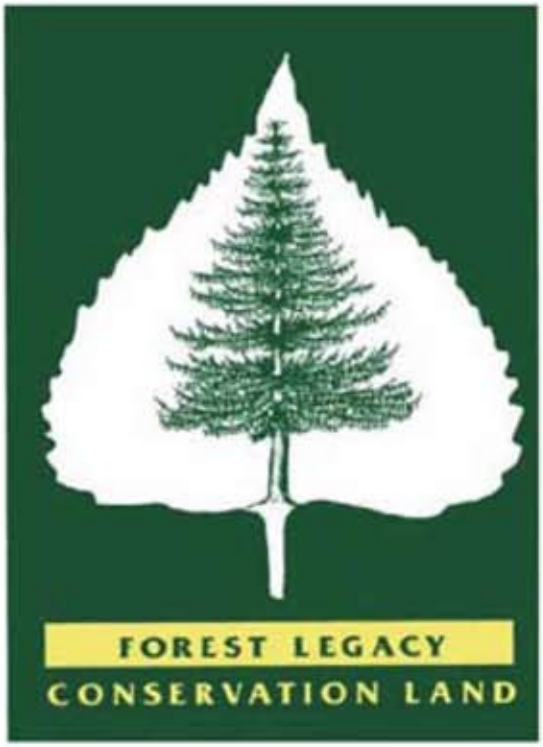
COLORADO STATE-WIDE FOREST LEGACY ASSESSMENT OF NEED FIVE YEAR REVIEW



Colorado State FOREST SERVICE

Colorado State Forest Service
Fort Collins, Colorado 80523-6010

Cooperatively Funded By:

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Presented to:

Colorado State Forest Service
Fort Collins, Colorado 80523-6010

July 25, 2001
Original Assessment of Need

July 20, 2006
Five Year Review

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Introduction

The Forest Legacy Program (FLP) authorizes the USDA Forest Service or state governments to purchase permanent conservation easements on private forest lands to prevent those lands from being converted to non-forest uses. The forest lands that contain important scenic, cultural, recreation resources, fish and wildlife habitats, water resources, and other ecological values that will support continued traditional forest uses receive priority. Those landowners who choose to participate in the program are required to follow a stewardship plan designed for their forest. Activities consistent with the management plan, including timber harvesting, grazing, and recreation activities, are permitted.

For Colorado to participate in the FLP, the Colorado State Forest Service (CSFS) through the State Forest Stewardship Coordination Committee (SFSCC), was identified by the Colorado State Governor as the lead FLP agency in 2000. The first task was to produce an Assessment of Need (AON) in 2001 to determine the need for such a program. This document contains a background of Colorado, an overview of the tasks performed, and descriptions of each Forest Legacy Area (FLA), as well as project selection criteria.

The purpose of the Forest Legacy Program is to protect environmentally important private forest areas that are threatened by conversion to non-forest uses. Specifically, the FLP in Colorado will emphasize:

1. **Reduction of forested land fragmentation as a result of development pressures, subdivision, and increasing housing density.**
2. **Protection of water quality and production amounts.**
3. **Protection of significant wildlife habitat.**
4. **Protection of economically significant timber forest products through positive forest stewardship programs.**
5. **Protection of significant riparian communities.**
6. **Maintaining continuity of forested lands adjacent to protected lands.**
7. **Protection of unique ecological areas**.
8. **Reduction of risk and occurrence of wildfires especially in developed areas or ecologically sensitive areas**.
9. **Protection of private property owner's rights.**
10. **Protection of lifestyle for property owners.**

These ten criteria were developed through a survey conducted as part of this AON. The survey is meant as a means to assess and include stakeholders' interest in the FLP for Colorado and for identification of Forest Legacy Areas (FLA's) within the state.

Section 1 of this document presents information pertaining to the historical, cultural, physical, biological, and ecological elements of Colorado, all of which influence Forest Legacy Program implementation.

Section 2 presents the Forest Legacy Area (FLA) boundary methodologies, including generation of the Primary Forest Conversion Map to identify areas in Colorado that are in danger of conversion from traditional forest uses, followed by gathering of information from landowners, natural resource agency personnel, and other stakeholders as to what they felt were important criteria for the protection of privately owned forests.

Section 3 identifies eight FLAs throughout Colorado where protection efforts provided under the Forest Legacy

Program should be applied when Colorado is accepted into the program. For each of the eight FLAs, this document (1) identifies area coverage description, (2) specifies Forest Legacy protection goals, and (3) describes topography, ecology, recreation, water, and other resources.

Included in Section 4 are SFSCC project selection criteria for inclusion in the FLP along with procedures to implement the FLP.

Section 5 lists the numerous land trust organizations already in existence in Colorado.

STATEMENT OF PURPOSE

Colorado is made up of a wide range of elevations, from striking 14,000-foot peaks, down to high mountain valleys and vast expanses of croplands. Colorado is also comprised of varied environmental landscapes, high alpine meadows, spruce-fir forests, lodgepole and ponderosa pine forests, aspen meadows, mountain deserts, lush riparian areas, and shrub and grass prairies.

This diverse and beautiful landscape coupled with a wide base of recreation opportunities, strong economy, and high quality of life has led to a great influx of new residents to Colorado. With a population increase of 30.6%, Colorado was the third fastest growing state in the United States of America between 1990 and 2000 (US Census). This immigration along with many residents' desire to move out of developed urban environments in the Front Range poses a threat to currently undeveloped land including those traditionally covered by forests. As increased subdivision and development of forested areas continue, numerous impacts occur or are possible in the near future.

Fragmentation of traditionally large forested areas leads to declines in quality habitat for wildlife and eventually displacement of the wildlife. Additionally, historically significant environments such as riparian areas and unique flora and fauna communities are lost through development. With this increased development comes new roads and infrastructure that can threaten water quality.

Development pressures on forested lands have direct impacts on more human related values as well. Many landowners find it hard to resist offers from developers to sell their land. Large forested areas, which had traditionally been in one family's ownership for many generations, are suddenly chopped up into numerous 35-acre or smaller parcels with houses, fences, and roads. This increase of housing density leads to more impacts from catastrophic wildfires. More landowners of smaller parcels lead to less access of traditionally commercial timber stands and less active stewardship management. Additionally, smaller parcels lead to more barriers of opportunity for possible inclusion into conservation easement programs or inclusion into local, state, or federally protected lands.

This Five Year Review of the Assessment of Need for the Forest Legacy Program in Colorado evaluates the current condition and use of privately owned forests in Colorado in 2006. Results of the values and attitudes regarding private forests identified by stakeholders in the 2001 AON were used with updated, or reformatted data, when available, representing conditions in 2006. Those criteria were used to support the existing eight Forest Legacy Areas (FLAs) in Colorado and to expand two of those FLAs to include areas that were not valued as highly in the 2001 AON. The addition to the geographic boundaries of these FLAs represents a small increase in eligible area due t the small amount of private forest lands relative to the large amount of public forest land in those areas. The conservation of these private lands, which are in conjunction to huge expanses of public forestlands, helps maintain the functioning forested landscape. The CSFS and SFSCC are recommending those eight FLAs for continued inclusion in the FLP along with the 26 criteria identified in 2001 by which nominated projects will be graded and ranked for enrollment in the FLP.

SECTION 1: STATE OF COLORADO BACKGROUND INFORMATION

Cultural Heritage

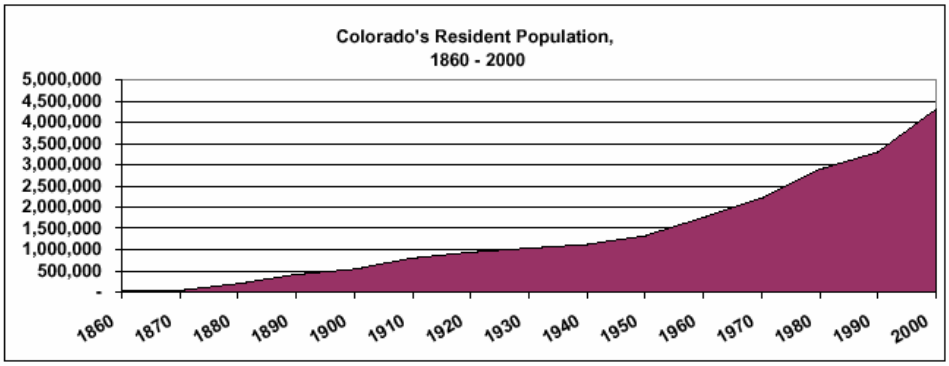
Long before Colorado received statehood in 1876, humans inhabited the land and rich cultural and historical events occurred. Hundreds of archaeology sites across the state, both Native American and Euro-American, uncover artifacts from at least 12,000 years ago to the end of the last Ice Age. The Great Plains have a substantial archaeological record providing unique information about prehistoric and historic people who lived in the region. Archaeologists hypothesize the most uninviting areas of Colorado, the alpine tundra regions, were used by humans at least 7,000 years ago.

Southeastern Colorado and the San Luis Valley currently provide the greatest number of projects requiring archaeological survey. The earliest visitors to Curecanti Recreation Area in the Upper Gunnison River Basin were most likely large game hunters and gathers. This Native American presence occurred as early as the Paleo-Indian traditions up to 10,000 years ago. Until the European explorers first arrived in the 18th and 19th centuries, the natives spent only part of each year in the high country because of the cold winters and limited growing season.

Present day Colorado represents many cultures and backgrounds. The 2000 census estimated the state's population at 82.8% white, 17% Hispanic or Latino, 3.8% African American, and 2.2% Asian, with the remainder falling into the categories of Pacific Islander, American Indian, Alaska native, or 2 or more races (percentages do not total 100 because individuals may report more than one race).

Population

Demographic shifts throughout Colorado have been significant over the past several decades. During the 1960's, the resident population began increasing at a substantial rate as compared to the previous decades when growth was not nearly as notable. According to the U.S. Census Bureau, the population change from 1990-2000 was 30.6% for Colorado but just over 13% for the country. Since 1960, the state's population has more than doubled from 1,753,947 to the current population of over 4,300,000 people, with the median age at 34.3. These figures place an average of 41.5 people per square mile in Colorado.



With almost half the total population of the state residing in the Front Range Corridor (along I-25, from Fort Collins to Pueblo), developmental pressures do exist. Denver, the largest and most sprawling metropolitan area in Colorado, and its surrounding counties (Jefferson, Douglas, Arapahoe, Adams, and Boulder), is situated just east of the Rocky Mountains. Many of the Front Range counties have seen population increases from 30% to 191% from 1990 to 2000. Growth trends in the populace seem to favor urban over rural areas, however the above information from the 2000 census does not include this type of data. We do know, however, that the Front Range is the primary population influence in Colorado, harboring more than 85% of the human population.

Although growth in Colorado is considerable, conservation and sustainable development plans implemented for varying needs and goals can help curtail the inevitable consequences of growing populations within a finite land. Projections of the future resident population growth of most counties in the state are high, therefore a conservation plan such as FLP should be considered.

Land Ownership and Use

Of the 66.6 million acres in Colorado, 24.6 million acres (37%) are managed federally, 3.3 million (5%) are managed by the state, and 38.7 million (58%) are privately owned (Colorado Division of Government, 1996). Lands federally managed by the Forest Service, Bureau of Land Management, Fish and Wildlife Service, and National Park Service have only slightly increased from the end of fiscal year 1964 (23,229,253 acres) through fiscal year 1993 (23,437,010 acres). Of the 1994 total acreage managed by these 4 agencies (23,455,115), 24.7% or 5,792,946 acres are managed for conservation. Twelve National Forests and two National Grasslands encompass a state total of 16 million acres mostly managed by the National Forest Service.

Nonfederal lands make up 42.2 million acres of Colorado, of which about 1.7 million is developed, 9 million is used for cropland, 1.3 million is pastureland, 23.6 million stands as rangeland, 5.9 million is forested, and the remainder is considered as minor cover/usage. Total farmland and rangeland has decreased by 22% between 1959 and 1997. Colorado's 3 million surface acres of state trust lands were given by the government to the state for uses such as support for common schools, ranching, farming, mineral, oil and gas production, and other uses. State Trust Lands are managed by the Colorado State Board of Land Commissioners, a division of the Department of Natural Resources. Many of these areas are off limits for general public recreational use, although the state manages 40 state parks involving 200,000 acres of land available for everything from rock climbing to fishing.

