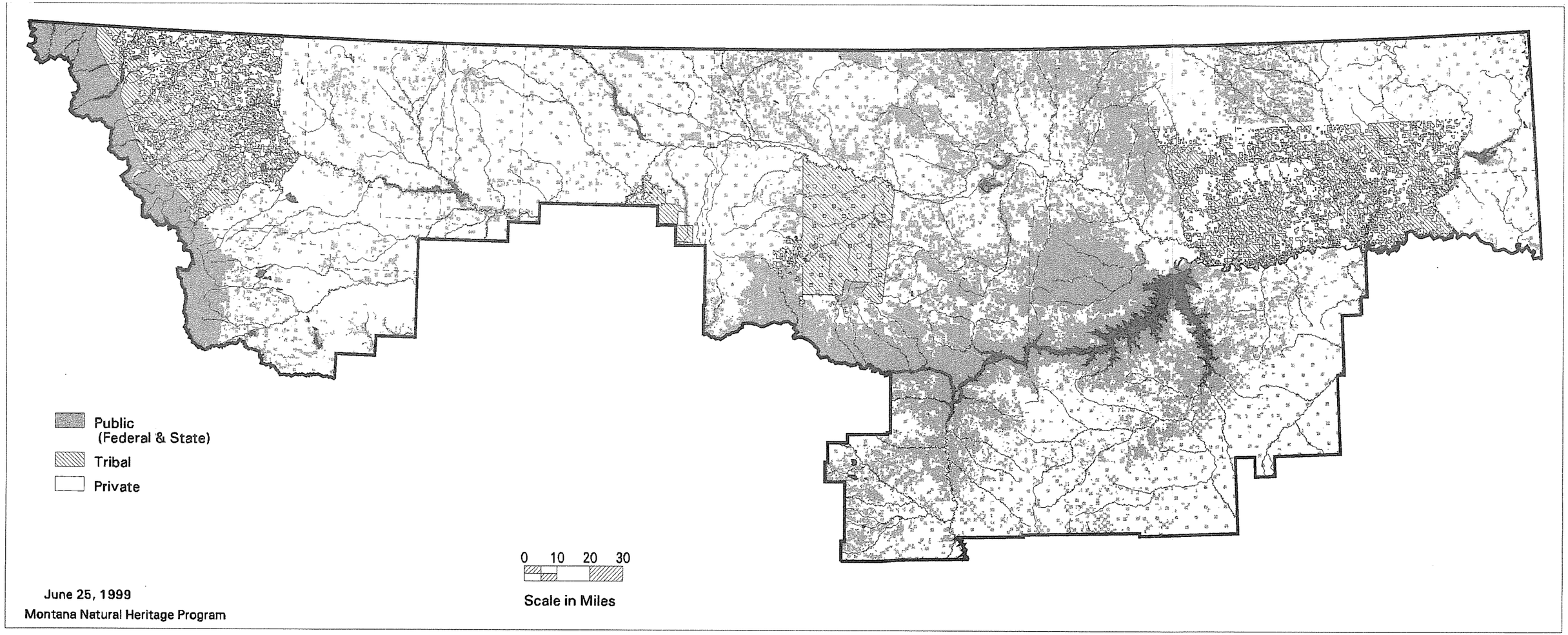

Figure 38. Land Ownership: Public, Tribal, and Private, Northeast Forest Legacy Area.

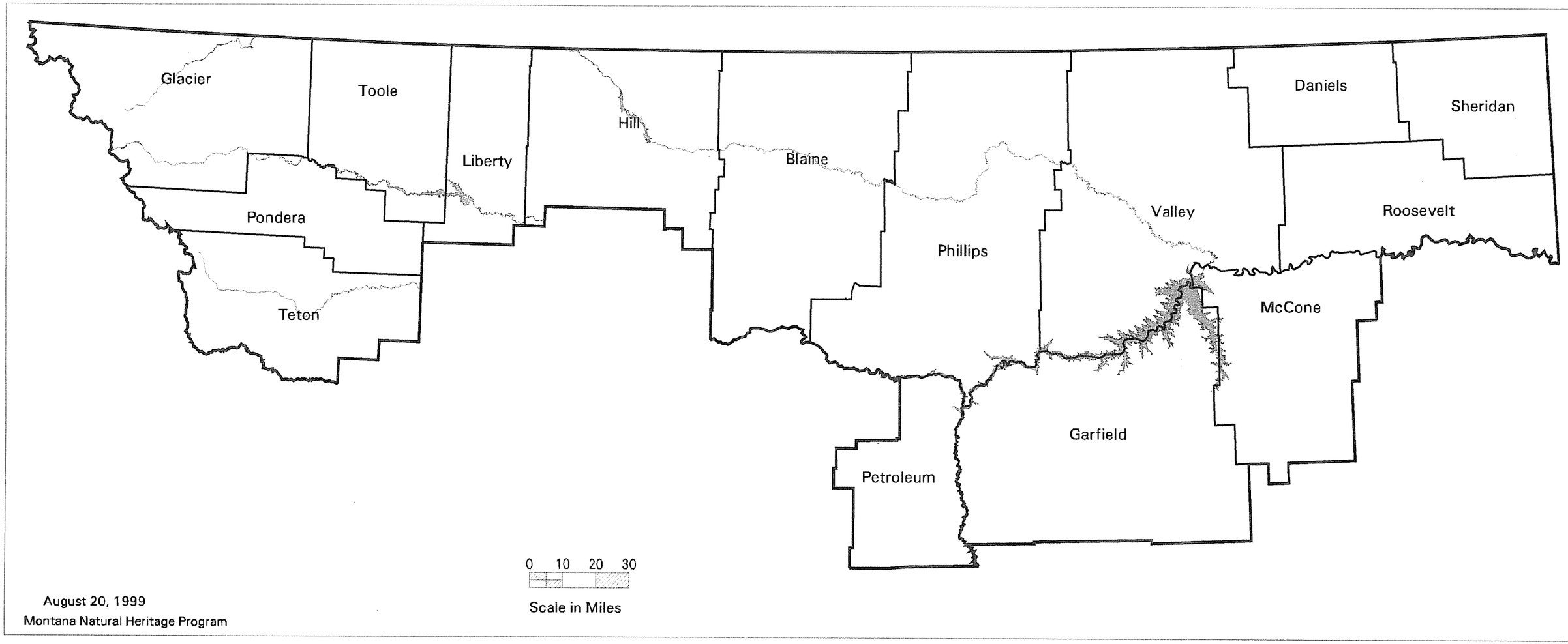

Figure 38a. Counties and Major Lakes & Rivers, Northeast Forest Legacy Area.

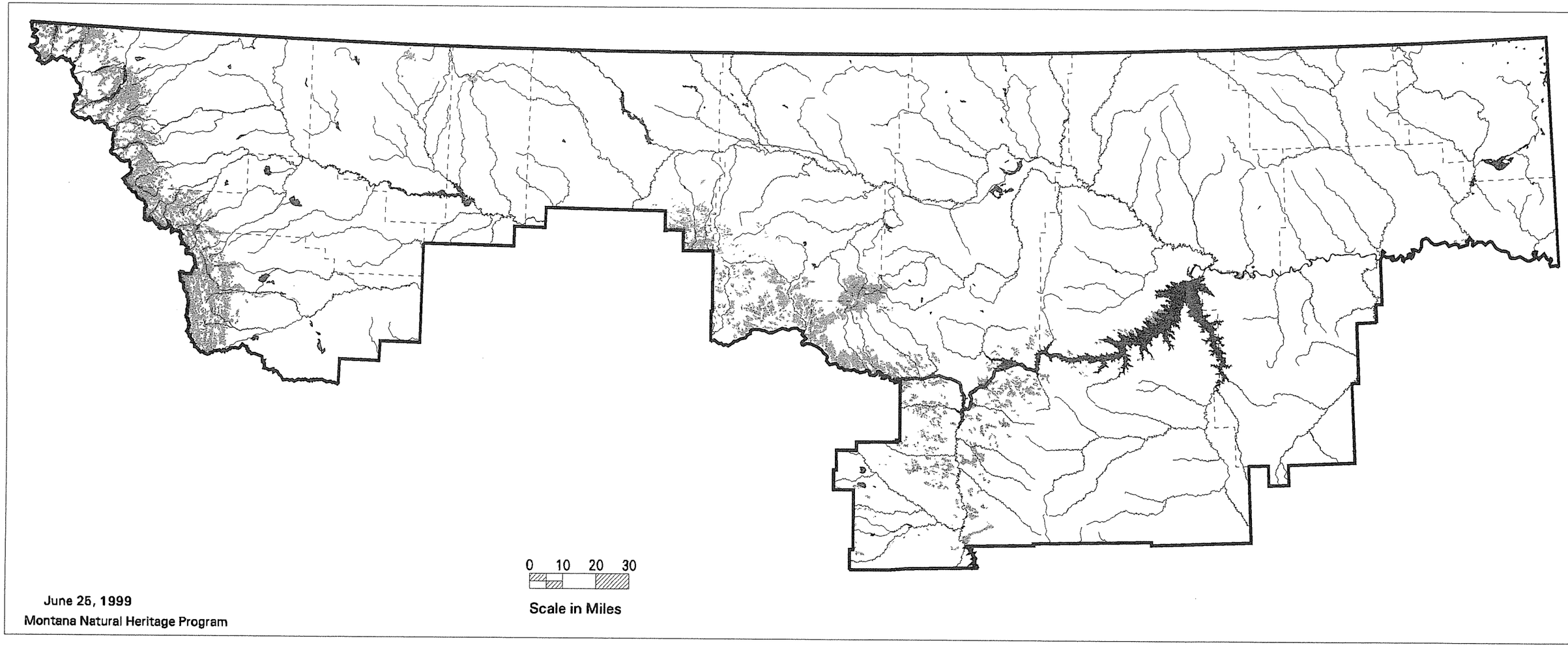

Figure 39. Forested Areas, Northeast Forest Legacy Area.

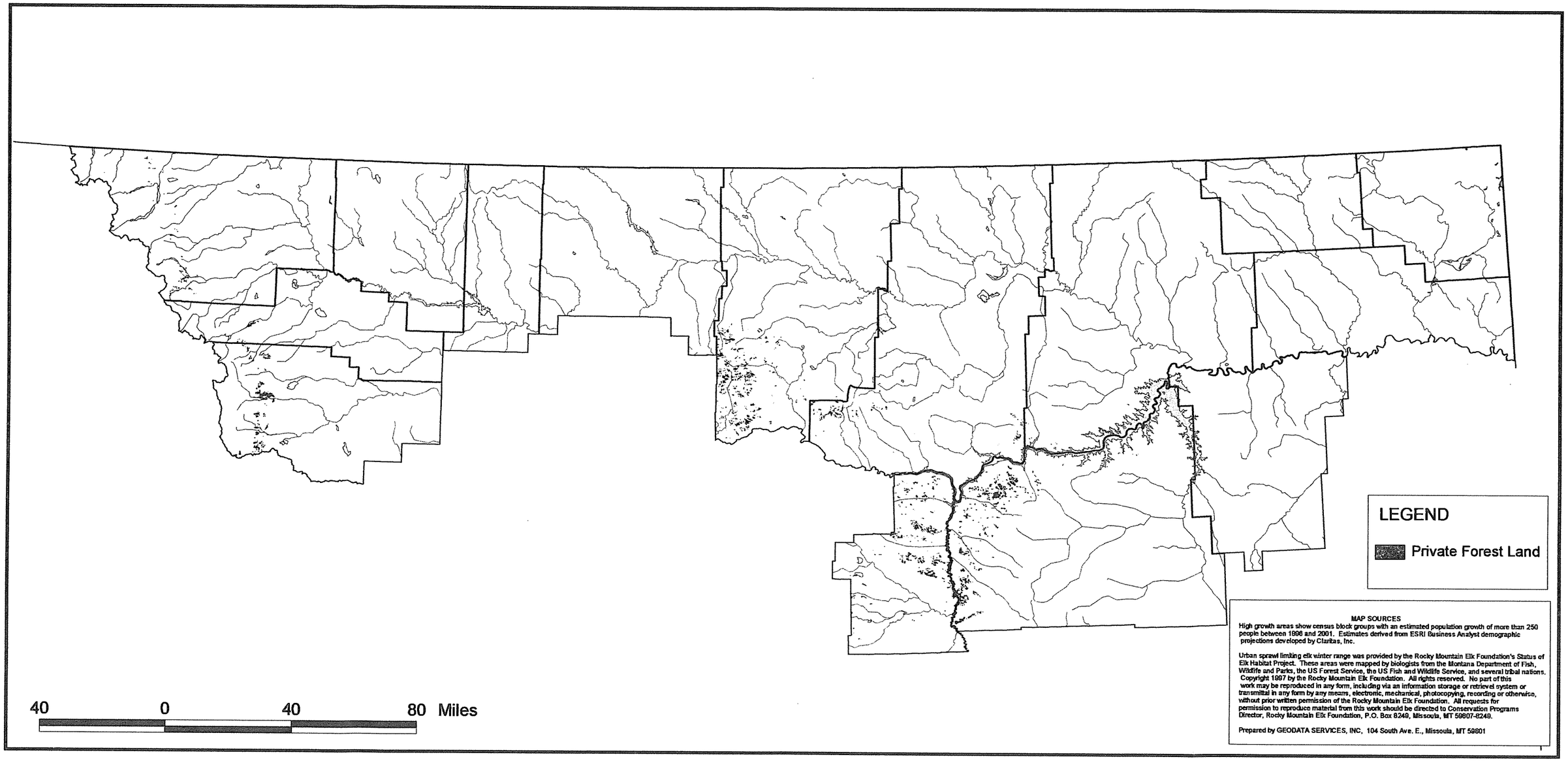

Figure 40. Private Forest Lands: Northeast Forest Legacy Area.

Table 22. Area of forest land by site class in thousands of acres.

	SITE CLASS (cubic feet/acre/year)				
	>165	120-165	85-120	50-85	20-49
Blaine	0	0	0	11	75
Daniels	0	0	0	0	0
Garfield	0	0	0	11	89
Glacier	0	0	0	11	81
Hill	0	0	0	15	6
Liberty	0	0	0	0	5
McCone	0	0	0	0	4
Petroleum	0	0	0	0	33
Phillips	0	0	0	0	69
Pondera	0	0	0	0	14
Roosevelt	0	0	0	4	4
Sheridan	0	0	0	0	0
Teton	0	0	0	0	49
Toole	0	0	0	0	5
Valley	0	0	6	6	5
Totals	0	0	6	60	440

Table 23. Area of forest land by forest type group in thousands of acres.

	Total	Spruce/ Fir	Douglas-fir	Ponderosa pine	Lodgepole pine	Other pines	Elm/Ash Cotton-wood	Aspen/ Birch
Blaine	86.4	0	17.2	57.8	0	0.0	0	11.4
Daniels	0	0	0	0	0	0.0	0	0.0
Garfield	100.7	0	0	94.8	0	0.0	5.9	0.0
Glacier	92.5	17.1	17.1	0	17.1	0.0	17.1	23.9
Hill	21	0	10.2	0	4.5	0.0	0	6.2
Liberty	4.7	0	0	0	4.7	0.0	0	0.0
McCone	4.4	0	0	0	0	0.0	4.4	0.0
Petroleum	32.7	0	0	32.7	0	0.0	0	0.0
Phillips	69.1	0	0	57.6	11.5	0.0	0	0.0
Pondera	14.3	0	0	0	0	0.0	0	14.3
Roosevelt	8.8	0	0	0	0	0.0	8.8	0.0
Sheridan	0	0	0	0	0	0.0	0	0.0
Teton	48.9	0	28.3	0	6.2	14.3	0	0.0
Toole	4.7	0	0	0	4.7	0.0	0	0.0
Valley	17.5	0	0	5.4	0	0.0	12.1	0.0
Totals	505.7	17.1	72.8	248.3	48.7	14.3	48.3	55.8

Growth and Development Patterns

The population declined during the 1980s in the Northeast FLA, dropping 0.4% annually. The net annual migration was -1.2%. The population decline slowed slightly during the period 1990 through 1997, dropping at a rate of 0.1% annually with a net migration -0.6% per year.

Population changes in each of the counties in the Northeast FLA over the last 17 years is shown in the Table 24. Over the last seven years, many of the counties saw significant decreases in population or at most only small increases.

Two percent of all lots proposed for subdivision in the state in 1996 were in this FLA. The number of subdivision lots requested that year are shown in Table 25.

Table 24. Population of Northeast Forest Legacy Counties, 1980-1997

County	1980 Population	1997 Population	Area (sq mi)	People/sq mi
Blaine	6,999	7,081	4,226	1.7
Daniels	2,835	2,057	1,426	1.4
Garfield	1,656	1,444	4,668	.3
Glacier	10,628	12,687	2,994	4.2
Hill	17,985	17,538	2,896	6
Liberty	2,329	2,391	1,430	1.7
McCone	2,702	2,035	2,642	.8
Petroleum	655	518	1,654	.3
Phillips	5,367	4,904	5,140	.9
Pondera	6,731	6,431	1,625	3.9
Roosevelt	10,467	11,121	2,356	4.7
Sheridan	5,414	4,341	1,677	2.6
Teton	6,491	6,340	2,273	2.8
Toole	5,559	4,818	1,911	2.5
Valley	10,250	8,295	4,921	1.7
Totals	**96,068**	**92,001**	**41,839**	**2.2**

Table 25. Number of subdivision lots requested in 1996

	Minors	Majors	Condos	Trailer Courts	All Lots
Blaine	2				2
Daniels	2				2
Garfield	10				10
Glacier	6			1	7
Hill	16	30			46
Liberty					0
McCone	2				2
Petroleum		27			27
Phillips	4				4
Pondera	1				1
Roosevelt					0
Sheridan	5			5	10
Teton	12			3	15
Toole	3				3
Valley	4				4
Totals	67	57	0	9	133

Summary of Important Environmental Values and How they will be Protected

Figure 41 shows the winter range areas in the Northeast FLA for moose, elk, mule deer, white-tailed deer, mountain goat, and bighorn sheep and the occurrence of species that are threatened, endangered, or rare throughout their range or in Montana.

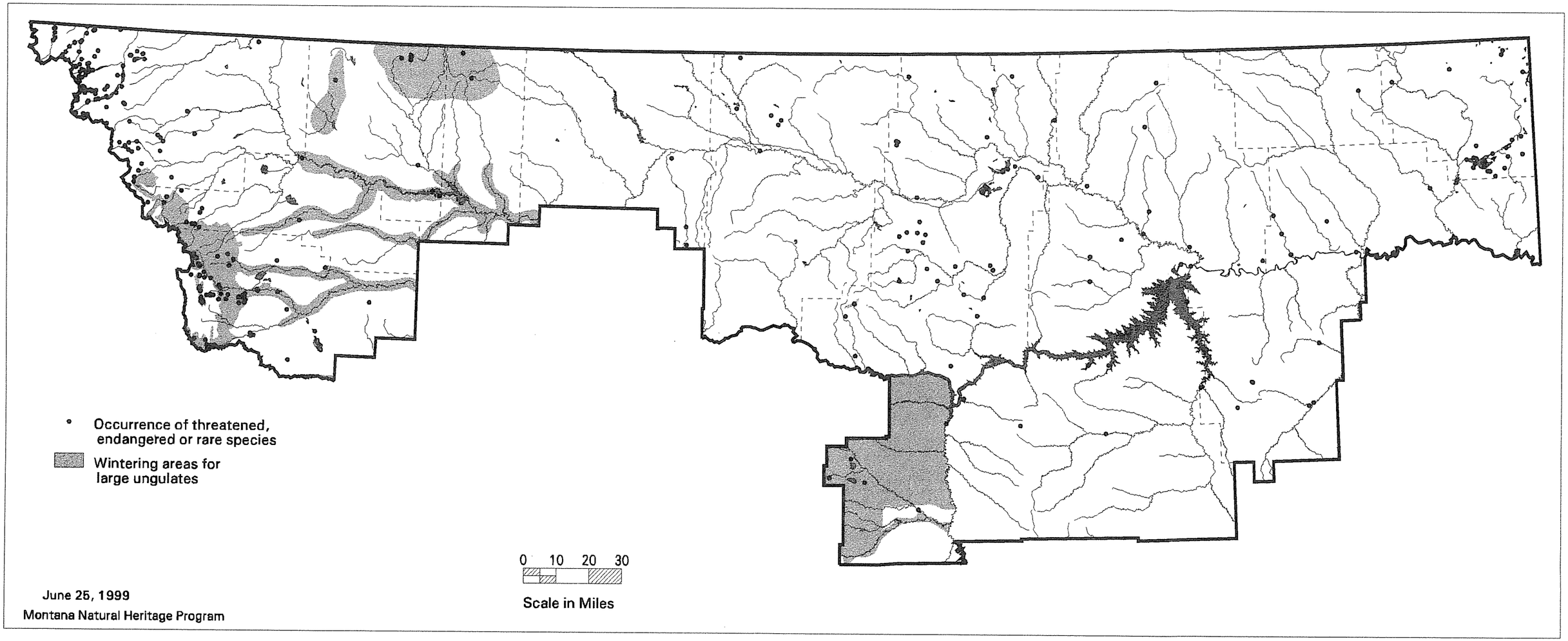

Figure 41. Winter Range & Sensitive Species Locations, Northeast Forest Legacy Area.

