

Utah Forest Action Plan



Division of Forestry, Fire & State Lands
2020



Cover Photos

Clockwise starting at top-right

Upper Provo River Prescribed Fire, photo credit: Uinta Wasatch Cache National Forest

Bear River Timber Sale, photo by Laura Ault, FFSL

Fencing to protect Aspen regeneration, Duchesne County, photo by PJ Abraham, FFSL

Boyden Farms, photo by Natalie Conlin, FFSL

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Executive Summary

The Division of Forestry, Fire and State Lands (FFSL) is preparing its second 10-year Utah Forest Action Plan (FAP) to assess threats and identify strategies to ensure healthy trees and forests into the future.

The 2020 FAP integrates with Utah's Shared Stewardship initiative, a risk- and outcome-based approach to address forestry and wildfire priorities across the State through collaborative, landscape-scale activities.

Utah's forests encompass a wide variety of environments and forest types that are valued for their scenic beauty; wood and non-timber forest products; wildlife habitat; and ecosystem services, such as clean air and water. The distribution and dominance of various tree species mirrors the wide range of elevations in Utah, from high, densely forested mountains to low-elevation woodlands and deserts.

In the heavily forested Rocky Mountains of northern Utah, the most common tree species by biomass is lodgepole pine, although Douglas-fir, quaking aspen, Engelmann spruce, and subalpine fir are also common. Quaking aspen and Douglas-fir are also abundant in the mountains of central and southern Utah, although this region is dominated by pinyon/juniper forests.

In the less mountainous portions of the State, Utah juniper and two species of pinyon (singleleaf pinyon and common or two-needle pinyon) are dominant, and Gambel oak occurs in some sites. The low-elevation deserts and steppes across southern and western Utah are mostly non-forest. Although these areas are not important for timber production, they can be very important in providing wildlife habitat, recreation and other values.

The State of Utah encompasses 54.3 million acres of land area, of which 18.2 million acres (34%) are forest. Utah's forests are distributed among several ownership groups dispersed throughout the State. In addition, Utah has 1.8 million acres of urban and community land with 16.6 percent tree cover, or 300,000 acres of urban and community forests.

The most important broad-scale trends in Utah's forests include increasing mortality and declining growth. Major factors affecting recent mortality are insects, disease and wildfires, each of which are related to shifts in climate patterns.

Threats to Utah's forests have been well documented by USDA Forest Service researchers, natural resource managers and policymakers over the past twenty years. These threats have raised growing public concern about declining forest health and increasing numbers of catastrophic and unwanted wildfires. In addition, the threats have been exacerbated by broader environmental shifts, primarily changes in climate patterns, and social changes, primarily growth and development. Finally, the decrease in forest-related businesses and jobs reflects a reduction in the capacity of all forest-management partners—federal, state and local agencies, Tribes, private landowners and private forestry businesses—to actively manage Utah's forests, or to do the work needed to address forest health and wildfire challenges.

Threats to Utah's Forests

- Declining forest health
- Increasing wildfires
- Climate change
- Growth and development
- Limited capacity for forest management

The goals and strategies developed by the Utah FAP 2020 align with Utah’s Shared Stewardship Agreement, a 2019 partnership initiative between the USDA Forest Service Intermountain Region and the State of Utah. Shared Stewardship is a fitting framework for the Utah FAP because it builds on a shared vision and strategies that seek to engage partners, stakeholders and communities in identifying and developing priority projects through collaboration. Like Shared Stewardship, the Utah FAP takes an “all lands” approach, recognizing the need to address wildland fire threats and other forest management objectives at a landscape scale and across ownership boundaries.

The Utah FAP’s four goals, and strategies to achieve them, are consistent for FFSL, all of its partners, and all forests statewide. The strategies are guided by the core elements and mutual commitments in Utah’s Shared Stewardship Agreement, as well as Key Performance Indicators (KPIs) developed by the State and Forest Service to monitor progress toward desired outcomes. The four goals are:

1. Restore healthy and resilient trees and forests across Utah.
2. Reduce wildfire risk to communities, water resources, and other natural resource values.
3. Increase collaborative landscape-scale forest restoration activities across the State.
4. Build capacity among partners, stakeholders and communities to engage in forest restoration activities across the State.

A priority landscapes map is presented for all forests in Utah based on the Shared Stewardship risk- and outcome-based approach. The map is a tool to help FFSL, the Forest Service and all their partners identify high-priority landscapes for forest restoration and wildfire risk-reduction projects through collaborative approaches.



Figure 1: *Ogden River Grant Close-out inspection.*
Photo by Jeran Farley, FFSL

Chapter 1: Introduction

What is the Utah Forest Action Plan?

The Utah Department of Natural Resources (DNR), Division of Forestry, Fire & State Lands (FFSL) is responsible for protecting and sustaining healthy forests across the State. FFSL fulfills this statewide responsibility through a close partnership with the U.S. Department of Agriculture (USDA) Forest Service. FFSL plans and implements its Forestry and Fire programs in partnership with the Forest Service. Through this federal-state partnership, FFSL has committed to prepare a statewide forest resource assessment and strategy every ten years, as have other states across the Nation. These assessments and strategies are known as state forest action plans. States follow certain guidelines for consistency but have flexibility to prepare these plans in ways that are responsive to their own context and priorities. The Utah Forest Action Plan 2020 responds to the dynamic shifts in policy and program priorities that have occurred in the State—as well as in the West and in the Nation—since the first Utah Forest Action Plan was prepared in 2010.

Why are we doing it?

FFSL is preparing the FAP 2020 because of our partnership with the USDA Forest Service, and also because we believe it is important to take a fresh look at how our forests are doing at least every ten years, by assessing our State's forest resources and reviewing changes in the social, economic and environmental context for our State's Forestry and Fire programs, particularly significant shifts in issues and policy priorities.

FFSL is also preparing the FAP 2020 because Utahns care about our State's forests. People in communities across the State know that forests are a major part of our natural environment and provide significant environmental values, such as clean air and water, wildlife and fish habitat, and biological diversity. They also know that forests contribute greatly to our social and economic well being by providing outdoor recreation opportunities and a variety of wood products.

In addition, Utahns know that our forests need care and maintenance if they are to be healthy and sustainable. Today, natural and human disturbances are altering forests and the natural environment more than ever before. These disturbances are occurring in Utah, other Western states, and across the Nation, on multiple scales and at ever-increasing rates, and they are having significant effects on health, safety and well being of human communities. FFSL is preparing the FAP 2020 to call attention to these trends and to develop strategies to care for Utah's forests and communities for the next ten years and beyond.

Who is it for?

The FAP is not only a ten-year assessment and strategy for FFSL and the Forest Service, it is a strategic action plan for all forest landowners and managers, partners and stakeholders, and communities with an interest in forests. It addresses needs and issues on all forest land in the State, including trees and forests on public and private lands, on remote landscapes and in urban areas and communities.

How are we doing it?

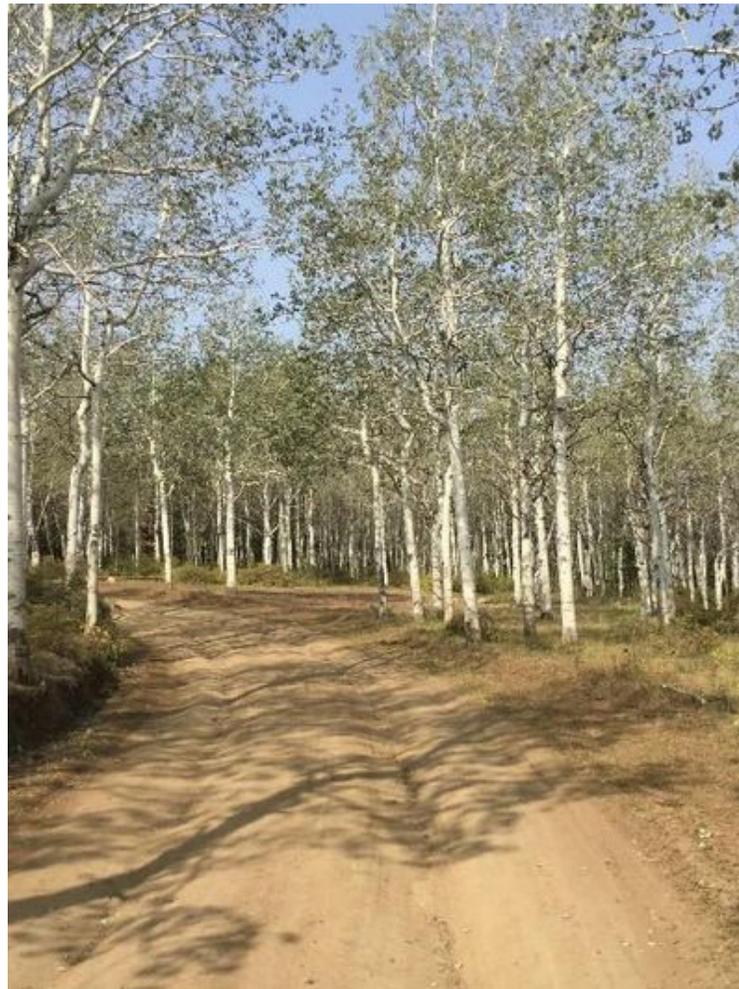
We are developing the Utah FAP based on guidance from the Forest Service, which helps bring consistency to the efforts of States in the West and across the nation. At the same time, we are taking a unique Utah approach to address our specific context—the issues and trends on our natural landscapes and in our

communities, as well as the directions and priorities in policies and programs. We are taking a new and exciting approach with our 2020 FAP, working to integrate the FAP with Shared Stewardship, a recent federal and state initiative that provides both a strong vision and strategies for addressing the management of Utah’s forests into the future.

We are sharing the FAP with partners, stakeholders as well as communities and working to coordinate the FAP with other statewide assessments and strategies.

How do we want to use it?

Through our strategy to integrate the FAP with Utah Shared Stewardship, our objective is to make the FAP useful and meaningful to FFSL and the Forest Service as we implement our programs and Shared Stewardship activities on all forests in the State. At the same time, the vision of Shared Stewardship and the FAP is to engage other partners, stakeholders and communities in addressing shared issues and priorities through collaborative, landscape-scale forest restoration activities across the State.



*Figure 2: Cold Springs Aspen Stand.
Photo by Erin Andrew*

Chapter 2: Assessing Utah's Forest Resources

What and where are Utah's Forests?¹

Utah's forests cover more than 18.2 million acres, or about one-third of the State's land area. These forests encompass a wide variety of environments and forest types that are valued for their scenic beauty, wood and non-timber forest products, wildlife habitat, and ecosystem services.

Utah Forest Areas

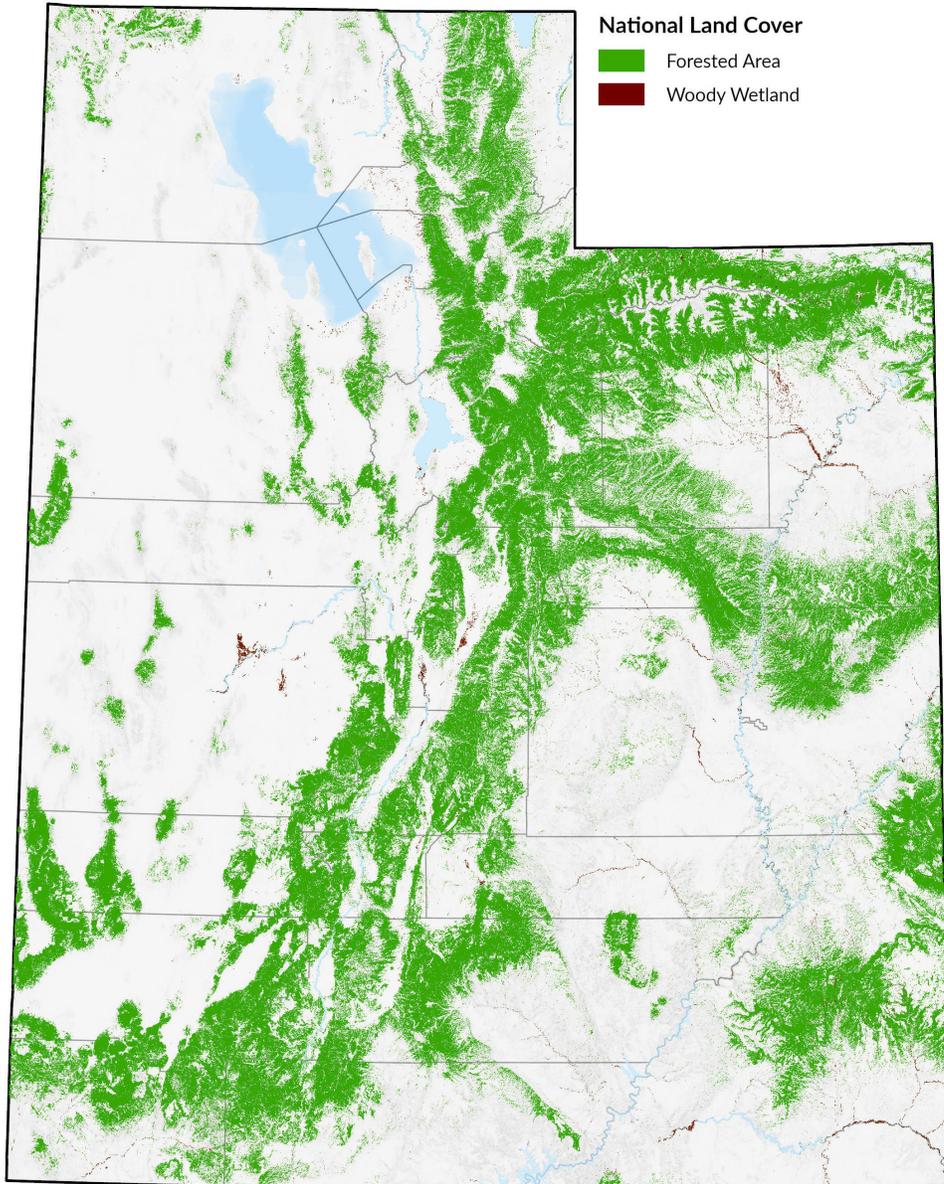


Figure 3: Forested areas in Utah showing all ownerships. FFSL produced this map using NRCS NLCD data.

¹ Data, narrative information, graphics, maps and photos for this discussion are largely drawn from the USDA Forest Service, Forest Inventory and Analysis reports, particularly *Forests of Utah, 2015*, a storymap found at: <https://ffsl.link/ForestsofUt> and *Utah's Forest Resources, 2003-2012*, Resource Bulletin RMRS-RB-20 (June 2016).

Forest Area

The State of Utah encompasses 54.3 million acres of land area, of which 18.2 million acres (34%) are forest. Reserved forests, such as those found in National Parks and Wilderness Areas, account for about 11 percent (2.1 million acres) of total forest land, with about one-quarter being productive and three-quarters being unproductive forests on reserved lands. Unreserved forest land accounts for 89 percent of the forest land in Utah and totals 16.1 million acres. Timberland constitutes 20 percent (3.7 million acres) of Utah's forest land, and the remaining 68 percent (12.4 million acres) is classified as unproductive forest land.

Forest Land Definitions

Reserved forest land is considered unavailable for any type of wood utilization management practice through administrative proclamation or legislation.

Unreserved forest land is considered available for harvesting activity where wood volume can be removed for timber products.

Both unreserved and reserved forest lands are further divided based on productivity. Unreserved forest land is subdivided into timberland and unproductive forests.

Timberland is defined as unreserved forest land capable of producing 20 cubic feet of wood per acre per year of trees designated as a timber species.

Unproductive forests, because of a combination of species' characteristics and site conditions, are not capable of producing 20 cubic feet of wood per acre per year of trees designated as a timber species.

Reserved forest land is also divided into **productive** and **nonproductive forests**. Some characteristics that contribute to productivity can be visibly obvious, such as the presence or absence of non-commercial species, rocky substrates, steep slopes, and high elevation. While these distinctions may be important for understanding reserved area management concerns – such as their effect on visitor experience – wood production capability on reserved forest land is useful only as a potential indicator of non-timber values. (From *Forests of Utah*, 2015. USDA Forest Service)

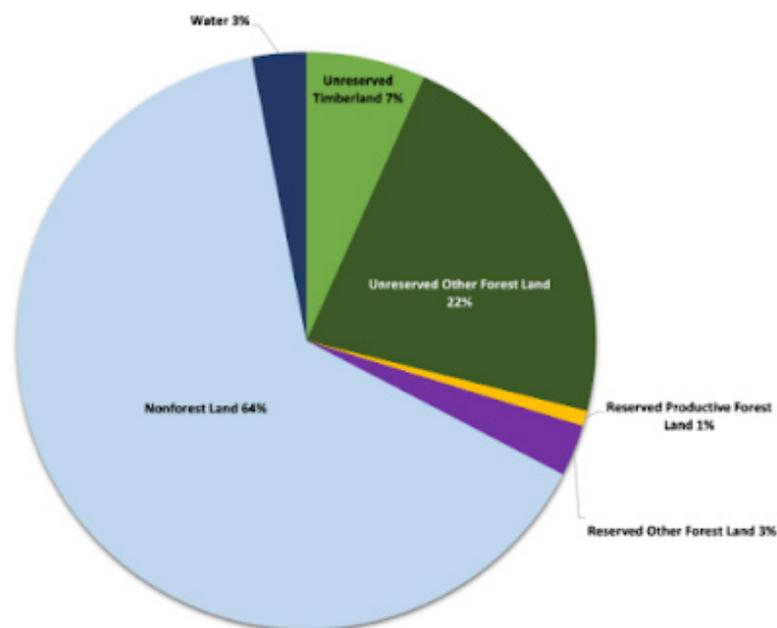


Figure 4: Breakdown of Utah's Forest Land. Percent of the State that is water, non-forest, unreserved timberland, unreserved other forest land, reserved productive forest land, reserved other forest land.