Economics

Since the days of fur trapping, buffalo hunting, and mining the Rocky Mountains, Colorado has experienced profound changes in the areas on which its economy depends. The recent past has produced significant economic growth and the forecast period until FY 2005-06 looks bright for most industries in the state. During 2000, employment increased by 3.9% as the number of jobs increased by 82,900. Colorado's average unemployment rate was at a record low at 2.7% while reaching a low of 2.2% in May 2000. Wage and salary income increased an estimated 10.9% as consumer spending also rose an estimated 11.5%.

Construction has been the main source of Colorado's recent boom, similar to the boom of the 1980's. According to the U.S. Department of Agriculture, between 1950 and 1999, the inflation-adjusted value of cash receipts from Colorado agricultural products increased 43.9%, representing a 0.8% annual increase (as compared to the national increase of 0.2% per year during this period).

Climate

Many elements influence the climate in Colorado. The Rocky Mountains are the largest factor in most areas of Colorado. An increase of 1000 feet in elevation translates to a temperature decrease of 3.6^{o}F. Cooler air holds less water than warmer air causing more precipitation to fall on the windward side of the mountains. Air is forced up, it cools, and the water vapor condenses and falls as rain or snow. Therefore, the humidity and precipitation are lower and winds more intense along the Eastern Slope as opposed to the Western Slope. The main ridge of the Rockies intercepts moisture coming from the Pacific Ocean.

Southeast Colorado's climate is warm and dry. Average annual maximum temperatures are close to 70^{o}F, and the average annual minimum temperature is approximately 37^{o}F. Average annual precipitation ranges from 11.95 to 15.11 inches. Total snowfall ranges from 23.5 to 42.3 inches on an average annual basis.

The climate of Northeast Colorado is also relatively warm and dry. Average annual total precipitation ranges from 12.91 to 18.1 inches. The average annual maximum temperatures are an estimated 65^{o}F, while average annual

minimum temperatures are around 35-36°F. Average annual total snowfall in northeast Colorado is lower than other regions in the state, although the range is similar to that of southeast Colorado.

Northwestern Colorado is, on average, cooler with more precipitation than northeastern Colorado. Average annual maximum temperatures in northwest Colorado range from approximately 60-64°F. Average annual minimum temperatures range from 24-31°F. The average annual total precipitation ranges from 11.63 to 13.82 inches, and the average annual total snowfall ranges from 40 to 57 inches.

Southwest Colorado's precipitation ranges between 17 and 24.5 inches on an average annual basis. Average annual snowfall can vary over a large range from 47 inches to more than 150 inches. Average annual maximum and minimum temperatures are lower in the Southwest. Maximum temperatures range between 52 F and 62 F, while minimum temperatures range between 18°F and 32°F.

Rivers and Water Resources

Water in Colorado's four main water basins comprises less than 1% or 371 square miles of the total area of Colorado. The Rio Grande River Basin, located in south central Colorado, is the smallest of the four basins at 7,700 square miles. Major tributaries of the Rio Grande include the Conejos and Alamosa Rivers. The Arkansas River Basin, located in southeast Colorado, drains 24,904 square miles and is the largest basin in the state. Its tributaries include the Fountain River and Purgatoire River. The Missouri River Basin is comprised of three smaller basins: the South Platte, North Platte, and Republican River Basins. They drain over 20,400 square miles of land. The Colorado River Basin drains 22,200 square miles and contains most of the Western Slope. Major rivers in the Colorado River Basin include the Animas, Dolores, La Plata, Blue, and San Miguel Rivers.

Colorado uses 13,800 million gallons per day (Mgal/d) of fresh water. Irrigation accounts for 92% of daily water usage with 10,700 Mgal/d drawn from surface water supplies and 2,020 Mgal/d drawn from ground water supplies. The next largest daily usage of water is for public use, although it accounts for only 5% of total usage. The majority of public-use water comes from surface water supplies.

Geology, Topography, and Soils

Surface features of the state's land are very diverse attributed to the three distinct geographical regions--the Great Plains in the east, the basins and plateaus in the west, and the Rocky Mountains rising to 14,000 feet at 53 peaks bisecting the state from north to south. All of this land rises well above sea level (the average elevation at 6800 feet), with Colorado's lowest point at 3350 feet where the Arkansas River flows into Kansas and the highest point at Mount Elbert (14,433 feet).

All of Colorado's rivers flow away from the Continental Divide, the division of eastern and western North America formed by the Rockies. A major hydrographic feature, the Divide directs water flow toward the Gulf of California on the Western Slope and toward the Gulf of Mexico on the Eastern Slope. Many rivers flow from Colorado, including one of North America's longest rivers, the Colorado River, which drains the western slopes containing about one-third of the land area of Colorado. The North and South Platte Rivers, the Arkansas, and the Rio Grande drain the eastern slopes in an array of complicated drainage patterns.

The Colorado Rockies occupy a restless geologic region that stressed and disrupted a weak crust about 30 million years ago forming the mountains of today. Glacial erosion shaped many mountains and valleys creating an ancient erosion surface that still exists on flat-lying sedimentary rocks in the high country. Several small glaciers remain tucked away in northern ranges. Landslides have deeply scarred mountainsides and wind-formed sand dunes exist in several intermontane valleys. These weathering and erosional forces continually alter surface topography, yet

Colorado's geology seems constant at a glimpse.

The Great Plains are underlain by layered rocks, shales, sandstones, and limestones covered by a short grass vegetation. Thirteen common rocks exist in Colorado (i.e. sandstone, basalt, granite, and quartzite), some of which contain unmistakable mineral groups that once were lava flows. Oil wells can be found all over the state indicating where ancient plants and animals once aggregated. In the northwestern part of the state ancient sea beaches once stretched and now mark potential locations for oil drilling in the future.

All geologic features, combined with climate, topography, vegetation, and animal activity, create complex patterns of soil distribution in Colorado. In general, soils differ from those of more humid regions by being lower in organic matter and higher in total plant nutrients. Colorado is home to many fossorial and den-producing mammal species that are distributed according to soil types (i.e. moles, ground squirrels, and prairie dogs). Agricultural areas are also restricted to certain soil types, for example, nearly all of the plains are covered by brown soils, producing valuable grasses for cattle grazing.

Agriculture

The Eastern Slope of the Rockies represents the center of agriculture and urban and industrial development in Colorado. Of the total land area making up the state (66.6 million acres), 16% is used as cropland (10,509,000 acres) with 3,430,000 acres irrigated. Of the 8.4 million acres of BLM public land, 95% is open to grazing. Farms and ranches make up 31,600,000 acres of land and rank in the top 10 in the nation for production of 37 products (2000 production data for crops and Jan.1, 2001, inventory for cattle and sheep). Proso millet, summer potatoes, and carrots are among the many crops produced in large quantities. Colorado market sheep, lambs, and cattle on feed are all 3rd in production for the country. Colorado agricultural cash receipts for 1999 were 69.3% from livestock products and 30.7% from crops.

Mineral Resources and Mining

Colorado's mining industry began in 1859 after gold was discovered near Denver in the bed of the Clear Creek, and mining became the fever of the west. Since then, mineral resource exploration and production has grown to a yearly contribution of $7.7 billion to the state's economy in 2000. This industry includes direct and indirect benefits from mining significant amounts of coal, gold, lead, gypsum, limestone, silver, molybdenum, uranium, and zinc. One of the largest molybdenum mines in the world is located in Colorado, and in 1999, coal production reached record production levels for the 3rd year in a row in the state. The aggregates industry also contributes greatly to Colorado's economy (sand, gravel, and crushed stone).

Aesthetics and Scenic Resources

From snow-covered mountains to deep canyons and expansive prairies, Colorado offers visual wonders of almost every kind. The main approach west along I70 into the Denver area is back-dropped by the magnificent vertical horizon of the Southern Rocky Mountains. A short drive from the city takes a visitor suddenly into a seemingly infinite land of topographical marvels. Recreation opportunities are endless, whether the visitor wishes to visit a national park or hike in wilderness areas, many options exist.

Within Colorado, 21 state Scenic and Historic Byways have been designated by a state-run commission. The state's diverse terrain can be viewed by following the sky blue signs sporting the state flower, the columbine, and the words "Scenic Byway". Most byways travel through National Forest land, therefore many recreational opportunities can be accessed.

The changing of seasons in Colorado brings a striking array of colors. As mountains give up their persistent covering of snow, spring weather delivers luscious wildflowers and brilliant greens on an otherwise drab-brown country. Waterfowl, shorebirds, and other viewable wildlife flood into areas of Colorado to breed and feed. As the fall approaches, quaking aspens turn gold adding spectacular hues to mountainsides that can often be seen from roads and paths.

Forest Types and Distributions

Colorado environments have been described in terms of eight ecosystem types: riparian systems, grasslands, semidesert shrublands, pinyon-juniper woodlands, montane shrublands, montane forests, subalpine forests, and alpine tundra. These ecosystems reflect the diversity created by variations in elevation, temperature, and rainfall that largely result from the presence of the Southern Rocky Mountains. These "life zones" vary greatly in the numbers and kinds of life forms they support, which results in Colorado having a relatively high number of plant and animal species.

The Southern Rocky Mountains are an island of forests surrounded by shrublands and grasslands. Forests cover the mountains only between 5600 and 11,000 feet. Thus, there is both an upper and lower treeline. In simple terms, trees are excluded from the highest elevations by cold, drought, and wind and from the lowest elevations by drought.

Colorado forests consist of both hardwood and softwood species. Softwood forests account for 3,555,400 acres or 76.1% of all forested areas. Of this total, 33.1% is held publicly, while the other 66.9% is privately owned. Ponderosa pine forests accounts for the largest amount of softwood forest with 1,542,000 total acres; 82.2% of those acres are privately owned. Douglas-fir forests (863,200 acres) are split almost evenly between public and private owners. The next largest forest type is the spruce-fir with 652,100 acres, 18.3% of the softwood forest. Sixty-three percent of the spruce-fir forest is privately held. Lodgepole pine make up 454,700 acres of Colorado's forest.

Hardwood species in both publicly and privately owned areas comprise less than 1/4 of the total forested area (1,114,800 acres). The predominant hardwood forest type is aspen-birch with 1,009,200 total acres. Approximately 74% of that forest type is privately owned. All 105,700 acres of elm-ash-cottonwood hardwood forest are privately owned.

Forest Products

While Colorado has millions of acres of forested land, the forestry industry does not contribute greatly to the state's gross product. Lumber and wood products have steadily accounted for 0.2% to 0.3% of the state's gross product since the early 1970s. In 1998 the lumber and wood industry's state gross product was 300 million dollars. Timber sale volumes on federal forest lands have decreased from 169,000 thousand board feet (MMBF) per year in 1997 to 99,000 MBF in 2000 (USDA Forest Service). Colorado forest products include saw timber, fuelwood, posts, poles, and furniture wood. Economically important species include aspen, spruce, fir, Douglas-fir, lodgepole pine, and ponderosa pine.

Wildlife and Fisheries

Colorado has about 130 species of mammals, 440 species of birds, hundreds of species of fish, amphibians, and reptiles, 3,000 species of plants, and 50,000 to 100,000 species of insects. Some of these components have always been rare, but many have become imperiled by changes in their habitats caused by human impacts on resources. The following number of species/subspecies by group are now considered imperiled or of concern by those who monitor and compile records on the organisms: birds (102), mammals (56), fish (31), reptiles (21), amphibians (14), and plants (388). However, many fewer are listed as threatened, endangered, or of special concern by the U.S.

Fish and Wildlife Service and the Colorado Division of Wildlife: birds (17), mammals (8), fish (27), reptiles (8), amphibians (10), and plants (12). These figures are estimates as they reflect decisions only on animals and plants for which population information exists.