Montana intends to use the State grant option in this FLA to acquire interests in important forest lands. The Northeast Forest Legacy Area encompasses the following environmental values:

- Tremendous diversity in plant and animal life resulting from the convergence of three ecoregions—the Great Plains, the Middle Rocky Mountain, and the Northern Rocky Mountain provinces—and a corresponding juxtaposition of quite different habitats.
- Big-game winter range, travel corridors, and a variety of other valuable wildlife habitats.
- High quality and intact riparian habitats and a vast array of wetland communities resulting from recent alpine and continental glaciation.
- Unusual array of rare and sensitive plant species.
- Intact assemblage of large mammal carnivores along the Rocky Mountain Front, which includes wolves, grizzly bears, wolverines, martins, and lynx (all are rare or endangered).
- Presence of boreal species at or near the southern limit of their range.
- Outstanding hunting, fishing, and recreational opportunities.
- Important watersheds that provide high quality water in an otherwise dry region.
- Presence of forests within or on the edge of the Northern Great Plains.

These values will be protected through:

- The development of a community-supported conservation easement program that will target vulnerable areas;
- The establishment of conservation partnerships to facilitate easement acquisition;
- The encouragement of private forest owners to complete Stewardship Management Plans or multi-resource management plans;
- The reduction of wildlife-human conflicts and the protection of key habitats through education, easement restrictions, and the direct conservation of habitat.

Conservation easements should focus on the following issues:

- Threats of conversion and habitat fragmentation from residential subdivision, second home development, farming, and oil and gas developments;
- Continuation of traditional forest uses;
- Quality and integrity of aquatic, wetland, riparian, and upland habitats;
- Sustainable timber harvest and forest practices;
- Restoration and maintenance of proper ecosystem function;
- Public access for recreational purposes.

List of Public Benefits to be Derived

- Sustainable timber industry;
- Maintenance of traditional forest uses and cultures;
- Protection of valuable wildlife and fish habitat;
- Protection of water quality for human uses;
- Protection of healthy ecosystem functions;
- Access to year-round recreational opportunities;
- Protection of scenic qualities.

Entities that may Participate in Monitoring and Management

Montana Fish, Wildlife, and Parks and, on a case by case basis, other participating entities will be involved in monitoring and management.

Public Involvement Process

See Chapter VII.

Southeast Forest Legacy Area

General Description

The Southeast Forest Legacy Area encompasses Big Horn, Carbon, Carter, Custer, Dawson, Fallon, Golden Valley, Musselshell, Powder River, Prairie, Richland, Rosebud, Stillwater, Sweet Grass, Treasure, Yellowstone, and Wibaux Counties. The upper Yellowstone, Big Horn, Lower Yellowstone, Tongue, Powder, and Little Missouri River basins and part of the Musselshell River basins fall within its boundary, and it includes the Custer National Forest and small parts of the Lewis and Clark and Gallatin National Forests as well as the Northern Cheyenne and Crow Indian Reservations. The east slope of the Crazy and Absaroka Mountains and Beartooth Plateau fall within the area, as do the Pryor Mountains. Land ownership is shown in Figure 42. Figure 42a shows counties and lakes and rivers in the FLA. Figures 43 and 44 show the distribution of all forest land in the FLA and the distribution of private forest land, respectively.

The Southeast FLA has a continental climate. Red belt damage can be severe at lower timberline. In the west, the valleys have high base elevations and generally have a growing season that is too brief for ponderosa pine. Farther east, where summers are longer and hotter, but more humid, ponderosa pine is the only coniferous forest tree. Most precipitation in the east falls as summer rain; winters are generally dry and cold.

The western part of this FLA is characterized by forests of Douglas-fir, lodgepole pine, spruce or subalpine fir. In the Pryor Mountains and in scattered places elsewhere in southeast Montana limestone is common. It accounts for stands of limber pine and Douglas-fir below about 8,000 feet. In the east, where there are no prominent mountains, ponderosa pine and Rocky Mountain juniper are the only coniferous species. Dry sites support very open stands of short trees with grass in the understory. North-facing slopes are more moist and support denser pine stands with shrub and herb undergrowth. Two eastern deciduous forest species, green ash and wild plum, grow along streams and moist lower north slopes. American elm and bur oak reach the eastern edge of the area. Riparian forests can be composed of cottonwood, boxelder, bur oak, green ash, willow, birch, or elm in various combinations.

About 27% of this FLA is potential forest lands. The average frost free season in lower elevation forests ranges from 100 to 130 days in the east but only 50 to 100 days in the west. The potential timber productivity is shown in Table 26. The average for the area is 41 feet^3/acre/year.

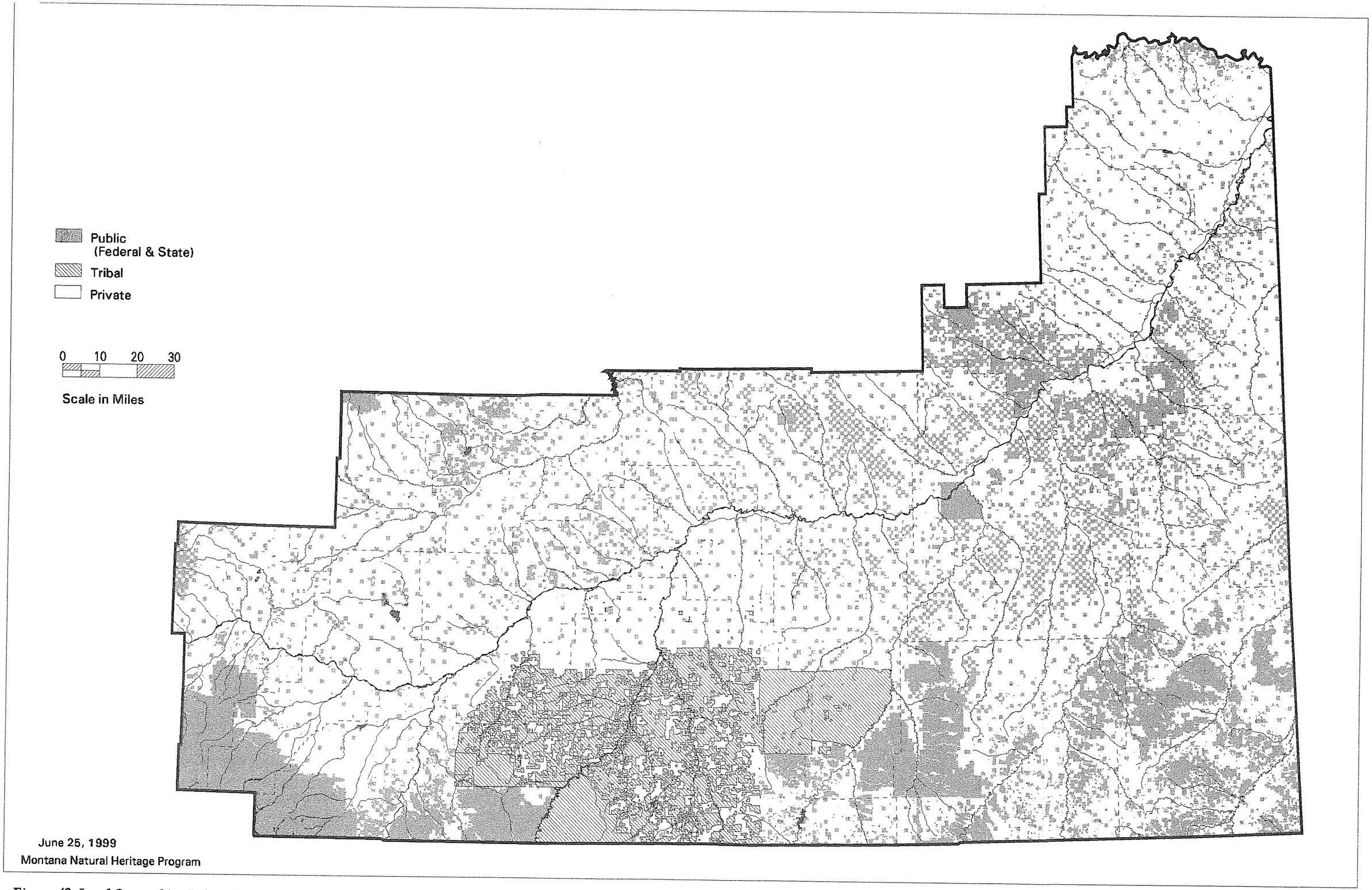

Figure 42. Land Ownership: Public, Tribal, and Private, Southeast Forest Legacy Area.

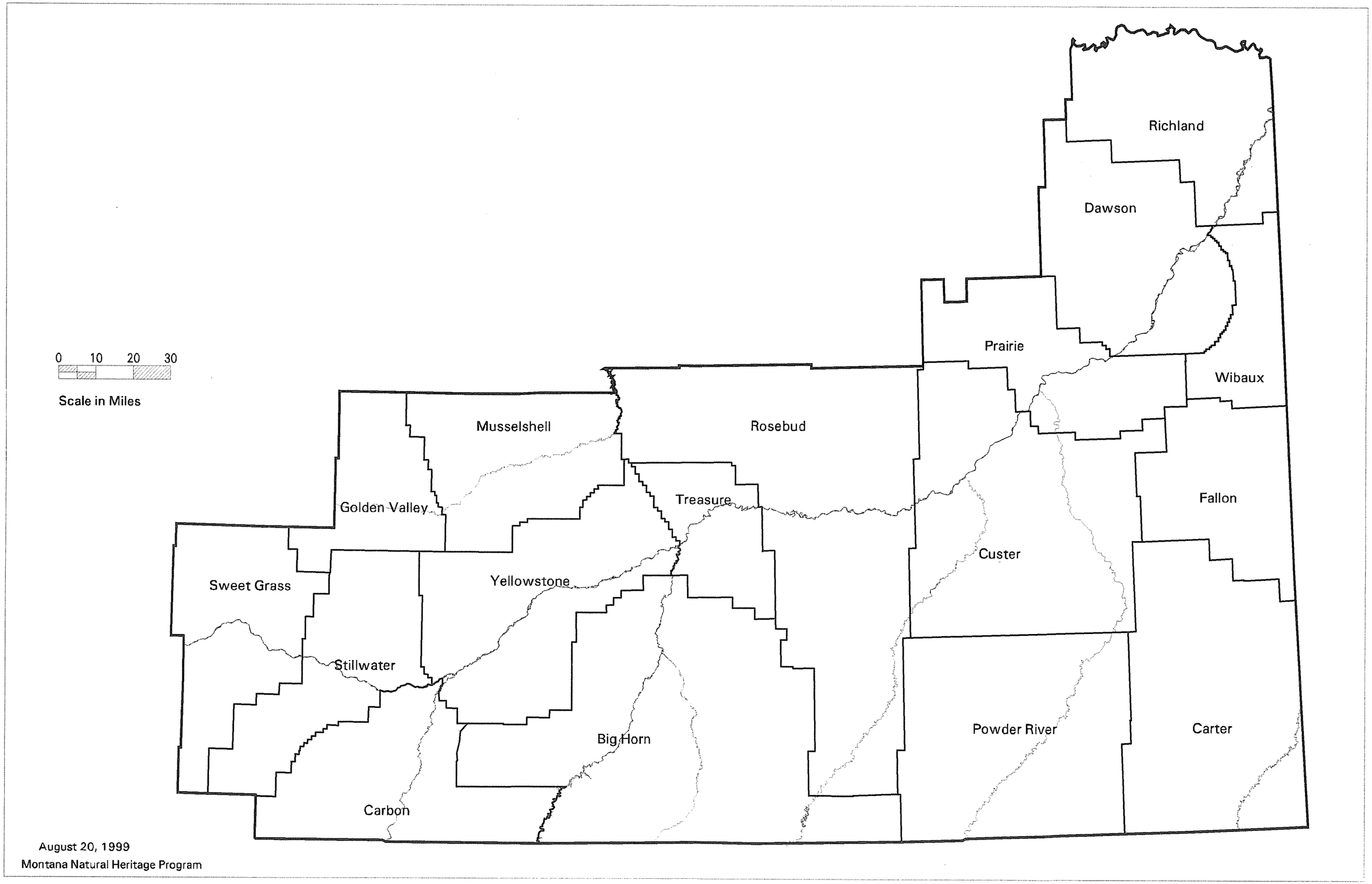

Figure 42a. Counties and Major Lakes & Rivers, Southeast Forest Legacy Area.

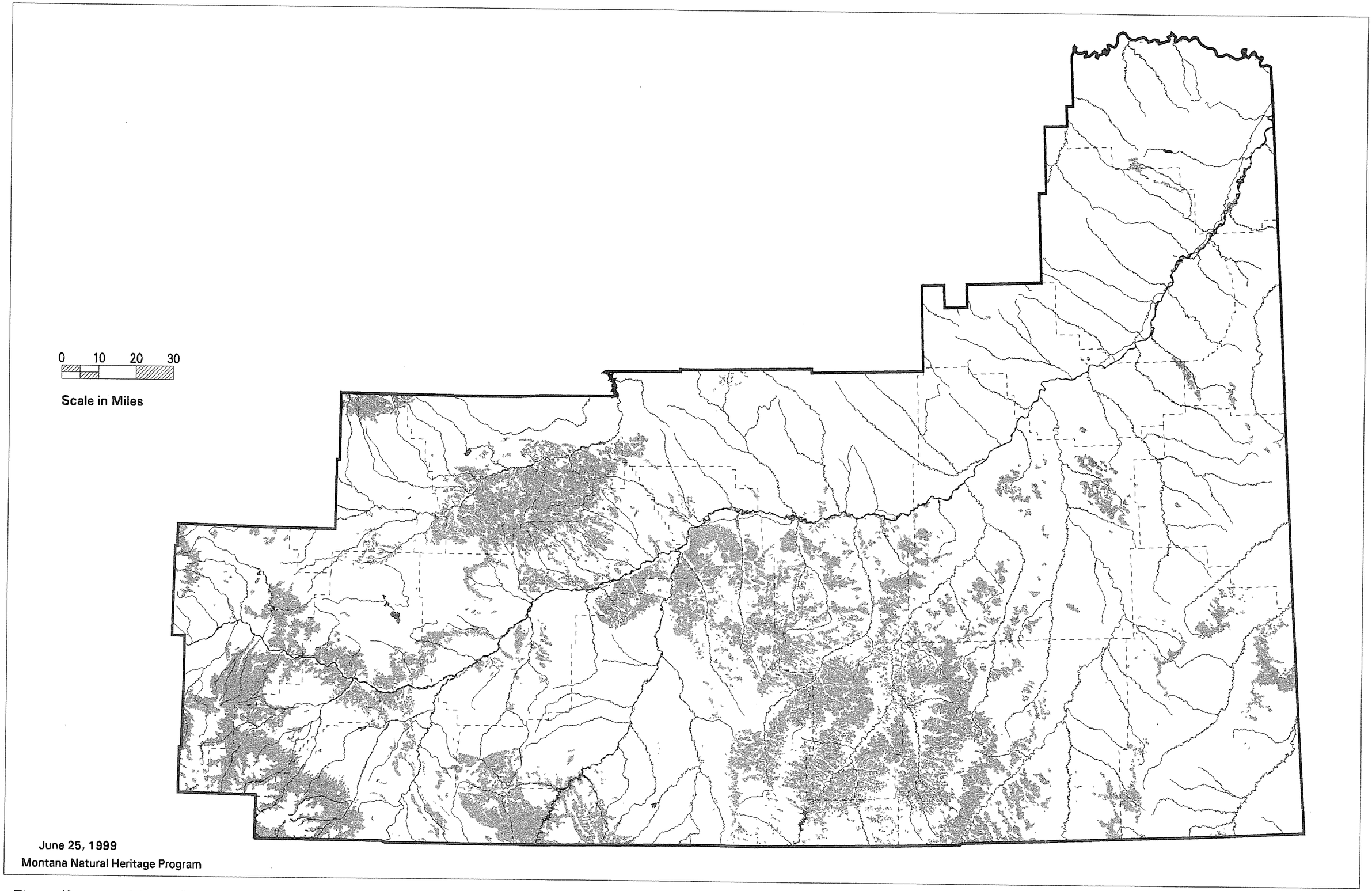

Figure 43. Forested Areas, Southeast Forest Legacy Area.

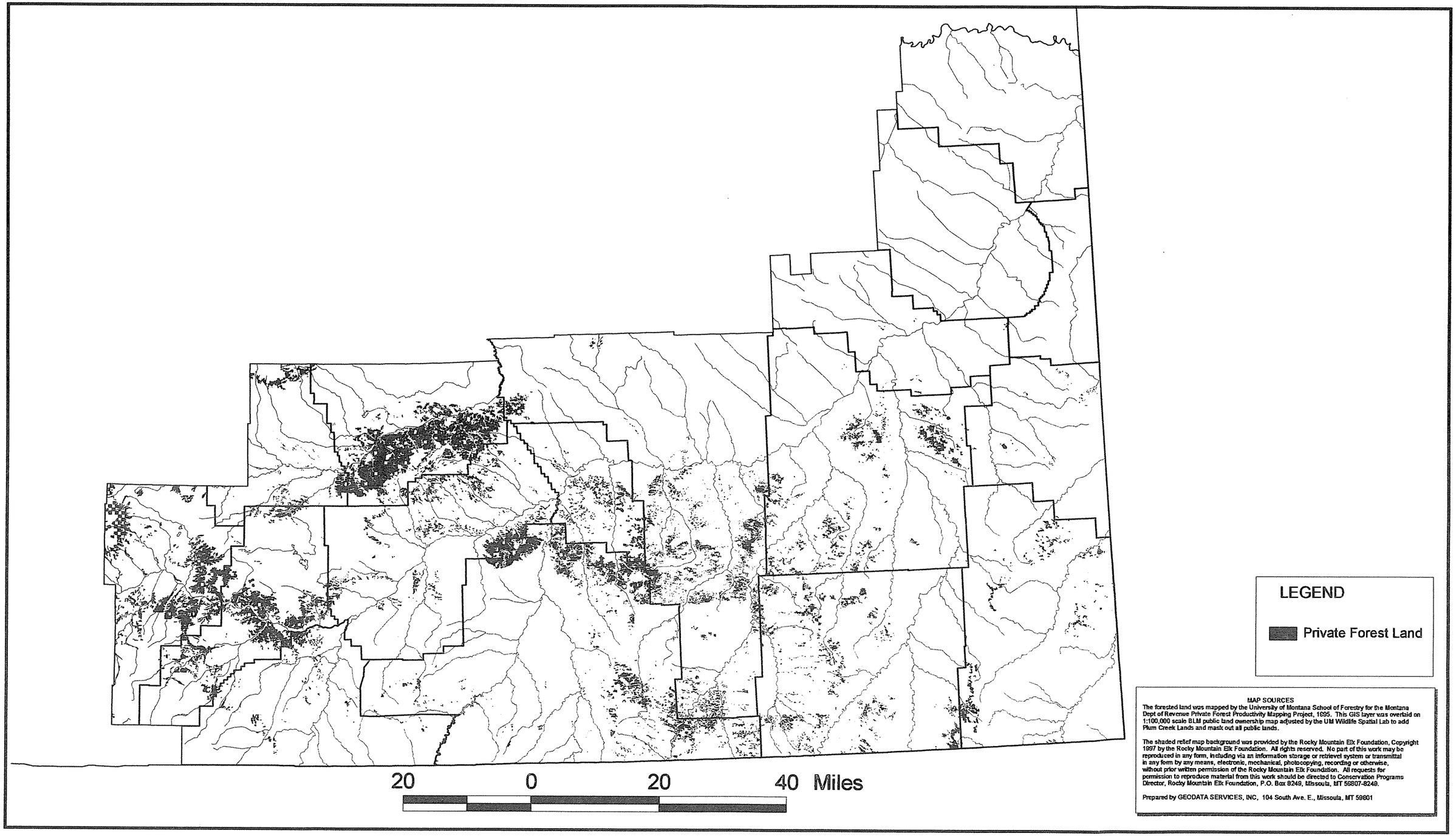

Figure 44. Private Forest Lands: Southeast Forest Legacy Area.