Figure 5 shows the percent of forest land by county in Utah, which ranges from less than 10 percent to nearly 70 percent.

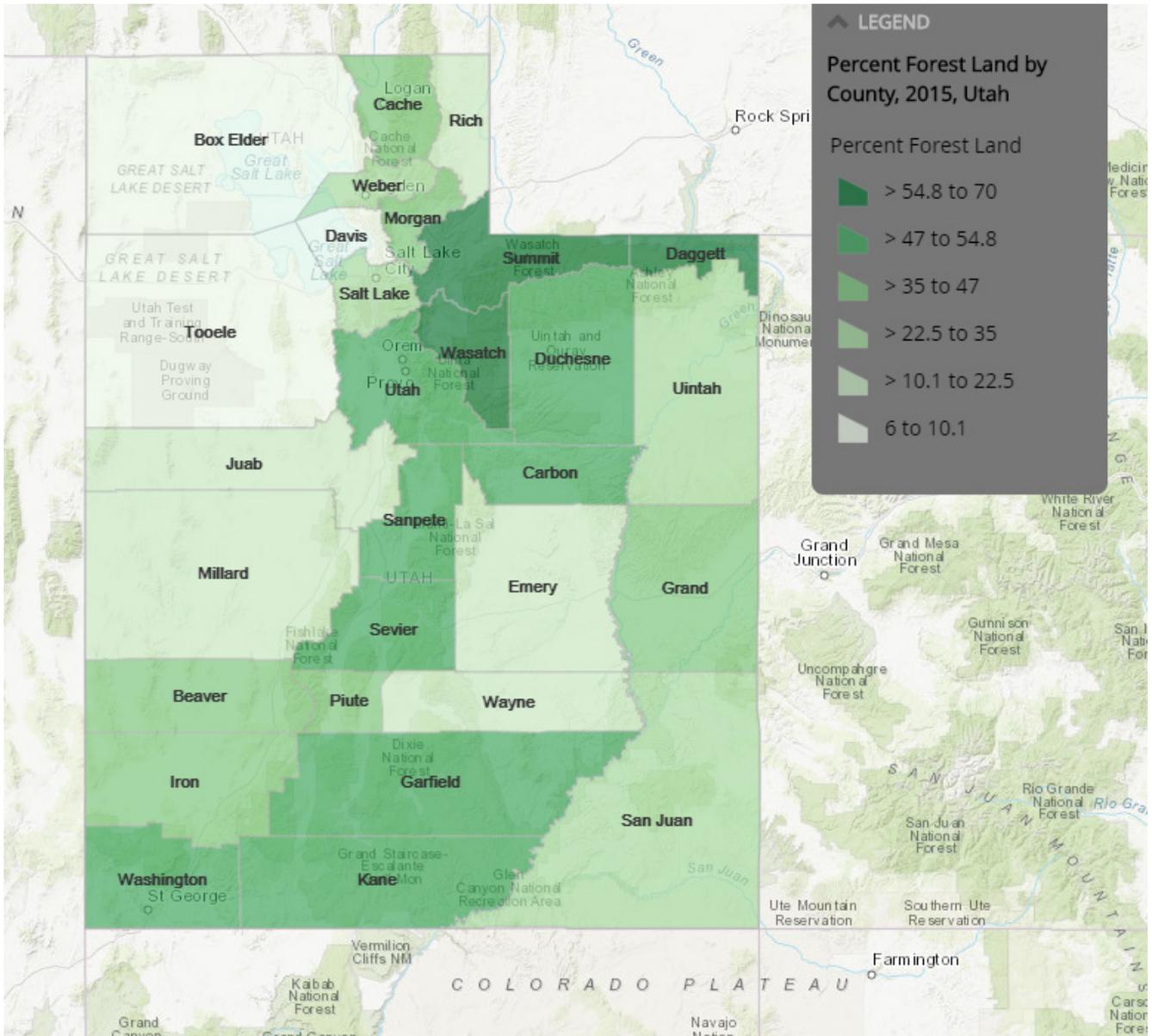


Figure 5: Percent Forest Land by County, Utah 2015.

Forest Types, Composition and Structure

The distribution of forest types across Utah's landscape is determined by factors such as climate, soil, elevation, aspect, and disturbance history. Many of these factors are reflected in Utah's ecoregions, which are often used to help understand natural landscapes. An ecoregion is a large landscape area that has relatively consistent patterns of physical and biological components that interact to form environments of similar productive capabilities, response to disturbances, and potentials for resource management. Utah is covered by parts of six different ecoregion provinces, as shown in Figure 6.

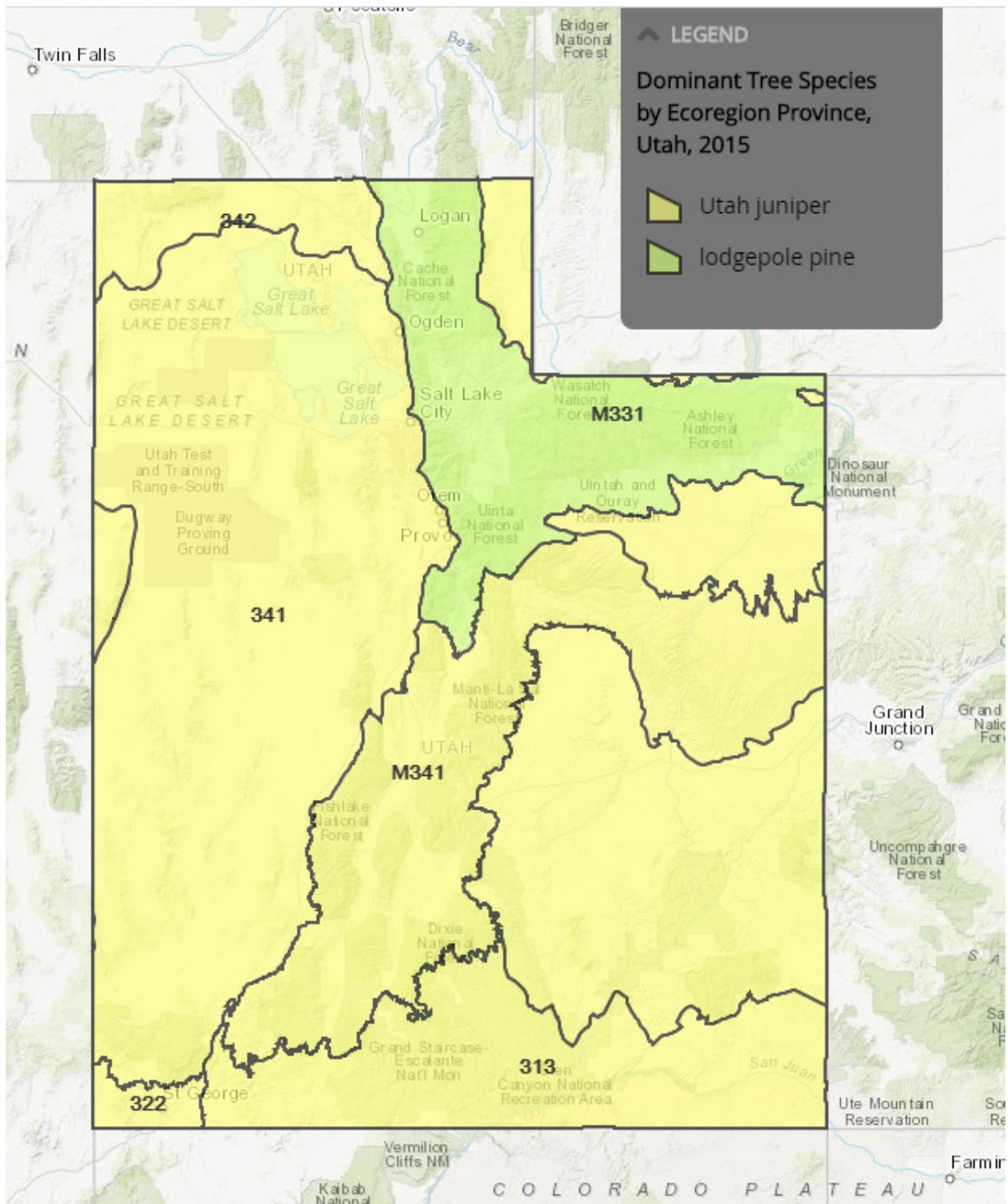


Figure 6: Dominant Tree Species by Ecoregion Province, Utah 2015.

Forest type is a classification of forest land based on the species forming a plurality of living trees growing in a particular forest. Forest type names may be based on a single species or groups of species. Forest types are an important measure of diversity, structure, and successional stage. Loss or gain of a particular forest type over time can be used to assess the impact of major disturbances such as fire, weather, insects and disease, and human-caused disturbances such as timber harvesting. (From *Utah's Forest Resources, 2003-2012*. USDA Forest Service)



The pinyon/juniper group is the largest of the 10 forest-type groups in Utah, covering 10.7 million acres. It accounts for 59 percent of the forest land in the State, most of which is in Ecoregion Province 341 (Intermountain Semi-Desert and Desert). Second largest is the woodland hardwoods group with 14 percent (2.5 million acres) of the State's forest land. Most of the woodland hardwoods group is in Ecoregion Province M331 (Southern Rocky Mountain Steppe-Open Woodland Coniferous Forest-Alpine Meadow) and Ecoregion Province M341 (Nevada-Utah Mountains Semi-Desert-Coniferous Forest-Alpine Meadow). The third largest group is aspen/birch with 9 percent

Figure 7: Aspen stand in fall color near Monroe Mountain, Fishlake National Forest. Photo by Darin Toone, USDA Forest Service.

of the State's forest land (1.6 million acres) with almost equal proportions in Ecoregion Province M331 (Southern Rocky Mountain Steppe-Open Woodland-Coniferous Forest-Alpine Meadow) and Ecoregion Province M341 (Nevada-Utah- Mountains Semi-Desert-Coniferous Forest-Alpine Meadow). Fourth largest is the fir/spruce/mountain hemlock group with 8 percent of the State's forest land, mostly in Ecoregion provinces M331 and M341 (Southern Rocky Mountain Steppe-Open Woodland-Coniferous Forest-Alpine Province and Nevada-Utah-Mountains Semi-Desert-Coniferous Forest-Alpine Meadow Province.)



*Figure 8: Aspen regeneration after fire.
Photo by Scott Dickson, USDA Forest Service.*

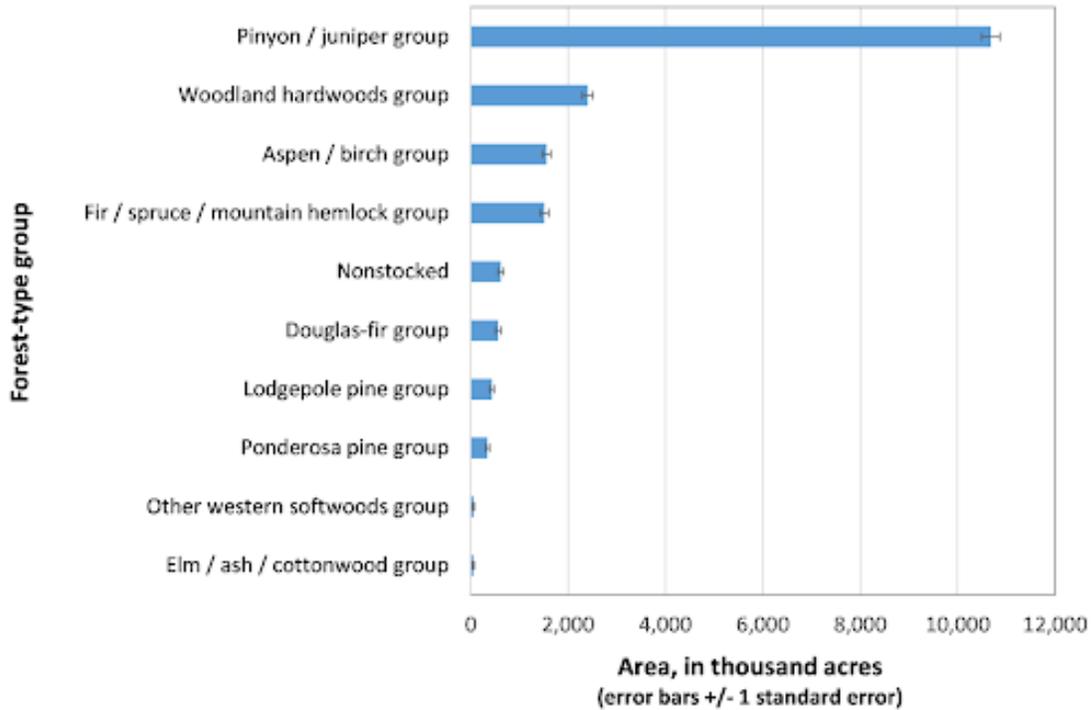


Figure 9: Area occupied by forest-types in Utah 2015.

The distribution and dominance of various tree species mirrors the wide range of elevations in Utah, from high, densely-forested mountains to low-elevation woodlands and deserts. In the heavily forested Rocky Mountains of northern Utah, the most common tree species by biomass is lodgepole pine, although Douglas-fir, quaking aspen, Engelmann spruce, and subalpine fir are also common. Quaking aspen and Douglas-fir are also abundant in the mountains of central and southern Utah, although this region is dominated by pinyon/juniper forests.



In the less mountainous portions of the State, Utah juniper and two species of pinyon (singleleaf pinyon and common or two-needle pinyon) are dominant, and Gambel oak occurs in some sites. The low-elevation deserts and steppes across southern and western Utah are mostly non-forest. Although these areas are not important for timber production, they can be very important in providing wildlife habitat and non-traditional forest values and resources.

Figure 10: Rock Creek drainage, High Uintas Wilderness Area, Ashley National Forest. Photo by Sara A Goeking, USDA Forest Service.



Figure 11: Mixed juniper stand.
 Photo by Scott Dickson, USDA Forest Service.

The largest proportion of Utah’s forest land is covered by fairly old stands of trees, with 58 percent older than 100 years. About 16 percent of the forest land is covered by trees more than 200 years old and 11 percent is covered by trees less than 20 years old.

There is considerable difference in the age of tree stands between major forest-type groups in Utah. The other western softwoods group, which includes long-lived species such as limber pine and Great Basin bristlecone pine, is the oldest with 73 percent of the forest area in stands over 140 years old. Almost 54

percent of pinyon/juniper stands in the pinyon/juniper group are over 140 years old. The aspen/birch group, which is composed primarily of the aspen forest type in Utah, is generally shorter lived than conifer species in the State. More than 90 percent of aspen forests are younger than 120 years old.

Forest Ownership

The State of Utah encompasses 54.3 million acres of land area, of which 18.2 million acres (34%) are forest. Utah’s forests are distributed among several ownership groups that are geographically dispersed throughout the State.

The Bureau of Land Management (BLM) manages more forest land in Utah than any other land ownership or management group. The BLM’s forest land totals nearly 7.2 million acres, or 39 percent of the State’s total forest land area. Eighty-five percent, or almost 6.1 million acres, of the forest land managed by the BLM is classified as unreserved forest land, while the remaining 15 percent falls within reserved areas such as wilderness. Only 2 percent of all unreserved forest land managed by the BLM, or 115,000 acres, is further classified as productive timberland.

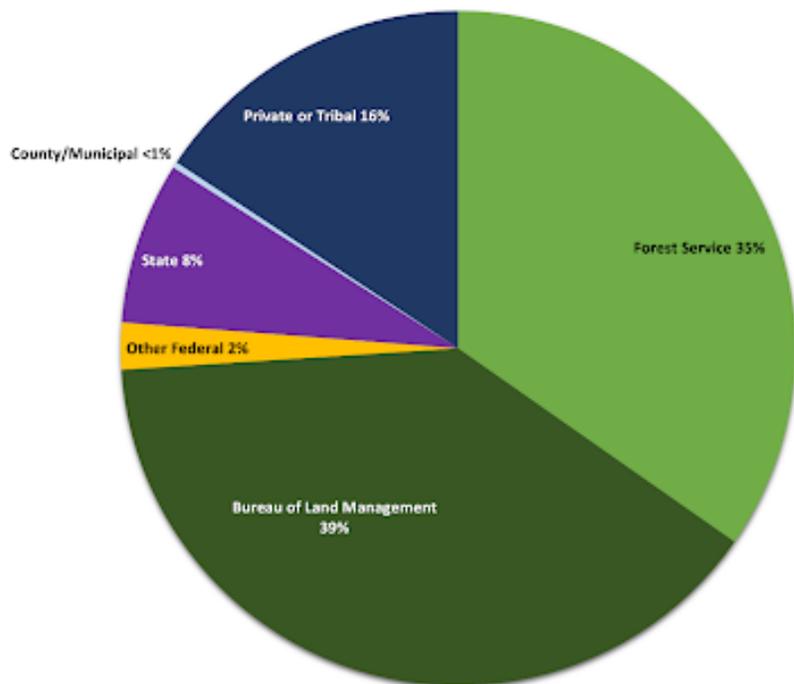


Figure 12: Percentage of forest land in each ownership category, Utah 2015.