Recreational opportunities are the most obvious values of wildlife in Colorado. Everyone enjoys seeing wildlife and watching their activities and antics. To increase such opportunities, Colorado has established parks, open space areas, and wildlife viewing sites. Rocky Mountain National Park and the Denver Museum of Nature and Science are two of the principal tourist attractions in the state. The recreational values of wildlife can be either consumptive or non-consumptive. Many species are taken for consumptive purposes, including furbearers, game animals, fish, and mushrooms. Non-consumptive uses such as birdwatching and wildlife photography are rapidly increasing in popularity. Wildlife in Colorado is categorized as game animals, furbearers, and non-game animals, although most wildlife in Colorado is considered non-game.

Sport hunting in Colorado attracts a large number of outdoor enthusiasts. In 1990, 530,000 hunters and trappers harvested 1.47 million animals of over 40 species. Deer and elk populations are at all-time highs, and harvest of elk is higher in Colorado than in any other state. Data compiled by the Census Bureau show that in Colorado more people are involved, and spend more money, in wildlife related activities than any other state in the nation. Non-consumptive uses such as bird watching are equally important, especially since some non-game animals are endangered species.

Hundreds of animals make their home in the forest habitats of Colorado. Animal diversity is generally higher in the forested foothills where there is a milder climate, more complex habitats, and an abundance of food and cover. The number of species and the abundance of animals decline as elevations increase in the mountains. An endangered species, the Canadian lynx, which recently was reintroduced into Colorado, relies on forests at high elevations for its habitat. Many birds migrate from nesting areas in the mountains after the breeding season. Likewise, elk, deer, and even coyotes return to lower elevations for winter.

The Southern Rocky Mountains retain much of the wildness of habitat and animal life that has disappeared from more developed areas of the nation. However, recent increases in the human population of Colorado have resulted in fragmentation of large areas of forested habitats, especially near large population centers. Forest lands have been sold and altered for residential development and recreational uses throughout the state. As a large proportion of Colorado is forested, inhabited by wildlife, and of exceptional scenic beauty, people in the state tend to heavily use the mountain areas for recreation.

Recreation

Colorado's millions of acres of forests, grasslands, and parks play host to countless numbers of outdoor activities. Twelve national forests with over 13,000,000 acres of land and 40 state parks with a combined area of 200,000 acres are used for backpacking, hiking, camping, fishing, hunting, birding, and other activities. During winter months, outdoor enthusiasts can also snowshoe, winter camp, and backcountry ski and snowboard in these areas. As winter turns to spring and summer, snow melts down from the mountains. Melting snow spills into rivers and streams creating prime areas for rafters and kayakers.

In addition to public park areas, there are 26 ski resorts available to the public, including such world-class resorts as Vail, Aspen, and Steamboat. Many of these resorts also have areas for cross-country skiing. During spring and summer months, many ski resorts are open to golfers, hikers, and mountain bikers.

Those wishing to get away from civilization and see more of the state can travel along the 471 mile Colorado Trail.

Extending from Denver westward across the state to Durango, the trail passes through seven national forests, six wilderness areas, five major river systems, and eight Colorado mountain ranges. The trail is open to hikers, horseback riders, and, to some extent, mountain bikers.

Unique Natural Areas

Many Colorado forests provide habitat for rare and important plant and animal species and are sometimes themselves a valuable resource. Marvelous complexity of scenery occurs within the endless diversity of ecosystems, a number of which occur in very remote areas. The Colorado Natural Areas Program has designated 62 areas in Colorado, mostly in the mountain and western parts of the state. Because of the need for watershed conservation, many of these areas contain riparian systems, especially along major rivers.

Many examples of important conservation areas exist among these selected natural areas. Owl Canyon Pinyon Grove in Larimer County includes 658 acres supporting a dense population of pinyon pine at the northeastern extremity of its range in North America. Individual trees from these stands are from 200 to 500 years old. Arapaho National Wildlife Refuge, located in an intermontane glacial basin south of Walden, was established in 1967 as a nesting and rearing stop-over for waterfowl. Garden Park, located 8 miles north of Cañon City in south central Colorado, harbors a rich diversity of vertebrate fossils. This natural area may possibly be the most valuable Jurassic dinosaur graveyard in the world.

Other unique areas of Colorado include North America's highest dunes rising over 700 feet against the Sangre de Cristo Mountains. The Great Sand Dunes National Park includes 39 square miles of dunes, alpine lakes and tundra, 6 peaks over 13,000 feet, ancient spruce and pine forests, large stands of aspen and cottonwood, grasslands, and wetlands.

Located in north central Colorado, Rocky Mountain National Park is a national icon with its rugged peaks and lush spruce and aspen forests. This home to countless species of plants and animals, including black bear, moose, coyote, bobcat, and deer, is visited by 3 million people each year. Black Canyon of the Gunnison was elevated to National Park Status in 1999.

The Earth's oldest living inhabitants, the bristlecone pine, finds a home near tree line in the Colorado Rockies. With an average age of 1,000 years, bristlecones have been recorded at over 4,000 years old, which makes it a resource worth protecting. The Colorado species of bristlecone is locally abundant south of Berthoud Pass, especially in the subalpine environment of Park County. Pure stands of bristlecones grow in central and southern parts of the Southern Rocky Mountains.

Urban Influences

Perhaps the most recognized threat to private forested areas in the state is urban expansion. Current projections show counties with moderate to high increases in housing density for the next 20 years lie mostly in forested areas along the Front Range and southwestern Colorado. Many of these areas also qualify as so-called "red zone" areas, or areas vulnerable to extensive wildfire damage. Overall population in the red zone areas has grown by one-third from 1990 to 2000. As many of the major wildfires in Colorado are caused by humans, the potential for more frequent wildfires within the red zone seems clear as populations continue to grow.

SECTION 2: FOREST LEGACY AREA DETERMINATION METHODOLOGY

In order to assess the need for protection of privately owned forest, and to assess the criteria by which those privately owned forests would be chosen, identification of areas of potential conversion, public participation, and interpretation of the public opinion were needed. The primary goals of this assessment were 1) establish FLA boundaries that provided private forest landowners the opportunity to participate in the FLP, and 2) incorporate stakeholder interest in the FLA boundaries. In 2001, the CSFS chose to accomplish this using the following four steps:

Step 1: Primary Forest Conversion Map

The CSFS produced the Primary Forest Conversion Maps under the direction of Western Environment. The maps were constructed by overlaying land ownership data for Colorado, vegetation survey data, and housing density change maps produced by Dr. David Theobald of the Natural Resource Ecology Laboratory at Colorado State University. The resulting map identified privately owned forested land, which showed projected changes in housing densities of no change, moderate change (from one housing density group to an adjacent density group), or high change (change of two density groups or more). The resulting map was further overlaid with the Colorado Red Zone map to show areas in Colorado that have been identified as high wildland-urban interface fire danger based upon vegetation cover, housing density, and ignition frequency (Appendix A).

Step 2: Public Participation

Western Environment and the Legacy Program Manager developed a two-page questionnaire to involve landowners, natural resource agencies, organizations, and other stakeholders interested in private forest land, requesting their input on land protection issues (Appendix B). The questionnaire was designed to reveal the demographics of the responder including age, income, setting, county of residence, zip code, setting of residence, education level, land ownership, and interest in the FLP. The primary purpose was for each respondent to identify their five most important criteria for protection of critical private forests from a predetermined list of 24 criteria. Space was also provided to enter criteria not provided in the list.

The questionnaires were sent to landowners, CSFS district foresters, county administrators, conservation/preservation association groups, Natural Resource Conservation Service district supervisors, Tree Farm System members, Colorado Division of Wildlife district managers, and other interested parties. The total number of mailings was over 900 with 300 questionnaires answered and returned. Additionally, an interactive questionnaire was posted on the www.coloradoforestlegacy.org Internet site so any interested party could fill out the questionnaire. The Internet site questionnaire yielded 79 questionnaire responses.

www.coloradoforestlegacy.org

The CSFS developed and populated the www.coloradoforestlegacy.org Internet site to be used as an online resource. The site contains a home page describing the program, a program status page describing progress of the Assessment of Need study and updates, a survey page where individuals can express their opinions regarding the Forest Legacy criteria, a links page to other Forest Legacy programs and information, and a page to contact Western Environment or the Legacy Program Manager via e-mail (Appendix C). The www.coloradoforestlegacy.org website is no longer active.

Step 3: Survey Analysis

Following receipt of the questionnaires by mail and the Internet site, the data were entered into a database and queried into separate categories by response group. The groups are as follows; setting, age, income, education, interest, landowners, e-mail and direct mail, and all responses. Each response group was tabulated by percentage of

respondents choosing each protection criteria. Those percentages were then tabulated to provide an average percentage of selection for each criteria and a 95% confidence interval was generated for each average (Appendix D). The objective of querying into separate demographic groups was to lessen bias in the survey results from the selection by all respondents. Additionally, the spread of the confidence intervals will show lesser variation among the groups for selection of criteria for smaller confidence intervals, and a greater variation among the groups for selection of criteria for larger confidence intervals.

Survey Results

The results for each criteria, averaged for all response groups with a 95% confidence interval are as follows:

Table 1,
Survey Response for Private Forest Land Protection Criteria

Criteria	Average %	95% CI +/-	Criteria	Average %	95% CI +/-
Wildlife Habitat	66.3%	+/- 1.4%	Threatened and Endangered Species	17.6%	+/- 2.5%
Growth/Sprawl Control	47.0%	+/- 3.1%	Wildlife Viewing	14.8%	+/- 1.6%
Water Quality/Quantity	40.0%	+/- 2.5%	Scenic Landscape Viewing	14.8%	+/- 1.4%
Wetland/Riparian Areas	33.9%	+/- 4.0%	Hunting	14.3%	+/- 1.5%
Wildfire Control Issues	29.4%	+/- 2.8%	Fishing	10.9%	+/- 1.1%
Private Property Rights	28.6%	+/- 4.5%	Non-Motorized Recreation	9.9%	+/- 1.2%
Flora/Fauna Species Diversity	23.8%	+/- 3.9%	Historic/Archeological Sites	4.8%	+/- 0.9%
Forest Timber Products	23.5%	+/- 2.2%	Non-timber Forest Products	4.1%	+/- 0.7%
Large Continuous Forest	22.4%	+/- 3.3%	Non-Motorized Winter Activities	3.7%	+/- 0.6%
Lifestyle Protection for Landowner	21.9%	+/- 4.7%	Mineral/Gas/Oil Resources	3.5%	+/- 1.0%
Lakes, Rivers, and Streams	19.6%	+/- 1.9%	Motorized Recreation	2.9%	+/- 0.7%
Unique Ecological Areas	18.1%	+/- 2.7%	Motorized Winter Activities	1.2%	+/- 0.4%

The results of the wildlife habitat criteria show an average selection of 66.3% from all response groups with a small variation of +/- 1.4% (2% of the average). In the case of private property rights, the average selection was 28.6%, but the variation among all response groups was greater at +/- 4.5% (15% of the average).

Based upon the results of the questionnaire, the top ten criteria for protection of privately owned forests are:

Wildlife Habitat Protection
Growth/Sprawl Control
Water Quality and Quantity Protection
Wetland and Riparian Area Protection
Wildfire Control Issues.
Private Property Rights
Flora/Fauna Species Diversity
Forest Timber Products
Large Continuous Forest
Lifestyle Protection for Landowner

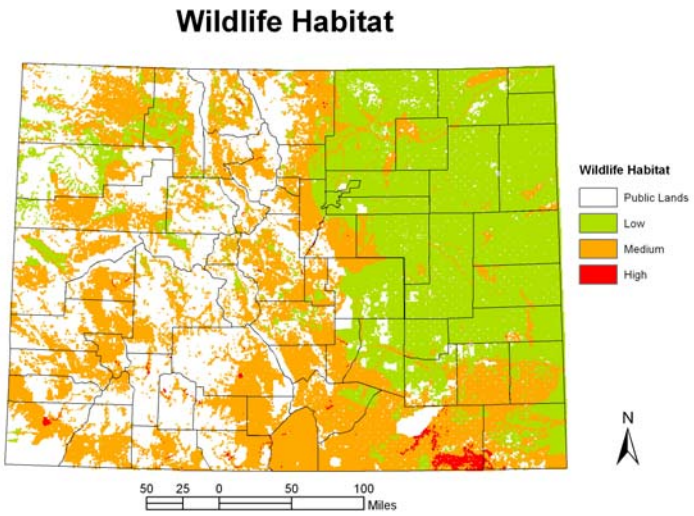
Step 4: Forest Legacy Area Determination

During a March 21, 2001, meeting of the State Forest Stewardship Coordinating Committee (SFSCC), the SFSCC requested that the top ten issues be spatially represented and incorporated into a spatial analysis. It was determined that Geographic Information System (GIS) data sets be used to represent these ten criteria to identify critical areas in Colorado which would aid in the identification of the Forest Legacy Areas (FLA's).