Table 26. Area of forest land by site class in thousands of acres.

	SITE CLASS (cubic feet/acre/year)				
	>165	120-165	85-120	50-85	20-49
Big Horn	0	0	0	59	166
Carbon	0	0	0	13	30
Carter	0	0	0	5	27
Custer	0	0	0	6	98
Dawson	0	0	0	0	0
Fallon	0	0	0	0	0
Golden Valley	0	0	0	0	41
Musselshell	0	0	0	12	275
Powder River	0	0	6	17	164
Prairie	0	0	0	0	4
Richland	0	0	0	4	0
Rosebud	0	0	0	71	148
Stillwater	0	0	0	13	59
Sweetgrass	0	0	0	19	56
Treasure	0	0	18	11	63
Yellowstone	0	0	6	12	136
Wibaux	0	0	0	0	4
Totals	0	0	29	243	1,271

Lower timberline on the mountain ranges is 5,500 feet. Alpine treeline is about 9,500 feet.

Table 27. Area of forest land by forest type group in thousands of acres.

	Total	Spruce/ Fir	Douglas-fir	Ponderosa pine	Lodgepole pine	Other pines	Elm/Ash Cotton-wood	Aspen/ Birch
Big Horn	224.5	0	0	218.3	0	0.0	6.2	0.0
Carbon	42.7	0	17.2	6.6	5.7	6.6	0	6.6
Carter	31.9	0	0	31.9	0	0.0	0	0.0
Custer	103.7	0	0	103.7	0	0.0	0	0.0
Dawson	0	0	0	0	0	0.0	0	0.0
Fallon	0	0	0	0	0	0.0	0	0.0
Golden Valley	41	0	0	41	0	0.0	0	0.0
Musselshell	287	0	0	287	0	0.0	0	0.0
Powder River	187.1	0	0	170.1	0	0.0	17.1	0.0
Prairie	4.4	0	0	0	0	4.4	0	0.0
Richland	4.4	0	0	0	0	0.0	4.4	0.0
Rosebud	219.3	0	0	207.4	0	0.0	11.9	0.0
Stillwater	72.1	0	26.2	39.3	6.6	0.0	0	0.0
Sweet Grass	75	6.6	32	30	0	0.0	6.6	0.0
Treasure	92	0	0	68.7	0	0.0	23.3	0.0
Yellowstone	153.4	0	0	147.5	0	0.0	5.9	0.0
Wibaux	4.4	0	0	4.4	0	0.0	0	0.0
Totals	1542.9	6.6	75.4	1355.9	12.3	11	75.4	6.6

Growth and Development Patterns

The population did not change during the 1980s in the Southeast FLA. The net annual migration was -1.0%. The population grew slightly during the period 1990 through 1997, increasing 1.1% annually with a net migration increase of 0.6% per year. Population changes in each of the counties in the Southeast FLA over the last 17 years is shown in the Table 28. Over the last seven years, Yellowstone, Carbon, Stillwater, Golden Valley, and Big Horn grew by 10.9, 16.6, 19.9, 15.2, 11.3 percent, respectively.

Eleven percent of all lots proposed for subdivision in the state in 1996 were in this FLA. The number of subdivision lots requested that year are shown in Table 29.

Table 28. Population of Southeast Forest Legacy Counties, 1980-1997

County	1980 Population	1997 Population	Area (sq mi)	People/sq mi
Big Horn	11096	12617	4,995	2.5
Carbon	8099	9425	2,048	4.6
Carter	1799	1503	3,340	.4
Custer	13109	12115	3,783	3.2
Dawson	11805	9048	2,373	3.8
Fallon	3763	3035	1,620	1.9
Golden Valley	1026	1051	1,175	.9
Musselshell	4428	4605	1,867	2.4
Powder River	2520	1909	3,297	.6
Prairie	1836	1335	1,736	.7
Richland	12243	10191	2,084	4.9
Rosebud	9899	10209	5,012	2
Stillwater	5598	7835	1,795	4.4
Sweet Grass	3216	3400	1,855	1.8
Treasure	981	839	979	.8
Wibaux	1476	1106	889	1.2
Yellowstone	108035	125771	2,635	47.7
Totals	**200929**	**215994**	**41,483**	**5.2**

Table 29. Number of subdivision lots requested in 1996

	Minors	Majors	Condos	Trailer Courts	All Lots
Big Horn	5			38	43
Carbon	62	77	12		151
Carter	1				1
Custer	5			1	6
Dawson					0
Fallon	3				3
Golden Valley					0
Musselshell	4				4
Powder River					0
Prairie					0
Richland	7				7
Rosebud	1				1
Stillwater	23			85	108
Sweet Grass	17			18	35
Treasure					0
Yellowstone	178	245	47	3	473
Wibaux					0
Totals	**306**	**322**	**59**	**145**	**832**

Summary of Important Environmental Values and How they will be Protected

Figure 45 shows the winter range areas in the Southeast FLA for moose, elk, mule deer, white-tailed deer, mountain goat, and bighorn sheep and the occurrence of species that are threatened, endangered, or rare throughout their range or in Montana.

Montana intends to use the State grant option in this FLA to acquire interests in important forest lands. The Southeast Forest Legacy Area encompasses the following environmental values:

- Diverse plant and animal life resulting from the convergence of the Great Plains and the Middle Rocky Mountain provinces.
- Big-game winter range and a variety of other valuable wildlife habitats.
- Unusual array of rare and sensitive plant species, especially in the Pryor Mountains.
- Presence of wolves, grizzly bears, and other rare wildlife including the dwarf shrew, Merriam's shrew, Uinta chipmunk, peregrine falcon, blue-gray gnatcatcher, Townsend's big-eared bat, spotted bat, and pallid bat.
- Outstanding hunting, fishing, and recreational opportunities.
- Important watersheds that provide high quality water in an otherwise dry region.
- Presence of forests within or on the edge of the Northern Great Plains.

These values will be protected through:

- The development of a community-supported conservation easement program that will target vulnerable areas;
- The establishment of conservation partnerships to facilitate easement acquisition;
- The encouragement of private forest owners to complete Stewardship Management Plans or multi-resource management plans;
- The reduction of wildlife-human conflicts and the protection of key habitats through education, easement restrictions, and the direct conservation of habitat.

Conservation easements should focus on the following issues:

- Threats of conversion and habitat fragmentation from subdivisions and farming.
- Continuation of traditional forest uses such as timber harvest, forested grazing, and recreation;
- Quality and integrity of aquatic, wetland, riparian, and upland habitats;
- Sustainable timber harvest and forest practices;

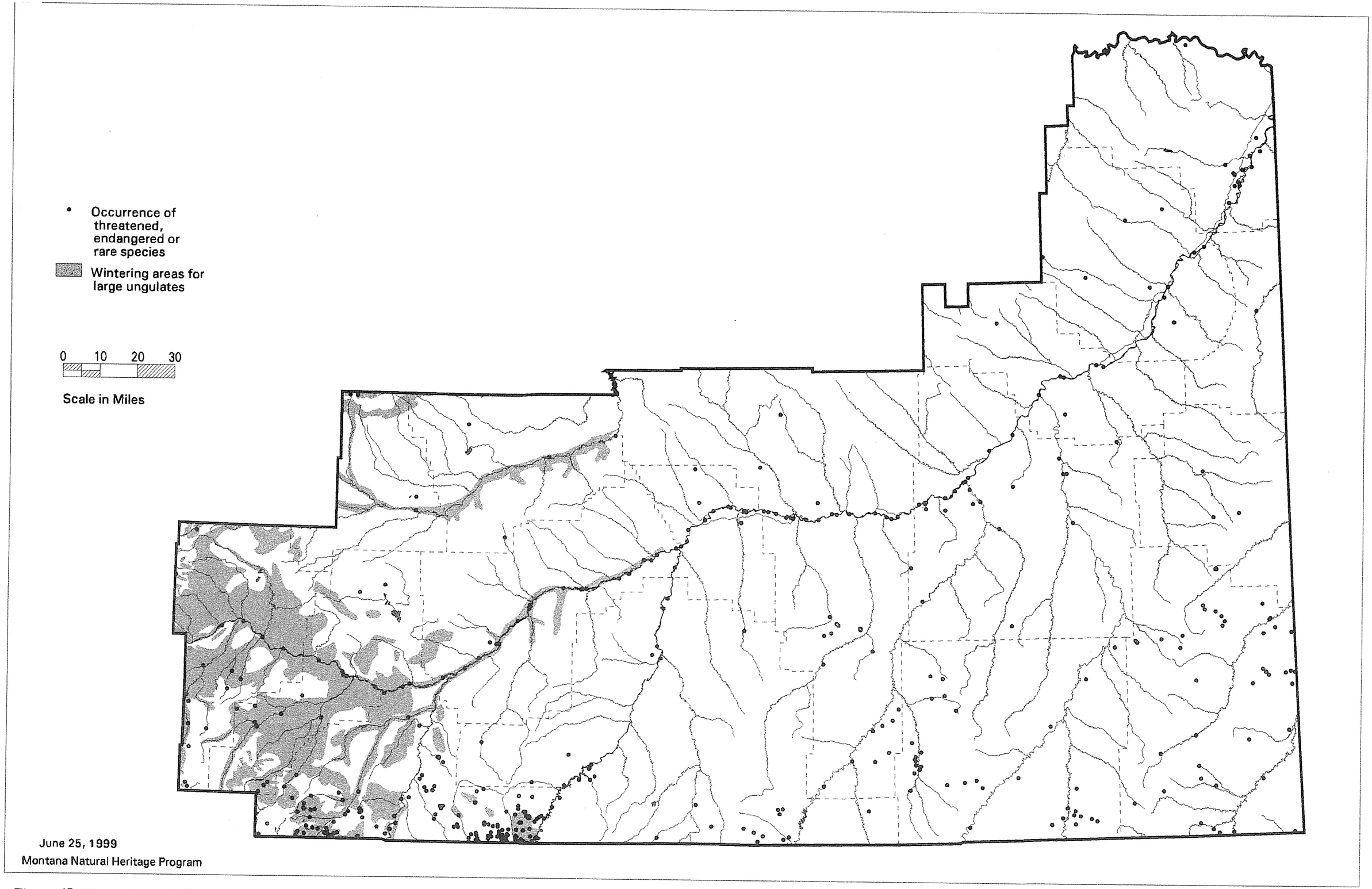

Figure 45. Winter Range & Sensitive Species Locations, Southeast Forest Legacy Area.

- Restoration and maintenance of proper ecosystem function;
- Public access for recreational purposes.

List of Public Benefits to be Derived

- Sustainable timber industry;
- Maintenance of traditional forest uses and cultures;
- Protection of valuable wildlife and fish habitat;
- Protection of water quality for human uses;
- Protection of healthy ecosystem functions;
- Access to year-round recreational opportunities;
- Protection of scenic qualities.

Entities that may Participate in Monitoring and Management

Montana Fish, Wildlife, and Parks and, on a case by case basis, other participating entities will be involved in monitoring and management.

Public Involvement Process

See Chapter VII.

VII. Public Involvement

Governor Marc Racicot began Montana's involvement in the Forest Legacy Program with his letter on March 30, 1999 to Regional Forester Dale Bosworth. In that letter, he designated Montana Fish, Wildlife, and Parks (FWP) as the lead agency for our Montana Program. Two meetings were subsequently held to develop the state's Assessment of Need. On April 13, 1999, FWP, the Department of Natural Resources and Conservation (DNRC), and USDA Forest Service officials met with representatives from the USDA Natural Resources Conservation Service, State Forest Stewardship Coordinating Committee, Rocky Mountain Elk Foundation, Montana Land Reliance, Trust for Public Lands, and the Conservation Fund to begin work on the draft Assessment of Need.

FWP and DNRC also met with the State Forest Stewardship Coordinating Committee on May 12, 1999 to discuss their role and involvement in this process. The Stewardship Committee is a public advisory group to DNRC that includes forest landowners and representatives from the Forest Service, Natural Resources Conservation Service, Extension Service, forest products industry, and land trusts. The Stewardship Committee organized a subcommittee to help with the preparation of the Assessment of Need. That group included three private forest landowners, the Montana Land Reliance, the Montana Wood Products Association, and the Montana Forest Owners Association. The Forest Legacy Draft Assessment of Need was available for public comment from July 16,1999 to August 16,1999.

News Releases were sent to most newspapers in the state. The Assessment of Need document was placed on FWP's website, www.fwp.state.mt.us. The document was not placed on the state bulletin board. Websites have taken over most bulletin board function. Letters inviting comment and giving ways to obtain copies of the Assessment of Need Document were sent to 92 potentially interested organizations and individuals, including all County Commissions. Sixty-six paper copies of the document were mailed to interested individual and organizations. Below is the summary of comments received, a total of fourteen.

Several issues were raised during the public review of the draft Assessment of Need. The following is a summary of the issues that were raised and FWP's response. All the comment letters received are included in Appendix G.

COMMENT 1. Bob Logar: How do you address a parcel that is not all forested land. Can you enroll the forested acres or can you have an easement on the entire parcel.

RESPONSE: The footnote on pages 57-58 was expanded to explain that a parcel must be at least 90% forested to qualify for Forest Legacy funding.

COMMENT 2. Robert Carroll: Letter supportive of the Forest Legacy Program and of FWP as the lead agency.

RESPONSE: None needed.

COMMENT 3. The Wildlife Society, Montana Chapter: Letter supportive of the Forest Legacy Program.

RESPONSE: None needed.

COMMENT 4. Betty McPhee: The essence of her letter was expressed in her underlined statement, "No more State or Federal Bureaucratic agencies Please!"

REPONSE: There will be no new bureaucratic agency or personnel. Forest Legacy will be implemented with existing people and agency structure. The holders of any conservation easement or fee title purchase will be state or local government, depending on who provides the required matching funds.

COMMENT 5. Jim Darling: Mr. Darling encourages an emphasis on riparian areas.

RESPONSE: The six Forest Legacy Areas include the entire state of Montana to ensure that deciduous forests along the riparian zones of Montana's rivers and streams, as well as our coniferous forests, could be included in the Forest Legacy Program.

COMMENT 6. James Phelps: Letter supportive of the Forest Legacy Program with a request to include cottonwood as a forest type of concern.

RESPONSE: Same as last response.

COMMENT 7. Jack and Hariet Rupe: There were several comments, each will be answered separately.

7a. You have failed to make a case for the NEED for the program.

RESPONSE: We agree. The data is there, but not a clear statement of need. A summary statement highlighting how the data demonstrate a need for the program is included in the abstract of the Final Assessment of Need.

7b. It is difficult to understand how several million acres can be placed under easement when eligible lands are restricted to those with certified plans.

RESPONSE: The assumption of several million acres under easement is very optimistic. This is a small program. Certified lands would appear to be more than adequate to expend foreseeable funding. Forest Legacy alone will not conserve enough land to impact the trends described in the draft Assessment of Need. However, working in conjunction with other programs that were discussed in Section IV. "Conserving the Land Base" we hope to implement meaningful projects across the State.

7c. It seems placing these easements under Forest Service control may be somewhat disingenious since they are already under fire for their policies.

RESPONSE: The part of the Forest Legacy Program that Montana has chosen to implement is called the 'state option'. State or local government agencies would hold any easement or fee title purchased through this program.

7d. The role of the Stewardship Committee is too much for a volunteer body.

RESPONSE: Montana Fish, Wildlife, and Parks actually reviews about two dozen proposals in a year with our Habitat Montana Program. That program is substantially larger than what we expect of Forest Legacy. Therefore, it does not appear that reviewing projects will be overly burdensome for the Stewardship Committee. Also, this protocol was developed with the help of the Stewardship Subcommittee.

7e. Page 46, a plan does not help forest health, only when a plan is implemented do good things happen.

RESPONSE: We agree. We changed this language.

COMMENT 8. Paul Berg: Supportive of program, but since public money is being used, hunting, fishing and recreational activities that are compatible with forest/wildlife management must be allowed.

RESPONSE: Hunting, fishing, and other recreational activities are part of a 'working forest' and are part of the Public Values embodied in the Program as well as part of the

selection criteria. However, these values are only one of several criteria to consider and as such, may not be part of every easement.

COMMENT 9. Flathead Wildlife: Endorses the Forest Legacy Program. Believes the 110,000 acre figure cited on page 5 is conservative.

RESPONSE: The 110,000 acre figure came from Plum Creek Timber Company.

COMMENT 10. Montana Forest Stewardship Steering Committee:

10a. 'Are we correct in our belief that the Eligibility criteria as stated in the main body of the document on page 58 will provide the legal screen for all Montana applications and that a landowner who wants to sell in fee or obtain an easement specifying no management with no plan will not be eligible under the Montana Legacy Program?'

RESPONSE: The intent of our working group was to focus on conservation easements but also allow for fee acquisitions in some cases. The Assessment of Need will be changed to explain that if there is a fee title purchase or a government agency holds timber rights, the agency will be required to prepare a management plan.

10b. What is the legal liability of the Montana Forest Stewardship Committee? Can our members be sued for actions taken associated with the Forest Legacy Program?

RESPONSE: No. According to Martha Williams, attorney for FWP, the Stewardship Committee could be named in a suit but would be dropped by the courts because the Committee's role is advisory.

10c. Recommend that a representative of Montana Department of Natural Resources be added in Eligibility Criteria, Step 3 of the Forest Legacy Program Project Development.

RESPONSE: Done.

COMMENT 11. Yellowstone Valley Audubon Society: In support of the Forest Legacy Program. Prefer fee title acquisition, but easements are next most acceptable. Particularly concerned about cottonwoods, and need to protect cottonwood forests.

RESPONSE: The reason the entire State of Montana is included in Forest Legacy is to include deciduous forests as well as coniferous forests. We are concerned about riparian woodlands and cottonwood forests.

COMMENT 12. Chris Tootell of Dept. Natural Resource and Conservation:

12a. please add to Goals and Objectives "Sustain healthy tree resources".

RESPONSE: Page 56, bullet #3 covers this concern under 'native forest plants and remnant forest types'.

12b. Page 58, fourth line needs semicolon.

RESPONSE: OK

12c. Add two criteria to Ecological Values on page 59
'Area contains tree species whose range or abundance is threatened by pathogens'
' Area contains tree species that are rare or unique to the State of Montana'

RESPONSE: Done.

12d. Please add statement about weeds.

RESPONSE: We will add 'noxious weed control is addressed in the stewardship of management plan'.

12e. How will you assess the second criteria on page 59; Neighbors and the local community support the project?

RESPONSE: There is always public participation in any proposed easement or fee title purchase. Also adjacent landowners are specifically contacted.

COMMENT 13. Granite County Commissioners: Do not support the Forest Legacy Program. Do not want the Program in Granite County.

RESPONSE: FWP understands state law requires county planning authority be notified of any conservation easement action in the county. FWP will comply fully with state law. The Forest Legacy Program is being implemented through the 'state option'. This means any acquisition or easement purchased in this program will be held by state or local government.

COMMENT 14. U.S. Forest Service: Several comments, see letter.

RESPONSE: We will provide two subsections in Chapter IV. We will provide maps showing counties by name. This letter summarizes public comment and our reply. We will fix maps needing legends. We did not incorporate Landowner Inspection Consent Form, since we will work only with willing, interested landowners that are fully involved in the process.