The U.S. Forest Service's National Forest System is Utah's second-largest manager of forest land and manages over 6.3 million acres of forest land. This represents nearly 12 percent of Utah's total land area and about 35 percent of its forest land area. In Utah, the U.S. Forest Service manages six National Forests. About 91 percent, or 5.8 million acres, of the forest land managed by the U.S. Forest Service is classified as unreserved forest land, while the remaining 9 percent falls within reserved areas such as wilderness. About 48 percent of all unreserved forest land managed by the U.S. Forest Service, or nearly 2.8 million acres, is further classified as productive timberland. Forest land managed by the U.S. Forest Service contains more net volume of live trees, and higher average annual tree mortality, than any other owner class.

Private owners in Utah manage 16 percent of the State's forest land, or 2.9 million acres. Private owners in Utah include individuals and families, corporations, Native American tribes, and non-governmental organizations such as private associations or conservation groups.

Other public agencies managing large portions of Utah's forest land include the State of Utah and the National Park Service (NPS). The State of Utah manages 1.4 million acres, or 8 percent of the forest land in Utah. The NPS manages 375,000 acres (2%). The remaining 93,000 acres (1%) is managed either by county and municipal governments, the Departments of Defense or Energy (DoD/DoE), other local governments, or the U.S. Fish and Wildlife Service (USFWS).

In addition to these forests, Utah has 1.8 million acres of urban and community land with 16.6 percent tree cover, or 300,000 acres of urban and community forests.² Urban and community forests are expanding with urban and community development, and they provide significant ecosystem services to the people of Utah.



Figure 13: Herriman is a new development in the Salt Lake Valley with few trees. It will soon have more tree cover like other communities in the Valley.

How are our Forests doing?³

This section discusses conditions, trends and issues affecting Utah's forests based on the latest data from the USFS, Forest Inventory and Analysis (FIA) and the priorities for forestry programs in the State. We discuss both natural changes and disturbances affecting forests as well as social, economic and policy forces, particularly timber harvest and forest management strategies.

Volume, Biomass, and Carbon

The volume of wood in a forest can be an important indicator of forest health, sustainability, and structure. U.S. Forest Service, FIA estimates wood volume, biomass, and carbon by recording species, heights, and diameter of trees in FIA plots around the State. Figure 14 shows the net volume of live trees in Utah forests by county. The FIA storymap includes an interactive map that shows the volume of live and standing dead trees by county.

² U.S. Urban Forest Statistics, Values and Projections. Nowak, D. and Greenfield, E. Journal of Forestry, March 2018, pp. 164-177.

³ Data, narrative information, graphics, maps and photos for this discussion are largely drawn from the USDA Forest Service, Forest Inventory and Analysis reports, particularly *Forests of Utah, 2015*, a storymap found at: <https://ffsl.link/ForestsofUt> and *Utah's Forest Resources, 2003-2012*, Resource Bulletin RMRS-RB-20 (June 2016).

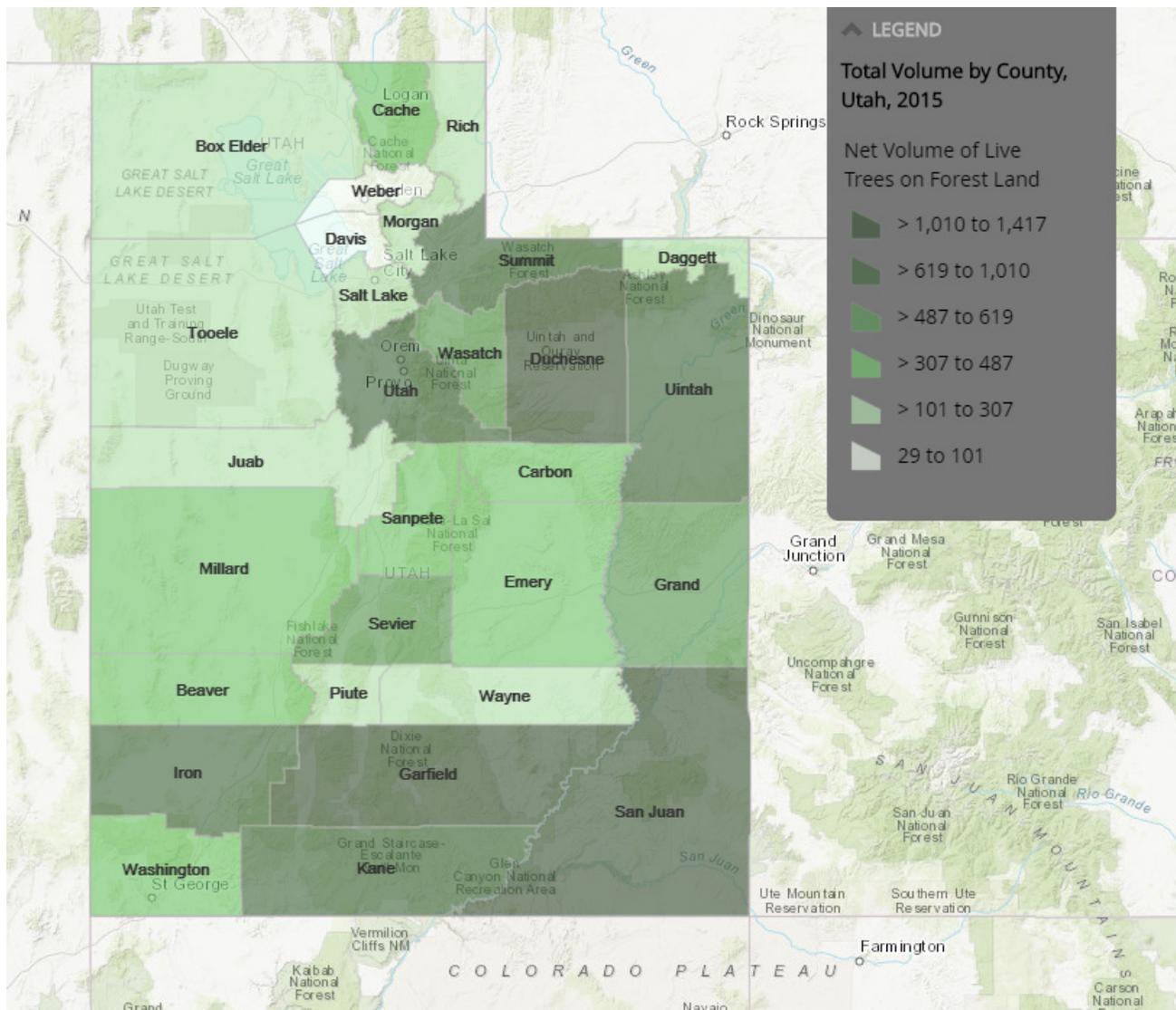


Figure 14: Net Volume of Live Trees (in million cubic feet) by County, Utah 2015.

The net volume of all live trees on Utah’s forest land totals 15.1 billion cubic feet. More than 51 percent of the live volume, or 7.8 billion cubic feet, is located on lands managed by the U.S. Forest Service (USFS). About 13 percent of the USFS-managed volume exists on reserved lands and is thus unavailable for harvest. Privately owned forests contain over 13 percent of the State’s total live volume, or 2 billion cubic feet. Twenty-eight percent, or 4.2 billion cubic feet, exists on lands managed by various federal agencies other than the USFS, and another 1 billion cubic feet is on lands managed by state and local governments. On a Statewide basis, unreserved forests include approximately equal volumes on timberland and unproductive forest land.

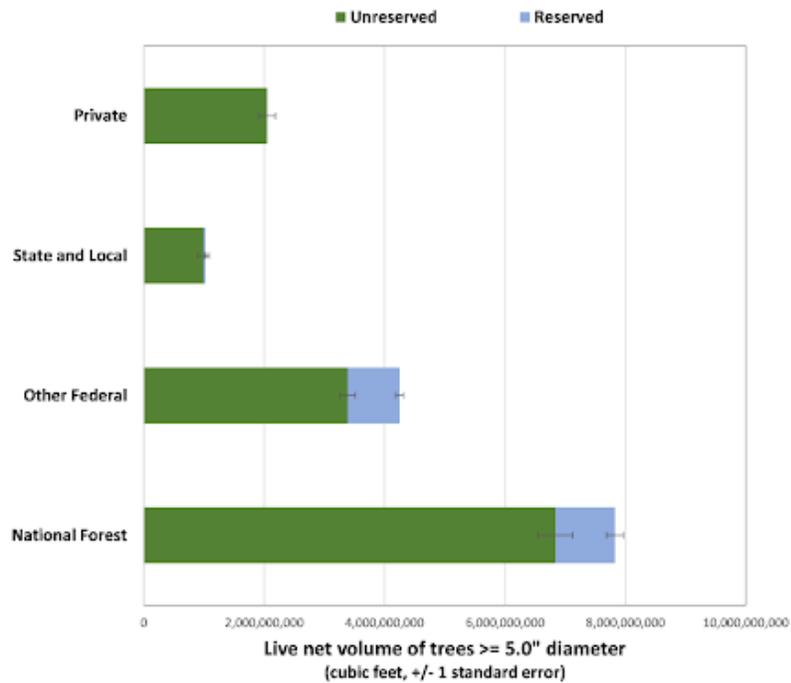


Figure 15: Live tree net volume by ownership group and reserved/unreserved categories. Utah 2015

Growth and Mortality

The most important broad-scale trends in Utah’s forests include increasing mortality and declining growth. Some of the major factors affecting recent mortality include insects, disease and wildfires, all of which are likely related to multi-year weather patterns such as drought.

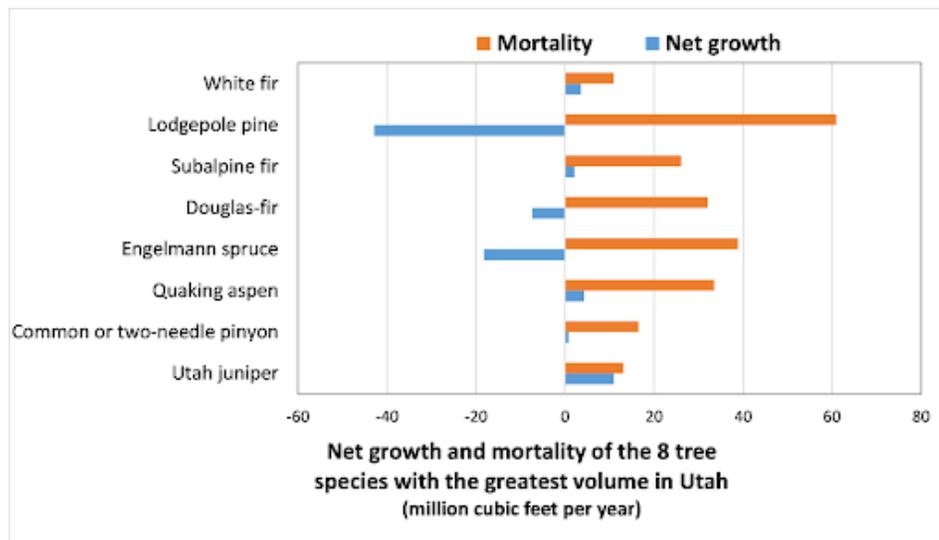


Figure 16: Net growth and mortality of eight major tree species (by volume). Net growth is positive for all tree species except lodgepole pine, Douglas-fir, and Engelmann spruce.

The pinyon/juniper forest-type group contains more live tree volume (6.9 billion cubic feet) than any other forest-type group. When the volumes of individual tree species are compared rather than forest types, Utah juniper has more volume than any other species. With 4.1 billion cubic feet statewide, Utah juniper accounts for more than one-quarter of all live tree volume in Utah.

Among the tree species that make up most of Utah’s timber volume, lodgepole pine, Douglas-fir, and Engelmann spruce had negative net growth, meaning mortality exceeded gross growth. Quaking aspen and common or two-needle pinyon pine are among those species showing net growth. These two species can be important for wildlife habitat, fuelwood, and biomass energy utilization.

In Utah, the most prevalent causes of mortality were insects, disease, and fire. The potential interactions between insects, disease, and fire are complex, but mortality agents identified in the field should reflect the most proximate cause of death.

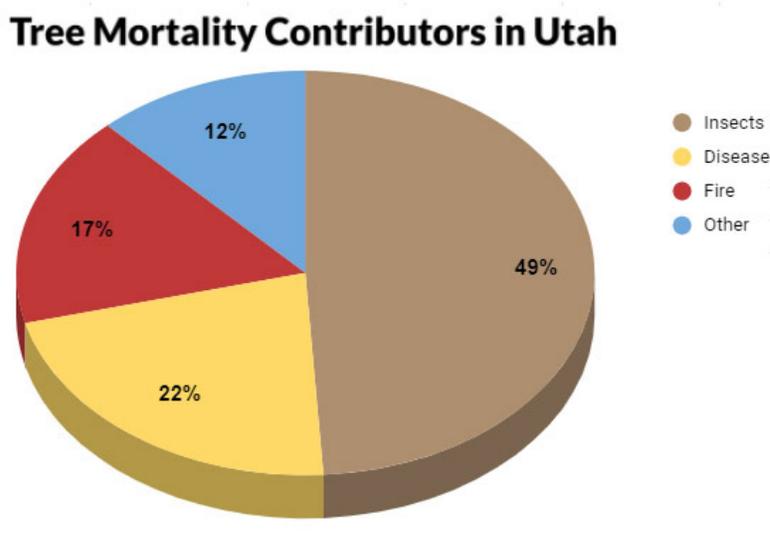


Figure 17: Percentage of contributors of tree mortality in Utah, 2003-2012. Chart produced by FFSL.

Insects and Disease

Nearly 82 percent of total Engelmann spruce mortality and nearly 68 percent of lodgepole pine mortality were attributed to insects. The most conspicuous mortality causing insects for Engelmann spruce, lodgepole pine, Douglas-fir, white fir, subalpine fir, and common or two-needle pinyon are bark beetles, so it is reasonable to attribute high levels of mortality to ongoing endemic or epidemic populations of these beetles. The spruce beetle is a native bark beetle that can grow to epidemic population levels in stands of mature, dense Engelmann spruce. Extensive and severe Engelmann spruce mortality, caused by the spruce beetle, has been reported in Utah since the 1980s. Continued Engelmann spruce mortality is expected into the future where mature host spruce stands still exist.

The mountain pine beetle is a native bark beetle that preferentially attacks mature, dense stands of primarily lodgepole pine. The mountain pine beetle is also responsible for mortality in ponderosa pine and limber pine in Utah and is likely responsible for a sizable portion of the mortality for those species during the 2003 to

2012 reporting period. Lodgepole pine mortality in Utah appears particularly acute because the range of the species is limited to the Uinta Mountains and the northern half of the Wasatch Mountains in the northeast part of the State. The most severe mortality has occurred on the north slope of the Uinta Mountains where stands were over 100 years old.

Other bark beetles have been active in their respective hosts, but not to the magnitude of the previously mentioned bark beetles. The western balsam bark beetle is likely the primary mortality agent for subalpine fir, although this beetle typically occurs as part of a “mortality complex” that involves several pests including root disease. The Douglas-fir beetle is the primary mortality agent for Douglas-fir in Utah and has been especially active in the southern half of the State. Insect-caused mortality to common or two-needle pinyon in Utah can be attributed to epidemic pinyon ips beetle populations. Another native beetle, this insect has been particularly active in response to drought conditions early in the 2000s. In stark contrast to the major conifer species in Utah, mortality in quaking aspen is attributed almost entirely to disease.

Wildfires

Fire is a major disturbance that influences the structure and dynamics of Utah’s forests. FIA report data from the Monitoring Trends in Burn Severity (MTBS) program shows that 292 fire perimeters from 224 different fires burned just over 2 million acres in Utah between 2003 and 2012. Of the forest land area burned by these fires, 43 percent was on BLM land, 34 percent on National Forest System (NFS) land, and 13 percent on private land.

A century of fire suppression throughout the Interior West has led to a fuels buildup and stand densification and may lead to uncharacteristically intense fires. Areas that burn intensely may experience slow regeneration and change in species composition and forest structure. In some forest types, such as ponderosa pine, fire can maintain open stands and stimulate the growth of grasses and forbs in the understory.