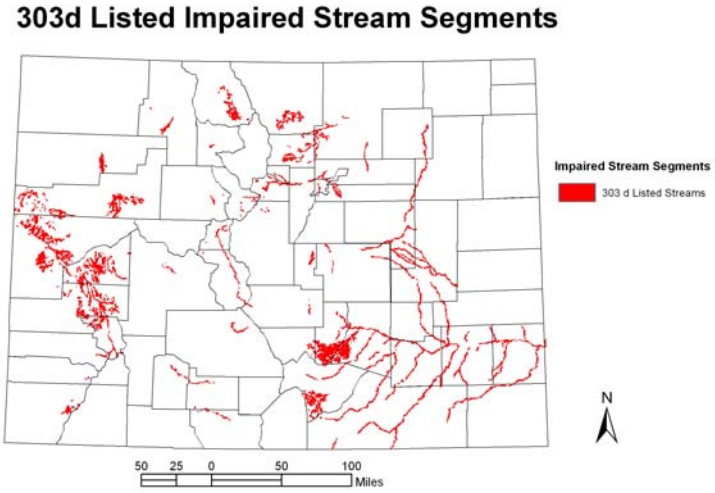
During a May 8, 2006 meeting with representatives of the Colorado State Forest Service and representatives of the SFSCC, it was decided that the original top ten issues identified in the 2001 Assessment of Need Study be used, and updated GIS datasets reflecting current conditions be incorporated into a spatial analysis identical to the 2001 Study. This analysis was used to determine if the FLA's identified in the 2001 Study should be modified to reflect conditions present in 2006.

1. Wildlife Habitat: Wildlife occurrence coverage maps, available on the Colorado Natural Diversity Information Source (NDIS) Internet site, were downloaded for all wildlife species available. Due to the high number of species represented, and the high number of coverage maps, one map showing the highest amount of coverage for each wildlife species (30 species) was used. These coverages were converted to grids and compiled determining the areas with the greatest occurrence of multiple species. This data was masked to show only privately owned land in Colorado. Values are as follows:

0 – 4 species = Low (1)
5 – 8 species = Medium (2)
9 – 12 species = High (3)



2. Water Quality/Quantity: Results from the Colorado's 2006 Clean Water Act, Section 303 (d) List, Water Quality Segments Requiring TMDL's, conducted by the Colorado Department of Public Health, and approved by the Environmental Protection Agency, were used to generate a map of impaired stream segments. The stream segments were buffered to a distance of 0.5 miles and assigned a value of 3 (high value) in the spatial analysis.



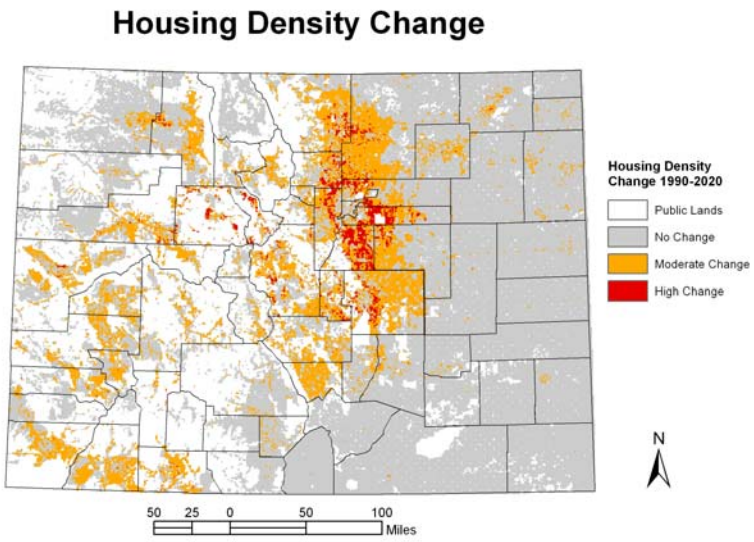
3. **Growth/Sprawl Control:** The housing density change map developed by Dr. Dave Theobald, of the NREL at CSU was used. The data set grid displays the housing density change by Census Block Group Unit (BGU). Block groups received the following values based on density:
    a. Urban >1 unit per acre
    b. Suburban 1 unit per 1-5 acres
    c. Exurban 1 unit per 5-40 acres
    d. Rural < 1 unit per 40 acres

Values were then calculated for 1990 and 2020 and grids created from these values. The two grids (1990 and 2020) were then subtracted to determine change for each BGU. The following values were assigned based on the degree of change:

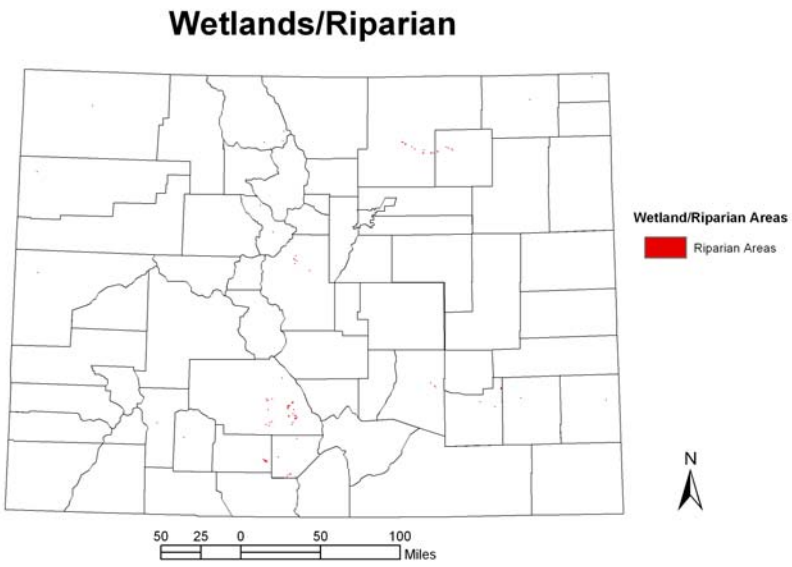
a. 0 = No Change
b. 1 = Moderate change (change from one value to the next highest – suburban to urban)
c. 2 = High Change (change in two value groups – exurban to suburban)

Values were then reclassified to fit into the value matrix for overlay on the FLA map. The map was masked to show only privately owned lands in Colorado.

1 = No Change
2 = Moderate Change
3 = High Change

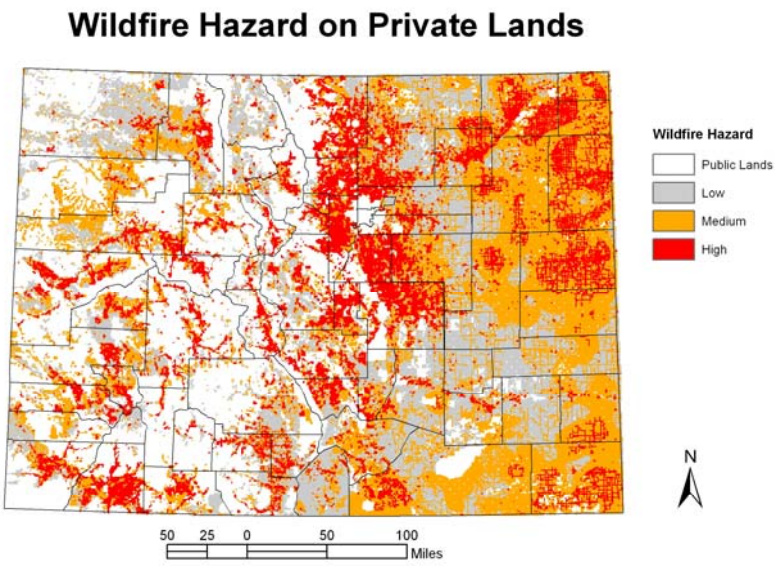


4. Wetland/Riparian Areas: A data set showing significant riparian communities identified in a GAP Vegetation survey of Colorado was used. These points were assigned a value of 3 in the analysis showing the significance of the riparian areas.



5. Wildfire Control Issues: The Wildfire Hazard map developed by the Colorado State Forest Service was used to represent areas with high wildfire control issues. The map was masked to show only privately owned lands in Colorado. The values are as follows:

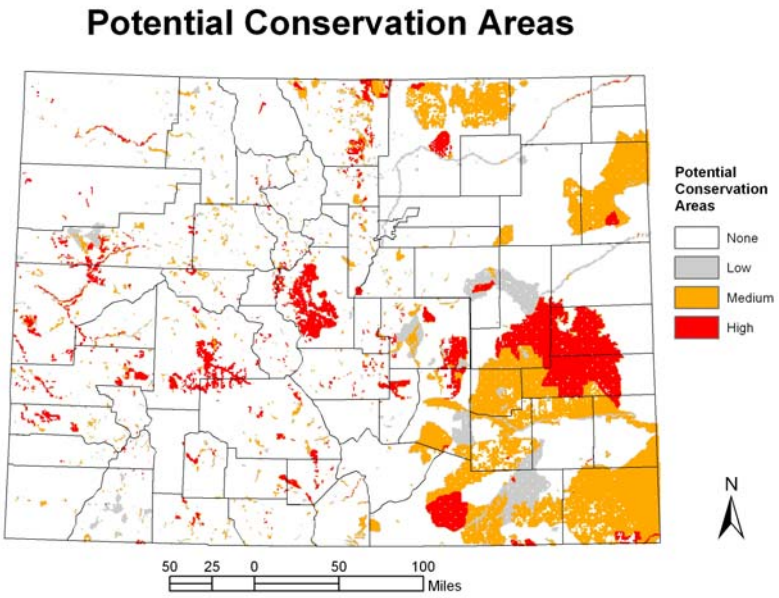
Low risk = 1
Medium risk = 2
High risk = 3



6. Private Property Rights: No data set could be identified that could spatially represent private property rights. This value was not represented on the FLA map.

7. Flora/Fauna Species Diversity: the Statewide Potential Conservation Areas data generated by the Colorado National Heritage Program were used. The values are as follows:

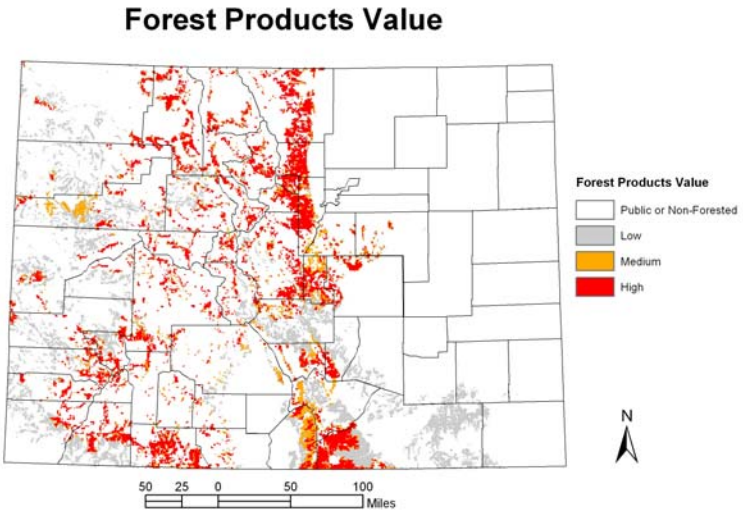
Low = 1
Medium = 2
High = 3



8. Lifestyle Protection for Landowners: No data set could be identified which could represent lifestyle protection for landowners spatially. This value was not represented on the FLA map