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Appendices

Appendix A: Common Montana Tree Species

Appendix B: Ecological Units of Montana

Appendix C: Montana's Private Forest Land Characteristics

Appendix D: Montana's Threatened and Endangered Animal Species and Animal Species of Special Concern

Appendix E: Montana Forest Stewardship Committee

Appendix F: Forest Legacy Implementation Guidelines

Appendix G: Comments Received on the Draft Assessment of Need

Appendix A

Common Montana Tree Species

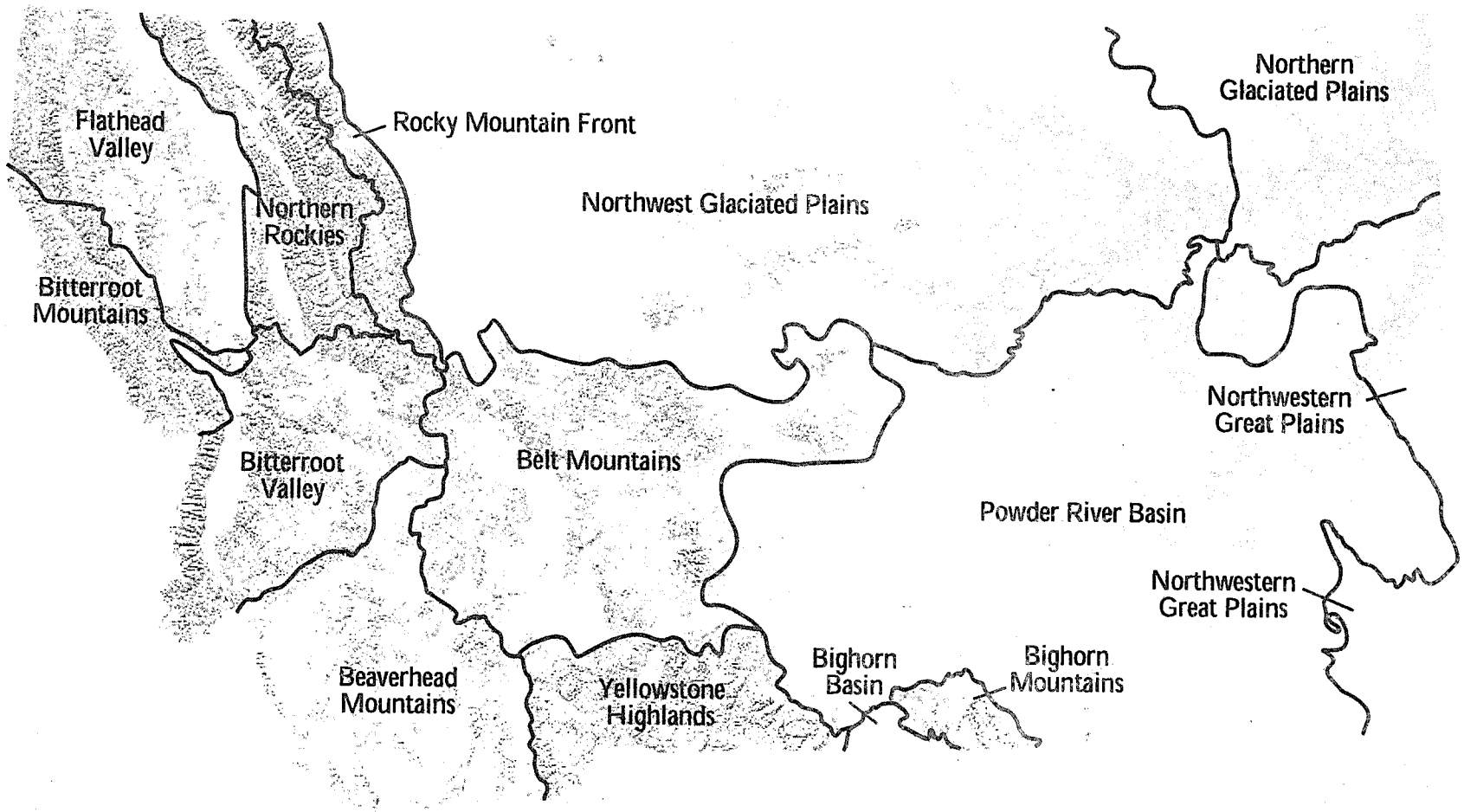
Common Montana Tree Species

Coniferous	
Grand fir	*Abies grandis*
Subalpine fir	*A. lasiocarpa*
Utah juniper	*Juniperous osteosperma*
Rocky Mountain juniper	*J. scopulorum*
Subalpine larch	*Larix lyallii*
Western larch	*L. occidentalis*
Engelmann spruce	*Picea engelmannii*
White spruce	*P. glauca*
Whitebark pine	*Pinus albicaulis*
Lodgepole pine	*P. contorta* var. *latifolia*
Limber pine	*P. flexilis*
Western white pine	*P. monticola*
Ponderosa pine	*P. ponderosa*
	P. ponderosa var. *scopulorum*
Douglas-fir	*Pseudotsuga menziesii* var. *glauca*
Western redcedar	*Thuja plicata*
Western hemlock	*Tsuga heterophylla*
Mountain hemlock	*T. mertensiana*
Deciduous	
Boxelder	*Acer negundo*
Paper birch	*Betula papyrifera*
Green ash	*Fraxinus pennsylvanica*
Balsam poplar	*Populus balsamifera*
Eastern cottonwood	*P. deltoides*
Black cottonwood	*P. trichocarpa*
Quaking aspen	*P. tremuloides*
Cascara buckthorn	*Rhamnus purshiana*
Peachleaf willow	*Salix amygdaloides*
American elm	*Ulmus americana*

Appendix B

Ecological Units of Montana

Appendix B
Montana Ecological Units



This map depicts ecological units developed according to the classification scheme of the National Hierarchical Framework of Ecological Units (Avers & al. 1994). Ecological units are identified by the integration of physical and biological components of the environment.

Montana shaded relief map Copyright © 1997 by the Rocky Mountain Elk Foundation. All rights reserved. No part of this work may be reproduced in any form, including via an information storage and retrieval system or transmittal in any form by any means, electronic, mechanical, photocopying, recording or otherwise, without prior written permission of the Rocky Mountain Elk Foundation. All requests for permission to reproduce material from this work should be directed to Conservation Programs Director, Rocky Mountain Elk Foundation, P.O. Box 8249, Missoula, MT 59807-8249.

Appendix C
Montana's Private Forest Land Characteristics

All the tables in this appendix are from *Private Forest-land Owners of the Western United States, 1994* by Thomas Birch. (USDA Forest Service Resource Bulletin NE-137, Northeastern Forest Experiment Station, Radnor, PA.)

Table 112. Estimated number of ownership units and acres of forest land, by size class and form of ownership, Montana, 1993

Size class (acres)	Ownership class						Total	SE
	Individual	Percent	Corporation	Percent	Other	Percent		
			(In owners)					
1-9	37,000	47	0	0	0	0	37,000	57.3
10-19	27,900	35	0	0	0	0	27,900	39.9
20-49	6,900	9	0	0	1,300	500	8,200	46.5
50-99	1,500	2	0	0	800	32	2,300	57.3
100-199	2,900	3	300	43	0	0	3,200	34
200-499	1,900	2	200	23	300	13	2,400	27.5
500-999	600	1	100	9	0	0	700	34.2
1000-4999	400	W	100	17	100	4	600	21.7
5000+	500	1	W	7	W	W	500	84.1
Sub total over 10	42,500	53	700	100	2,500	100	45,700	24.9
Total	79,500	100	700	100	2,500	100	82,700	28
SE	29.3		50		59.4		28	
			(In thousands of acres)					
1-9	151	5	0	0	0	0	151	70.4
10-19	303	11	0	0	0	0	303	42.5
20-49	202	7	0	0	50	2	252	59.9
50-99	101	4	0	0	50	2	151	59.2
100-199	353	13	50	5	0	0	403	34.3
200-499	454	17	50	5	101	4	605	34.6
500-999	353	13	50	5	0	0	403	35.8
1000-4999	605	22	202	22	202	9	1,009	22.7
5000+	202	7	572	62	1,905	83	2,679	21.9
Subtotal over 10	2,572	95	925	100	2,309	100	5,806	2
Total	2,723	100	925	100	2,309	100	5,957	0.8
SE	18.9		26.8		27.1		0.8	

W- Fewer than 50 owners or less than 0.5 percent.

Table 113. Estimated number of ownership units and acres of forest land, by form of ownership and past harvest experience, Montana, 1993

Form of ownership	Harvest experience				Total	SE
	Harvested	Percent	Did not harvest	Percent		
	(In owners)					
Individual + joint	41,900	97	37,600	95	79,500	29.3
Partnership	400	1	800	2	1,200	69.4
Corporation	600	1	100	W	700	50
Other	W	W	1,300	3	1,300	95.2
Total	42,900	100	39,800	100	82,700	28
SE	45.2		35.7		28	
	(In thousands of acres)					
Individual + joint	1,765	38	958	70	2,723	18.9
Partnership	202	4	50	4	252	47.3
Corporation	723	16	202	15	925	26.8
Other	1,905	41	151	11	2,057	32.1
Total	4,595	100	1,361	100	5,957	0.8
SE	6.5		21.8		0.8	

W-Fewer than 50 owners or less than 0.5 percent

Table 114. Estimated number of ownership units and acres of forest land, by incorporated and unincorporated businesses and past harvest experience, Montana, 1993

Nature of business	Harvest				Total	SE
	Harvested	Percent	Did not harvest	Percent		
	(In owners)					
Incorporated:						
Forest industry	W	W	0	0	W	59.2
Farm	600	1	100	W	700	52.4
Industrial business	W	W	0	0	W	99.5
Real estate	0	0	W	W	W	99.5
Other	0	0	0	0	0	0
Total corporate	600	1	100	W	700	50
Unincorporated:						
Forest industry	W	W	0	0	W	62.1
Farm	4,200	10	16,800	42	21,000	40.1
Misc. individual	37,900	88	21,600	54	59,500	36.7
Real estate	W	W	0	0	W	98.9
Other	200	W	1,300	3	1,400	87.5
Total noncorporate	42,300	99	39,799	100	82,000	28.3
Total	42,900	100	39,800	100	82,700	28
SE	45.2		35.7		28	
	(In thousands of acres)					
Incorporated:						
Forest industry	199	4	0	0	199	63.8
Farm	473	10	151	11	625	31.3
Industrial business	50	1	0	0	50	100
Real estate	0	0	50	4	50	100
Other	0	0	0	0	0	0
Total corporate	723	16	202	15	925	26.8
Unincorporated:						
Forest industry	1,284	28	0	0	1,284	62.7
Farm	1,462	32	655	48	2,118	13.8
Misc. individual	403	9	454	33	857	40.4
Real estate	50	1	0	0	50	100
Other	672	15	50	4	722	54.7
Total noncorporate	3,872	84	1,160	85	5,032	5
Total	4,595	100	1,361	100	5,957	0.8
SE	6.5		21.8		0.8	

W- Fewer than 50 owners or less than 0.5 percent

Table 115. Estimated number of ownership units and acres of forest land, by occupation class and intention to harvest , Montana, 1993

Occupation	Future harvest								Total	SE
	1-10 years	Percent	Indefinite	Percent	Never	Percent	No answer	Percent		
					(In owners)					
Professional	600	3	10,700	31	9,600	36	0	0	20,900	57
Managers	11,500	55	18,100	53	W	W	0	0	29,600	64.5
Other White collar	W	W	0	0	0	0	0	0	W	99.5
All white collar	12,100	58	28,800	85	9,700	36	0	0	50,600	43.3
Craftsmen	3,400	16	0	0	0	0	0	0	3,400	91.8
All blue collar	3,400	16	0	0	0	0	0	0	3,400	91.8
Farmers	2,000	10	1,000	3	10,200	38	0	0	13,200	53
Retired	1,000	5	3,300	10	6,900	26	1,000	100	12,200	50.1
No answer	100	W	0	0	0	0	0	0	100	99.5
All other owners	2,300	11	900	3	W	W	0	0	3,200	46.9
Total	20,900	100	34,000	100	26,800	100	1,000	100	82,700	28
SE	49.7		56.6		40.3		98.9		28	
					(in thousands of acres)					
Professional	101	2	151	18	101	14	0	0	353	41.1
Managers	151	3	202	23	50	7	0	0	403	46.2
Other white collar	50	1	0	0	0	0	0	0	50	100
All white collar	303	7	353	41	151	21	0	0	807	33
Craftsmen	101	2	0	0	0	0	0	0	101	81.7
All blue collar	101	2	0	0	0	0	0	0	101	81.7
Farmers	807	19	202	23	303	43	0	0	1,311	19.4
Retired	151	3	101	12	151	21	50	100	454	37.3
No answer	50	1	0	0	0	0	0	0	50	100
All other owners	2,931	67	202	23	101	14	0	0	3,234	16
Total	4,343	100	857	100	706	100	50	100	5,957	0.8
SE	8.1		29.9		26.4		100		0.8	

W-Fewer than 50 owners or less than 0.5 percent

Table 116. Estimated number of ownership units and acres of forest land, by age class and past harvest experience, Montana, 1993

Age	Harvest experience				Total	SE
	Harvested	Percent	Did not harvest	Percent		
	(In owners)					
Under 25	600	1	0	0	600	98.9
25-34	0	0	0	0	0	0
35-44	8,100	19	10,100	25	18,200	61.2
45-54	18,600	43	5,600	14	24,100	72
55-64	12,000	28	11,400	29	23,300	52.3
65 or over	2,500	6	10,600	27	13,200	46.5
All other owners	1,000	2	2,200	5	3,200	46.9
Total	42,900	100	39,800	100	82,700	28
SE	45.2		35.7		28	
	(In thousands of acres)					
Under 25	50	1	0	0	50	100
25-34	0	0	0	0	0	0
35-44	252	5	50	4	303	45.3
45-54	353	8	303	22	655	27.8
55-64	504	11	252	19	756	27.9
65 or over	605	13	353	26	958	28.9
All other owners	2,830	61	403	30	3,234	16
Total	4,595	100	1,361	100	5,957	0.8
SE	6.5		21.8		0.8	

Table 117. Estimated number of ownership units and acres of forest land, by date of aquisition and form of ownership, Montana, 1993

Date of acquisition	Ownership class: Forest industry	Farmer	Miscellaneous: Individual	Corporation	Other	Total	SE
			(In owners)				
1990-1994	0	400	16,100	0	200	16,600	65.3
1980-1989	W	800	9,500	0	0	10,200	58.1
1970-1979	0	300	30,100	0	0	30,400	62.9
1960-1969	0	7,600	0	0	0	7,600	67.1
1950-1959	0	5,700	3,200	W	1,300	10,100	59.3
1940-1949	0	1,200	200	0	0	1,400	47.8
1901-1939	W	800	500	0	0	1,300	53.5
Prior to 1900	W	0	0	W	W	W	76
No answer	0	5,000	0	0	0	5,000	99.5
Total	W	21,700	59,600	W	1,400	82,700	28
SE	44.1	38.8	36.7	78.7	87.5	28	
			(In thousands of acres)				
1990-1994	0	202	202	0	50	454	42.4
1980-1989	50	454	252	0	0	756	29.5
1970-1979	0	353	303	0	0	655	30.8
1960-1969	0	725	0	0	0	725	29.7
1950-1959	0	252	50	50	50	403	37.8
1940-1949	0	353	50	0	0	403	37.8
1901-1939	50	353	50	0	0	454	35.1
Prior to 1900	1,382	0	0	50	621	2,055	34.2
No answer	0	50	0	0	0	50	100
Total	1,483	2,743	908	101	722	5,957	0.8
SE	52.3	13.1	40.3	70.3	54.7	0.8	

W-fewer than 50 owners or less than 0.5 percent

Table 118. Estimated number of ownership units and acres of forest land, by distance from tracts, Montana, 1993

Distance	Tracts			Total
		More than one tract		
	1 tract	Nearest tract	Farthest tract	
		(In owners)		
Less than 1 mile	7,900	14,900	2,100	
2-5 miles	27,100	100	5,700	
6-15 miles	2,500	4,700	4,700	
16-25 miles	200	200	0	
26-50 miles	0	W	3,500	
51-100 miles	800	300	500	
More than 100 miles	23,200	300	4,000	
No answer	200	200	200	
Total	62,000	20,700	20,700	82,700
		(In thousands of acres)		
Less than 1 mile	555	2,981	423	
2-5 miles	252	101	303	
6-15 miles	252	202	252	
16-25 miles	151	50	0	
26-50 miles	0	151	252	
51-100 miles	101	101	202	
More than 100 miles	353	202	2,357	
No answer	151	353	353	
Total	1,815	4,142	4,142	5,957

W-Fewer than 50 owners or less than 0.5 percent

Table 119. Estimated number of ownership units and acres of forest land, by primary and secondary reason for owning forest land, Montana, 1993

Reason	Primary reason		Secondary reason	
	Number	Percent	Number	Percent
		(In owners)		
Land investment	2,100	3	6,300	8
Recreation	1,300	2	12,500	15
Timber production	200	W	1,100	1
Farm and domestic use	6,700	8	300	W
Esthetic enjoyment	17,500	21	5,200	6
Part of farm	6,800	8	600	1
Part of residence	14,800	18	5,200	6
Estate	15,600	19	19,400	24
Other	17,800	21	12,100	15
No secondary reason given	-	-	20,000	24
No answer	0	0	0	0
Total	82,700	100	82,700	100
		(In thousands of acres)		
Land investment	202	3	151	3
Recreation	303	5	875	14
Timber production	1,685	28	555	9
Farm and domestic use	403	7	151	3
Esthetic enjoyment	454	8	252	4
Part of farm	555	9	252	4
Part of residence	353	6	151	3
Estate	202	3	151	3
Other	1,801	30	336	6
No secondary reason given	-	-	3,082	51
No answer	0	0	0	0
Total	5,957	100	5,957	100

W-Fewer than 50 owners or less than 0.5 percent

Table 120. Estimated number of ownership units and acres of forest land, by primary benefit expected in the next 10 years and past harvest experience, Montana, 1993

Benefits expected	Harvest Experience				Total	SE
	Harvested	Percent	Did not harvest	Percent		
			(In owners)			
Land value increase	4,700	11	1,200	3	5,900	57.6
Recreation	2,600	6	700	2	3,300	47.9
Income from timber	200	W	100	W	300	69.8
Farm and domestic use	1,000	2	5,100	13	6,200	81.4
Esthetic enjoyment	21,900	51	14,800	37	36,700	53.2
Firewood	600	1	0	0	600	98.9
Other	11,900	28	6,500	16	18,400	60.9
No answer	W	W	11,400	29	11,500	62.4
Total	42,900	100	39,800	100	82,700	28
SE	45.2		35.7		28	
			(In thousands of acres)			
Land value increase	252	5	151	11	403	35.8
Recreation	353	8	151	11	504	34.8
Income from timber	1,685	37	50	4	1,736	44.1
Farm and domestic use	353	8	151	11	504	32.9
Esthetic enjoyment	403	9	403	30	807	34.8
Firewood	50	1	0	0	50	100
Other	1,448	31	303	22	1,750	26.6
No answer	50	1	151	11	202	50.6
Total	4,595	100	1,361	100	5,957	0.8
SE	6.5		21.8		0.8	

W-fewer than 50 owners or less than 0.5 percent

Table 121. Estimated number of ownership units and acres of forest land, by size class and intention to harvest, Montana, 1993

Size class (acres)	Future harvest								Total	SE
	1-10 years	Percent	Indefinite	Percent	Never	Percent	No answer	Percent		
				(In owners)						
1-9	10,100	48	26,900	79	0	0	0	0	37,000	57.3
10-19	0	0	3,200	9	24,800	92	0	0	27,900	39.9
20-49	5,800	28	0	0	1,400	5	1,000	100	8,200	46.5
50-99	600	3	1,600	5	0	0	0	0	2,300	57.3
100-199	1,600	7	1,100	3	500	2	0	0	3,200	34
200-499	2,000	9	400	1	0	0	0	0	2,400	27.5
500-999	400	2	200	1	100	W	0	0	700	34.2
1000-4999	300	2	100	W	100	W	0	0	600	21.7
5000+	100	W	400	1	W	W	0	0	500	84.1
Subtotal over 10	10,800	52	7,100	21	26,800	100	1,000	100	45,700	24.9
Total	20,900	100	34,000	100	26,800	100	1,000	100	82,700	28
SE	49.7		56.6		40.3		98.9		28	
				(In thousands of acres)						
1-9	50	1	101	12	0	0	0	0	151	70.4
10-19	0	0	50	6	252	36	0	0	303	42.5
20-49	151	3	0	0	50	7	50	100	252	59.9
50-99	50	1	101	12	0	0	0	0	151	59.2
100-199	202	5	151	18	50	7	0	0	403	34.3
200-499	504	12	101	12	0	0	0	0	605	34.6
500-999	252	6	101	12	50	7	0	0	403	35.8
1000-4999	555	13	202	23	252	36	0	0	1,009	22.7
5000+	2,578	59	50	6	50	7	0	0	2,679	21.9
Subtotal over 10	4,293	99	756	88	706	100	50	100	5,806	2
Total	4,343	100	857	100	706	100	50	100	5,957	0.8
SE	8.1		29.9		26.4		100		0.8	

W- Fewer than 50 owners or less than 0.5 percent.