The 2013 Western Regional Action Plan of the National Cohesive Strategy describes the Western wildfire context in Western states as a century of widespread fire exclusion and recent decades of severe reduction in active forest management, which have resulted in a build-up of surface fuels (downed wood, litter and duff) and the overstocking of forests with trees and ladder fuels. Large areas of western grasslands and fire-adapted forests are in need of restoration. Additionally, both forests and grasslands are suffering the effects of long-term drought, changing climate conditions, and the rapid spread of invasive species.

The forest and rangeland health problems in the West are widespread and increasing, affecting wildlife habitat, water quality and quantity and long-term soil productivity, while providing conditions for uncharacteristically large, severe, and costly wildfires, with increasing threats to human life and property. These environmental conditions, along with the effects of an expanding wildland urban interface (WUI), underlie four broad areas of risk: risk to firefighters and civilian safety, ecological risks, social risks, and economic risks.

Managing wildfires in the West is becoming increasingly complex, as the number of acres burned has increased substantially since the late 1980’s. Figure 18 illustrates the upward trend in acres burned by wildfires in 11 western states since 1916. In 2012, 7.5 million acres burned in these 11 Western states, with 1.67 million acres in Idaho, followed by Oregon (1.26 mm ac.), Montana (1.22 mm ac.), and California (0.87 mm acres).

Acres burned (millions)

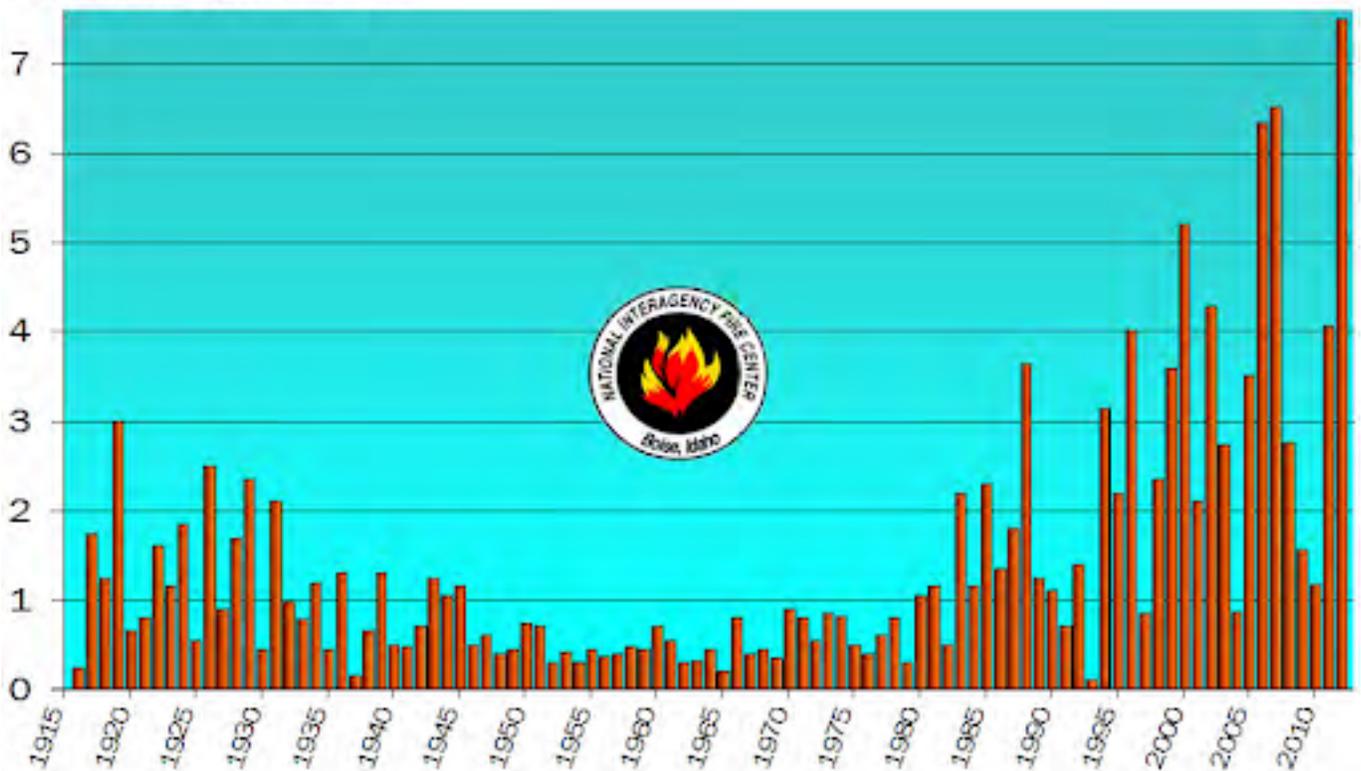


Figure 18: Acres burned by wildfires in eleven Western states, 1916-2012.

(Arizona, California, Colorado, Idaho, Montana, New Mexico, Nevada, Oregon, Utah, Washington, and Wyoming). Source data: National Interagency Fire Center.

In addition to the changes related to long-standing fire suppression practices, the number and intensity of wildfires over the past two decades has been affected by increasing temperatures and drought conditions as well as growing community development—people, structures and infrastructure—in and around Utah’s forests. These changes—related to both the natural environment and social and economic systems—have led to changes in policies and management practices related to wildfire and forests. Utah and other Western states have developed their own responses to wildfire based on the National Cohesive Strategy and the Shared Stewardship initiative. (See Chapter 5: Integrating with Other Plans)

One wildfire challenge, as described in *Toward Shared Stewardship Across Landscapes*, is to change the Nation’s history of excluding fire from fire-adapted landscapes. Nearly every landscape in the United States has a history of fire, but the cascading effects of more than a century of fire exclusion and fuel buildups, changes in land use, extended drought, warming temperatures, and the spread of invasive species have led to widespread changes in vegetation conditions and fire frequency across the Nation. The effects of fire exclusion can be called a “fire deficit,” which can vary depending on many factors. For example, a ponderosa pine woodland with a history of burning every 5 years on average might not have burned at all since the 1950s, creating a tremendous fire deficit. The fire deficit is the difference between the historical rate of burning and the current rate of fire frequency (whether wildfire or prescribed fire) plus mechanical treatments. Figure 19 shows the difference. On forested lands, the average annual fire deficit can range up to 60 percent—that is, up to 60 percent more of the landscape burned historically than now, especially in the West.

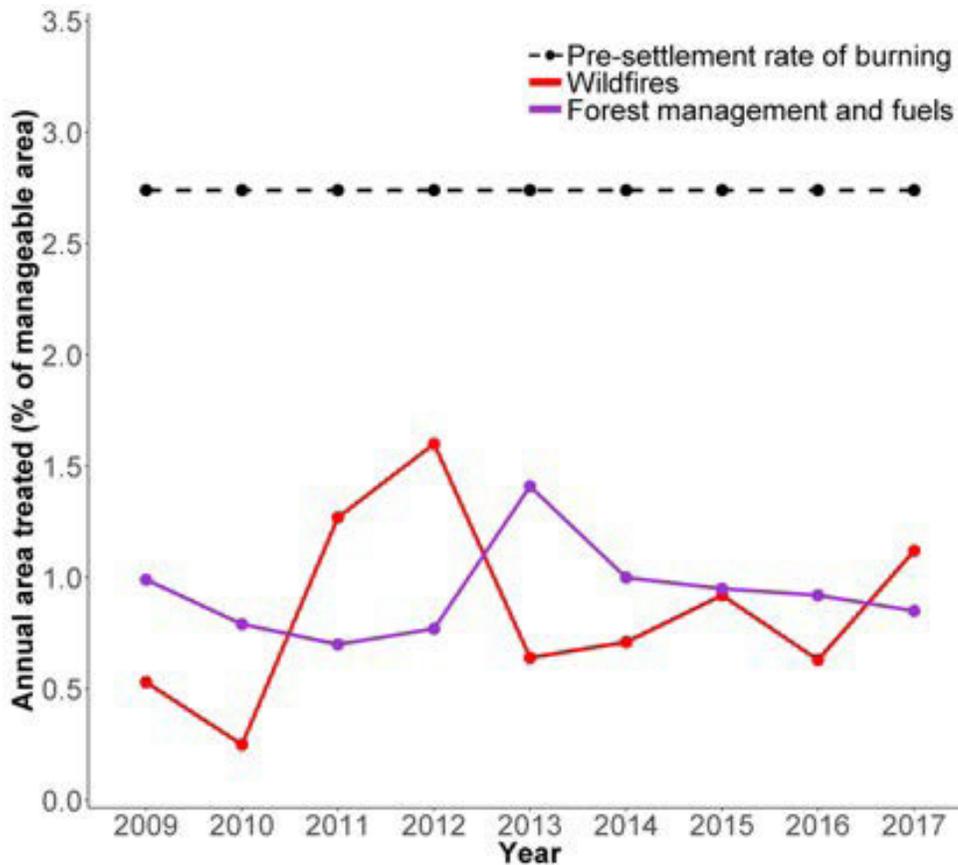


Figure 19: Fire Deficit Chart
 Area in percent of lands in the United States (excluding wilderness and roadless areas) affected by wildfire and fuels treatments from 2009 to 2017. The dotted line at the top, based on LANDFIRE fire regime data, shows the historical rate of burning.

The result has been fuel buildups and a growing number of catastrophic fires. Scientists predict that extreme fire danger across much of the West will become the new normal by the middle of the 21st century. Recent experience confirms the trend. Impelled by fire seasons lengthening into fire years, land managers might be inclined to step up fire suppression, compounding fire deficits and increasing future wildfire risk.

Utah’s Timber Harvest and Forest Products Industry⁴

The FIA 2003-2012 report on Utah’s forest products industry concludes with the following statement, which reflects a key challenge facing Utah’s forests today—our capacity to conduct active management in our forests:

“The State’s timber harvest in 2007 was 73 percent of what it was in 2002 and only about one-half of the 1992 level. These declines in Utah’s timber harvest volumes pose significant challenges to both the industry and forest sustainability, because the ability to conduct vegetation management and mitigate mortality impacts has decreased as timber processors and forest operators have gone out of business.”

⁴ Data and information for this section are from a draft report FIA 2018 entitled The Four Corners Timber Harvest and Forest Products Industry, 2016, by Steven W. Hayes, et al. Resource Bulletin RMRS-RB-xx. Fort Collins, CO: USDA Forest Service, Rocky Mountain Research Station.

In 2016, Utah had approximately 3.7 million acres of non-reserved timberland, with National Forests accounting for 75 percent, private and tribal owners accounting for 16 percent, and other public agencies accounting for the remaining 9 percent. All private timberland was classified as NIPF timberland. Utah had no large tracts of timberland owned by entities operating primary wood processing facilities. Sawtimber volume on non-reserved timberlands was estimated at 4.2 billion cubic feet or approximately 21 billion board feet Scribner in 2016.

Utah's 2016 commercial timber harvest was 24.9 MMBF Scribner, 29 percent higher than the 2012 harvest of approximately 19.4 MMBF. Although harvest was higher in 2016, this volume is 18 percent less than the 2007 harvest of around 30 MMBF Scribner, and over 60 percent less than the 1992 harvest of 64 MMBF. Of the timber harvested in Utah during 2016, 48 percent was live and 52 percent was salvage or standing dead when harvested. While Utah's harvest has increased overall since 2012, all of this increase has occurred on National Forest land which increased by 96 percent. Harvest levels from private and tribal timberlands, and other public lands, fell over this same period by 43 percent and 50 percent, respectively.

As in most of the western states, decreasing federal timber harvests during the 1990's led to greater shares of annual timber harvest coming from other ownerships. National Forests still provided the majority of the state's harvest (80 percent) in 2016, but the volume and share supplied by private and tribal owners continues to be an important component. During 2016, private and tribal landowners accounted for 14 percent (3.6 MMBF) of Utah's timber harvest. The share of harvest from BLM and state lands in Utah was 6 percent of the total in 2016.

National Forests provided the majority of sawlogs and house logs harvested in Utah, with 80 percent and 82 percent, respectively, in 2016. National Forests also provided the majority of other products (e.g., furniture logs, post and poles, fiber logs) at over 76 percent. Sawlogs accounted for about 72 percent (17.9 MMBF) of the total volume harvested in 2016; house logs were 12 percent; and other products accounted for about 16 percent.

In 2016, Summit County led Utah's timber harvest with 29 percent (7.3 MMBF) of total volume, followed by Kane and Sanpete Counties with 13 and 7.5 percent, respectively. In 2012, Summit County led Utah's timber harvest, with 33 percent (6.4 MMBF Scribner) of total volume; Uintah followed with 12 percent (2.3 MMBF); and Emery, Rich, and Sanpete followed, each providing 7.7 percent (1.5 MMBF).

Chapter 3: Threats to Utah's Forests

Threats to Utah's forests have been well documented by USDA Forest Service researchers, natural resource managers and policymakers over the past twenty years. These threats have raised growing public concern about declining forest health and increasing numbers of catastrophic and unwanted wildfires. In addition, the threats have been—or are being—exacerbated by broader environmental shifts, primarily changes in climate patterns—particularly precipitation and temperature—and social changes, such as growth and urban development. Finally, the decrease in forest-related businesses and jobs reflects a reduction in the capacity of all forest-management partners—federal, state and local agencies, Tribes, private landowners and private forestry businesses—to actively manage Utah's forests, or to do the work needed to address forest health and wildfire challenges.

Threats to Utah's Forests

- Declining forest health
- Increasing wildfires
- Climate change
- Growth and development
- Limited capacity for forest management

Declining Forest Health

Declining forest health has become an overarching public concern in Utah and much of the Western U.S. due to increasing mortality and decreasing growth of mature forests. Forest health is affected by many factors, environmental and social. It is a broad term reflecting the capacity of forests, as natural systems, to function well and provide ecological benefits to society, such as clean water, clean air, fish and wildlife habitat, biodiversity, and carbon sequestration.

Key factors affecting the health of Utah's forests are insects and disease, as well as wildfires. The effects of all these factors have been increasing, and they are related to changes in weather patterns, such as multi-year drought. These factors are widely and consistently recognized by federal, state and local natural resource agencies when addressing the long-term health and sustainability of forests, watersheds, critical habitat and natural environments in Utah.

Concerns about declining forest health have been growing across the nation, and they are much stronger in Western states, including Utah. The 2011 National Report on Sustainable Forests notes the challenges of understanding and describing forest health, but identifies insect-induced tree mortality as a key indicator. In Utah, insect outbreaks have accounted for about half of the State's total tree mortality in recent years.

"... the Nation's forests are subject to increasing levels of disturbance, such as insect infestation and fire. These disturbances result from processes we often cannot control and may not always fully understand. In particular, the incidence of insect-induced tree mortality has increased three-fold in the past decade. This fact is backed by substantial anecdotal experience and is undoubtedly the clearest red flag emerging from this report."

U.S. Forest Service. 2011. National report on sustainable forests—2010. FS-979. Washington, DC.

Because most ecosystems across the United States are adapted to periodic stressors and disturbances, such as drought, fires, storms, and outbreaks of insects and diseases, it is difficult to describe and measure whether a forest is healthy. The USDA Forest Service has developed a mapping tool to help understand

whether a forest is healthy by identifying the percentage of forest area, or trees, within each watershed classified as being “at risk” of dying within a 15-year time frame due to insects and disease. The National Insect and Disease Composite Risk Map by Subwatersheds (below) shows forest areas across the country in red if they are in “hazard condition,” which means “that, without remediation, at least 25% of standing live basal area greater than one inch in diameter will die over a 15-year time frame (2013 to 2027) due to insects and diseases.” There are about 81.3 million acres of forest classified as being in hazard condition across the country, the vast majority in Western states. Utah has a substantial area of forests in hazard condition in the northeastern part of the State, with other watersheds at significant risk scattered throughout Utah’s forested areas.

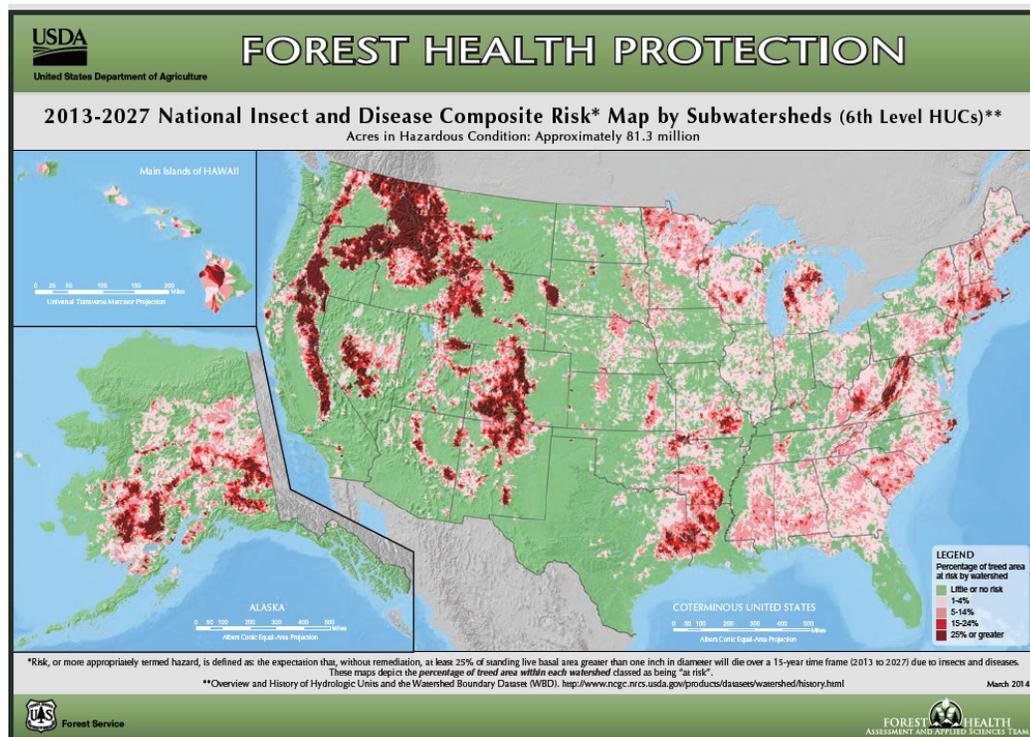


Figure 20: National insect & disease composite risk map by subwatersheds (2013-2027).