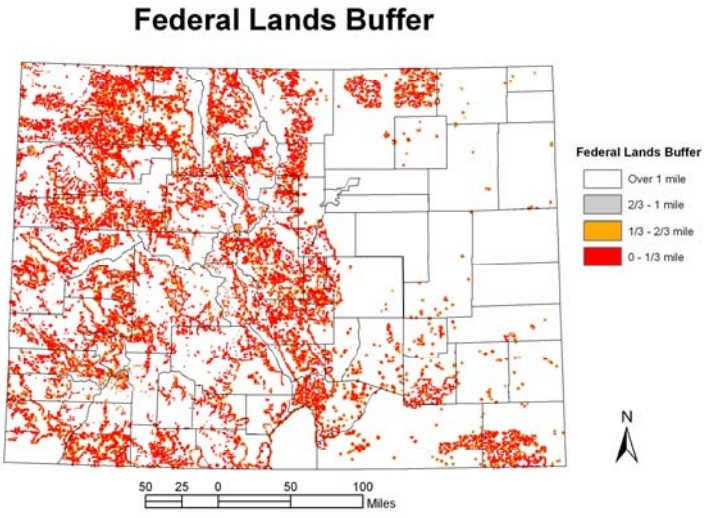
9. Forest Timber Products: This data set was derived from the GAP Vegetation Coverage from the Colorado Division of Wildlife. Timber species of a high economic value in Colorado were given a value of 3, species of a moderate value were given a value of 2, and species of a low economic value were given a value of 1. The following shows how each species was classified:

3 = (high value) aspen, spruce-fir, lodgepole pine, ponderosa pine
2 = (moderate value) douglas-fir, blue spruce, white fir, mixed conifer, mixed forest
1 = (low value) spruce-fir clearcut, lodgepole pine clearcut, limber pine, juniper woodland, pinyon-juniper, rocky mountain bristlecone pine



10. Large Continuous Forest: A BLM 100,000 scale land ownership map was used to identify lands that were in federal ownership. Those lands included BIA, BLM, USFS, USFWS, and NPS lands. These lands were then buffered in 1/3 mile increments and given the following values;

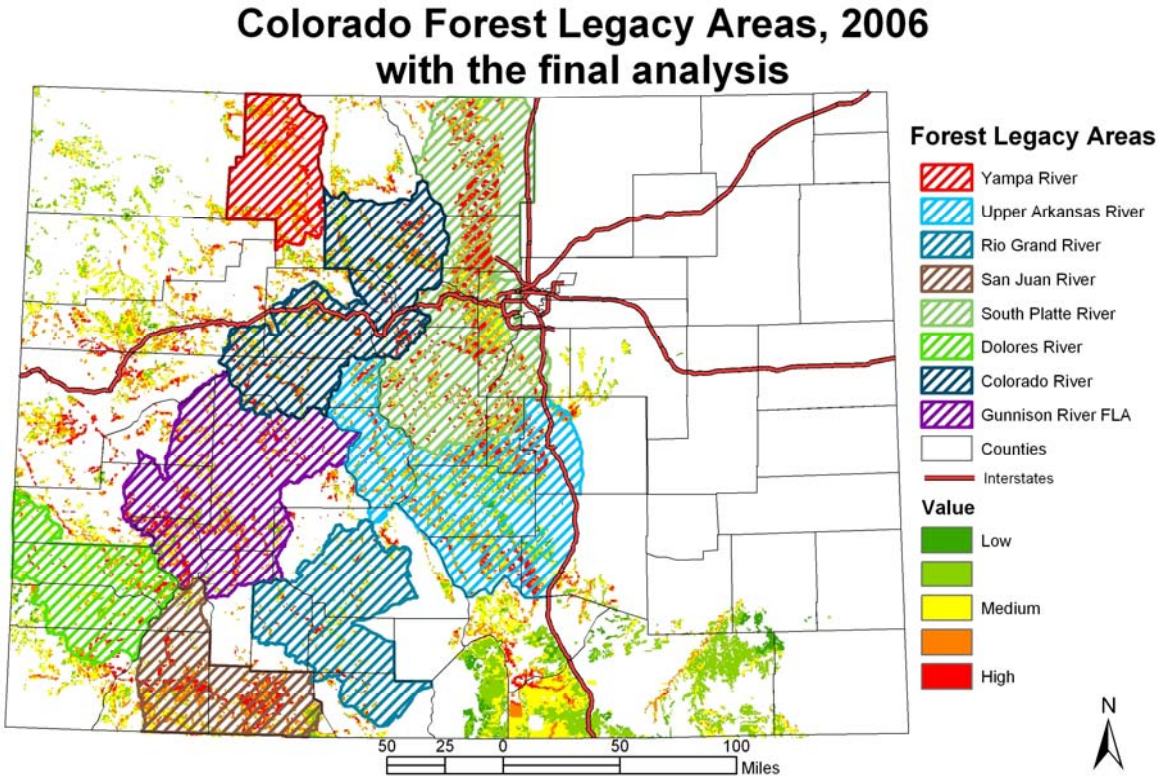
3 = 0 to 1/3 mile
2 = 1/3 to 2/3 mile
1 = 2/3 to 1 mile



In the 2001 analysis, the eight data sets were converted into grid format and additively combined to determine the areas with the highest concentration of values from 3 to 23. The resulting scores were grouped into values of 3-6, 7-9, 10-13, 14-16, 17-19, and 20-23. The values of 17 to 23 were identified as being within potential FLA's. The major groupings of values from 17 to 23 were buffered out to watershed boundaries as the FLA boundaries.

These FLA watersheds were then grouped into common major river drainages and cropped by geomorphic or geopolitical boundaries to exclude large areas which did not have high values according to the GIS assessment or large areas of non-forested land.

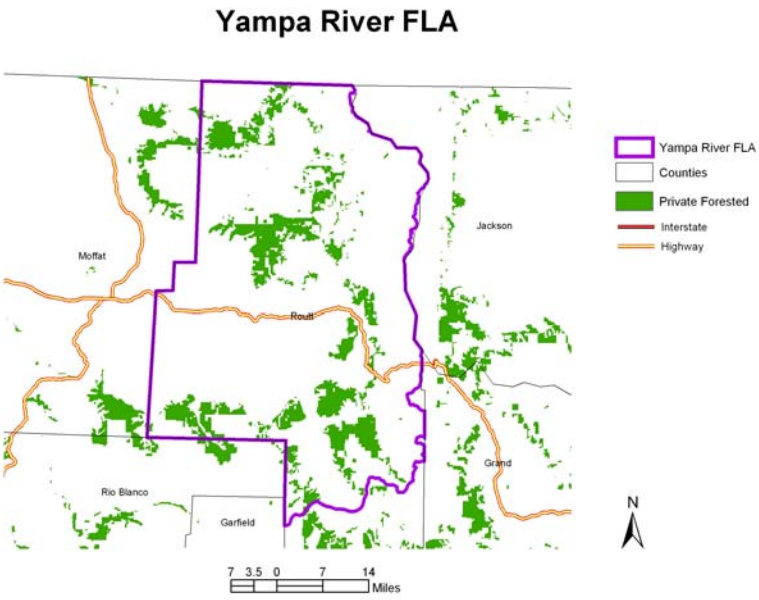
In the 2006 analysis, the eight updated data sets were converted into grid format and additively combined to determine the areas with the highest concentration of values from 0 to 23. The data was then masked to show only privately owned, forested lands in Colorado. The resulting scores were grouped using statistical natural breaks into values of 0-5, 5.1-7, 7.1-9, 9.1-11, and 11.1-23. Review of these data determined that the FLA's identified in 2001 should be maintained. Additionally, the current data indicated that the Colorado River FLA should be expanded to include Grand County, and the Upper Arkansas River FLA should be expanded to include all of Custer County, and Pueblo County west of Interstate 25. The addition to the geographic boundaries of these FLAs represents a small increase in eligible area due to the small amount of private forest lands relative to the large amount of public forest land in those areas.



SECTION 3: FLA DESCRIPTIONS

The following FLA's were identified for the Forest Legacy Program in Colorado:

Yampa Forest Legacy Area



Area Coverage Description: This forest legacy area includes the Upper Yampa Watershed within Routt County, and the Little Snake Watershed within Routt County

Forest Legacy Protection Goals for the Yampa Area:

1. **Protection of significant riparian communities.**
2. **Maintaining continuity of forested lands adjacent to protected lands.**
3. **Protection of significant wildlife habitat.**
4. **Protection of economically significant timber forest products through positive forest stewardship programs.**
5. **Protection of private property owner's rights.**
6. **Protection of lifestyle for property owners.**

This forest legacy area includes much of the upper Yampa river valley. The area is covered by 690,394 acres of forested lands with 75% protected as federal or state lands and 172,438 acres of privately owned, forest lands. The legacy area boundary covers part of the Routt National Forest, including the Mount Zirkel Wilderness area along with the Steamboat Lake, Pearl Lake, and part of the Yampa River State Park and one ski resort. This area of Colorado has seen an increase in population of 39.8% from 1990 to 2000. Additionally, 66.9% of its residents are employed in the tourism field (Colorado State Demographer, 2000).

The topography and ecology of this area is mixed with high mountains to the west and north containing high alpine meadows, aspen, Douglas-fir, spruce, fir, and lodgepole pine forests down to the Yampa river valley, which is dominated by gamble oak, big sage, and dryland crops.

This area offers many recreational opportunities, including camping, hiking, mountain bike riding, horseback riding, cross country skiing, snowmobiling, snowshoeing, off-highway vehicle use, hunting, fishing, and wildlife viewing.

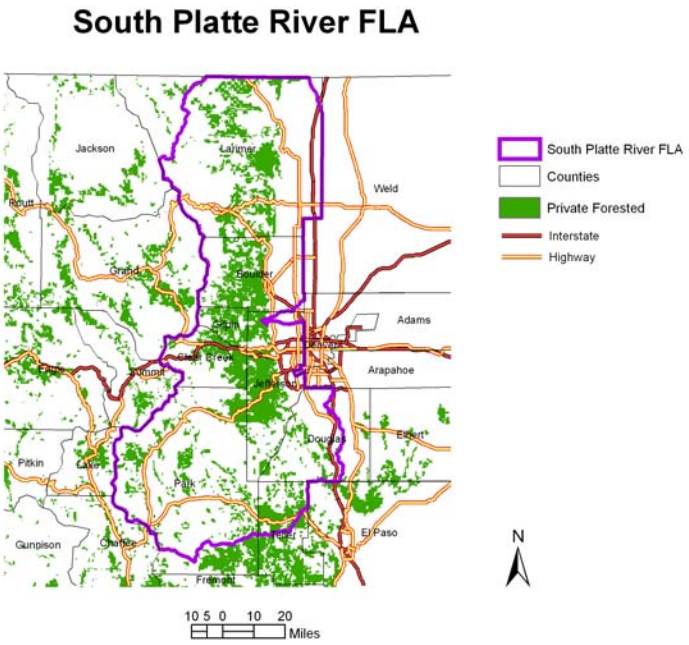
The Yampa FLA is home to numerous wildlife species including elk, moose, mule deer, Columbian Sharp-tailed grouse**,** sage grouse, sand hill crane, song birds, pine martin, squirrels, and numerous fish species. Additionally,

many of the Federal and State threatened and endangered species of Colorado are found within this area including the bald eagle, Canada lynx, and boreal toad.

The Yampa river is a major source of water for northwestern Colorado and parts of northern Utah. The Little Snake drainage is listed as an area needing restoration according to the 1998 Colorado Unified Watershed Assessment.

South Platte Forest Legacy Area

Area Coverage Description: This forest legacy area includes the Cache La Poudre watershed within Larimer County, the Big Thompson Watershed within Larimer and Boulder Counties, the Saint Vrain watershed within Boulder, Gilpin, and Jefferson Counties, the Clear Creek watershed within Jefferson, Gilpin, and Clear Creek counties, the Upper South Platte watershed within Park, Clear Creek, Jefferson and Douglas counties, and the entire South Platte Headwaters watershed.



Forest Legacy Protection Goals for the South Platte Area:

1. **Reduction of forested land fragmentation as a result of development pressures and increasing housing density.**
2. **Protection of water quality and production amounts.**
3. **Protection of significant wildlife habitat.**
4. **Protection of economically significant timber forest products through positive forest stewardship programs.**
5. **Protection of significant riparian communities.**
6. **Maintaining continuity of forested lands adjacent to protected lands.**
7. **Protection of unique ecological areas**.
8. **Reduction of risk and occurrence of wildfires especially in developed areas or ecologically sensitive areas**.
9. **Protection of private property owner's rights.**
10. **Protection of lifestyle for property owners.**

This forest legacy area covers the northern Front Range area of Colorado from the state border south to Colorado Springs. With 28% of the population of Colorado within the South Platte River Headwaters Forest Legacy Area, and another 33% of the population adjacent to the FLA in the Denver metro area, this is the most populous forest legacy area in Colorado. Additionally, this area has three of the top ten fastest growing counties in the state from 1990 to

2000, Douglas, Park, and Teller counties.