Appendix D

Montana's Threatened and Endangered Animal Species and Animal Species of Special Concern

Appendix D
Montana's Threatened and Endangered Animal Species and Animal Species of Special Concern

Montana Natural Heritage Program

The attached list of animal species of special concern in Montana has been compiled by Montana Natural Heritage Program (MTNHP) to provide information to others on the current status of these species. It has been developed largely from information in the scientific literature, unpublished reports, agency databases, field research, and field inventories. This information comes from a variety of cooperating local, state and federal agencies, private organizations and businesses, academic researchers, and interested individuals. Background information was obtained from sources such as Vertebrate Species of Special Interest or Concern (Flath 1984, 1995), P. D. Skaarís Montana Bird Distribution (Montana Bird Distribution Committee 1996), Fishes of Montana (Brown 1971), the USFWS Animal Candidate Review for Listing as Endangered or Threatened Speciesî (61 FR 7596, Feb. 28, 1996), and from scientific literature, personal contacts, museum specimens, and MTNHP staff research.

Montana Natural Heritage Program Ranks

Taxa are evaluated and ranked by the Heritage Program on the basis of their statewide status. These ranks are used to determine protection and data collection priorities, and are revised as new information becomes available. A scale of 1 (critically imperiled) to 5 (demonstrably secure) is used for these ranks. Example: Merriamís shrew = S3 (i.e., species is is found within a restricted range in Montana). Sstate ranks are assigned according to a standardized procedure used by all Natural Heritage Programs (The Nature Conservancy 1992), and are briefly defined below. Rank Definition S1 Critically imperiled because of extreme rarity (5 or fewer occurrences, or very few remaining individuals), or because of some factor of its biology making it especially vulnerable to extinction. S2 Imperiled because of rarity (6 to 20 occurrences), or because of other factors demonstrably making it very vulnerable to extinction throughout its range. S3 Either very rare and local throughout its range, or found locally (even abundantly at some of its locations) in a restricted range, or vulnerable to extinction throughout its range because of other factors; in the range of 21 to 100 occurrences. S4 Apparently secure, though it may be quite rare in parts of its range, especially at the periphery. S5 Demonstrably secure, though it may be quite rare in parts of its range, especially at the periphery. SU Possibly in peril, but status uncertain; more information needed. SH Historically known; may be rediscovered. SX Believed to be extinct; historical records only, continue search.

Fish and Wildlife Service Status

The symbols in this column denote the categories defined in the U.S. Fish and Wildlife Service Notice of Review (1980, 1983, 1985, 1990, 1993, 1996) and indicate the status of a taxon under the federal Endangered Species Act of 1973 (16 U.S.C.A. ß 15311543 (Supp. 1996)). Categories are listed below: LE listed endangered LT listed threatened PE proposed endangered PT proposed threatened C candidatesubstantial information exists in U.S. Fish and Wildlife Service files on biological vulnerability to support proposals to list as endan gered or threatened. NL not listed/no designation (see note below) XN nonessential experimental population Note: The categories C2, 3B and 3C are no longer maintained by the USFWS (61 FR 7596, Feb. 28, 1996). A species can have more than one federal designation if the speciesí status varies within its range. In these instances the Montana designation is listed first. Example: LELT = species is listed as endangered in Montana; elsewhere in its range it is listed threatened.

US Forest Service Status

The status of species on Forest Service lands as defined by the U.S. Forest Service manual (2670.22). These taxa are listed as such by the Regional Forester (Northern Region) on National Forests in Montana. The Forest Service lists species as either: E Endangered, federally listed as Endangered (LE) T Threatened, federally listed as Threatened (LT) S Sensitive, animal species identified by the Regional Forester for which population viability is a concern as evidenced by significant downward trend in population or a significant downward trend in habitat capacity.

Bureau of Land Management Status

The status of species on Bureau of Land Management lands as defined by the BLM 6840 Manual. SS Special Status, federally listed Endangered, Threatened, or Candidate species or other rare or endemic species that occur on BLM lands.

Scientific Name	Common Name	MTNHP State Rank	FWS Status	USFS Status	BLM Status
Cottus confusus	Shorthead Sculpin	S3		Sensitive	
Cottus rhotheus	Torrent Sculpin	S2		Sensitive	
Cottus ricei	Spoonhead Sculpin	S1			
Acipenser transmontanus pop 1	White Sturgeon (Kootenai River Population)	S1	Endangered	Sensitive	
Scaphirhynchus albus	Pallid Sturgeon	S1	Endangered	Endangered	
Polyodon spathula	Paddlefish	S1S2			
Lepisosteus platostomus	Shortnose Gar	S1			Special status
Oncorhynchus clarki bouvieri	Yellowstone Cutthroat Trout	S2		Sensitive	Special status
Oncorhynchus clarki lewisi	Westslope Cutthroat Trout	S3		Sensitive	Special status
Oncorhynchus mykiss gairdneri	Interior Redband Trout	S2		Sensitive	
Salvelinus confluentus	Bull Trout	S3	Threatened	Sensitive	
Thymallus arcticus montanus	Montana Arctic Grayling	S1	Candidate	Sensitive	
Phoxinus eos x phoxinus neogaeus	Northern Redbelly X Finescale Dace	S3			Special status
Hybopsis gelida	Sturgeon Chub	S2	Candidate		
Hybopsis meeki	Sicklefin Chub	S1	Candidate		
Semotilus margarita	Pearl Dace	S2			Special status
Cycleptus elongatus	Blue Sucker	S3?			
Percopsis omiscomaycus	Troutperch	S1			
Plethodon idahoensis	Coeur D'alene Salamander	S2		Sensitive	Special status
Dicamptodon aterrimus	Idaho Giant Salamander	SR			
Bufo hemiophrys	Canadian Toad	S1			Special status
Rana pipiens	Northern Leopard Frog	S3S4			
Rana sylvatica	Wood Frog	SR			Special status
Chelydra serpentina	Snapping Turtle	S3			Special status
Trionyx spiniferus	Spiny Softshell	S3			Special status
Heterodon nasicus	Western Hognose Snake	S3?			
Lampropeltis triangulum	Milk Snake	S2			
Liochlorophis vernalis	Smooth Green Snake	S2S3			
Gavia immer	Common Loon	S1S2B,SZN		Sensitive	Special status
Aechmophorus clarkii	Clark's Grebe	S2S4B,SZN			
Pelecanus erythrorhynchos	American White Pelican	S2B,SZN			
Nycticorax nycticorax	Blackcrowned Nightheron	S2S3B,SZN			
Plegadis chihi	Whitefaced Ibis	S1B,SZN			
Cygnus buccinator	Trumpeter Swan	S2B,S2N		Sensitive	
Histrionicus histrionicus	Harlequin Duck	S2B,SZN		Sensitive	
Haliaeetus leucocephalus	Bald Eagle	S3B,S3N	Threatened	Threatened	
Accipiter gentilis	Northern Goshawk	S3S4			
Buteo regalis	Ferruginous Hawk	S3B,SZN		Sensitive	
Falco peregrinus	Peregrine Falcon	S1S2B,SZN	Endangered	Endangered	
Tympanuchus phasianellus columbianus	Columbian Sharptailed Grouse	S1		Sensitive	
Coturnicops noveboracensis	Yellow Rail	S1B,SZN			
Grus americana	Whooping Crane	SZN	Endangered	Endangered	
Charadrius melodus	Piping Plover	S2B,SZN	Threatened	Threatened	
Charadrius montanus	Mountain Plover	S2B,SZN	Candidate	Sensitive	
Himantopus mexicanus	Blacknecked Stilt	S2B,SZN			
Larus pipixcan	Franklin's Gull	S3B,SZN			
Sterna caspia	Caspian Tern	S2B,SZN			
Sterna hirundo	Common Tern	S3B,SZN			
Sterna forsteri	Forster's Tern	S2B,SZN			
Sterna antillarum athalassos	Interior Least Tern	S1B,SZN	Endangered		
Chlidonias niger	Black Tern	S3B,SZN			
Coccyzus americanus	Yellowbilled Cuckoo	S3B,SZN			
Otus flammeolus	Flammulated Owl	S2S3B,SZN		Sensitive	Special status
Athene cunicularia	Burrowing Owl	S3B,SZN			Special status
Strix nebulosa	Great Gray Owl	S3			Special status
Aegolius funereus	Boreal Owl	S3S4		Sensitive	Special status

Cypseloides niger	Black Swift	S3B,SZN			
Picoides arcticus	Blackbacked Woodpecker	S3		Sensitive	Special status
Empidonax alnorum	Alder Flycatcher	S1B,SZN			
Tyrannus vociferans	Cassin's Kingbird	S1S3B,SZN			
Polioptila caerulea	Bluegray Gnatcatcher	S1B,SAN			
Spiza americana	Dickcissel	S1S2B,SZN			Special status
Ammodramus bairdii	Baird's Sparrow	S3S4B,SZN			
Ammodramus leconteii	Le Conte's Sparrow	S1S2B,SZN			Special status
Ammodramus nelsoni	Nelson's Sharptailed Sparrow	S1B,SZN			
Sorex preblei	Preble's Shrew	S3			
Sorex nanus	Dwarf Shrew	S3			
Sorex merriami	Merriam's Shrew	S3			Special status
Myotis thysanodes	Fringed Myotis	S3			
Myotis septentrionalis	Northern Myotis	S2			
Euderma maculatum	Spotted Bat	S1		Sensitive	
Corynorhinus townsendii	Townsend's Bigeared Bat	S2S3		Sensitive	Special status
Antrozous pallidus	Pallid Bat	S1		Sensitive	
Lepus californicus	Blacktailed Jack Rabbit	S2S3			
Brachylagus idahoensis	Pygmy Rabbit	S2S3			
Tamias umbrinus	Uinta Chipmunk	S3?			
Cynomys ludovicianus	Blacktailed Prairie Dog	S3S4			Special status
Cynomys leucurus	Whitetailed Prairie Dog	S2		Sensitive	Special status
Perognathus parvus	Great Basin Pocket Mouse	S2S4			
Chaetodipus hispidus	Hispid Pocket Mouse	S1			
Synaptomys borealis	Northern Bog Lemming	S2		Sensitive	Special status
Zapus hudsonius	Meadow Jumping Mouse	S2S3			Special status
Canis lupus	Gray Wolf	S1	LEXNLTNL	Endangered	
Vulpes velox	Swift Fox	S1	Candidate		
Ursus arctos horribilis	Grizzly Bear	S1S2	Threatened	Threatened	
Martes pennanti	Fisher	S2		Sensitive	Special status
Mustela nigripes	Blackfooted Ferret	SH#	Nonessential experimental population	Endangered	
Gulo gulo luscus	North American Wolverine	S2			
Felis lynx	Lynx	S2		Sensitive	
Rangifer tarandus caribou	Woodland Caribou	SX		Endangered	
Discus shimeki	Striate Disc	S1			
Discus brunsoni	Mission Range Disc	SH			
Hemphillia danielsi	Marbled Jumpingslug	S1S3			
Magnipelta mycophaga	Spotted Slug	S1S3			
Zacoleus idahoensis	Sheathed Slug	S1S2			
Oreohelix alpina	Alpine Mountain snail	SH			
Oreohelix amariradix	Bitterroot Mountain snail	S1S2			
Oreohelix carinifera	Keeled Mountain snail	S1			
Oreohelix elrodi	Carinate Mountain snail	S1			
Oreohelix strigosa berryi	Berry's Mountain snail	S1S2			
Oreohelix yavapai mariae	Gallatin Mountain snail	S1			
Oreohelix sp 3	Bearmouth Mountain snail	S1S2			
Oreohelix sp 4	Drummond Mountain snail	S1			
Oreohelix sp 5	Brunson Mountain snail	S1S2			
Oreohelix sp 6	Kintla Lake Mountain snail	S1			
Oreohelix sp 7	Kitchen Creek Mountain snail	S1S2			
Oreohelix sp 10	Missoula Mountain snail	S1S3			
Oreohelix sp 11	Subcarinate Mountain snail	S1			
Oreohelix sp 31	Byrne Resort Mountain snail	S1S2			
Udosarx lyrata russelli	Russell Mantleslug	S1			
Lyogyrus greggi	Rocky Mountain Dusky snail	S1			
Amnicola sp 2	Washington Dusky snail	S1			
Fluminicola fuscus	Columbia Pebble snail	SX			
Acroloxus coloradensis	Rocky Mountain Capshell	S1			

Stagnicola elrodi	Flathead Pond snail	S1	
Stagnicola elrodianus	Largemouth Pond snail	S1	
Stagnicola montanensis	Mountain Marsh snail	S1S3	
Fisherola nuttalli	Shortface Lanx	S1S3	
Physa megalochlamys	Largemantle Physa	S1	
Zaitzevia thermae	Warm Spring Zaitzevian Riffle Beetle	S1	Candidate
Microcylloepus browni	Brown's Microcylloepus Riffle Beetle	S1	
Caenis youngi	A Mayfly	S2	
Phyciodes batesii	Tawny Crescent	S2S3	
Euphydryas gillettii	Gillette's Checkerspot	S3	
Erpetogomphus designatus	Eastern Ringtail	S1	
Aeshna subarctica	Subarctic Darner	S1S2	
Somatochlora albicincta	Ringed Emerald	S1S3	
Somatochlora walshii	Brushtipped Emerald	S1S2	
Erythemis collocata	Western Pondhawk	S1S2	
Leucorrhinia borealis	Boreal Whiteface	S1	
Coenagrion interrogatum	Subarctic Bluet	S1S2	
Enallagma optimolocus	Last Best Place Damselfly	S1S3	
Isocapnia crinita	A Stonefly	S2	
Isocapnia integra	A Stonefly	S2	
Utacapnia columbiana	A Stonefly	S2	
Lednia tumana	Meltwater Lednian Stonefly	S1	
Zapada cordillera	A Stonefly	S2	
Zapada glacier	Western Glacier Stonefly	S1	
Isoperla petersoni	A Stonefly	S2?	
Rhyacophila alexanderi	Alexander's Rhyacophilan Caddisfly	S2	
Rhyacophila ebria	A Caddisfly	S1?	
Rhyacophila newelli	A Rhyacophilan Caddisfly	S2?	
Rhyacophila glacieri	A Rhyacophilan Caddisfly	S1	
Agapetus montanus	An Agapetus Caddisfly	S2?	

Appendix E

Montana Forest Stewardship Committee

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Appendix F

U. S.Forest Service Forest Legacy Implementation Guidelines

August 15, 1996

FINAL VERSION
Forest Legacy Program Implementation Guidelines

USDA Forest Service
State & Private Forestry
Cooperative Forestry

I. Introduction to the Revised Implementation Guidelines

The Forest Legacy Program (FLP) identifies and protects environmentally important private forest lands that are threatened by conversion to nonforest uses. Recent legislation provides for optional grants for States to carry out the FLP. These guidelines include direction for implementation of the new program authority for the FLP.

The guidelines are organized in THREE PARTS:

PART 1 - General Program Guidelines: Program direction applicable to all aspects of the FLP.

PART 2 - Federal Acquisition Program Guidelines: Program direction applicable to States and Forest Service (FS) units selecting the Federal acquisition and ownership process, where ownership of lands or interests in lands is vested in the United States (U.S.).

PART 3 - State Grant Program Guidelines: Program direction applicable to States and FS units where the State has elected the State grant option and acquisitions result in non-Federal ownership.

PART 1 - General Program Guidelines

I. Authority and Purpose of the Forest Legacy Program

A. Authority

The Cooperative Forestry Assistance Act (CFAA) of 1978, as amended, (16 U.S.C. 2103c et.seq.) provides authority for the U.S. Secretary of Agriculture to provide financial, technical, educational, and related assistance to States, communities, and private forest landowners. Section 1217 of Title XII of the Food, Agriculture, Conservation and Trade Act of 1990 (P.L. 101-624:104 stat.3359), also referred to as the 1990 Farm Bill, amended the CFAA and allows the Secretary to establish the FLP to protect environmentally important forest areas that are threatened by conversion to nonforest uses. This authority continues indefinitely. Through the 1996 Farm Bill (Federal Agricultural Improvement and Reform Act of 1996; Public Law 104-127); Title III - Conservation; Subtitle G - Forestry; Section 374, Optional State Grants for Forest Legacy Program), the Secretary is authorized, at the request of a

participating State, to make a grant to the State to carry out the FLP in the State, including the acquisition by the State of lands and interests in lands.

B. Purpose of the Forest Legacy Program

The CFAA recognizes that the majority of the Nation's productive forest lands are in private ownership; that private landowners are facing increased pressure to convert their forest lands to other uses; that greater population density and user demands are placing increased pressures on private lands to provide a wide variety of products and services including fish and wildlife habitat, aesthetic qualities, timber and recreational opportunities; and that good stewardship of privately held forest lands requires a long-term commitment that can be fostered through a partnership of Federal, State, and local government efforts.

In 1990, the FLP was one of several programs established to promote the long-term integrity of forest lands. The Secretary was directed to establish a FLP in cooperation with State, regional, and other units of government. In carrying out this mandate, the Secretary is authorized to acquire lands and interests in lands in perpetuity for inclusion in the FLP. Landowner participation in the FLP, including the sale of lands and interests in lands, is entirely voluntary.

II. Description of Terms

Conservation easements are partial interests in lands conveyed by deed from a landowner to an easement holder with the intent of restricting present and future owners of the property in order to achieve conservation objectives.

Fair Market Value is generally defined by the Uniform Appraisal Standards for Federal Land Acquisitions as being the amount in cash, or on terms reasonably equivalent to cash, for which in all probability the property would be sold by a knowledgeable owner willing but not obligated to sell to a knowledgeable purchaser who desired but is not obligated to buy. (Uniform Appraisal Standards for Federal Land Acquisitions: Interagency Land Acquisition Conference, 1992, p.4.)

Federal Appraisal Standards are those standards contained in the publication entitled "Uniform Appraisal Standards for Federal Land Acquisitions: Interagency Land Acquisition Conference, 1992." These standards are available for purchase from the Superintendent of Documents, U.S. Government Printing Office, Washington D.C. 20402-9328 (ISBN 0-16-038050-2).

Federal Acquisition Procedures, as listed below, must be followed when Federal funds are used to complete an acquisition of land or interests in land using Forest Legacy authority: 1. Federal appraisal standards must be met; 2. The landowner must be informed of the fair market value and that sale of the property is strictly voluntary; 3. The landowner must be notified in writing that the property will NOT be purchased if negotiations do not result in amicable agreement; 4. Payment to the landowner for lands or interests in lands is not more than the fair market value determined under #1; 5. Assure title is free and unencumbered or that title insurance is secured for the full value of the encumbered property; and 6. If relocation is involved the requirements in PL 91-646 must be followed.

Forest Legacy Area (FLA) is a forested area with important environmental values, that satisfies identified eligibility criteria and has been delineated, described, and mapped in a State's Assessment of Need for the FLP. Acquisition of lands and interests in lands for the FLP can only occur within approved FLA's.

Full fee purchase is a land conveyance where a vendor conveys all rights, title and interest in a property to a purchaser.