Increasing Wildfires

Wildfire has become recognized as the major threat to Utah’s forests over the last decade. Catastrophic fire has become the focus of federal, state, and local policy and management discussions related to forests and communities. These discussions have led to new policies, tools, and resources for addressing wildfire, as well as forest health, through the National Cohesive Wildland Fire Management Strategy, Utah’s Catastrophic Wildfire Reduction Strategy and, most recently, Utah’s Shared Stewardship Agreement.

Wildfires are natural disturbances, like insects and disease, that affect forest health. They have been exacerbated by climate change, growing in size and intensity with increased temperatures and decreased precipitation. They have also become more frequent, destructive and dangerous with urban growth and development. As human fire-starts have increased, wildfires have put more of the homes and communities built into forested landscapes at risk.

In addition, wildfire threats are related to past forest management policies and practices, such as fire suppression efforts that have excluded fire from the forest and prevented it from playing its natural role. New policies and tools for wildfire management focus on restoring the natural roles of fire in the forest in ways that are safe for communities. Helping communities to adapt and live with fire is a key objective. The following excerpts from Utah's Catastrophic Wildfire Reduction Strategy (CatFire) reflect on the roles of fire in the forest, as well as the effects of management practices and increasing numbers of homes and communities in the wildland-urban interface (WUI):

Recognizing that fire does play an important ecosystem service role, the outcome of this strategy is to identify and implement solutions to abate those fires whose size and intensity prove damaging to landscapes, economies, and human safety. These fires are termed "catastrophic" because they cause unacceptable harm to resources and assets valued by society, including ecosystem and community health and resilience.

In most cases, fires reach catastrophic levels largely as the result of human intervention, or lack thereof, on the land. Invasive species, policies that reduce naturally occurring and beneficial wildfires, and homes and communities in the wildland urban interface (WUI) have altered landscapes in ways that increases the risk of fires getting out of control or causing harm to human life and property. These are the wildfires for which this process seeks meaningful solutions. Rather than just reducing fires, the ultimate goal is to return landscapes to a condition of health and resilience that allows for wildfires to burn without becoming catastrophic to either human or natural systems.

"We can not change the weather or topography; however, we do have the power to impact both the fuel load and the resilience of communities to wildfire. We have knowledgeable and experienced leadership in Utah with partnerships and programs to improve landscape health and thus significantly reduce the threat posed by wildland fire. Likewise, we know how to improve the resilience of communities to wildfire. If we coordinate the efforts of all interested parties, including local partners, we can reduce the impacts and costs of wildland fires."

From CatFire Report, Executive Summary of Leonard M. Blackham.

In addition to the increasing costs of wildfire suppression activities, catastrophic wildfire inflicts significant damage and financial burden on State and local economies and critical infrastructure. Utah's 2019 Hazard Mitigation Plan highlights the substantial impacts wildfire can have on communications, electrical, water delivery systems and transportation infrastructure:

- Communications infrastructure (e.g. internet, phone, television, radio) including emergency notifications can be interrupted if cell phone towers are damaged in wildfire incidents. This may impede evacuation notices if mobile phones and radio and television broadcasts are hindered. Damaged radio relay towers can also impact emergency responders' ability to communicate effectively.
- The destruction of energy infrastructure like power lines can impact medical services and equipment to homes and hospitals if redundancies like generators are not in place and adequately fueled until power can be restored. Downed powerlines can also impede evacuations and first responders' ability

to access certain locations in an emergency. The expedient repair and replacement of electrical infrastructure is critical to disaster recovery following an incident.

- Water delivery systems can also be affected by wildfires if increased sediment decreases storage capacity in dams and reservoirs.
- Transportation infrastructure (e.g. roads, bridges, rail) are essential to respond to an emergency or disaster. Wildfires often require major road closures. This impedes first responders, evacuations and the transportation of goods and supplies, especially if detours are limited. Wildfire damage to railroad lines impairs commerce with devastating financial consequences to companies that depend on rail transportation.

Through ongoing dialogue, research and practice over the last decade, partners involved in the National Cohesive Wildfire Management Strategy have developed models and tools for planning and decision-making regarding wildfires. Much of this work has focused on identifying wildfire threats, potential effects, and risk. Figure 21 shows a wildfire risk map of Utah developed by FFSL for the Utah Wildfire Risk Assessment Portal (UWRAP). UWRAP is a wildfire risk assessment and decision-making tool for the State derived from models and tools developed through the National Cohesive Strategy.

Utah Wildfire Risk Index

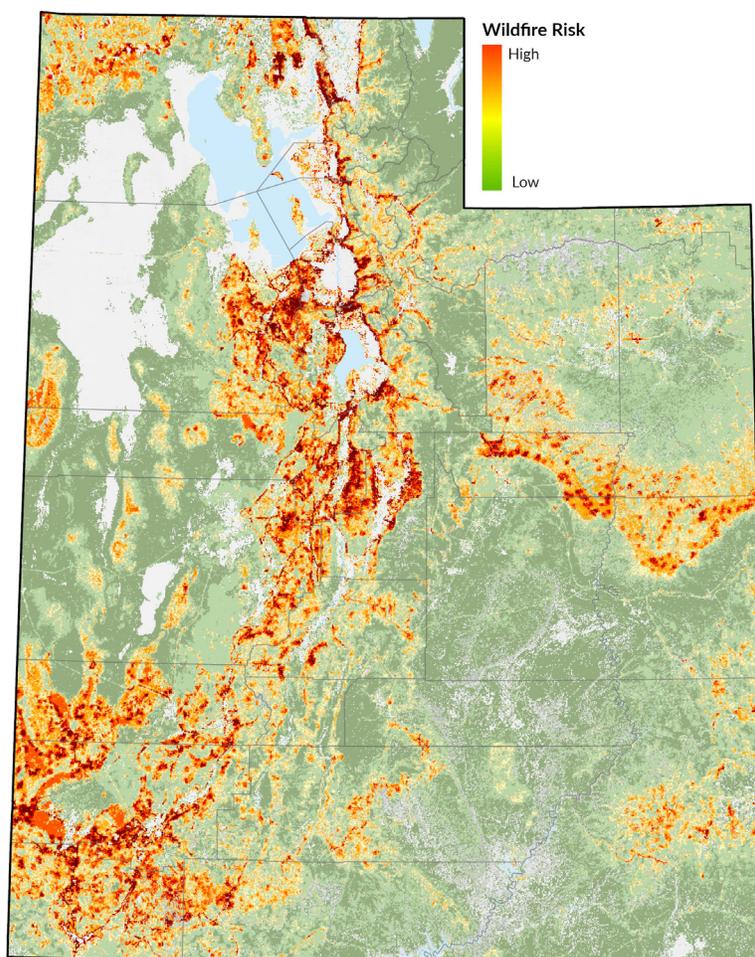


Figure 21: Utah Wildfire Risk Index.
Source: UWRAP, Utah Division of Forestry, Fire, and State Lands, 2017

Utah switched from a reactive wildfire suppression strategy to a proactive risk reduction strategy in 2017 with the legislative adoption of a new wildland fire policy between the FFSL and participating counties, municipalities and special service fire districts throughout Utah who chose to opt in.⁵ Every participating entity is required to create a community wildfire preparedness plan (CWPP) within two years of joining the coalition to help prioritize risk-reduction projects for their jurisdiction or community. When wildfires occur, the participating entities join with the associated fire department to mount the best possible initial attack to control and contain the fire quickly. If the wildfire escapes initial attack, the participating entity can transfer the fiscal responsibility to the state. When this delegation occurs, the incident will be managed in a unified command environment and the costs associated with the fire will be paid through the state fire suppression fund.

Climate Change

Global, national and regional assessments agree that climate change will continue to affect forests in increasingly significant ways. The 2010 Resources Planning Act Assessment indicates that climate change will alter natural ecosystems and affect their ability to provide goods and services. It finds that carbon stocks in forests are expected to decrease because of future reductions in forestland area and changes in carbon stored per acre. As a result, forests are expected to switch from being an emissions sink to an emissions source in future decades.

The 2014 National Climate Assessment recognizes how little we know about how much our climate will change, what the effects will be on natural and social systems, and how we might best respond. It notes that the rate of climate change is expected to be more rapid than human society has ever experienced and the effects are expected to vary regionally and locally. Two of its findings on forests are:

- Climate change is increasing the vulnerability of many forests to ecosystem changes and tree mortality through fire, insect infestations, drought, and disease outbreaks. Although each of these factors is significant, they are often interrelated and it is difficult to attribute tree mortality to any single factor.
- U.S. forests and wood products currently absorb and store about 16 percent of all carbon dioxide emitted by fossil fuel burning in the United States each year. However, climate change and societal trends in land use and forest management are projected to reduce forests' rate of carbon dioxide uptake, and net forest carbon storage is expected to decline in the future because of accelerating mortality and disturbance.

The National Association of State Foresters 2020 policy statement on forests and climate change presents similar findings and makes recommendations on ways to enhance the roles of forests in addressing climate change:

It is estimated that total forest carbon storage in the U.S. (including wood products) is 58.7 billion tons. Each year, forests and harvested forest products capture between 600 and 700 million tons of greenhouse gas equivalents, offsetting roughly 12% of U.S. annual greenhouse gas emissions. However, since 1990 for a variety of reasons, the annual net increase of carbon in standing forests has declined by nearly 10%.

⁵ From 2019 Utah Hazard Mitigation Plan.

It is also important to note that a changing climate represents a threat to forest health. In some regions it increases the likelihood of sustained drought. In other areas there have been more frequent, longer duration floods. Changing weather patterns can also introduce new pathogens and invasive species. More active management with a strong focus on forest resilience will be an ongoing need.

The NASF policy statement also identifies threats to the nation's forests and makes recommendations for increasing carbon storage in forests and forest products, and for using forest biomass for energy. These recommendations are discussed below:

The area of forested acres in the U.S. had been increasing for several decades, but has now leveled off and stands at over 800 million acres. Population growth has increased development and corresponding land conversion, but the greater threat to forests nationwide is poor management and health. From 1976 to 2016, the annual mortality of standing timber in the U.S. more than doubled due to over maturity and increases in wildfire, insect infestations, and disease. Trees that are dead or declining rapidly, actually become carbon emitters.

- **Active management:** It is critical to actively manage federal, state, and private forests to create and maintain conditions that are resilient to these threats, thereby better ensuring that forests can create carbon solutions rather than contribute to carbon emissions. Management strategies focused on resilience include promoting species and age class diversity, actively managing for optimal forest health and creating or retaining suitable pathways for species migration.
- **Tree Planting:** Nearly all federal programs available to forest landowners support tree planting, but greater funding priority should be given to tree planting activities given the carbon sequestration potential of young trees. Forests in the U.S. sequester between 600 and 700 million metric tons of greenhouse gas equivalents every year, but one analysis showed that an additional 50 million tons per year could be mitigated by reforestation approximately 8 million acres.
- **Forest products:** The U.S. produces over 100 million cubic meters of lumber, plywood, and oriented strand board per year. A cubic meter of wood contains about 1 ton of carbon dioxide. Despite the 2020 coronavirus pandemic, annual housing starts are projected to increase from about 1.4 million to over 2 million by 2028. A typical 2,400 square foot home stores roughly 28 ½ tons of carbon dioxide. In addition, life cycle assessments have shown that greenhouse gas emissions from the manufacture of wood products can be less than that of concrete or steel.
 - Programs and emerging markets that promote even greater use of wood products not only increase carbon storage, they have the added benefit of bolstering markets for raw materials. Strong markets encourage the retention and sustainable management of forests and woodlands. Examples include:
 - USFS Forest Products Programs: The USFS supports several efforts that promote wood utilization. These include the Forest Products Research Lab, the Wood Education and Research Center, Wood Innovation Grants, and the Mass Timber University Grant Program. These are all valuable efforts that should be retained and built upon.
- **Forest Biomass for Energy:** The mitigating effects of forest biomass energy on climate change hinge primarily on forest sustainability, which can be measured with a landscape-level analysis of net carbon sinks and emissions. Biomass made from wood residues and low-quality standing timber

is generally accepted as a “climate-friendly” fuel. When forests that provide biomass for fuels are managed effectively over time they can be a sustainable form of renewable energy.

Several different energy applications are emerging as the most feasible. Using Industrial Pellets to generate electricity is widely practiced in other countries. Torrefaction is a process that uses heat to turn wood into a coal-like substance and is being tested in at least one demonstration project in Oregon. There have also been demonstration projects around the country working on Cellulosic Biofuels, with jet fuel emerging as one long-term use.

In the absence of nationwide policy that favors the use of renewable energy, some states have adopted their own, disparate standards. Without a federal renewable energy standard for woody biomass harvested from sustainably managed forests, markets for biomass will be slow to develop.

The 2019 Utah Hazard Mitigation Plan presents some of the significant impacts that climate change has had on wildfires and forest area burned in Utah and the southwestern U.S. in recent years, as well as projections into the future.

Climate change, specifically increases in temperature, will increase the risk of wildfire occurrence in Utah. Extensive changes to both the length and severity of the fire season began around 1970 in the western United States. Burned area in the southwestern United States increased by 668% in the 1990s and by 1,266% in the 2000s. Southwestern United States fire season length increased from 82 days in the 1970s to 182 days in the 2000s, and the mean burn time of fires increased from 3 to 41 days. Changes in climate also increase fuel aridity, or dryness, through increased temperatures and vapor pressure deficit for trees. From 2000 to 2015, there was a 75% increase in fuel aridity because of climate change. The increase in fuel aridity resulted in an additional 10.4 million acres burned in the West from 1984 to 2015 (Figure 22). The trends in acres burned by wildfire in the western United States are projected to continue through the twenty-first century as temperatures warm and incidence of drought increases. The projected increase in fire risk is due to a lengthening of the fire season caused by earlier onset of spring, earlier snowmelt and reductions to seasonal snowpack.

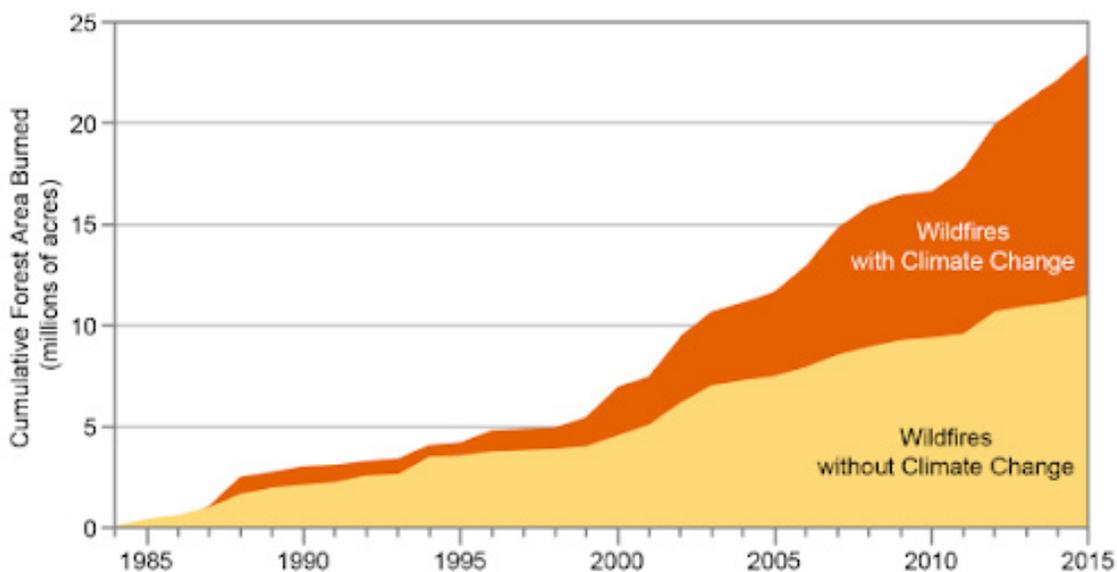


Figure 22: Cumulative forest area burned in the western United States from 1985 to 2015 with and without the effect of climate change.