This FLA's boundary covers parts of the Arapahoe-Roosevelt and Pike-San Isabel National Forests, Rocky Mountain National Park, 9 wilderness areas, three ski resorts, and 8 State Parks. The area contains 2,468,088 acres of forested lands with 66% protected as federal or state lands and 833,790 acres of privately owned, forest lands.

The topography of the area extends from 14,000 foot peaks in the west down to the front range at approximately 5,000 feet. The ecology of the area is mixed from high alpine meadows to aspen, Douglas-fir, spruce, fir, and lodgepole pine forests in the higher elevations, down to ponderosa pine and grass and shrub rangelands in the lower elevations.

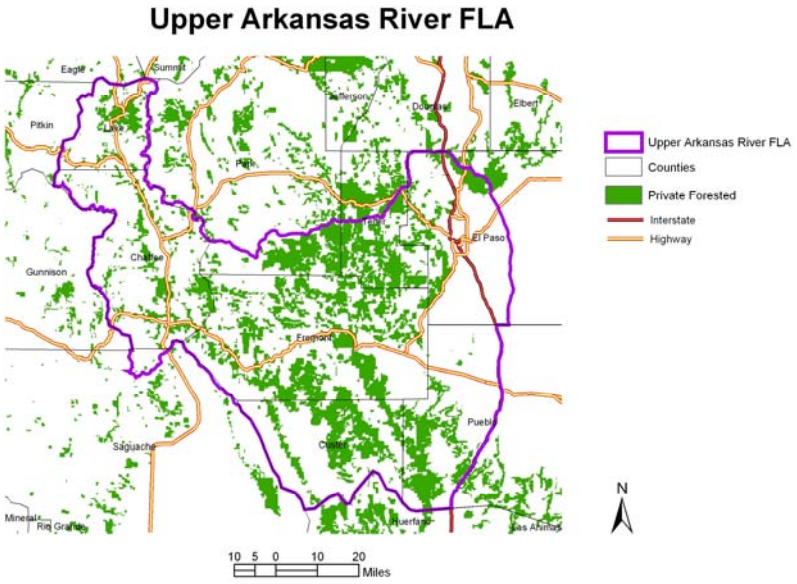
The South Platte river is a major source of water for much of the northern front range communities along with a source for irrigated crop lands in northeastern Colorado. The Cache la Poudre, Saint Vrain, and Upper South Platte drainages were listed as needing restoration according to the 1998 Colorado Unified Watershed Assessment.

This area of Colorado is heavily dependent on tourism and recreation relating to skiing, hiking, hunting, and climbing of fourteen thousand foot peaks. This area offers many recreational opportunities, including camping, hiking, mountain bike riding, horseback riding, cross country skiing, snowmobiling, snowshoeing, off-highway vehicle use, hunting, fishing, and wildlife viewing.

The South Platte FLA is home to numerous wildlife species, including elk, moose, mule deer, song birds, wild turkey, blue grouse, peregrine falcon, pine martin, squirrels, and numerous fish species. Additionally, most of the Federal and State threatened and endangered species of Colorado are found within this area including the bald eagle, mountain plover, Mexican spotted owl, Preble's meadow jumping mouse, and Canada lynx.

Upper Arkansas Forest Legacy Area

Area Coverage Description: This forest legacy area includes the Arkansas Headwaters watershed within Lake, Chaffee, Fremont, and Park Counties, the upper Arkansas watershed within Park, Teller, Fremont, and El Paso Counties, Custer County, Pueblo County west of Interstate 25, and the Fountain watershed in Teller and El Paso Counties.



Forest Legacy Protection Goals for the Upper Arkansas Area:

1. **Reduction of forested land fragmentation as a result of development pressures and increasing housing density.**
2. **Protection of water quality and production amounts.**
3. **Protection of significant wildlife habitat.**
4. **Protection of significant riparian communities.**
5. **Maintaining continuity of forested lands adjacent to protected lands.**
6. **Protection of unique ecological areas.**
7. **Reduction of risk and occurrence of wildfires especially in developed areas or ecologically sensitive areas.**
8. **Protection of private property owner's rights.**
9. **Protection of lifestyle for property owners.**

This forest legacy area covers the upper Arkansas River from Lake and Chaffee counties east to Colorado Springs. The Upper Arkansas FLA includes Fremont and Teller Counties with 43% and 65% increases in population from 1990 to 2000, and El Paso County, the third most populous county in the state. Additionally, Custer County had a population increase of 84% from 1990 to 2000.

This FLA's boundary covers parts of the White River and Pike-San Isabel National Forests, Florissant Fossil Beds National Monument, 5 wilderness areas, 2 ski areas, and 4 State Parks. The area contains 2,254,155 acres of forested lands with 68% protected as federal or state lands and 721,329 acres of privately owned, forest lands. The addition to the geographic boundaries of this FLA represents a small increase in eligible area due to the small amount of private forest lands relative to the large amount of public forest land in the area.

The topography of the area extends from 14,000 foot peaks in the west down to the front range at approximately 5,000 feet. The ecology of the area is mixed from high alpine meadows to aspen, Douglas-fir, spruce, fir, and

lodgepole pine forests in the higher elevations, down to ponderosa pine and grass and shrub rangelands in the lower elevations with some irrigated pasture lands throughout the drainage.

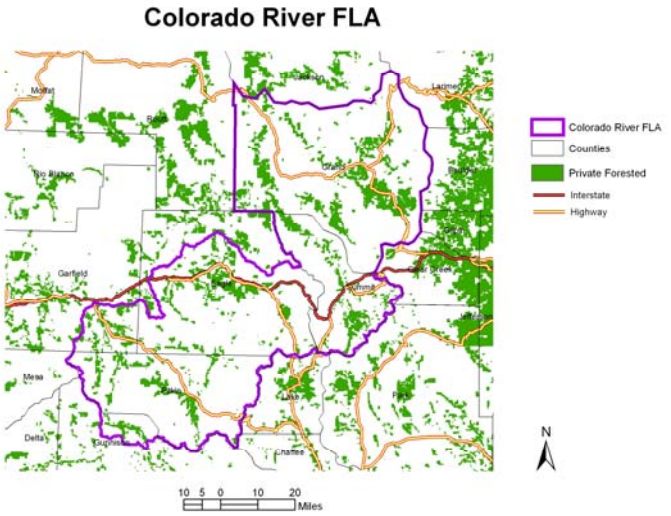
The Arkansas river is a major source of water for much of the southern front range communities along with a source for irrigated crop lands in southeastern Colorado. The Arkansas Headwaters drainage was listed as needing restoration according to the 1998 Colorado Unified Watershed Assessment.

This area of Colorado is heavily dependant on tourism and recreation relating to skiing, hiking, hunting, white water rafting, kayaking, and climbing of fourteen thousand foot peaks. The area offers many recreational opportunities including camping, hiking, mountain bike riding, white water rafting, horseback riding, cross country skiing, snowmobiling, snowshoeing, off-highway vehicle use, hunting, fishing, and wildlife viewing.

The Upper Arkansas FLA is home to numerous wildlife species including elk, moose, mule deer, squirrels, song birds, and numerous fish species. Additionally, many of the Federal and State threatened and endangered species of Colorado are found within this area including the mountain plover, Mexican spotted owl, Canada Lynx, bald eagle, southwestern willow flycatcher, Preble's meadow jumping mouse, and boreal toad.

<u>Colorado River Forest Legacy Area</u>

Area Coverage Description: This forest legacy area includes the entirety of the Blue, Eagle, and Roaring Fork, watersheds and the entirety of Grand County.



Forest Legacy Protection Goals for the Colorado River Area:

1. **Reduction of forested land fragmentation as a result of development pressures and increasing housing density.**
2. **Protection of water quality and production amounts.**
3. **Protection of significant wildlife habitat.**
4. **Protection of economically significant timber forest products through positive forest stewardship programs.**
5. **Protection of significant riparian communities.**
6. **Maintaining continuity of forested lands adjacent to protected lands.**
7. **Protection of unique ecological areas.**
8. **Reduction of risk and occurrence of wildfires especially in developed areas or ecologically sensitive areas.**
9. **Protection of private property owner's rights.**
10. **Protection of lifestyle for property owners.**

This forest legacy area covers much of the Colorado high country from Grand County in the north to Gunnison and Delta Counties in the south. This FLA contains three of the twelve fastest growing counties in Colorado from 1990 to 2000, Eagle, Grand and Summit Counties.

This FLA's boundary covers parts of the Arapahoe-Roosevelt, Routt, White River, and Grand Mesa-Uncompahgre-Gunnison National Forests, Rocky Mountain National Park, 11 wilderness areas, 17 of Colorado's 26 major ski resorts, and 4 State Parks. The area contains 1,790,231 acres of forested lands with 78% protected as federal or state lands and 393,850 acres of privately owned lands. The addition to the geographic boundaries of this FLA represents a small increase in eligible area due to the small amount of private forestlands relative to the large amount of public forest land in the area.

The topography of the area extends from 14,000 foot peaks in the east down to the Gunnison river basin at approximately 6,000 feet. The ecology of the area is mixed from high alpine meadows to aspen, Douglas-fir, spruce, fir, and lodgepole pine forests in the higher elevations, down to gambel oak and grass and shrub rangelands in the lower elevations.

The Colorado River is a major source of water for much of the central mountain communities along with a source for irrigated crop lands in the western slope of Colorado to southern California. The Blue and Roaring Fork, drainages were listed as needing restoration according to the 1998 Colorado Unified Watershed Assessment.

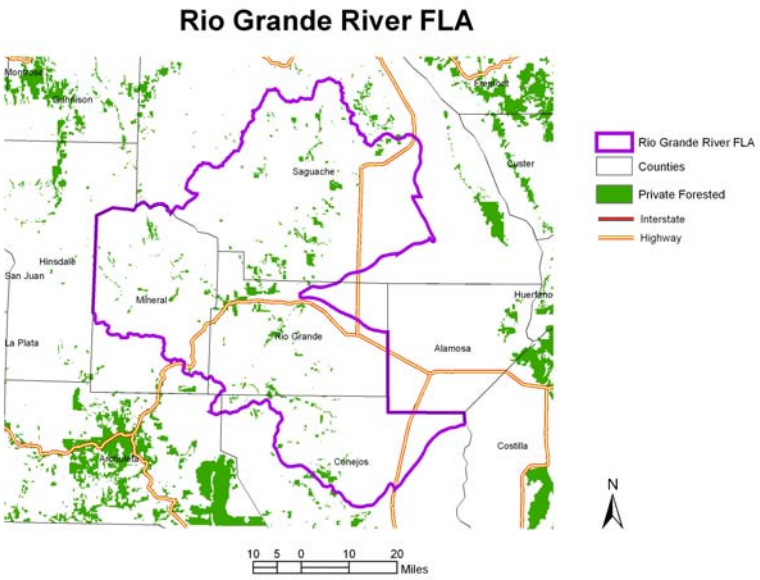
This area of Colorado is heavily dependent on tourism and recreation relating to skiing, hiking, hunting, and climbing of fourteen thousand foot peaks. This area offers many recreational opportunities, including camping, hiking, mountain bike riding, horseback riding, cross country skiing, snowmobiling, snowshoeing, off-highway vehicle use, hunting, fishing, and wildlife viewing.

The Colorado River FLA is home to numerous wildlife species including elk, moose, mule deer, songbirds, wild turkey, blue grouse, peregrine falcon, pine martin, squirrels, and numerous fish species. Additionally, many of the Federal and State threatened and endangered species of Colorado are found within this area including the bald eagle, Canada lynx, Mexican spotted owl, and boreal toad.

Since the original AON was completed, both public and private forestlands have been severely impacted by insects killing trees on thousands of acres within the counties in this watershed. The potential of bringing large acreages of private forest lands under management through the benefits of the Forest Legacy Program will aid in reaching the Forest Legacy Goals of the Colorado River FLA.