Indirect costs relate to the management and administration of the FLP. Indirect costs, unlike salary which is a direct cost, are defined as costs not readily assignable to the cost objectives specifically benefited. Examples of indirect costs would be overhead, secretarial, and vehicular costs.

In-kind contributions are non-cash contributions, including third-party contributions. In-kind contributions must be necessary to accomplish program activities, and allowable if the Federal Government were required to pay for them.

Nonforest uses are uses of the land inconsistent with traditional forest uses including, but not limited to, residential subdivisions, commercial development, extensive pasture (generally meaning more than 10 percent), cultivated farmland, and mining that causes extensive surface disturbance.

Pass-through as used herein describes a land transaction whereby a third party, such as a land trust, acquires interests in lands with the intent to convey such interests to a government. The transaction can include a full or partial donation, or sale at fair-market value.

Secretary is the U.S. Secretary of Agriculture.

State Forest Stewardship Coordinating Committees (SFSCC) are chaired and administered by the State Foresters, or equivalent State officials, with membership composed of representatives from the following agencies, organizations, or individuals: Forest Service; Natural Resources Conservation Service; Farm Services Agency; Cooperative, State, Research, Education, and Extension Service; local government; consulting foresters; environmental organizations; forest products industry; forest land owners; land trusts; conservation organizations; the State fish and wildlife agency; and others determined appropriate by the Secretary.

State Lead Agency is responsible for coordinating the establishment and implementation of the FLP in the State. The State lead agency may be a forestry agency, or other natural resource agency as designated by the Governor or pursuant to State law.

Stewardship Management Plans, or multi-resource management plans, are prepared with the purpose of achieving long-term stewardship of forest land. Such plans identify landowner objectives and describe actions the landowner may take to protect and manage soil, water, range, aesthetic quality, recreation, timber, and fish and wildlife resources. Plans are to be prepared by a professional resource manager. A Forest Stewardship Plan that meets the requirements of the Forest Stewardship Program or a multi-resource management plan is required for FLP qualification. Either plan's content must be acceptable to the State.

III. National Environmental Policy Act (NEPA)

NEPA applies to certain proposed actions of the Federal Government. NEPA does not apply to the independent actions of States or private property owners. It has no applicability to a private property owner's use or development of his/her property rights. It could apply on private property if the U.S. acquired a right to permit or deny certain land uses and then proposed to exercise that right, but in such an instance it would be the U.S. that would be required to satisfy NEPA requirements, not the private owner.

A Programmatic Environmental Assessment was completed for the FLP at the Washington, D.C., Office level.

Under the FS NEPA regulations, the acquisition of an individual Forest Legacy tract and/or easement may be categorically excluded from the preparation of an Environmental Impact Statement or an Environmental Assessment unless scoping indicates extraordinary circumstances exist.

IV. Eligibility Criteria for Areas Included in the FLP

The CFAA directs the Secretary to establish eligibility criteria for the designation of Forest Legacy Areas (FLA), in consultation with the State Forest Stewardship Coordinating Committees (SFSCC). These criteria are developed based upon the State lead agency's Assessment of Need (AON) for establishing a State FLP.

FLA boundaries must encompass forest lands with significant environmental and other resource-based values. Areas may also include nonforested areas such as farms and villages if they are an integral part of the landscape and are within the logical boundaries. Since FLA boundaries may not correspond to property boundaries, tracts located partially within the geographically defined FLA are eligible for the FLP, upon approval of a boundary adjustment.

Indian reservations and tribal lands are an important feature of the forested landscape. Indian tribes and States are encouraged to collaborate to consider tribal lands and reservations for designation as, or inclusion within, an FLA.

To be eligible for the FLP, the proposed area must meet the following National criterion:

> Be an environmentally important forest area that is threatened by conversion to nonforest uses.

Individual States are responsible for determining their definition of "threatened" and the definition of "environmentally important forest areas."

Environmentally important forest areas shall contain one or more of the following important public values, as defined by the States:

1. Scenic resources;
2. Public recreation opportunities;
3. Riparian areas;
4. Fish and wildlife habitat;
5. Known threatened and endangered species;
6. Known cultural resources;
7. Other ecological values; and/or

Provide opportunities for the continuation of traditional forest uses, such as forest management, timber harvesting, other commodity use, and outdoor recreation, as defined in the AON.

Since many tracts may qualify for the FLP, once State eligibility criteria are established States may need to establish additional criteria to prioritize acquisition proposals.

Lands and interests in lands identified within a FLA may be acquired under FLP authority by the FS, State or unit of State or local government, only on a willing seller/willing buyer basis.

V. Assessment of Need and Identification of Forest Legacy Areas

A State lead agency or other designated entity in conducting a State-wide AON must cooperate with the SFSCC. Federally recognized Indian tribes must cooperate with the SFSCC when conducting an AON over tribal lands. The purposes of the AON are: 1. To document the need for a FLP; 2. To identify and delineate the boundaries of forest areas meeting the eligibility requirements for designation as FLA's; and 3. To recommend areas to the FS/Secretary for inclusion in the FLP.

State lead agencies may utilize the services of land trusts or other entities in preparing the assessment. Information from existing sources may be used to prepare the AON, instead of initiating new studies that would duplicate existing data. Examples of appropriate sources include State Forest Resources Plans, State Comprehensive Outdoor Recreation Plans, growth management studies, cultural site inventories in State Historic Planning Offices, inventories of threatened and endangered species, and other State, regional or local plans, studies or reports. The AON should include relevant information about both public and private lands, and address the issue of how best to maintain the integrity of forest lands for future generations. The document should address pertinent issues as identified by the States, but be kept as succinct as possible.

At a minimum, the AON should address the following as they relate to the purpose of the FLP:

1. Forested areas threatened by conversion to nonforest use, in both the near and long term;

2. Forest resources including:

    a. Aesthetic and scenic values;
    b. Fish and wildlife habitat, including threatened and endangered species;
    c. Minerals resource potential;
    d. Public recreation opportunities;
    e. Soil productivity;
    f. Timber management opportunities; and
    g. Watershed values.

3. Historic uses of forest areas, and trends and projected future uses of forest resources;

4. Current ownership patterns and size of tracts, and trends and projected future ownership patterns;

5. Cultural resources that can be effectively protected;

6. Outstanding geological features;

7. Demographic trends as they relate to conversion of forest areas; and

8. Other ecological values.

Using the above information the AON should include the following:

1. Specific goals and objectives to be accomplished by the FLP;

2. Guidelines to be used by the State in determining the priority of interests in lands to be acquired;

3. Identification of applicable eligibility criteria; and

4. Identification of specific FLA(s) for designation.

The AON must reflect the direction set forth in the CFAA to give priority to lands which can be effectively protected and managed, and which have important scenic or recreational values, timber, riparian areas, fish and wildlife values including threatened and endangered species, or other ecological values.

Public participation and involvement is a State responsibility. In the absence of established State procedures, NEPA will serve as an appropriate model for public involvement. The State lead agency will solicit involvement and comments on the AON from the public including State and local governments.

The composition of the SFSCC is defined in the CFAA. This committee cooperates with the State lead agency in the preparation of the AON, identification of eligibility criteria, identification of proposed FLA's, and selection of priority lands and interests in lands to be considered for enrollment in the Program.

Based on the State-wide AON, the State lead agency in consultation with the SFSCC identifies specific geographic FLA's that meet the eligibility criteria, and recommends them to the FS for designation of a FLA.

The identification of proposed FLA's includes:

1. Identification of each geographic area on a map;

2. Description of each important forest area;

3. Summary of the important environmental values and how they will be protected and conserved in each FLA;

4. List of public benefits that will be derived from establishing each FLA;

5. Identification of the governmental entity or entities that may be assigned management responsibilities for the lands enrolled in the program; and

6. Documentation of the analysis and public involvement process.

Once designated, FLA's and resulting map of FLA's may be modified or amended upon recommendation by the State lead agency if future conditions make changes necessary. Proposed revisions shall be recommended to the appropriate FS Region/Area/Institute for approval before taking effect.

VI. Multi-State Identification of Forest Legacy Areas

Two or more States or Indian tribes may elect to identify and recommend one or several FLA's that cross State or tribal boundaries. States may elect to jointly use an existing or new multi-State entity to identify FLA's that cross State boundaries. The multi-State entity must be a government-established organization, whose jurisdiction encompasses all or portions of the land area of the States involved. Regional entities may prepare the documentation for identifying a FLA if they are multi-State in nature.

The entity conducting a multi-State identification of FLA's is responsible for:

1. Obtaining approval from the appropriate States or Indian tribes for FLA's within their boundaries, and

2. Obtaining public comments on the identification of FLA's and complying with all other requirements of these guidelines.

VII. AON Approval and Designation of FLA's

The State lead agency, Indian tribe(s), or multi-State entity must submit the AON and identification of proposed FLA's to the FS. The FS reviews the AON, identification of eligibility criteria, and identification of proposed FLA's. The Secretary provides final approval which establishes the FLP for the State(s) or Indian tribe(s), establishes eligibility criteria, and designates FLA's.

VIII. Fund Allocation Process

Funds for the program will fall into one of these categories: Program Administration Funds, Project Funds, Unspent Funds, or AON Preparation Funds.

A. **Program Administration Funds** are the portion of funds used for day-to-day program management and activities leading up to tract acquisition, including, but not limited to appraisals and surveys. As a goal, a maximum of 15 percent of FLP funds will be used for program administration. These funds will be used by FS headquarters, Regions/Area/Institute, and either granted to the State or allocated to the FS unit as appropriate.

B. **Project Funds** are funds equal to the value to be paid to landowners for lands or interests in land joining the FLP, plus title work for those tracts. Also funds expended to facilitate donations of land or interests in lands to a qualified and willing donee for FLP purposes, by paying for expenses directly related to the donation, including but not limited to: land surveys, title work, appraisals, etc. When Federal funds are used, appraisal and acquisition work procedures shall meet Federal standards. Project funds are to be distributed to FS units (Regions/Area/Institute) and may fall into two categories: base level and other funds.

<u>Active Regions/Area/Institute with State consultation will recommend to FS headquarters on an annual basis the following three items</u>:

(1) The portion of project funds based on equal distribution among participating States (base level funds). The base level fund portion may not be less than 50 percent of available project funds. Funds will either be granted to States or allocated to the FS unit performing acquisition work, as appropriate;

(2) The portion, if any, of project funds remaining after base level allocation (other funds), to be distributed based on considerations such as equity among States, forested areas in greatest need of protection, lands that can be effectively protected and managed, and other considerations and

(3) To which Region/Area/Institute the "Other Funds" should be allocated.

C. **Unspent Funds** have not been spent, or contractually obligated, by the end of time period allowed and revert to the appropriate FS Region/Area/Institute for reallocation at the discretion of the FS in consultation with State partners.

D. **AON Preparation Funds** may be granted to States or Indian tribes to help defray the cost of preparing the AON.

IX. Cost-Sharing

The CFAA directs that, to the extent practicable, the maximum Federal contribution for total program costs may not exceed 75 percent. The FS position is that at least 25 percent of these costs may be matching funds or in-kind contributions from non-Federal sources, including States and non-profit organizations. Non-Federal contributions may include direct costs and indirect costs associated with any of the planning, acquisition, capital improvement, management, or administrative activities.

Donations of land or interests in land must be documented. The title does not have to be transferred to the Federal Government in order for the donation to qualify. The value of donations may be included as part of the non-Federal cost-share match if:

1. The donation contributes to the objectives and priorities of the State FLP as set forth in the AON;

2. All or part of the donation is within the boundaries of a FLA;

3. The donor specifically requests that the value of the interests be used as a non-Federal match for the FLP at the time of transfer;

4. The donation of an interest in land must contain perpetual covenants to assure that the tract will be managed in a manner compatible with the goals for which the FLA was established;

5. The deed contains a clause that directs all of the easement holder's proceeds from a subsequent sale or exchange of the easement be used in a manner consistent with the conservation purposes of the easement;

6. The donation must not have been previously credited towards any other FLP non-Federal match; and

7. The State lead agency approves the donation as contributing to the cost-share match.

A. Federal Acquisition Option Cost-Sharing

States may use up to five years of direct, indirect and in-kind contributions associated with the management of specific Forest Legacy tracts for cost-share matching. States may use the total anticipated five-year costs for the first year of program matching, or choose to prorate expenses over the future five-year period.

Eligibility for cost-share credit shall be:

(I) Initial Forest Legacy States: Two (2) years prior to signing the FS/State Memorandum of Understanding, or other agreement (henceforth MOU means all similar instruments that document an agreement between entities), but no earlier than November 23, 1990.

(ii) Other States: Two (2) years prior to signing the FS/State MOU.

In a case where a State or private landowner owns land within the boundary of a National Forest, National Park, National Wildlife Refuge, or other Federal reserve, and wishes to donate it to the Federal Government, the value of the donation may be credited as part of the non-Federal cost-share match, even though the donation is not in a designated FLA, provided that:

1. The Federal agency agrees to accept the donation; and

2. The owner of the tract specifically requests the value of the land be used as a non-Federal cost-share match for the FLP at the time of transfer.

B. State Grant Option Cost-Sharing

Only allowable costs actually incurred during the grant period may be included in the non-Federal share of grant costs. A grant may have a maximum duration of five (5) years. To the extent practicable, the Federal share of the total costs of a grant shall not exceed 75 percent, including any in-kind contributions. Allowable costs for the non-Federal share may include, but are not limited to, those associated with planning, administration, property acquisition, property management, and in-kind contributions. Allowable costs shall be determined in accordance with 7 Code of Federal Regulations Part 3016 (7 CFR 3016), Uniform Administrative Requirements for Grants and Cooperative Agreements to State and Local Governments, and any amendments to this regulation.

X. Landowner Participation

Landowner participation in the program is voluntary and shall consist of two elements:

1. Conveyance of interests in lands to achieve the land conservation objectives of the FLP; and

2. Preparation of a Stewardship Management Plan or a multi-resource management plan. The management plan must be prepared and approved prior to signing the acquisition of the easement. Future modifications of the plan must be agreed to by the State lead agency. A plan is not needed if the landowner does not retain the right to harvest timber or conduct other land or resource management activities, or if lands are sold in fee.

Landowners may submit to the State lead agency an application for enrollment of interests in their lands in the FLP. All owners of private forest lands within the designated FLA are eligible to submit an application.

For a landowner to participate in the program, it is not required that their tracts be completely forested. However, priority will generally be given to tracts that are currently forested or are

identified to be forested in the landowner Stewardship Management Plan or multi-resource management plan.

Application requirements for landowner participation in the FLP shall be developed by the State lead agency. Landowners or their designated representatives may submit their applications to the State lead agency and will be asked to supply information about the property proposed for entry into the Program (see Appendix A).

The State lead agency, with involvement of the SFSCC, shall cooperatively review the applications and establish State acquisition priorities and continue with landowner consultation. Priority for FLP acquisitions shall be given to lands which can be effectively managed; and which have important scenic or recreational values, riparian areas, timber, fish and wildlife values, including threatened and endangered species, or other ecological values.

The FLP respects the rights of private property holders. Under no circumstances shall the right of eminent domain be used for the unwilling "taking" of any private property rights. Conservation easements or deed reservations acquired or reserved pursuant to the FLP may allow forest management activities deemed consistent with Forest Legacy purposes.

The FLP adheres to language contained in Section 14 of the CFAA, STATEMENT OF LIMITATION: "This Act shall not authorize the Federal Government to regulate the use of private land or to deprive owners of land of their rights to property or to income from the sale of property, unless such property rights are voluntarily conveyed or limited by contract or other agreement. This Act does not diminish in any way the rights and responsibilities of the States and political subdivisions of States." Purchase or donation of rights does not limit enforcement of regulations that would otherwise apply.

XI. Acquisition of Lands or Interests in Lands

If any Federal funds are used in the acquisition of a tract, including pre-acquisition work, the following shall apply:

1. Federal appraisal standards must be met;
2. The landowner must be informed of the fair market value and that sale of the property is strictly voluntary;
3. The landowner must be notified in writing that the property will NOT be purchased if negotiations do not result in amicable agreement;
4. Payment to the landowner for lands or interests in lands is not more than the fair market value determined under item 1;
5. Assure title is free and unencumbered or that title insurance is secured for the full value of the encumbered property; and
6. If relocation is involved the requirements in PL 91-646 must be followed.

All FLP acquisitions are perpetual and are binding on subsequent owners who may acquire from the present landowner those rights that the present landowner retains. Future owners of the rights

that are not acquired shall be subject only to those restrictions which the present landowner has sold to the Federal, State, or local government.

Cultivated farmland and extensive pasture (generally meaning more than 10 percent) are desirable land uses in many areas and may be intermingled with FLP parcels. FLP funds should not be used to conserve farmland, pasture and similar land uses. Other programs are available for such purposes.

States and landowners may choose to display signs on the FLP property using the signs suggested in Appendix C.

During the development of tract specific conservation easements, a determination shall be made as to whether the acquisition of mineral rights would be necessary in order to protect the other rights that are being considered for acquisition. In some situations, it may be impossible to protect environmentally important forest areas pursuant to the purpose of the FLP without acquiring the mineral rights.

XII. Tax Implications

The FS has no jurisdiction to make tax determinations or render advice as to the tax implications of transactions. Since tax implications differ from person to person, landowners may need to seek independent counsel from local assessors, tax lawyers, or accountants.

Taxes on private lands are determined by local assessors based on the fair market value of the property. When a government or other qualified entity purchases an interest in lands, the value of the property rights retained by the landowner may be reduced. Local officials may, at their discretion and in accordance with applicable State laws, assess the landowner on the value of the land with rights removed.

Many States already have a current use assessment or use valuation program where lands are taxed according to their productivity and income-producing ability. This means that managed forest land is taxed by its ability to produce income, from activities such as timber harvesting and not by its ability to generate income should it be subdivided into residential lots. Therefore, if the easement does not affect income production capability, the taxation may be unaffected by the easement. Other States base the assessed value on the highest and best use of the land. In this case, present use, i.e., forest management, may not be the highest valued use of the land and the assessed value might be based upon the developed use of the land. It should be noted, however, that the highest and best use of the land needs to be based on present or probable future use. The probable future use should be based on realistic near term uses and not highly speculative long term uses.

Conservation easements are increasingly being used as a tool to allow forest lands to be passed on from generation to generation. Federal estate taxes are assessed on the market value of land, often resulting in taxes that are so high that some or all of the land must be sold to pay the taxes. Since estate taxes are assessed on the market value of land rights held by the landowner, sale of an easement that lowers the market value may allow the land to remain in the family without generating a huge tax burden. Landowners who are interested in easements as an estate planning tool may wish to participate in the FLP; but, as previously mentioned, landowners should seek professional tax advice to determine how enrollment of their lands in the FLP might effect their estate taxes and private property taxes. Neither Federal nor State Government officials administering the FLP are authorized or qualified to assess personal tax implications.

PART 2 - Federal Acquisition Program Guidelines

I. Federal Acquisition Process

In the furtherance of the purposes of the FLP, the State lead agency with involvement of the SFSCC and the FS will review property owner applications, prioritize tracts, obtain State approval, and submit properties to the appropriate FS Region/Area/Institute for approval. Upon approval, the FS will proceed to acquire from willing sellers conservation easements and/or other interests in land including fee acquisition.

Certain land areas are not eligible for the Federal ownership option under FLP authority because other authorities and funding sources are available for acquisition of lands or interests in lands within these Federally established areas. These include lands or interests in lands located within National Forests, National Parks, National Wildlife Refuges, or other Federal Government boundaries. Proximity to Federal lands or the inclusion of Federal lands within a proposed FLA does not disqualify an area for program eligibility.

Federal laws governing public lands do not apply to private property rights not acquired by the Federal Government from willing private landowners. Interests in lands retained by private landowners, not conveyed to the Federal Government under the FLP, are subject to the same requirements of the Endangered Species Act (ESA) that existed prior to their participation in the FLP. Conveyance of interests in lands to the Federal Government neither enhances nor diminishes the landowner's responsibility under the ESA. Any interests in lands acquired by the Federal Government under the FLP shall be subject to the same requirements of the ESA as are other Federal lands.