Growth and Development

Utah is one of the fastest growing states in the nation. From 1970 to 2013 the state's population nearly tripled from 1.1 million to 2.9 million and it is projected that there will be 1 to 2.5-million new Utahns by 2050. That growth will necessitate more places for people to live, work, shop, and play. For every new resident, open space is lost due to construction of housing, roads, schools, commercial buildings, and other infrastructure. Additionally, urban growth requires the development and use of limited water resources.⁶

Growth and development cause shifting land-use patterns that threaten the integrity of forests and natural ecosystems. They also create pressures toward fragmentation and parcelization of forest ownerships into smaller and less manageable areas. Increasing numbers of landowners and decreasing tract sizes affect forest sustainability. In addition, population increases and development pressures are likely to shift more private forest land to non-forest uses. The fragmentation or loss of large contiguous tracts of forest land can have a devastating impact on forest management and opportunities maintain forest and natural resource values.

Growth and development in fire-prone areas have resulted in increased accidental and intentional ignitions that are changing the native vegetation to more fire resistant plants and grasses. Wildfires also impact the state's timberlands and woodlands which affect many animal species leading to habitat loss, displacement, and death.

Zones of greatest potential loss to wildfire are located in these WUI areas that continue to expand with the state's growing population, especially on the southern end of Salt Lake County and the northern end of Utah County, where structures are at high or extreme wildfire risk. Wildfire hazards ranked by population indicate that Summit, Millard, and San Juan counties have the largest areas of extreme and high wildfire risk.

An increase in wildfires due to human encroachment into the WUI impacts the timberlands and woodlands, which in-turn threatens the built environment. Low elevation sites are ideal for real estate development, but they often contain wildland fuels that make them prone to wildfires.

As Utah continues to grow, planning officials must consider wildfire potential when they plan to build homes and structures in areas prone to wildfires. Counties and cities should plan for fire response in wildland areas to mitigate threats to loss of life, property and natural resources.⁷

Limited Capacity for Forest Management

The significant reduction in Utah's forest industry from the early 1990s to today presents major challenges for strategies to restore forest health and resilience, as well as reduce wildfire risk. The loss of forest-industry infrastructure and workforce reflects a lack of basic capacity to do the needed work in the forest and to utilize the large volumes of woody biomass that will be generated by the work.

⁶ From Utah Wildlife Action Plan, 2015-2025.

⁷ From 2019 Utah Hazard Mitigation Plan, p. 31, Development Trends Impact.

Year	Under 1 MMBF ^a	Over 1 MMBF ^a	Total
<i>-----Number of sawmills-----</i>			
2016	6	3	9
2012	4	4	8
2007	7	5	12
2002	17	6	23
1992	25	9	34
1966	37	13	50
<i>---Percentage of lumber output---</i>			<i>Volume (MBF^b)</i>
2016	14	86	11,431
2012	13	87	9,553
2007	6	94	22,892
2002	13	87	26,524
1992	13	87	63,637
1966	10	90	72,000
^a Size class is based on reported lumber production. MMBF = million board feet lumber tally. ^b MBF = thousand board feet lumber tally.			

Figure 23: Utah sawmills by production size class for selected years. (FIA, Hayes 2018 draft)

Figure 23 shows that the total number of sawmills in Utah has dropped from 50 in 1966 to 9 in 2016. In addition, for sawmills with more than one million board feet of lumber production annually, which account for more than 85 percent of the State’s annual lumber production, the number of mills is down from 13 in 1966 to 3 in 2016.

The 2016 map of Utah’s primary timber processors reflects a baseline from which FFSL and the Forest Service can build on existing businesses and seek to expand both Utah’s capacity—both a skilled workforce and businesses that can utilize the wood.

Utah Primary Timber Processors

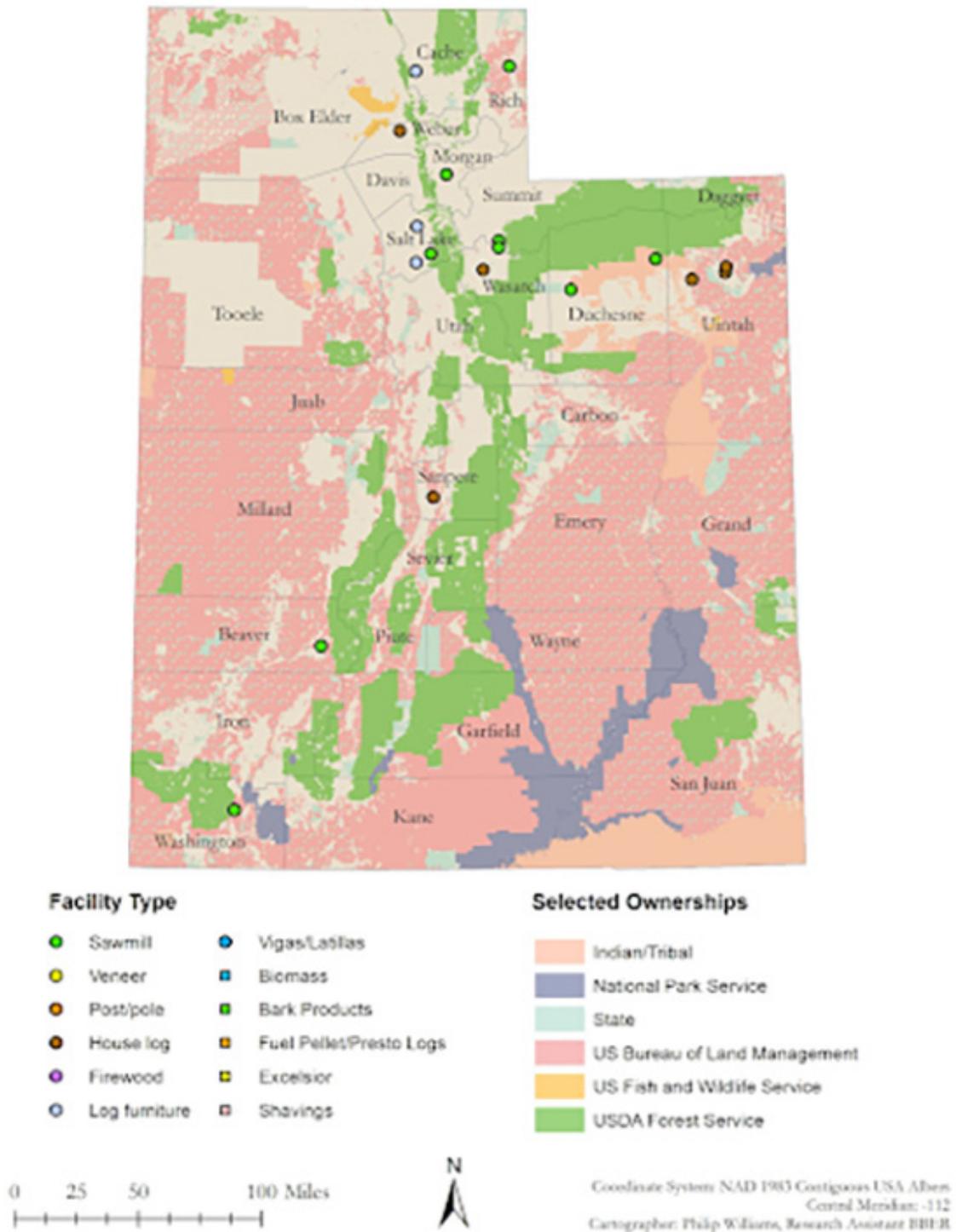


Figure 24: Utah primary timber processors, 2016. (FIA, Hayes and others, 2018 draft)

Chapter 4: Restoring and Sustaining Utah's Forests

This chapter presents Utah FAP 2020 goals and strategies to address threats facing Utah's forests, restore forest health and resiliency, and sustain the ecological functions and social benefits of these forests into the future. It discusses how the FAP goals and strategies align with Utah's Shared Stewardship Agreement, a 2019 partnership initiative between the USDA Forest Service, Intermountain Region, and the State of Utah.

The goals and strategies are intended to inform and guide FFSL managers and staff as they plan and implement programs and projects with the Forest Service, as well as other public and private partners. Like Utah Shared Stewardship, the FAP takes an "all lands" approach, recognizing the need to address wildfire threats and other forest management objectives at a landscape scale and across ownership boundaries.

This chapter also presents a Utah FAP 2020 map of statewide priority areas as a tool to help FFSL, the Forest Service and other partners identify priority landscapes and develop collaborative projects. The FAP priority area map adapts a methodology developed by FFSL and the Forest Service to map priority landscapes for Shared Stewardship on Utah's national forests. The FAP process uses a similar methodology to develop a map identifying priority areas for forest restoration on all forest lands in Utah.

Integrating the Utah FAP with Utah Shared Stewardship

The Utah FAP 2020 fits well with Utah Shared Stewardship because both build on a vision and strategies that seek to engage partners, stakeholders and communities in identifying and developing priority projects through collaboration.

Utah's Shared Stewardship Agreement is based on a national vision and framework presented in, *Toward Shared Stewardship Across Landscapes: An Outcome-Based Investment Strategy*, released by the USDA Forest Service in August 2018. The Forest Service's purpose was to:

"... share the concept for an outcome-based investment strategy with partners and stakeholders across the Nation as a starting point for dialogue. We realize that what we envision will require experimentation, co-learning, and adaptation. Working with States and others, we envision stakeholders coming together across landscapes to co-manage risk, use new tools to better target investments, focus on outcomes at the right scale, and recalibrate our wildland fire environment for the benefit of people, both now and for generations to come."

The national vision and framework for Shared Stewardship has three core elements:

1. Determine management needs on a state level.
2. Do the right work in the right places at the right scale.
3. Use all available tools for active management.

Because the national vision and framework aligned well with the direction that Utah and the USDA Forest Service Intermountain Region, wanted to go with forestry and fire programs, they moved quickly to develop a unique Shared Stewardship response for Utah. In May of 2019, USDA Secretary Sonny Perdue and Utah Governor Gary Herbert signed the Utah Shared Stewardship Agreement, which includes six mutual commitments on how FFSL and the Forest Service will work together toward Shared Stewardship priorities and desired outcomes (See Appendix A, page 86).

Following the signing, FFSL and the Forest Service worked collaboratively to develop a Utah Shared Stewardship Action Plan to guide their efforts, which consists of five key elements, as shown in the following text box:

1. Accelerate planning.
2. Increase the pace of implementation.
3. Focus on economic development.
4. Provide more training.
5. Convene stakeholders and leverage their interests.

These five elements guide the initial actions of the partner agencies, but they may change as the agencies assess their effectiveness and adapt, in response to the Shared Stewardship principles of co-learning and adaptation.

Utah's Shared Stewardship Action Plan

Introduction: On May 22, 2019, Utah Governor Gary R. Herbert and USDA Secretary Sonny Perdue signed the Agreement for Shared Stewardship between the State of Utah and the USDA Forest Service Intermountain Region. This agreement establishes six mutual commitments that support the national vision and framework for Shared Stewardship. We are committed to:

1. Existing partnership, programs, and initiatives that have been successful in Utah.
2. Working together to identify and map shared priorities for protecting at-risk communities and watersheds across all lands.
3. Making joint decisions and sharing resources for immediate and ongoing work in priority areas.
4. Engaging local communities in dialogue and learning about active management and desired landscape-scale outcomes, including capacity building and economic development opportunities.
5. Shared planning efforts, including the integration of Utah's Forest Action Plan and the Forest Service's Five-Year Vegetation Management Plans.
6. Co-managing wildfire risks and supporting each other in decisions that we have made together.

Shared Stewardship Action Plan: Following the signing of the Utah Agreement for Shared Stewardship, the State and Forest Service worked collaboratively to develop a Utah Shared Stewardship Action Plan to guide our efforts, which consists of the elements described below:

1. **Accelerate planning:** The Forest Service will expedite National Environmental Policy Act (NEPA) analysis and documentation for forest management projects that reduce community wildfire risks and stimulate forest-based economic development. This will increase the amount of on-the-ground forest management work available for funding and implementation in priority areas.
2. **Increase the pace of implementation:** The State and Forest Service will combine resources to increase the amount of forest management work that is funded and implemented in agreed upon priority areas.
3. **Focus on economic development:** The State and Forest Service will support a concerted economic development initiative to increase forest-related economic opportunities in Utah.
4. **Provide more training:** The State and Forest Service will increase fire prevention outreach and education efforts in an effort to curtail the number of human caused fires. The Forest Service will also continue its efforts to educate employees on the topic of the 2001 Roadless Rule and forest management activities that can be performed utilizing the rule's exceptions.
5. **Convene stakeholders and leverage their interests:** The State and Forest Service will collaborate with a broad spectrum of partners to develop informed plans for forest management projects that meet the goals of Shared Stewardship in Utah. Collaboration with partners will help build support for priority projects and increase project funding opportunities.

Shortly after the signing, FFSL and the Forest Service also worked with the Utah Public Lands Policy Coordinating Office (PLPCO) to develop outcome-based success measures and annual reporting requirements for the Utah Shared Stewardship Agreement. This effort was informed by an internal assessment and a series of workshops with State and Forest Service regional and area managers to identify Key Performance Indicators (or KPIs) as the agencies work to build relationships and improve forest conditions across Utah (See Appendix B, page 92).

The KPIs are framed in three categories: Relationships, Process, and Forest Conditions (Figure 25). The KPIs provide insight into how FFSL and the Forest Service will measure the success of Shared Stewardship across all lands in Utah. They are being integrated into the Utah FAP 2020, and they will be adapted and updated as FFSL and the Forest Service work and learn together to apply them.



Figure 25: Utah Shared Stewardship Key Performance Indicators (KPIs).

FAP Goals and Strategies

This section presents goals and strategies developed by the Utah FAP 2020 to address the major threats to forests identified in Chapter 3. The goals and strategies are consistent with mutual commitments, priority actions, and KPIs developed by FFSL and the Forest Service through Utah’s Shared Stewardship Agreement.

FAP goals and strategies are intended to guide FFSL efforts to plan and implement programs and projects with the Forest Service and other public and private partners. Goals and strategies are intended to inform

and help engage all forest landowners and managers, governmental and non-governmental entities, forest stakeholders and communities in Utah. They are meant to help build relationships and support collaborative, landscape-scale, and cross-boundary initiatives on forest lands across the state.

The FAP 2020 identifies four goals followed by strategies for FFSL, the Forest Service and other partners. The four goals are:

1. Restore healthy and resilient trees and forests across Utah.
2. Reduce wildfire risk to communities, water resources, and other natural resource values.
3. Increase collaborative landscape-scale forest restoration activities across the State.
4. Build capacity among partners, stakeholders and communities to engage in forest restoration activities across the State.

Goals

1. Restore healthy and resilient trees and forests across Utah.

The first FAP goal is consistent with FFSL's Strategic Plan for Forestry and Utah's Shared Stewardship Agreement. It responds to the urgent and growing challenges faced by all land managers and forest owners in the State, among them catastrophic wildfires, invasive species, drought and epidemics of forest insects and disease. It also recognizes the combined need for reduced wildfire risk and improved forest conditions, reflecting the National Cohesive Strategy goal to restore and maintain fire-resilient landscapes in accordance with management objectives. The FAP builds on FFSL's existing Forestry programs and related Fire programs that focus on restoring and maintaining resilient landscapes.

Strategies

- a. FFSL will build on existing Cooperative Forestry Programs and adapt them to Utah Shared Stewardship. These programs include Forest Stewardship, Landscape Scale Restoration, Forest Legacy, Forest Health, Urban and Community Forestry, and Conservation Education.
 - i. Each Forestry Program will seek to integrate forest restoration activities with Fire Programs focused on hazardous fuels reduction, community wildfire planning, and wildland-urban-interface activities.
- b. FFSL Forestry Programs will determine management needs and priorities, strategies, and desired outcomes with partners and stakeholders, consistent with Utah Shared Stewardship.
 - i. Forest Stewardship Program strategies include:
 - (1.) Promote active management on private lands by targeting an increased number of private forest landowners located in Priority Stewardship areas for assistance with stewardship or other planning purposes.
 - (2.) Encourage activities on private forest lands focusing on improving forest health and resilience, reducing the potential for land fragmentation and addressing wildfire risk reduction. Use Forest Stewardship Plans to assist landowners with achieving their resource conservation objectives.