Rio Grande Forest Legacy Area

Area Coverage Description: This forest legacy area includes the Rio Grande River Headwaters watershed in Mineral, Rio Grande, and Saguache counties, the Alamosa-Trinchera watershed in Saguache, Rio Grande, and Conejos Counties, and the entirety of the Saguache watershed



Forest Legacy Protection Goals for the Rio Grande Area:

1. **Protection of water quality and production amounts.**
2. **Maintaining continuity of forested lands adjacent to protected lands.**
3. **Protection of significant riparian communities.**
4. **Protection of unique ecological areas.**
5. **Protection of private property owner's rights.**
6. **Protection of lifestyle for property owners.**

This forest legacy area covers the headwaters of the Rio Grande River. At a population of less than 25,000, this is the least populated FLA in Colorado.

This FLA's boundary covers parts of the Rio Grande and San Juan National Forests and 4 wilderness areas. The area contains 1,159,l243 acres of forested lands with 93% protected as federal or state lands and 72,152 acres of privately owned lands.

The topography of the area extends from 14,000 foot peaks in the west down to the San Luis Valley at approximately 7,500 feet. The ecology of the area is mixed from high alpine meadows to aspen, Douglas-fir, spruce, fir, and lodgepole pine forests in the higher elevations, down to gambel oak, pinyon, juniper, and grass and shrub rangelands in the lower elevations.

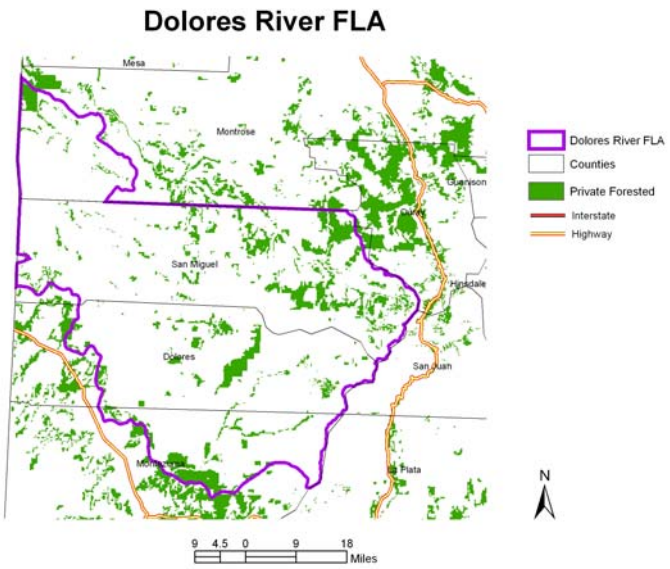
The Rio Grande River is a major source of water for much of the southern central communities along with a source for irrigated croplands in northern New Mexico. The Alamosa-Trinchera and Saguache drainages were listed as needing restoration according to the 1998 Colorado Unified Watershed Assessment.

This area offers many recreational opportunities, including camping, hiking, mountain bike riding, horseback riding, cross country skiing, snowmobiling, snowshoeing, off-highway vehicle use, hunting, fishing, and wildlife viewing.

The Rio Grande FLA is home to numerous wildlife species, including elk, moose, mule deer, song birds, peregrine falcon, bear, squirrels, and numerous fish species. Additionally, several of the Federal and State threatened and endangered species of Colorado are found within this area including the southwestern willow flycatcher, bald eagle, Mexican spotted owl, boreal toad, mountain plover, and Canada lynx.

Dolores Forest Legacy Area

Area Coverage Description: This forest legacy area includes the entirety of the Upper Dolores watershed east of the Colorado State Boundary, and the San Miguel watershed within San Miguel county.



Forest Legacy Protection Goals for the Dolores Area:

1. **Protection of water quality and production amounts.**
2. **Protection of significant wildlife habitat.**
3. **Protection of economically significant timber forest products through positive forest stewardship programs.**
4. **Protection of significant riparian communities.**
5. **Maintaining continuity of forested lands adjacent to protected lands.**
6. **Protection of private property owner's rights.**
7. **Protection of lifestyle for property owners.**

This FLA covers the Upper Dolores watershed, with a population of less than 70,000. Ouray and San Miguel Counties have, however seen population increases of 63% and 80% respectively from 1990 to 2000.

The FLA's boundary covers parts of the Grand Mesa-Uncompahgre-Gunnison and San Juan National Forests, 3 wilderness areas, 3 ski areas, and 2 State Parks. The area contains 1,166,835 acres of forested lands with 83% protected as federal or state lands and 193,143 acres of privately owned lands.

The topography of the area extends from 14,000 foot peaks in the east down to the Dolores river valley at approximately 6,000 feet. The ecology of the area is mixed from high alpine meadows to aspen, Douglas-fir, spruce, fir, and lodgepole pine forests in the higher elevations, down to ponderosa pine, gambel oak, irrigated crop lands, and

grass and shrub rangelands in the lower elevations.

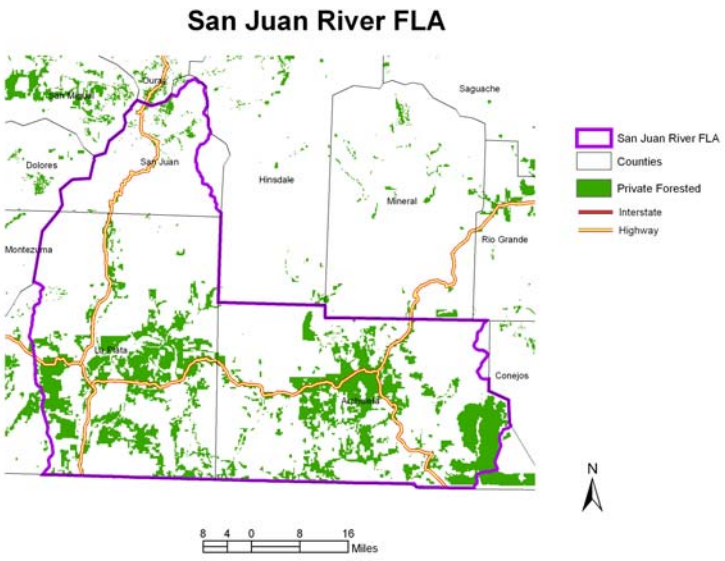
The Dolores river is a major source of water for many of the western slope communities along with a source for irrigated crop lands. The Upper Dolores drainage was listed as needing restoration according to the 1998 Colorado Unified Watershed Assessment.

This area offers many recreational opportunities including camping, hiking, mountain bike riding, horseback riding, cross country skiing, snowmobiling, snowshoeing, off highway vehicle use, hunting, fishing, and wildlife viewing

The Dolores FLA is home to numerous wildlife species including elk, mule deer, song birds, wild turkey, blue grouse, peregrine falcon, squirrels, and numerous fish species. Additionally, several of the Federal and State threatened and endangered species of Colorado are found within this area including the bald eagle, southwestern willow flycatcher, boreal toad, Canada lynx, and Mexican spotted owl.

<u>San Juan Forest Legacy Area</u>

Area Coverage Description: This FLA includes the Upper San Juan watershed in San Juan, La Plata, and Archultea counties, the Piedra watershed in Archuleta County, and the Animas watershed in La Plata county.



Forest Legacy Protection Goals for the San Juan Area:

1. **Reduction of forested land fragmentation as a result of development pressures and increasing housing density.**
2. **Protection of significant wildlife habitat.**
2. **Protection of economically significant timber forest products through positive forest stewardship programs.**
4. **Protection of significant riparian communities.**
5. **Maintaining continuity of forested lands adjacent to protected lands.**
7. **Reduction of risk and occurrence of wildfires especially in developed areas or ecologically sensitive areas.**
7. **Protection of private property owner's rights.**
8. **Protection of lifestyle for property owners.**

This forest legacy area covers the Upper San Juan, Piedra, and Animas drainages which feed the San Juan river in New Mexico. With a population of less than 55,000, this is the least populated FLA. However, Archuleta County had an 85% population increase from 1990 to 2000.

The FLA's boundary covers parts of the San Juan National Forest, the Southern Ute Indian Reservation, 2 wilderness areas, 1 ski area, and 1 State Park. The area contains 1,422,877 acres of forested lands with 72% protected as federal or state lands and 394,443 acres of privately owned lands.

The topography of the area extends from 14,000 foot peaks in the north down to the Colorado State Boarder at approximately 6,000 feet. The ecology of the area is mixed from high alpine meadows to aspen, Douglas-fir, spruce, and fir forests in the higher elevations, down to ponderosa pine, irrigated crop, and grass and shrub rangelands in the lower elevations.

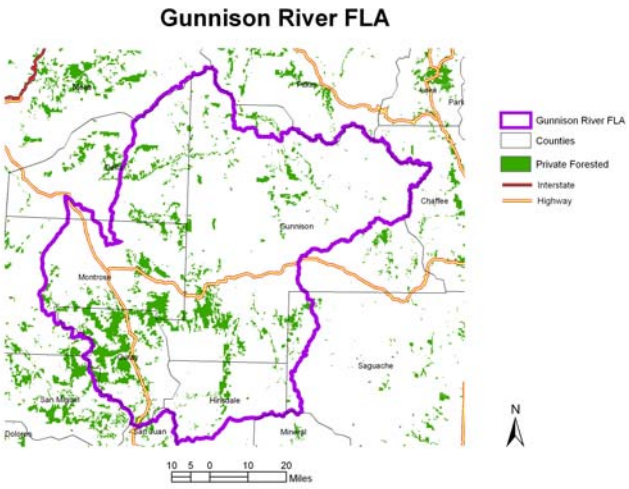
The San Juan river is a major source of water for much of the southwestern communities along with a source for irrigated crop lands in southwestern Colorado and northwestern New Mexico. The Upper San Juan and Animas drainages were listed as meeting goals according to the 1998 Colorado Unified Watershed Assessment.

This area of Colorado is heavily dependent on tourism and recreation relating to hiking, hunting, and climbing of fourteen thousand foot peaks. This area offers many recreational opportunities, including camping, hiking, mountain bike riding, horseback riding, cross country skiing, snowmobiling, snowshoeing, off-highway vehicle use, hunting, fishing, and wildlife viewing.

The San Juan FLA is home to numerous wildlife species, including elk, moose, mule deer, song birds, wild turkey, blue grouse, peregrine falcon, pine martin, squirrels, and numerous fish species. Additionally, several of the Federal and State threatened and endangered species of Colorado are found within this area including the bald eagle, Mexican spotted owl, boreal toad, Canada Lynx, and southwestern willow flycatcher.

Gunnison River Forest Legacy Area

Area Coverage Description: This forest legacy area includes the entirety of the Uncompahgre, East Taylor, Upper Gunnison, and North Fork of the Gunnison watersheds.



Forest Legacy Protection Goals for the Gunnison River Area:

1. **Protection of water quality and production amounts.**
2. **Protection of significant wildlife habitat.**
3. **Protection of economically significant timber forest products through positive forest stewardship programs.**
4. **Protection of significant riparian communities.**
5. **Maintaining continuity of forested lands adjacent to protected lands.**
6. **Protection of private property owner's rights.**
7. **Protection of lifestyle for property owners.**

This forest legacy area covers the portions of the Gunnison River watershed. At an overall population of less than 70,000, this is a less populated FLA. However, Ouray County saw a population increase of 63% from 1990 to 2000.

This FLA's boundary covers part of the Grand Mesa-Uncompahgre-Gunnison National Forest, 2 wilderness areas, 3 ski areas, and 2 State Parks. The area contains 1,856,443 acres of forested lands with 81% protected as federal or state lands and 348,838 acres of privately owned lands.

The topography of the area extends from 14,000 foot peaks in the east down to the Gunnison river valley at approximately 6,000 feet. The ecology of the area is mixed from high alpine meadows to aspen, Douglas-fir, spruce, fir, and lodgepole pine forests in the higher elevations, down to ponderosa pine, gamble oak, irrigated crop lands, and grass and shrub rangelands in the lower elevations.

The Gunnison river is a major source of water for many of the western slope communities along with a source for irrigated crop lands. The Uncompahgre and North Fork of the Gunnison drainages were listed as needing restoration according to the 1998 Colorado Unified Watershed Assessment.