II. Memorandum of Understanding for Coordination of the FLP

An MOU will be used to coordinate the FLP where Federal acquisition option resulting in Federal ownership of FLP acquisitions occurs. The MOU will define and facilitate partnerships between the State lead agency, FS, and other participating entities in implementing the program, acquiring interests in lands, and sharing the costs of the program. The MOU shall determine how costs are shared between parties, including administrative, management, monitoring, and capital improvement expenses. The terms of a MOU will determine which party is responsible for costs incurred following the tract's five-year cost-share write off period..

If individual Forest Legacy tract MOU's are needed, they become an addendum to the State level "umbrella" MOU.

The umbrella MOU between the State lead agency and the FS shall be developed following the Secretary's approval of the State AON and the establishment of the State's FLP.

The FS/State MOU is for the purpose of specifying roles and responsibilities for implementing the program, and may address the following items:

1. Costs and Funding:

    a. Identify direct and indirect costs expected to be incurred in establishing the FLP, and acquiring and administering interests in lands during the first five years of the program. Revise or renew these cost estimates as appropriate.

b. Identify and propose sources of cost-share matches.

2. Planning:

a. Document the amount of work that was required to complete the AON and identification of FLA's.

b. Define a process for revising existing landowner Stewardship Management Plans, or multi-resource forest management plans.

c. Identify how specific tract-by-tract acquisition needs and priorities shall be established by the State.

3. Acquisition:

a. Identify who is responsible for title work, appraisals, surveys, and similar pre-acquisition work.

b. Define a process for determining the value of donated interests in lands.

4. Management:

a. Define responsibilities for management of interests in lands acquired or dedicated to the program.

b. Identify possible activities needed to enhance, restore, or maintain resources to meet the intent of the program and general responsibilities in carrying out such activities.

5. Administration:

a. Estimate the staff work required to implement the Program.

b. Define responsibilities for processing applications to the FLP.

c. Establish procedures for monitoring the terms of reserved interest deeds and easements and identify who will be responsible.

d. Identify responsibilities for periodic reports summarizing the achievement of FLP goals in the State.

III. Administration of Federal Acquisitions

The FS will administer any interests in lands acquired by the Federal Government in FLA's. The FS may delegate or assign management and enforcement responsibilities over federally owned lands and interests in lands acquired under the FLP only to other Federal agencies or State or local government entities. Such delegation or assignment of responsibility shall be documented by a written agreement. The governmental entity responsible for management and enforcement of the conservation easement may in turn delegate or assign monitoring authority to other parties, to include land trusts, conservation groups, and other governmental entities. Such delegation or assignment of authority shall be adequately documented and the FS shall be notified for approval prior to such delegation or assignment. Similarly, management activities conducted pursuant to

the easement and in furtherance of the purposes of the FLP may be delegated or assigned by the responsible governmental entity to another party, to include land trusts, conservation groups, and other governmental entities. This delegation or assignment of authority shall also be adequately documented and the FS shall be notified for approval prior to such delegation or assignment for approval.

Optimal management of tracts in FLA's is based upon partnerships between landowners, private non-profit organizations owning or managing lands, and State and Federal officials. Land trusts and other private organizations will continue to manage their own easements and lands within designated FLA's, and while they may not manage federally owned interests in lands, the Secretary may contract or cooperate with them for monitoring and to implement specific management activities. Management of federally owned interests in lands is reserved to the FS, but may be assigned to State or local governments. Although delegable, enforcement actions for easements will generally be conducted by the easement holder, i.e., the Federal Government/FS.

IV. Participation of Land Trusts

Land trusts are nonprofit corporations having the general objective of preserving and protecting land to achieve conservation objectives. They often operate by acquiring land and interests in land. Land trusts have an important and appropriate role to play in the FLP. The following considerations apply to land transactions between the Federal Government and land trusts.

1. Land trusts cannot execute contracts for acquisition of interests in lands on behalf of the Federal Government. Land trusts may work as intermediaries for eventual Federal acquisition, but without an accepted land purchase option and contract with the FS there is no guarantee of Federal acquisition. No pass-through transactions shall be done without prior consultation with the FS.

2. Lands and interests in lands acquired by land trusts (pursuant to Final Guidelines Part 1, Section IX) may be counted toward the non-Federal cost-share contribution, provided that the interests in lands permanently contribute to the goals of the FLA.

3. The monitoring of easements within FLA's may be performed by land trusts in accordance with the umbrella MOU for the FLP and individual MOU's for specific tracts.

V. Payment in Lieu of Taxes (PILT)

Where lands are acquired in fee by the Federal Government under the FLP, the Federal Government will pay PILT to the local taxing authority. No PILT will be paid on conservation easements.

VI. Other Implementation Procedures

If the Secretary specifies a window of opportunity for the submission of FLP applications, the Secretary will give reasonable advance notice of the opportunity to the State lead agency.

The number of applications for the FLP may be beyond the ability of the Secretary to fund them. The State lead agency may indicate which applications to the FLP are highest priority and make recommendations for the Secretary's consideration. The Secretary will make final decisions about

interests in lands that will be acquired with Federal funds, with preference for interests in lands with important environmental values that can be effectively protected and managed. The Secretary may also assign priority to applications with the greatest proportion of non-Federal cost-share match.

Once interests in lands are acquired, the State lead agency, FS, and others as appropriate, may negotiate tract-specific MOU's as necessary to specify management and monitoring responsibilities for the interests in lands.

PART 3 - State Grant Program

The State lead agency elects the State grant option of the FLP, in writing, to the appropriate FS Region/Area/Institute.

When a State elects the State grant option, all future FLP acquisitions shall be transacted by the State with title vested in the State or a unit of State or local government. There are three exceptions: 1. Active cases predating the State grant option request, where all parties agree that the case should be completed by the FS and title vested in the U.S.; 2. Donations where the donor may wish to make a donation to a land trust, local, or Federal Government and the donee agrees to accept the donation, and to manage the lands or interests in lands in perpetuity for FLP purposes; and 3. At the request of the State and at the discretion of the FS, individual tracts may be acquired by the FS with title vested in the U.S. in accordance with Part 2 of these guidelines.

I. Grants

If a State elects the optional State grants Forest Legacy Program, the FS will provide a Federal grant to the State that is consistent with the uniform administrative requirements established in 7 CFR 3016. States will generally be reimbursed for costs incurred with cash advances limited to the minimum amounts needed and timed to be in accord only with the actual, immediate cash requirements of the State in carrying out the FLP. The timing and amount of cash advances shall be as close as is administratively feasible to the actual cash outlay by the State for direct program costs and the proportionate share of any allowable indirect costs.

A. Conditions of the Grant

1. States must submit annual performance and financial status reports. A final performance report and financial status report is required prior to close out of the grant.

2. Funds appropriated for the FLP shall not be included in consolidated-payment grants made under authority of Section 12 of the CFAA.

3. The State shall maintain current and complete financial records in accordance with requirements contained in the latest Federal Aid Manual and OMB Circular (Appendix B).

B. Eligible Activities

The following activities are eligible uses of funds granted to States for the FLP:

1. Purchase of lands or interests in lands from willing sellers for inclusion in the FLP;

2. Facilitation of donations of lands or interests in lands to a qualified and willing donee for FLP purposes; and

3. Program administration expenses, including indirect costs and direct acquisition related expenses relating to lands and interests in lands acquired under Forest Legacy authority.

C. Availability of Funds

Funds shall be available only for the first two (2) years of a grant to insure that Federal funds are spent promptly. However, the grant period may extend beyond two years to allow for non-Federal cost-sharing to occur. In no case shall the grant period exceed five (5) years.

II. Acquisition of Lands and Interests in Lands by States

All Forest Legacy acquisitions including the acquisition of lands or interests in lands, shall be made in accordance with Federal appraisal and acquisition standards and procedures. Partial interests in land acquired for Forest Legacy shall be adequate for Forest Legacy purposes and be perpetual. Title to such lands or interests in lands will be vested in the State or unit of State or local government. These lands or interests in lands will be managed and administered for goals consistent with Forest Legacy conservation purposes by State agencies or their assigns. The State shall be ultimately responsible for all administrative and other costs associated with the acquisition and management of lands for FLP purposes.

Where title is to be vested to the State, lands and interests in lands located within a FLA and within other Federal boundaries (e.g. national forest, national park, or national wildlife refuge) are eligible for the FLP.

If a State has passed legislation that extinguishes claims to or restrictions on real property, the State shall use all available authorities, including that of acting as an agent of the U.S., to achieve the purposes of section 7(K)(2) of the CFAA.

III. Reversion of Funds for Forest Legacy Inconsistency

In the event that lands or interests in lands acquired with Federal funding are ever sold, exchanged, or otherwise disposed of, and after notification of the FS, the State shall:

1. Reimburse the FS for the current market value in proportion to the original Federal investment; or

2. Substitute other lands or interests in lands of at least equal fair market value and of reasonably equivalent location, with public purposes that equal or exceed those of the disposed tract, with FS approval.

IV. Transition to State Grant Option Program

Once the State grant option is elected, if there are active cases in the State that predate the option and all parties (FS, State, and landowner) agree that a case should be completed by the State, then:

1. For Federal fiscal year 1996, the FS may provide a Federal grant to the State in an amount not to exceed the funds currently allocated for expenditure in the State for the FLP. If funds have already been obligated for a tract, the obligation may be voided and the funds transferred to the State in a grant at the request of the State;

2. For fiscal year 1997 and beyond, the State grant shall be determined as described in Part 1, Section VIII, Fund Allocation Process; and

3. To facilitate State acquisitions, the FS may provide the State with copies of any appraisals, appraisal reviews, title reports, option contracts and other pre-acquisition materials for lands which have been under negotiation by the FS within the State for the FLP.

Appendix G
Comments Received on the Draft Assessment of Need

Knapp, Steve

From: Bob Logar [blogar@mt.nrcs.usda.gov]
Sent: Monday, July 26, 1999 2:08 PM
To: sknapp@state.mt.us
Cc: blogar@mt.nrcs.usda.gov
Subject: Forest Legacy AON document

Hello Steve,

I had the pleasure and opportunity to review again the Forest Legacy Assessment of Need (AON) document. Some areas have little to no changes and other areas have been changed to address the concerns that myself and several others may have suggested some changes to. Bottom line is that an excellent job on the document and incorporating the needed changes.

I still have one concern that I feel needs to be mentioned in the AON document. It deals with the amount of forest land in a parcel. You have done an excellent job on defining what forest land is and establishing a minimum acreage limitation. One question that I feel needs further explanation is "How do you address a parcel that is not all forest land". Can you only enroll the forested acres or can you have an easement on the entire parcel? For example if a parcel has a riparian area or a hardwood woody draw that is offered, then can the entire parcel be enrolled or are only the woody draw acres eligible. This question can be raised also on parcels with a homesite that has been cleared of its trees and do you exclude those acres.

Well give this some thought. I suggest a paragraph or a further explanation of offerings not completely forested be addressed possibly within pages 58-61.

If you have any further questions or comments, feel free to contact me at 587-6836. Thank you for your time and cooperation.

Bob Logar
NRCS
State Staff Forester

Habitat Bureau - Wildlife Div.
Montana Fish, Wildlife and Parks
Po Box 200701 Helena MT

816 Cooper Lk Rd
Ovando MT
August 1, 1999

Great Falls Tribune

Comment sought on private forest plan

By Fish, Wildlife & Parks

Montana Fish, Wildlife & Parks is seeking comment on a document that assesses the need to conserve Montana's privately owned forestland. The document will be used to help Montana qualify for federal forest conservation funds.

FWP's "Assessment of Need" for Montana's Forest Legacy Program establishes goals and objectives, determines the eligibility criteria for lands to be included within the program, and establishes and describes six Forest Legacy Areas in forested locations across Montana.

The Forest Legacy Program is a federally funded conservation effort aimed at conserving forestlands by assisting with the purchase of conservation easements or fee-title purchase of private forestland. To comment, or to receive a copy of the program assessment of need, contact the Habitat Bureau — Wildlife Division, Montana Fish, Wildlife & Parks, P.O. Box 200701, Helena, MT 59620-0701, or call (406) 444-2612.

WHAT IS THE CONNECTION BETWEEN TREES AND THE WILDLIFE DIVISION?

Dear Agency:

This Article for Comment, written by an agency rather than a person, makes it clear why no one would want to claim authorship our Comment:

"No more State or Federal Bureaucratic agencies Please!"

Our situation: we have a small forest and the misfortune to have the "State School" section to the east of ours, The Helena National Forest (South), and The Lolo National Forest (North & East). Additional Misfortunes are a Creek and an irrigation Ditch (treated as a Creek) Crossing Our property. As you might guess, we have far more than our share of interference with our every move.

One instance: we wanted to make a pond - we have such interesting and varied "water" birds - Bureaucratic result "No"

another instance: Feb '98 we signed a contract with a Forester" to supervise removal of decadent, over mature, and Poor quality trees. The purpose: to improve the health and Vigor of our small forest.

Sept '98 Lincoln District Ranger

determined that the log trucks could not use 1/10 mile of FS Road #4106 (this to prevent contamination of "Dry" Creek). Someone said Dry Creek — Bull Trout — endangered Species. The fact that "Dry" Creek dries up west of here every fall, and the only fish (30 yrs) have been planted (cutthroat & Brook). The final 29 Page report - the obvious: "No Bull Trout - No Danger to Bull Trout;" but The USFS must be involved. July 29 '99 after 1 1/2 years we received the "road use" permit.

So far we have dealt with ① US FS ② USFWS ③ District Biologist (State) ④ USFWS fish Biologist ⑤ DNRC State forestry division. Such a waste of tax payer money! 29 Page report (with nothing) and so many People and agencies wasting time (1 1/2 yrs.) ⑥ State Fish and Game

No We Do Not Need Another Agency

In the same edition of the Tribune I found "The Cherry Creek Management By Poison" discussed: Ted Turner and FWP together planning to poison off Native Trout, so Mr Turner can have only Cutthroat in his Stream

Montana is a Mining, Logging, farming and Ranching State - one by one the "tree huggers are ruining each industry, in my opinion.

I am copying this to Senator Conrad Burns, Representative Rick Hill and Senator Max Baucus

Thank you for Listening

Betty L. McRae

THE WILDLIFE SOCIETY
MONTANA CHAPTER

John Vore, President
490 N. Meridian
Kalispell, MT 59901
Phone: (406) 751-4588
FAX: (406) 257-0349
e-mail: jvore@digisys.net

August 6, 1999

Mr. Steve Knapp
Montana Fish, Wildlife & Park s
Wildlife Division
Forest Legacy Comments
P.O. Box 200701
Helena, MT 59620-0701

Dear Mr. Knapp:

I am writing on behalf of the Montana Chapter of The Wildlife Society in support of the Forest Legacy Program in Montana. The Wildlife Society is an international, non-profit, professional association for wildlife biologists and managers. The Montana Chapter includes more than 375 managers, researchers, educators, and private individuals that live and work in our state. Our mission includes advocating the cultural values of wildlife resources; promoting sound stewardship of these resources; advancing the science and art of wildlife management; and maintaining high professional standards.

The conversion of Montana's forestlands to subdivision and development is having a significant impact on Montana's forest wildlife habitat. For the past several years our membership has identified subdivision as the number one threat to Montana's wildlife. And just last March, The Montana Chapter was a primary sponsor of a symposium on open space at which Governor Racicot was a speaker. These private forests sought by developers are not only the most productive wildlife habitats; many are also the most productive timberlands as well. Low elevation, valley bottom or foothill forests, provide winter range for big game and contain productive riparian and wetland habitats. Consequently, they have high levels of habitat diversity. It is no wonder people in Montana and our nation are gobbling up these lands. The Forest Legacy Program seems to provide an excellent opportunity to protect these lands that provide not only vital wildlife ranges but also provide the many other public values that you mentioned in your assessment.

Once people move into these forested habitats, they will create persistent human-wildlife problems and then rely on government agencies to resolve the problems they have created. These include conflicts with grizzly bears, black bears, mountain lions, deer and elk. It often appears to the newcomers that these animals are taking something from people. In fact, the reverse is true. As the number of people increases, local wildlife populations are usually reduced to accommodate the change.

This is no small issue, particularly in western and southwestern Montana valleys where conversion of forestland is happening at an alarming rate. Your Assessment of Need did an

excellent job of identifying the extent, geographic distribution and demographic trends that are currently affecting Montana's wild lands and open spaces.

Subdivision of forestlands also reduces some of the most accessible open space near our communities as well as overall public recreational opportunities. We are fortunate in Montana; most private large-tract or corporate landowners allow public use. As these forests are sold into smaller and smaller parcels, the new residents nearly always put a stop to this traditional public use. This gradual reduction in local recreational opportunities concentrates recreational use on our public lands which increases impacts to important public resources and makes it more difficult to manage public wildlife populations through regulated harvests. It also directly affects families that have recreated on these lands for several generations.

The Montana Chapter of The Wildlife Society fully recognizes that Montana is growing and people need space and a place to live. But we should grow in areas with the least impact to our sustainable natural resources. In the absence of statewide planning and zoning ordinances, The Forest Legacy Program will help citizens of Montana identify and protect our most important forest resources. Montana has several government and private organizations with active conservation easement programs. Forest Legacy offers an excellent opportunity to work in partnership with these other programs to continue this important work in our state.

Montana Fish, Wildlife & Parks is the obvious agency to lead this effort. I'm sure that Governor Racicot recognized your active land conservation programs as evidence your agency's ability to lead this important program in our state. We enthusiastically support the Forest Legacy Program in Montana and Fish, Wildlife and Parks' leadership of the program.

Sincerely,

John Vore, President
The Wildlife Society
Montana Chapter

FLATHEAD WILDLIFE, Inc.
P.O. BOX 4
KALISPELL, MONTANA 59903

RECEIVED
AUG 11 1999
FISH, WILDLIFE, & PARKS
DIRECTOR'S OFFICE

August 7, 1999

RECEIVED

Pat Graham, Director
Montana Department of Fish, Wildlife and Parks
P.O. Box 200701
Helena, MT 59620-0701

Dear Pat:

Flathead Wildlife would like to go on record as thoroughly endorsing the Forest Legacy program.

Sportsmen of western Montana have long taken the use of private forest lands in this area for granted. We have been fortunate to have been allowed to use many of these lands, especially corporate forest lands for all forms of recreation, without cost. But times are changing. More and more of these lands are being sold and subdivided into smaller parcels. This eliminates public recreation use. The development of these forest lands into small sites along with roads, home sites and accompanying development, is usually adverse to wildlife populations. In addition, it seems every rural landowner needs to have free roaming pets which cause additional impacts on wildlife.

These negative impacts on private lands also impart adjoining public lands. The conversion of good commercial forest land into home sites also reduces the timber lands which are needed to sustain our local timber industry.

While we respect the rights of forest land owners to convert their property to more profitable uses, that conversion can be detrimental to our way of life and the environment. Therefore the Forest Legacy program seems an ideal program to keep our forests producing timber, wildlife and recreation for the general public.

We believe the 110,000 acre figure cited on page 5 may be conservative. As you know the State and PCTC are already working on a 168,000 acre conservation easement for forest land in the Thompson and Fisher drainages. The use of the 110,000 acre figure may underestimate the total acreage owned by PCTC which may need protection through a conservation easement. PCTC owns about 1.5 million acres, most of which is used by the general public for recreation.

Again, we would like to endorse the Forest Legacy program.

Sincerely yours,

Warren Illi

Warren Illi
President

montana wildlife federation

The Wealth Of Our Nation Is In Its Natural Resources
Preserve It By Conservation, Not Conversation

FLATHEAD WILDLIFE INC. MONTANA

James Phelps
2110 Bradbrook Court
Billings, Montana 59102

August 12, 1999

Montana Fish, Wildlife & Parks
Wildlife Division
Forest Legacy Comments
P. O. Box 200701
Helena, MT 59620

Sirs/Madams:

Please consider my comments upon the **Forestry Legacy Program Assessment of Need** document.

I support the concept. To my mind, a program of this kind, and its attendant goals and objectives is long overdue. We in Montana have found it difficult ever envisioning a time when open space became a premium. But it's here.

With regard to dividing the state into the several different "forest legacy" areas - six, to be exact - this makes sense. We do have timber in Montana other than in the West. Ours (as pointed out in the document) in the East is vastly different, but it provides (for the southeast FLA, see page 113 of the draft) many public benefits. I am glad to see these listed and do not want anyone to lose sight of these when the program becomes reality.