- (3.) Advance landscape-scale, cross boundary partnerships by including non-federal landowners in such ecosystem-based planning where appropriate and acceptable to the landowner.
 - (4.) Continue to foster cooperative relationships with partner agencies and multi-agency partnerships that incentivize forestry management on private lands such as the Natural Resources Conservation Service (NRCS) and Utah's Watershed Restoration Initiative (WRI), and encourage timber industry development in the state.
 - (5.) Support program integration between FFSL programs in forestry and hazardous fuels reduction treatments in the common goal of pre-fire vegetation management.
 - (6.) Educate landowners and logging contractors on Utah's Forest Practices Act and related Forest Water Quality Guidelines. Collaborate on timber harvest tours and public demonstration days to showcase the importance of sustainable forest stewardship.
- ii. Forest Legacy Program strategies are to:
- (1.) Maintain the existing Forest Legacy Areas (FLAs) and Assessment of Need, and
 - (2.) Identify and prioritize projects within FLAs that meet the following objectives:
 - (a.) Protect and enhance water quality and water supplies.
 - (b.) Prevent future conversion of forest land and forest resources.
 - (c.) Protect wildlife habitat and maintain habitat connectivity and related values needed to ensure biodiversity.
 - (d.) Protect riparian areas.
 - (e.) Maintain and restore natural ecosystem functions.
 - (f.) Maintain forest sustainability and the cultural and economic vitality of rural communities.
- iii. Urban & Community Forestry (U&CF) Program strategies are:
- (1.) Tree Diversity: Diversify the assortment of tree species across the state for forest health, wildlife habitat, aesthetics and other beneficial functions.
 - (2.) Environmental Education: Explore and adopt new tools and methods for introducing children to U&CF.
 - (3.) Urban Forestry Across Program and Landscape Boundaries: Integrate U&CF education and program activities with related natural resource fields to address cross-cutting issues, such as water supply, air quality and wildfire risk reduction, and to address cross-boundary issues and urban-rural landscapes.
 - (4.) Urban Forestry Management Plans: Provide technical assistance, training, and competitive-grant funding to communities to develop their own U&CF management plans.
 - (5.) Collaboration and Communication: Establish a network for outreach to remote or underserved communities to provide information, assistance and training opportunities.

- iv. Forest Health and Conservation Education programs will build on and adapt existing processes to determine priority needs, identify priority landscapes, and plan and implement “the right work in the right places at the right scale.”
- c. FFSL Forestry Programs will use new mapping and decision tools to identify highest priority areas for projects and management activities.
 - i. Forestry programs will use and adapt Shared Stewardship methods and tools that help identify risks and trade-offs for at-risk communities, water resources and other natural resource values.
- d. FFSL Forestry Programs will use all available tools and authorities to increase active management, including:
 - i. Good Neighbor and Wyden authorities for cross-boundary activities with the Forest Service and Bureau of Land Management.
 - ii. New policies and practices for timber sales, mechanical treatments, hazardous fuels reduction, prescribed fire, carefully managing wildfire, innovative wood-product utilization, and collaboration with partners.
- e. FFSL Forestry Programs will consider related KPIs (see Appendix B, page 92) as priorities in planning and implementing activities, particularly:
 - i. Increase the number of acres directly and effectively treated in priority areas. (KPI 3)
 - ii. Share decision-making when establishing statewide and local priorities. (KPI 6)
 - iii. Refine priority landscape maps to accurately reflect changes in landscape conditions. (KPI 8)
 - iv. Use special authorities, such as Good Neighbor, that provide opportunities to improve forest coordination with federal, state, tribal and county partners. (KPI 9)
 - v. Increase forest-related economic opportunities in Utah. (KPI 10)

2. Reduce wildfire risk to communities, water resources, and other natural resource values.

The second FAP goal is consistent with FFSL’s Strategic Plan for Fire and Utah’s Shared Stewardship Agreement. It responds to increasing risks of wildfire in the State, as reflected in Utah’s Catastrophic Wildfire Reduction Strategy (CatFire), and builds on FFSL’s existing Fire programs and policies. It also recognizes and builds on guidance from the National Fire Plan, the National Cohesive Wildland Fire Management Strategy, and the National Fire Plan 2.0, currently in process.

Strategies

- a. FFSL will build on existing Cooperative Fire Programs and adapt them to Utah Shared Stewardship. Existing programs include State Fire Assistance and Volunteer Fire Assistance.
 - i. Fire Programs focused on hazardous fuels reduction, community wildfire preparedness planning, and wildland-urban-interface activities will seek to integrate with related FFSL Forestry Programs.
- b. FFSL Fire Programs will build on three primary CatFire strategies:
 - i. Restore and maintain resilient landscapes through programs, including:
 - (1.) Hazardous fuels reduction
 - (2.) Community wildfire preparedness planning

- (3.) Wildland-Urban Interface
- ii. Strengthen the capacity of communities to adapt to wildfire disturbances through existing fire programs, including:
 - (1.) Wildfire Prevention Coordinator
 - (2.) Community wildfire preparedness planning
 - (3.) Wildland-Urban Interface
 - (4.) FireWise Communities
- iii. Improve wildfire response
 - (1.) Volunteer Fire Assistance provides financial, technical and other assistance to volunteer fire departments in rural communities to build capacity for wildfire suppression.
 - (2.) Utah's Cooperative Wildfire System is a set of policies through which the State pays for suppression efforts for large and extended wildland fire while local governments pay initial suppression efforts, prevention, preparedness and mitigation actions proven to reduce risk and costs of wildland fire in the long run.
- c. FFSL Fire Programs will determine management needs and priorities, strategies, and desired outcomes with partners and stakeholders, consistent with Utah Shared Stewardship.
 - i. FFSL will strengthen and maintain CatFire regional working groups for collaborative planning and decision making.
 - ii. FFSL and the Forest Service will co-manage wildfire risks and support each other through shared decision-making processes (Utah Shared Stewardship Commitment 6)
- d. FFSL Fire Programs will use new mapping and decision tools to identify highest priority landscapes and treatment areas, consistent with Shared Stewardship.
 - i. Priority landscapes and treatment areas will be identified with the Forest Service and other partners, sharing data and technical tools, making joint decisions and sharing resources.
 - ii. CatFire regional groups and UWRAP provide existing technical tools and processes for sharing data and making shared decisions.
- e. FFSL Fire Programs will use all available tools and authorities
 - i. Good Neighbor Authority for landscape-scale cross-boundary activities
 - ii. Utah's Watershed Restoration Initiative for sharing resources and implementing projects
 - iii. Other tools, authorities and lessons emerging from national and regional learning related to the National Cohesive Strategy
- f. FFSL Fire Programs will consider related KPIs as priorities in planning management activities, particularly:
 - i. Increase the number of acres directly and effectively treated in priority areas. (KPI 3)
 - ii. Increase the number of acres treated on National Forest System Land through management of natural ignitions. (KPI 4)
 - iii. Decrease the number of human-caused fire starts. (KPI 5)
 - iv. Share decision-making when establishing statewide and local priorities. (KPI 6)

- v. Local, state and federal partners jointly agree on fire management priorities during preseason planning. (KPI 7)
- vi. Refine landscape maps to accurately reflect changes in landscape conditions. (KPI 8)
- vii. Use special authorities, such as Good Neighbor, that provide opportunities to improve forest conditions in coordination with federal, state, tribal, and county partners. (KPI 9)
- viii. Increase forest-related economic opportunities in Utah. (KPI 10)

3. Increase collaborative landscape-scale forest restoration activities across the State.

The third FAP goal is to achieve better responses to forest threats at the right scale and to engage all landowners, forest managers, stakeholders and communities in planning, implementation and collaborative learning.

By adopting Utah’s Shared Stewardship Agreement as a guide, Utah’s 2020 FAP emphasizes the increasing importance of collaboration across all ownerships—federal, state, local, Tribal and private-to engage each partner and leverage their capacity and to address threats that require landscape-scale approaches, such as forest health and wildfire.

Strategies

- a. FFSL will build on existing landscape-scale restoration programs and initiatives in partnership with the Forest Service, including:
 - i. Landscape Scale Restoration (LSR), Collaborative Forest Landscape Restoration Program (CFLRP) and the Joint Chiefs Program.
 - ii. Use storytelling approaches to share information and learn lessons from past, current, and future projects.
- b. Collaborate with partners and stakeholders to determine needs and priorities for landscape-scale forest restoration initiatives.
 - i. FFSL will convene partners and stakeholders through existing programs and initiatives, such as CatFire working groups, All-Lands meetings, and the Forest Stewardship Coordinating Committee.
 - ii. FFSL will engage with partners on other existing coordination efforts, such as DNR’s Watershed Restoration Initiative and NRCS State Technical Coordinating Committee
- c. FFSL will use new mapping and decision tools to identify the highest priority landscapes and areas for management activities, consistent with Shared Stewardship.
 - i. FFSL will coordinate with the Forest Service to develop consistent methods and tools for mapping shared priorities and making shared decisions.
- d. FFSL will use all available authorities and tools to plan and implement collaborative landscape-scale forest restoration activities, including:
 - i. Good Neighbor Authority
 - ii. Wyden Amendment
 - iii. Stewardship Contracting

- e. FFSL will use related KPIs in developing collaborative landscape-scale restoration initiatives.
 - i. FFSL and the Forest Service will continue to build on successful state-federal relationships at all organizational levels. Collectively, they will build relationships with other partners. (KPI 1)
 - ii. Local, state, and federal partners jointly agree on fire management priorities during preseason planning. (KPI 7)
 - iii. Use special authorities, such as Good Neighbor, that provide opportunities to improve forest conditions in coordination with federal, state, tribal and county partners. (KPI 9)
 - iv. Increase forest-related economic opportunities in Utah. (KPI 10)

4. Build capacity among partners, stakeholders and communities to engage in forest restoration activities across the State.

The fourth FAP goal responds to broad social and economic processes and desired outcomes in Utah's Shared Stewardship Agreement, Commitment 4:

"We are committed to engaging local communities in dialogue and learning about active management and desired landscape-scale outcomes, including capacity building and economic development opportunities."

"Strategies will aim to include local communities in planning and decision-making as well as addressing broader goals, such as developing capacity for forest work, utilizing wood products for innovative businesses and economic development, and supporting fire-adapted community development."

Strategies

- a. FFSL will engage partners, stakeholders and local communities in dialogue and learning about active management, forest restoration, and desired landscape-scale outcomes, through existing initiatives such as:
 - i. CatFire's six regional working groups
 - ii. Forest Stewardship Coordinating Committee
 - iii. State Urban & Community Forestry Council
- b. Include partners, stakeholders and local communities in addressing broader social and economic goals.
 - i. Develop communication and outreach activities to share information and lessons about active forest management and landscape-scale outcomes.
 - (1.) FFSL Forestry and Fire programs
 - ii. Develop technical and financial assistance to build capacity for forest restoration work
 - (1.) Education and training

- (2.) Wood Utilization & Business Development Coordinator
- iii. Develop technical and financial assistance to strengthen existing and stimulate new wood products businesses
 - (1.) Wood Utilization & Business Development Coordinator
- iv. Support fire-adapted community development (learn to live with fire)
 - (1.) Wildfire Prevention Coordinator
- c. FFSL will use related KPIs to build capacity among partners, stakeholders and local communities
 - i. FFSL will work with the Forest Service to build relationships with other partners. (KPI 1)
 - ii. Cultivate diverse community-based support for Shared Stewardship through engaging partners at the local and state level. (KPI 2)
 - iii. Increase the number of acres directly and effectively treated in priority areas on all forest lands. (KPI 3)
 - iv. Decrease the number of human-caused fire starts (KPI 5)
 - v. Use special authorities, such as Good Neighbor, that provide opportunities to improve forest conditions in coordination with state, tribal, and country partners. (KPI 9)
 - vi. Increase forest-related economic opportunities in Utah. (KPI 10)

Identifying FAP Priority Areas

The Utah FAP 2020 has developed a map of forest health priority areas across the State to help FFSL, the Forest Service and other partners identify the most urgent forest health challenges and develop collaborative forest restoration projects, recognizing that no agency can face these challenges alone.

The FAP Priority Areas Map adapts a methodology developed by FFSL and the Forest Service to map Shared Stewardship priority areas on Utah's national forests. Like Shared Stewardship, the primary goals of FAP priority areas and restoration projects are to protect communities and watersheds from the threat of large unwanted fires and to achieve other forest management objectives.

This section discusses the process used by FFSL and the Forest Service to develop a Shared Stewardship Priority Areas map for Utah's national forests. It then discusses how the Utah FAP 2020 adapted the Shared Stewardship process to develop a priority area map for all of Utah's forest lands.

Utah Shared Stewardship Priority Areas

The process for developing a Shared Stewardship Priority Areas map for Utah's national forests involved a team of analysts from FFSL and the Forest Service. The team worked with agency leaders and land managers to develop three key criteria: drinking water, strategic protection areas (i.e., values at risk), and fuel hazards. Figure 26 illustrates how these three criteria were used to identify where the threat of fire presents the greatest risk to Utah's communities and water resources.

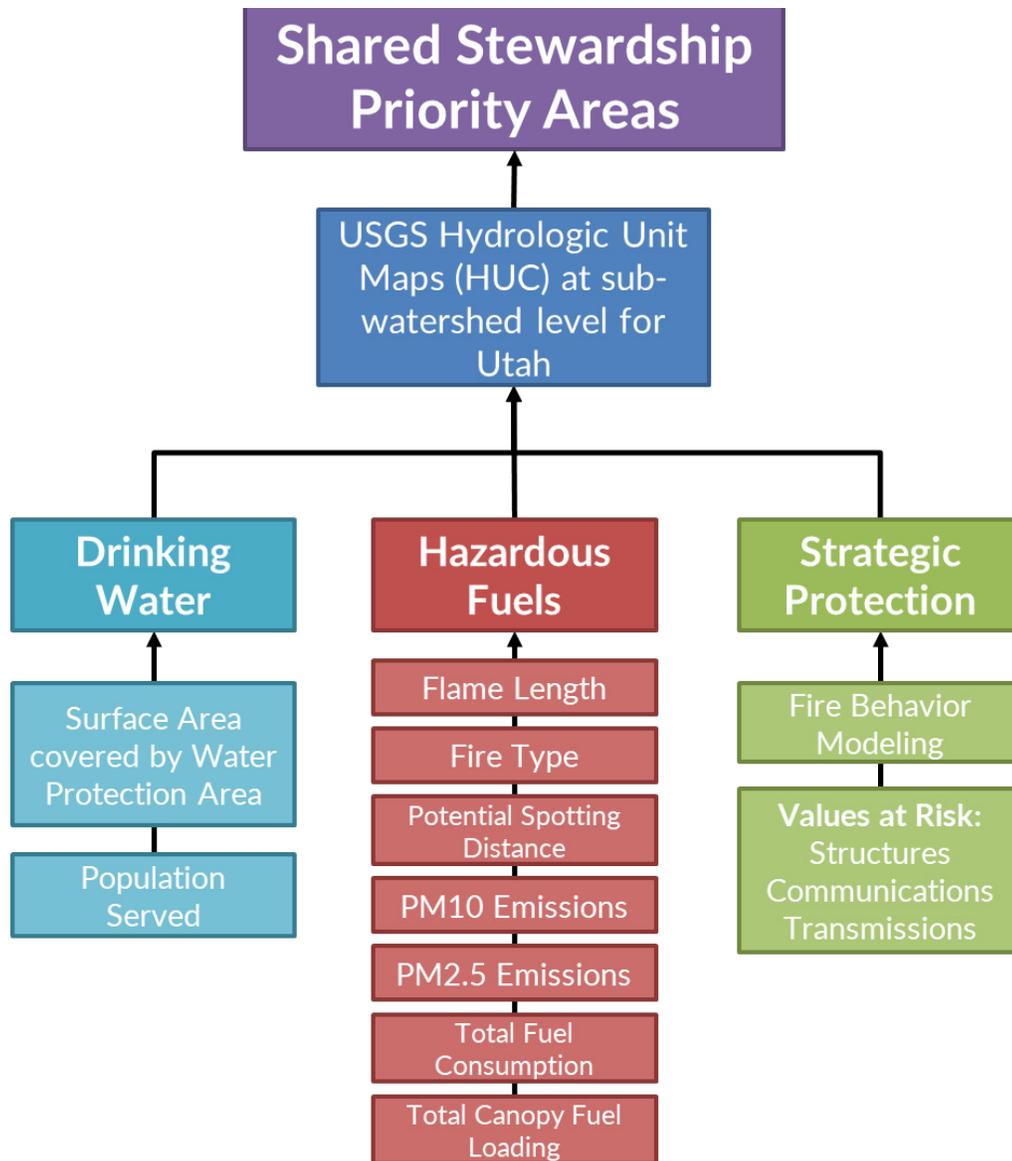


Figure 26: Shared Stewardship Priority Areas Diagram.

By combining drinking water, strategic protection areas, and fuel hazards, the team of analysts was able to identify areas with the highest risk of being negatively impacted by unwanted wildfire events.