This area offers many recreational opportunities including camping, hiking, mountain bike riding, horseback riding, cross country skiing, snowmobiling, snowshoeing, off highway vehicle use, hunting, fishing, and wildlife viewing

The Gunnison River FLA is home to numerous wildlife species including elk, mule deer, song birds, wild turkey, blue grouse, peregrine falcon, squirrels, and numerous fish species. Additionally, several of the Federal and State threatened and endangered species of Colorado are found within this area including the boreal toad, bald eagle, southwestern willow flycatcher, Canada lynx, and Mexican spotted owl.

SECTION 4: FOREST LEGACY PROJECT SELECTION CRITERIA AND PROCEDURE

As the result of a meeting of the State Forest Stewardship Coordinating Committee on March 21, 2001, a list of 26 criteria were identified which prospective FLP projects will be ranked. A subcommittee of the SFSCC will review project proposals. Each proposal will receive a qualitative ranking based on the extent to which they address the criteria. Criteria marked with a "*" are required and must be clearly addressed in the project proposal to establish eligibility. The remaining criteria will be evaluated as adding value to the proposal and used to select among multiple competing projects. No rank significance is implied by the order in which the criteria are listed.

1. ***FLA Area Inclusion:** The proposed property boundary must lie, at least in part, within a defined Forest Legacy Area.
2. ***Willing Landowner:** Written expression of interest must be received from the landowner.
3. ***Easement Condition:** Conservation easement terms must be clearly consistent with FLP guidelines.
4. ***Plan Quality:** The land management plan must encourage active forest stewardship through compliance with Forest Stewardship Program plan guidelines.
5. ***Money Leverage:** At least 25% of the project costs must be secured from non-federal cash or in-kind sources
6. ***Threat of Conversion to Non-Forest Use:**
7. ***Readiness:** Proposal must clearly describe the current status of project development and the time line for transaction completion.
8. ***Value of Project:** Proposal must clearly describe the cost-benefit relationships of the project.
9. **Size:** Size of the parcel will be given a value in ranking of the proposals submitted. Larger parcels will be given a higher value than smaller parcels. Smaller parcels may be given a high value during ranking based upon the other criteria.
10. **Forest Type:** Forest types will be ranked using a numbered grading system based upon forest types in Colorado and their economic and ecological values.
11. **Forest Condition:** Current condition of the forested area and its use will be graded on a numbering system.
12. **Continuity With Other Protected Lands:** Proposed lands which are contiguous or adjacent to other public and protected lands will be given a higher point value than those that do not border public or protected lands.
13. **Wildlife Habitat:** Proposed lands which demonstrate important habitat to wildlife, or demonstrate a high diversity of wildlife species on the land will be given a higher ranking to those lands which do not contain significant wildlife habitat.
14. **Urgency:** Submitted projects will be given consideration dependant on the urgency of the project need, i.e. projects with an immediate danger of development or other conversion to non-forest uses will be given a higher ranking than projects with a lesser threat of conversion.
15. **Partnerships:** Partnerships with other management agencies, either local or state/federal, or partnerships with other conservation organizations will give proposed projects a higher ranking than those that are relying on the FLP solely.
16. **Community Support:** Projects which can demonstrate support and/or acceptance from surrounding landowners or communities will be given a higher ranking than projects which have little or no acceptance from local community groups.
17. **Scenic Resources:** Proposed properties which have a positive aesthetic appearance or those properties

which would preserve an overall positive aesthetic appearance to the surrounding areas will be given higher ranking than areas that do not, or would not promote a positive aesthetic appearance.

18. **Ecological/Environmental Significance and Resources:** Projects which can demonstrate the occurrence of significant ecologic or environmental resources will be given a higher ranking than projects which do not have significant quantities or qualities of ecologic or environmental resources.

19. **Economic Significance:** Project areas which can demonstrate a significant economic impact through traditional forest use will be given a higher consideration than projects which will not provide economic returns from forest products or traditional forest uses

20. **Wildfire Hazard Reduction:** As Wildland Fire/Urban Interface concerns are an increasingly important issue in Colorado, projects located within the identified "Redzone" for Colorado, or projects which demonstrate a potential reduction of wildfire occurrences, or projects which provide access for wildfire mitigation and control will be given a higher consideration and ranking than projects which do not support wildfire control.

21. **Aquatic Resources:** Submitted project plans which show a demonstrated effort to protect or enhance aquatic resources such as lakes, rivers, wetland areas, and streams, will be given a higher ranking and consideration than projects which do not.

22. **Historic Land Use:** Lands which have demonstrated a historic and ongoing traditional forestry land use, and which ensure that such uses will continue, will be given a higher consideration in the ranking procedure than lands which have not historically demonstrated traditional forest uses.

23. **Public Access:** Project areas which allow public access for recreational, educational, or other use of the subject property, or use of adjacent public lands will be ranked higher than plans which do not allow for access.

24. **Water Quality Protection:** Submitted project plans which show a demonstrated effort to protect or enhance water quality resources in lakes, rivers, and streams, will be given a higher ranking and consideration than projects which do not.

25. **Cultural Resources:** Project areas which contain significant cultural resources, such as historic sites or archeological resources will be given a higher consideration than project areas which do not contain these resources.

26. **Other Public Values:** Other resources or assets contained within a proposed project area, or proposed project plan, will give additional ranking points to the project at the discretion of the SFSCC members.

The SFSCC will be the ongoing advisory group for establishing priorities in project selection. Additionally, the CSFS will be entirely responsible for enrollment in the FLP and administration of land or easement procurement. At the discretion of the CSFS and the State Forester, sub-contractors, land trust organizations, or other state or federal agencies may be used for land or easement procurement.

PROJECT SELECTION PROCESS

Project proposals will be identified through a periodic request process managed by the Colorado State Forest Service Forest Legacy Program Manager. A subcommittee of the State Forest Stewardship Coordinating Committee will support this process. The basic components will include 1) public announcement, 2) sub-committee ranking according to stated criteria, 3) recommendation/approval of ranked project list to State Forester, and 4) submission of list to national program manager for consideration.

SECTION 5: FOREST LAND CONSERVATION AND LAND TRUSTS

Existing Land Trusts Programs

National, Regional, and Local land conservation organizations play a vital role in the protection of private lands in Colorado. These organizations will be important partners in the success of Forest Legacy. Colorado is fortunate to have an extensive network of land trusts across the state.

National, Statewide, and Regional Land Trusts Operating in Colorado

American Farmland Trust
Colorado Cattlemen's Agricultural Land Trust
Colorado Open Lands
Colorado Wildlife Heritage Foundation
The Conservation Fund
The Nature Conservancy
Southern Plains Land Trust
Trust for Public Land

Local Land Trust Agencies

Aspen Valley Land Trust
Centennial Land Trust
Clear Creek Land Conservancy
Continental Divide Land Trust
Crested Butte Land Trust
Douglas County Land Conservancy
Eagle Valley Land Trust
Estes Valley Land Trust
Gunnison Ranchland Conservation Legacy
Great Outdoors Colorado (GOCO)
Lake Fork Land Trust
La Plata Open Space Conservancy
Legacy Land Trust
Manitou Institute/Crestone Baca Land Trust
Mesa Land Trust
Middle Park Land Trust
Montezuma Land Conservancy
Mountain Area Land Trust
Palmer Foundation
Poudre River Trust
Rio Grande Headwaters Land Trust
Roaring Fork Conservancy
San Isabel Foundation
San Miguel Conservation Foundation
South Metro Land Conservancy
Southwest Land Alliance
Three Rivers Land Trust
Valley Land Conservancy
Yampa Valley Land Trust

Municipal Open Space Programs

Boulder County Parks and Open Space
City of Boulder Open Space
Douglas County Open Space
Larimer County Rural Land Use Center
Larimer County Parks and Open Lands
Jefferson County Open Space
Town of Breckenridge
Pitkin County Open Space and Trails

Bibliography

Archaeology: Curecanti National Recreation Area, Colorado. Retrieved May 18, 2001, from National Park Service, Available: http://www.nps.gov/cure/webvc/archaeology.htm

An Assessment of Imperiled Habitat in Colorado (1998, March)[Poster]. Presented at the 1998 US-International Association of Landscape Ecology annual meeting, East Lansing, MI: Theobald, D.M.

Chronic, Halka. (1980). *Roadside Geology of Colorado*. Mountain Press Publishing Co., Missoula, Montana.

Coloradotrail.org., Retrieved May 21, 2001, Available: http://coloradotrail.org

Colorado Agriculture: A Profile. National Agriculture Statistics Service. (2001, February). R. Renee Liles of the U.S. Department of Agriculture and Don Ament of Colorado Department of Agriculture.

Colorado Mining Association, Retrieved May 15, 2001, Available: http://www.coloradomining.org/colomining.html

The Colorado Native Plant Society. (1997). *Rare Plants of Colorado*, (2nd Ed.). Falcon Press Publishing Co., Inc., Helena, Montana and the Rocky Mountain Nature Association, Estes Park, Colorado.

Colorado Partners for Fish and Wildlife, from Private Land Branch in Region 6, U.S. Fish and Wildlife Service. Retrieved May 17, 2001, Available: http://www.r6.fws.gov/pfw/COLORADO/co1.htm

Conservation Status Handbook: Colorado's Animals, Plants, and Plant Communities of Special Concern. Colorado Natural Heritage Program. Volume 3, No.2. May 1999.

Fitzgerald, J.P., Meaney, C.A., and Armstrong, D.M. (1994). *Mammals of Colorado*. Denver Museum of Natural History and University Press of Colorado. Niwot, Colorado.

Colorado Legislative Council Staff. (2001, March). *Focus Colorado: Economic and Revenue Forecast*, Table 7. Retrieved May 25, 2001, from Colorado by the Numbers.

Jobe, Margaret M. and Hollis, Deborah R. (1996). Retrieved May 15-16, 2001, from Colorado by the Numbers on-line database. University of Colorado at Boulder Government Publications Library.

Lofholm, N. and Draper, E. (2001, May 18). It's Wait and See on the Western Slope: Drilling Activity Already of Full Bore, *Denver Post*. Retrieved May 24, 2001, from the *Denver Post*, Available: http://denverpost.com

Mutel, Cornelia F. and Emerick, John C. (1992). *From Grassland to Glacier: The Natural History of Colorado and*

the Surrounding Region. Johnson Printing. Boulder, Colorado.

National Energy Policy: Reliable, Affordable, and Environmentally Sound Energy for America's Future. (2001, May). Report of the National Energy Policy Development Group. Retrieved May 23, 2001, Available: http://www.whitehouse.gov/energy

The National Role in Wildlife Habitat Protection. Chapter 8. Retrieved May 24, 2001, Available: http://ndis.nrel.colostate.edu/escop/handbook/chapter8.html

Purdy, Penelope. (2001, April 8). The Slippery Slope of Ski Resort Survival. *Denver Post*. Retrieved May 23, 2001, from the United States Forestry Service, Available: http://www.sarsfia.usfs.msstate.edu/scripts/ew.htm

Siemer, Eugene G. (1977). Colorado Water Knowledge, Colorado Climate: Colorado Experimental Station. Retrieved May 17, 2001, from Colorado State University, Available: http://waterknowledge.colostate.edu/controls.htm

Solley, W.B., Pierce, R.R., Perlman, H.A. (1995). USGS Circular 1200: Estimated Use of Water in the United States of America in 1995. U.S. Department of the Interior, United States Geological Survey. U.S. Government Printing Office.

Statistical Abstract of the United States: 1995. Table No. 365, U.S. Census Bureau. Retrieved May 21, 2001, from University of Colorado at Boulder Government Publications Library.

Statistical Abstract of the United States: 1990. Table No. 361, U.S. Census Bureau. Retrieved May 17, 2001, from the Land and Water Area of States and Other Entities, University of Colorado at Boulder Government Publications Library.

Wildernet: Your Guide to Outdoor Adventure. 2001 Interactive Outdoors Inc., Retrieved May 21, 2001, Available: http://wildernet.com/

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Colorado Association of Soil Conservation Districts
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Colorado Division of Wildlife
Colorado Timber Industry Association
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