When "implemented," - a good bureaucratic word - look at the islands and meanders in the flood plains of our prairie rivers, which for the "southeast" means the Tongue, the Powder, the Big Horn, the Musselshell, the Yellowstone, and - yes, some - the Clarks Fork of the Yellowstone. We need to protect these from further development. Of course, much has been taken for irrigated agriculture, but most of the good stuff is developed. I still lament the loss of the "bottomland gallery forest," along the Yellowstone River between Miles City and Forsyth, cleared for agriculture in the 1970s.

Oxbows and islands have cottonwood, a key species, and I urge these be included in the program. There has been some cutting of cottonwood for lumber - it's used for casket liners, for instance, plus linings or chipping for pulp, I understand - but I believe the value of cottonwood for wildlife and for open space far outweighs any other purpose.

Thank you.

Sincerely,

James Phelps

JAMES PHELPS

Yellowstone Valley Audubon Society
P.O. Box 1075 Billings, Montana 59103-1075

August 12, 1999

Department of Fish, Wildlife & Parks
Wildlife Division
Forest Legacy Comments
Post Office Box 2000701
Helena, MT 59620-0701

Dear Sirs:

Please consider our comments upon the "Forest Legacy Program Assessment of Need Document."

Yellowstone Valley Audubon Society is a local chapter of the National Audubon Society and Montana State Audubon. YVAS is one of nine Audubon Chapters within the state of Montana. Our chapter's membership includes over 530 members living in the area described by the name of the Chapter and -- you will note --coincides with the "Southeast Forest Legacy Area."

YVAS members believe the "Forest Legacy" program is long overdue and also believes that the Department of Fish, Wildlife and Parks is the logical agency here in Montana to administer the program for maximum potential and effectiveness. Our members believe you will make a good faith effort to listen to all segments of the public and then make the necessary and proper decisions.

YVAS appreciates the flexibility outlined for the source of the non-federal matching funds. If we read this correctly, such sources can come from any place. We approve of this method believing that it will give an incentive to conservation-minded organizations and individuals as well as local and state governments to contribute to the program.

We prefer fee title because it is permanent, but given the political climate, easements are the next most acceptable method. Wherever possible, however, we urge permanent easements be obtained under the observation that if we don't get easements now, the next generation will find them unavailable, clouding the long range future of the Forest Legacy program.

It should be noted, critically, that the maps were not of much help. We need to know specific locations and this is often not possible. Alternatively, we also know that locations ought to be protected. Perhaps site locations and their protection will be possible after the program is in operation.

As pointed out above, a principal concern is the "Southeast FLA." It may not look like much, but when the stumpage prices soared some time back, there was a lot of "jackpine" ponderosa cut.

One of our major concerns is cottonwood. Do not overlook it. The cottonwood forest always under severe pressure is the source of valuable wildlife habitat as well as desirable livestock grazing. We believe much of the cottonwood forest ought to be protected against any form of "development" one way or another and that the Forest Legacy Program is the best way to do this.

Very truly yours,

Robert Lubbers,
President,
Yellowstone Valley Audubon Society

1125 Whispering Pines
Bigfork, MT. 59911
(406) 837- 1363

August 13, 1999

Montana Fish, Wildlife and Parks
Wildlife Division, Forest Legacy Comments
P.O. Box 200701
Helena, Montana 59260

The Montana Forest Stewardship Steering Committee supports the Forest Legacy Program Draft Assessment of Need (DAON) and the Forest Legacy Program Project Development Process paper. In general, the Stewardship Steering Committee believes these documents will provide guidance to effectively use future Federal Forest Legacy funds as another tool to help maintain the open space and associated public benefits provided by productive private working forests.

During the review process, the Committee identified a few concerns in the draft documents for which we would like to receive an explanation in writing or the draft documents changed to address our concern:

- The Montana Forest Stewardship Steering Committee believes it is appropriate to require Forest Stewardship Plans for private landowners, or multi-resource management plans for corporate lands in order to be eligible for Forest Legacy program funds as stated on page 58 of the DAON. We are concerned that the USFS Forest Legacy Program Implementation Guidelines included in the DAON Appendix F, states on page 9, X, item 2, "A plan is not needed if the landowner does not retain the right to harvest timber or conduct other land or resource management activities, or if the lands are sold in fee." Are we correct in our belief that the Eligibility criteria as stated in the main body of the document on page 58 will provide the legal screen for all Montana applications and that a landowner who wants to sell in fee or obtain an easement specifying no management with no plan will not be eligible under the Montana Legacy Program?

- What is the legal liability to members of the Montana Forest Stewardship Steering Committee? Can our members be sued for actions taken in administering the Legacy Program as outlined in the DAON and Project Development Process?

- We recommend that a representative of MT DNRC be added as key agency required to review all applications against the Eligibility Criteria in Step 3 of the Forest Legacy Program Project Development Process.

The Montana Forest Stewardship Steering Committee appreciates the efforts of all those who contributed to the draft documents. We stand ready to do our best to carry out our role in ensuring the Forest Legacy Program produce public benefits for all Montanans.

Sincerely,

Fred D. Hodgeboom

Fred D. Hodgeboom, Chairman
Montana Forest Stewardship Steering Committee

CC: MFSSC members
Alan Wood, FWP Kalispell

Knapp, Steve

From: Jack & Hariet Rupe [chr2873@montana.com]
Sent: Friday, August 13, 1999 12:35 AM
To: sknapp@state.mt.us
Cc: hodge@cyberport.net
Subject: Commjent on "Forest Legacy Program Assessment of Need Document"

Montana Fish, Wildlife and Parks, Wildlife Division, Forest Legacy Comments:
Mr. Alan Wood:

Sirs: In accordance with your request of 16 July 1999 wherein you are solisiting public comment on the subject document, I hereby make the following observations/comments.

(1) It is my personal view that you have failed to make a case for the ***NEED*** for the program outlined in the subject document to be implemented in Montana. Your document is a very valuable and comprehensive compilation of data on the forests of Montana and as suich will be invaluable to anyone working in forestry in our state. Particularly to those addressing the meaning and means of establishing sustainable forestry in Montana. However, in my perusal of this information I failed to find statistics supporting ***NEED.*** For example, particularly in the Executive Summary, I would have expected to find something like the following. To wit -

- _____,000 acres of Montana forests are being diverted to non-forest uses each year.
- If the entire private forest base were lost, over time, (23% of the non reserved forest land in the state of Montana) approximately 4.4 million acres would be lost to non-forest uses.
- The Forest Legacy Program will, when fully implemented, stem this tide by diverting _____,000 acres annually to conservation easements which will be placed under control of the U.S. Forest Service.

Obviously these numbers have to be documented (and it is possible they can be found in the document) but the point is the need can be established only if it is shown that this new program will have an impact on the declining forest base.

(2) It is in my view difficult to understand how several million acres (ie a significant fraction of the private forest base) can be placed under easement when the Forest Service restricts the eligible lands to those that have certified plans -- approximately 416,273 acres.

(3) It seems to me that placing these easements under Forest Service control may be somewhat disingenious since they are already under fire from several different quarters for their policies relating to conservation on the some 10 million acres they already control

(4) With regards to the role of the Stewardship Committee as the evaluation, selection, and awards committee, I believe this is asking too much of this volunteer body. Particularly when the criteria and procedures as set down by the Forest Service are couched in language that is taken directly from their procurement manual for multi-million dollar contracts. One can argue that there will only be a "few" (out of 80,000 parcels) such judgements to make in any one year, but if that is the case then the tide will not be stemmed. It is conceivable that this committee could serve as a steering committee for a contractor who would be responsible for this function - much as it does for the Stewardship Program.

(5) I know it is just a "pick", but the authors statement on page 46 that "Poor forest genetic and forest health practices could be improved as more lands are brought under stewardship plans." is just not true. A plan does not do this! It is only when the plan is implemented that good things can be made to happen. And even in that case good things will not happen unless the implementation includes sustainable forestry practices.

Thank you for the opportunity to comment on the "--- assessment of need document".

Jack H. Rupe
4500 Moiese Valley Rd
Moiese, MT 59824
email: chr2873@montana.com

MEMORANDUM

TO: Steve Knapp **DATE:** August 13, 1999

FROM: Jim Darling

SUBJECT: Forest Legacy Program

Dick Ellis asked that we encourage an emphasis upon riparian areas as part of this program. In Region 5, we have witnessed excessive logging of cottonwoods on some private lands along the Yellowstone River. Also, the need to preserve a healthy riparian buffer has been demonstrated by the public and interagency debate about the cumulative impacts of extensive riprap and channelization along the Yellowstone River. Seeking conservation easements with private holders of valuable riparian land could be a valuable tool in helping to resolve these problems. The same arguments and concerns apply on a smaller scale to other streams within this region.

C: Dick Ellis

Billings, MT
Aug 14, 1999

Mt. Dept. FWP
Wildlife Div. Forest Legacy Comments
P.O. Box 200701
Helena, MT 59620
attn: Stephen Knapp

Dear Stephen:

My following comments are based on the Executive Summary of the Forest Legacy Program Draft Assessment of need.

This is a good program to increase wildlife habitat and I support it. However, since public money would be involved, public access for hunting, fishing and other recreational activities that are compatible with forest/wildlife management must be allowed.

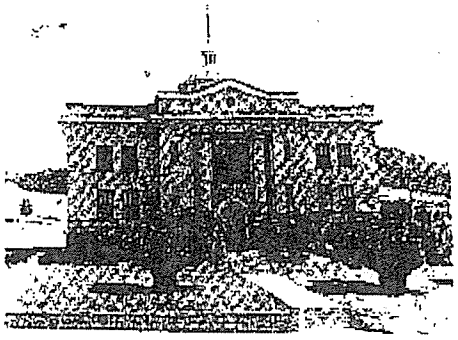
If the above activities are not compatible, then public access through the private forest areas to any public lands must be allowed.

A public hearing in Billings should be scheduled.

Please date all documents!

Thank you for the opportunity to comment

Sincerely yours
Paul F. Berg
3708 Harry Cogan Place
Billings, MT 59106-1025
656-2015



AUG 16 1999
FISH, WILDLIFE, & PARKS
DIRECTOR'S OFFICE

Office of
The Board of County Commissioners
Granite County

COMMISSIONERS
ALLEN A. MORRISON, CHAIRMAN
5990 HIGHWAY ONE
PHILIPSBURG, MT 59858
FRANK WALDBILLIG
P.O. BOX L
PHILIPSBURG, MT 59858
EARL A. MARTIN
BOX 408
DRUMMOND, MT 59832

OFFICE TELEPHONE
(406) 859-3771
OFFICE FAX
(406) 859-3817

Post Office Box 7
Philipsburg, Montana 59858

August 16, 1999

Pat Graham
c/o Forest Legacy Program
Montana Fish, Wildlife and Parks
1420 E. 6th Avenue
P.O. Box 200701
Helena, Montana 59620-0701

Dear Pat,

We have received a copy of the Montana Forest Legacy Program Assessment and are deeply concerned about every aspect of this proposal. Granite County is very active in the management of natural resources within the county, and in May of 1994 implemented the Granite County Natural Resources Land Use Plan. This action provided the County with dual sovereignty with land management agencies operating within the boundaries of Granite County. Any resource management agencies operating within the County that utilize federal funds must include Granite County from the very beginning of any new proposals. The Granite County Land Use Planning Council is the initial body to review any proposals, and provide direct comment to the Granite County Commissioners for interactions with resource management agencies. The Land Use Planning Council has reviewed the proposals presented by the Montana Forest Legacy Program and we concur with the opinions provided below.

Nearly two-thirds of the lands within Granite County are currently administered by federal resource management agencies. We simply cannot and will not support a program that seeks to remove additional private lands from the County. We realize that this effort supposedly leaves land resources in private ownership and provides for conservation easements or fee simple purchase of private property rights, but the end result is unacceptable. According to information recently provided by the U.S. Forest Service, ranching and timber related industries account for 84% of the private sector economic activity. This program will have a disastrous impact on the industries that provide the foundation for the Granite County economy. Tax revenues will be decreased, economic activity for businesses within the County will be decreased, and the custom and culture of Granite County will be irreparably damaged. This proposal amounts to a federally funded reduction in private property rights for Granite County citizens, and we will not support

this effort. Additionally we will pursue every avenue to assure that this program does not take place within Granite County.

Another aspect of the program that is deeply troubling is the expenditure of federal funds to acquire additional resource management responsibilities, when the current demands are not being met. The Forest Service is unable to meet the demands of resource management on the lands currently in the areas of monitoring management strategies, inventory of resources, and meeting Forest Plan objectives. It is totally inconsistent with good resource management to acquire new responsibilities, when current responsibilities are not being met.

We cannot support this program as it is fiscally irresponsible and not consistent with good resource management. Do not plan to include any lands within Granite County in this poorly conceived idea.

Sincerely,
Granite County Board of Commissioners

Allen A. Morrison
Allen A. Morrison
~~Chairman~~

Frank Waldbillig
Frank Waldbillig
Chairman

Earl Martin
Earl A. Martin

DIRECTOR'S OFC REQUEST FOR RESPONSE

TO: Region 2 Supervisor

DATE: 8/17/99 (faxed) **RE:** Morrison/Waldbillig/Ma

Please prepare a double spaced, draft response utilizing the forms provided electronically:

✓ **Director:** !ltrpg.frm or !memopg.frm

___ **Chief of Staff:** !ltrcs.frm or !memocs.frm

___ **Chief of Operations:** !ltrao.frm or !memoao.frm

___ **Governor:** !ltrgov.frm

E-mail the draft response to the Director's Office (Betty Johnson or Marie Rauch) using: Ref:DO 0797-99 and forward any attachments to DO by 8/24/99

Thanks. Your timeliness is greatly appreciated!

Ref:DO0400.99

C: Wildlife - FYI

Montana Fish Wildlife & Parks

THE CONSERVATION FUND

August 16, 1999

Mr. Steve Knapp
Montana Fish, Wildlife and Parks
Wildlife Division – Forest Legacy Comments
P.O. Box 200701
Helena, MT 59620

Dear Steve

I have thoroughly reviewed the draft Assessment of Need (AON) for Montana's Forest Legacy Program that David Rockwell and Jim Beyer prepared, and I wanted to be sure and express the strong support of The Conservation Fund for the program.

The Conservation Fund wholeheartedly endorses the state's overall approach to the program in establishing six Forest Legacy Areas for the program in Montana. Further, there is excellent rational in the AON for the need for the Forest Legacy Program in the State of Montana, something the Fund deems absolutely critical

Our organization is very supportive of having the Montana Fish & Wildlife & Parks as the lead agency for the Forest Legacy Program in the state. MTFWP has an excellent track record of utilizing easements for the protection of forest lands and wildlife habitat, and it is well positioned to administer this statewide program.

Thank you for the opportunity to comment on the draft Assessment of Need and Forest Legacy in Montana. The Conservation Fund looks forward to continuing its role on the Forest Legacy Steering Committee and the development of the Forest Legacy Program for the State of Montana.

Sincerely,

Mark W. Elsbree
Northwest Representative

CC: Mr. Alan Wood, MT FWP
Mr. John F. Turner, President, The Conservation Fund

FAX 406-444-4952: Forest Legacy, % Stephen Knapp
MT Fish Wildlife & Parks Wildlife Division Forest Legacy Comments
P.O. Box 200701,
Helena, MT 59620

Dear Mr. Knapp:

I have read the *Montana Forest Legacy Program Assessment of Need* and found it factual in every detail.

The Montana Department of Fish, Wildlife and Parks (FWP) is the ideal agency to administer the Forest Legacy Program because of its well over half-a-century experience managing conservation easements and fee-title acquisitions. Furthermore FWP demonstrably represents the widest array of public interests than any other state department which deal with natural resources!

In addition, FWP has extensive experience dealing successfully with the U.S. Forest Service, which is no small accomplishment.

Sadly, Montana is quickly changing its face from the place we like to the place where out-of-state money is rapidly devouring our landscape, private *and* public as our population burgeons. This sorry situation is aided and abetted by numerous state agencies.

The Forest Legacy Program is a terrific idea long overdue, which will function very well indeed under the stewardship of FWP. It obviously will be an excellent investment with minimal expense to the state itself.

I urge you to approve FWP's participation with all due speed!

Sincerely,

Robert E Carroll & Family
801 Knight St
Helena, MT 59601-2669

United States Department of Agriculture | Forest Service | Region 1 | 200 East Broadway
P. O. Box 7669
Missoula, MT 59807

File Code: 3200

Date: August 17, 1999

Mr. Steve Knapp
Chief, Wildlife Habitat Bureau, Montana Dept. of Fish, Wildlife, and Parks
P.O. Box 200701
Helena, MT 59620

Dear Steve:

We have completed our review of the second draft of the Montana Forest Legacy Program Assessment of Need (AON). These are the consolidated comments of our agency, including the Northern Region and the Chief's Office. Our comments are as follows:

General

1. All of our comments on the first draft have been addressed.
2. In Chapter IV, we recommend having two subsections.

   a. Land Trusts, etc.; b. Agency conservation easement programs. This second subsection could include Montana FWP; US F&W; and NRCS's Farmland Protection Act--which is not included in the current draft.
3. This draft addresses all of the Assessment of Need national guidelines.

Specific

1. Figure 1 identified all counties. It would be desirable to do likewise on all the other maps.
2. Figure 24 needs a legend for private forest lands.
3. For the final AON, you are aware that the last two paragraphs on page 116 would be replaced by incorporating and summarizing public comments and how they were used. We also recommend including all public comments in the Appendix--similar to the Indiana AON.
4. We also recommend inclusion of a "Landowner Inspection Consent Agreement" form in the Appendix, similar to the one in the Indiana AON - Appendix B-2.
5. There appears to be a discrepancy between Figures 39 and 40; i.e. more shaded areas (forest land?) along the Missouri River in Figure 40 downstream from Ft. Peck. Both maps need legends.

This concludes our comments. You have done an excellent job in developing the AON to this point in such a short time. Please thank everyone involved.

Sincerely,

Glenn A. Roloff

for WILLIAM W. BOETTCHER
Director
State and Private Forestry

cc:
Alan Wood, Montana Dept. of FWP, Kalispell
Ted Beauvais, Cooperative Forestry Staff, WO
Glenn Roloff, CFFHP, R1

DEPARTMENT OF NATURAL RESOURCES
AND CONSERVATION
2705 Spurgin Road, Missoula, MT 59804-3199
(406) 542-4300 Telefax (406) 542-4217

MARC RACICOT
GOVERNOR

STATE OF MONTANA

DIRECTOR'S OFFICE (406) 444-2074
TELEFAX (406) 444-2684

Memorandum

To: Steve Knapp, FW&P

From: C. Tootell, DNRC

Date: August 18, 1999

Re: Comments on AON

Steve:

Thank you for the opportunity to comment on the AON.

I am grateful that we require plans for all competing proposals. Page 58 "3. Planning" says that an eligible property must have one of the two plan types that listed in the national criteria. Though the national implementation guidelines don't require plans for lands 'non-management' scenarios, it is important that the goals and objectives of passive management be expressed by the landowner. That expression projects the landowners desires into the perpetual future and gives the selection committee information to help prioritize the land parcel.

I am also pleased that "Traditional Forest Uses" is listed as a co-equal public value (page 58) with the other seven values listed in the national guidelines Appendix F, page 4. For some unknown reason, "Traditional Forest Values" is somewhat segregated from that public values list. That is unfortunate because it sends the message (intentional or otherwise) that the economic well being of a timber dependent community is not a public value.

Here are some suggestions and questions.

- Please add to the list of Goals and Objectives on page 56: "Sustain Healthy Tree Resources".
- Forth line from the bottom of page 58 needs a semi-colon (;).
- Add the following two criteria to "Ecological values:" on page 59
  1) Area contains tree species whose range or abundance is threatened by pathogens.
  2) Area contains tree species that are rare or unique to the State of Montana.
- Please add to "Management of surrounding lands and manageability:" page 59 the following criteria: "Area is weed free or noxious weed control is addressed in the Stewardship or Management Plan".

How will you assess the second criteria on page 59: "Neighbors and the local community support the project."?

I have discussed some of this with Alan Wood, so he will be able to give a little more background to these. I, of course, would be happy to discuss them with you.

My apologies for being a day late. I'm also a dollar short.