Utah Shared Stewardship Priority Areas

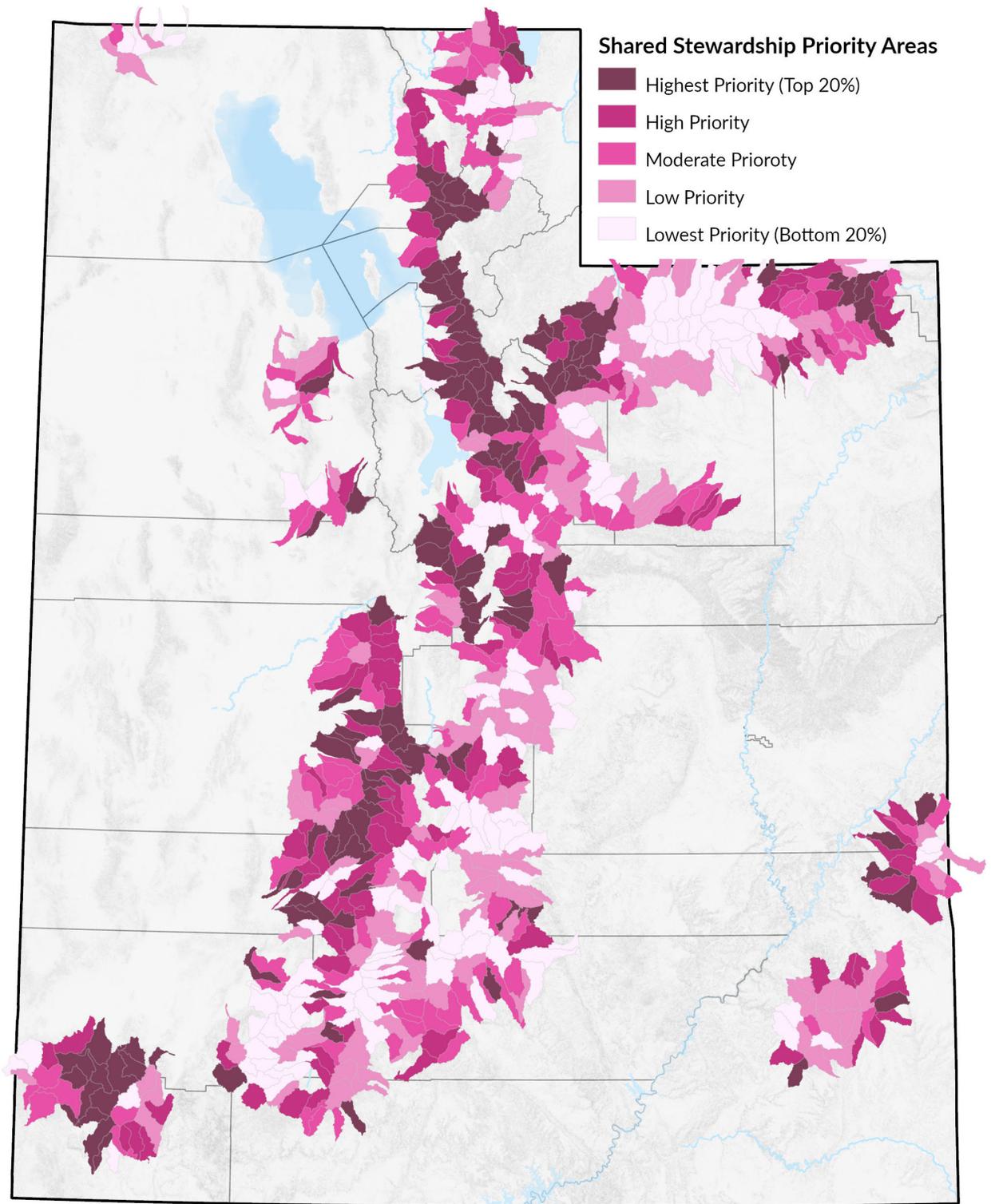


Figure 27: Shared Stewardship Priority Areas for Utah's National Forests. The Forest Service and State are using this mapping tool to identify high-priority forest restoration projects.

Shared Stewardship priority area maps for Utah’s National Forests have been an important tool enabling State and Federal land managers to identify high-priority forest restoration projects to protect Utah’s communities and water resources and achieve other forest management objectives.

Utah FAP 2020 Priority Areas

The Utah FAP 2020 adapted the Shared Stewardship process to develop a map of priority areas for all forest lands across the State. The FAP process sought to apply data for the same three criteria—drinking water, strategic protection areas (i.e., values at risk), and fuel hazards—to all forest lands in Utah. However, the data to address these criteria for land ownerships beyond the boundaries of the national forests were neither as available nor of the same quality. So, the FFSL analysts adapted the process to use the best available data at the time. The FAP Priority Areas Diagram in Figure 28 illustrates the process.

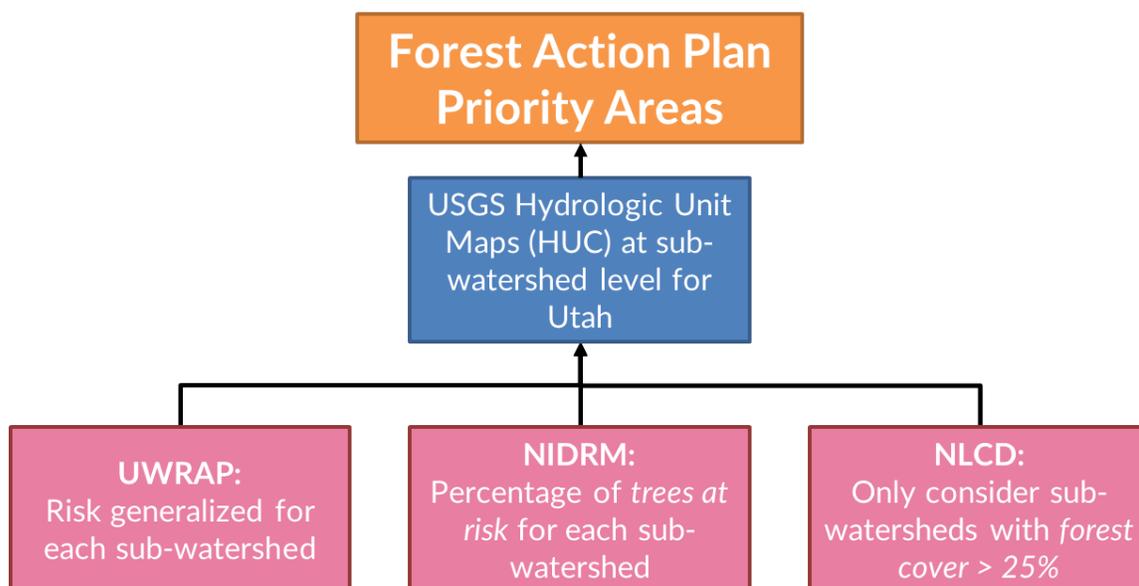


Figure 28: FAP Priority Areas Diagram.

The process for identifying priority landscapes for the FAP utilized a combination of datasets:

- Utah Wildfire Risk Assessment Portal (UWRAP) Risk layer (more information about the UWRAP Risk layer can be found on page 54.)
- United States Geological Survey (USGS) hydrological units.
- National Insect and Disease Risk Maps (NIDRM) from the US Forest Service.
- Forest cover data from the USGS 2016 National Land Cover Database (NLCD).

The UWRAP risk, NIDRM risk, and NLCD forest cover were averaged across each sub-watershed (HUC12). Only those sub-watersheds with at least 25% forest cover were considered. The UWRAP and NIDRM risks were scored by their relative risk within the state and combined with equal weight to determine overall risk. Those that scored in the top 33rd percentile are considered the highest priority

Utah Forest Action Plan 2020 Priority Areas

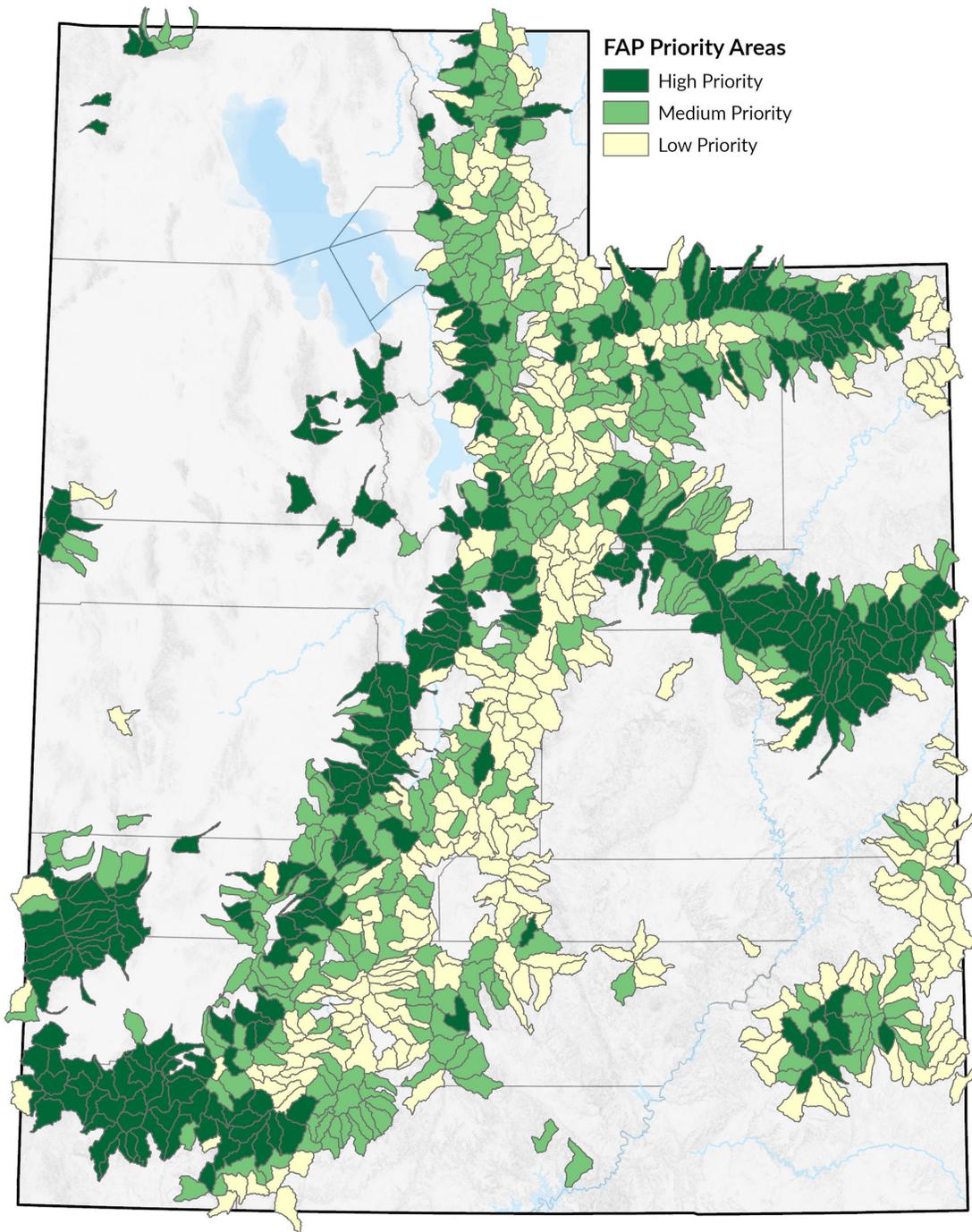


Figure 29: FAP 2020 Priority Areas for all forest lands in Utah. This mapping tool is intended to help FFSL, the Forest Service and other partners identify and implement high-priority forest restoration projects across the State

The FAP 2020 Priority Areas map is intended as a tool to help FFSL, the Forest Service and other partners identify and implement high-priority forest restoration projects on all forest lands across the State. The primary goals of these projects are to protect Utah's communities, water resources and other natural resource values.

Due to data limitations, the FAP 2020 Priority Areas map presents some information about priority areas that is questionable and may require further analysis. For example, it is difficult to understand why so much of the Book Cliffs region of central-eastern Utah has scored within the highest-priority rankings. One reason is that current UWRAP data are more than ten years old and are in the process of being updated. FFSL, the Forest Service and partners are encouraged to be aware of possible shortcomings in the current FAP Priority Areas map and to recognize that the map will be updated and improved as new data become available and as partners gain experience using the FAP for guidance.

Resources Required to Advance FAP Goals and Strategies

The resources required to advance the FAP goals and strategies are essentially those being developed through existing programs and initiatives and those that will be brought to the shared strategies and activities by partners and stakeholders.

As an outcome-based investment strategy, Shared Stewardship requires sharing among partners and stakeholders to be effective, from the start and throughout the process. The process involves sharing in many forms—dialogue, planning, decision-making, investment, experimentation, risk-taking, monitoring, learning and adaptation. The resources required are developed with and through partners and stakeholders who engage along the way.

Success measures advancing FAP goals and strategies, like Shared Stewardship KPIs, are framed in three categories: Relationships, Process, and Improved Forest Conditions. Resources required for success include the capacity of partners and stakeholders to work together, to develop processes through which they can plan activities across shared landscapes, and to leverage each other's investments to implement more work.

Chapter 5: Integrating with Other Plans

This chapter discusses how the FAP 2020 integrates with other related planning efforts in the State:

- A. The Utah Wildlife Action Plan prepared by the DNR Division of Wildlife Resources (DWR);
- B. Community Wildfire Preparedness Plans (CWPPs) prepared through FFSL's Wildland-Urban Interface Program; and
- C. National Forest 5-Year Vegetation Plans

A. Utah Wildlife Action Plan

This section discusses how the Utah Wildlife Action Plan (WAP) 2015-2025 integrates with the Utah FAP 2020. The WAP and FAP are consistent in context and approach, priorities and strategies for conserving wildlife habitats, essential conservation actions, and need to address growth and development.

Context and Approach

The statewide scope and broad goals of the WAP are similar to the FAP 2020. The WAP also adopts a collaborative, creative, solution-based partnership approach consistent with the FAP.

The goal of the Wildlife Action Plan is: "To manage native wildlife species and their habitats, sufficient to prevent the need for additional listings under the Endangered Species Act." The scope of work required to achieve this goal is beyond what any single organization can accomplish on its own. It will require collaborative, creative, solution-based partnerships. These partnerships will provide the mechanisms to develop jointly identified objectives and conservation actions, and the basis for investment of time and effort to pursue mutually-desired outcomes.

Priorities and Strategies

The Utah WAP identifies 141 species of greatest conservation need and 13 key habitat types. One way to explore the integration of the WAP and FAP is examine where and how key habitat types and conservation strategies in the WAP overlap with key FAP forest types, priorities and strategies. Of the WAP's 13 key habitat types, Aspen-Conifer and Gambel Oak represent significant terrestrial habitats, and Aquatic-Forested represents a significant aquatic habitat, though much smaller in area. Discussions below from the WAP reflect consistent priorities and strategies with the FAP 2020.

Aspen-Conifer Key Terrestrial Habitat

a. Condition

While the Aspen-Conifer physical (abiotic) habitat remains largely intact in Utah, coverage of aspen itself within that setting has declined greatly for two main reasons: (1) departure from natural fire regime (reduction in disturbance), resulting in widespread forest succession to conifer dominance; and (2) heavy ungulate browsing on young aspen stems, following disturbance.

b. Threats

In a statewide assessment, the following threats to Aspen-Conifer were identified as WAP priority threats - those that negatively impact many species and habitats including Aspen-Conifer:

- Inappropriate Fire Frequency and Intensity

- Droughts
- Problematic Animal Species (native)
- Improper Grazing (current)

c. Improving Condition

A good strategy for management may include the following elements:

- Increasing disturbance from either prescribed or natural fire. Recent studies have shown that larger scale burns (e.g., 5,000 acres) that burn more intensely have been the most successful in terms of aspen regeneration. Higher-intensity burns stimulate higher numbers of young aspen per unit area than lower-intensity burns. A larger treatment area distributes ungulate browse pressure, allowing most young aspen stems to reach a safe height.
- Applying mechanical disturbance agents such as timber harvest. This can also be used to stimulate aspen regeneration and avoid or reduce resource losses to bark beetles. As with fire, larger mechanical treatment areas serve to distribute browsing pressure and reduce damage to individual stems, increasing regeneration success.
- Monitoring smaller, naturally-occurring or human-created disturbances for ungulate damage, and taking follow-up actions such as fencing, hazing, hunting, and/or domestic grazing management, may be required to prevent or reduce damage caused by domestic, wild, or feral ungulates.
- Promoting policies that reduce improper browsing and grazing by domestic livestock and wildlife.

Gambel Oak Terrestrial Key Habitat

a. Condition

Gambel oak resprouts after fire, so other types of vegetation generally do not replace it following burning. Gambel oak stands are susceptible to cheatgrass invasion, especially on drier sites. Changes in fire regime may not replace the dominant oaks, but are likely to have effects on other important members of the plant community that define this key habitat.

b. Threats

In a statewide assessment, the following threats to Gambel oak were identified as WAP priority threats - those that negatively impact many species and habitats including Gambel oak.

- Invasive Plant Species - Non-native
- Inappropriate Fire Frequency and Intensity

c. Improving Condition

A good strategy for management may include the following elements:

- Promoting policies and management that allow fire to return to a more natural regime.
- Promoting and funding restoration that reduces the Uncharacteristic class, including cutting/mulching of invading pinyon and juniper trees, and herbicide or mechanical treatment of non-native invasive species such as cheatgrass and smooth brome.

- Continuing the funding and support for weed abatement programs, including “early detection–rapid response” programs.

Aquatic - Forested Key Habitat

a. Extent and Brief Description

- Total current mapped area: 4,460 acres; 0.01% of state surface area.
- Distribution: mapped in 39 of 67 HUC8s that overlap Utah.
- Characterized by woody vegetation greater than 6 meters in height, commonly found around the margins of rivers, montane lakes, or springs (Emerson 2014).
- Can include both intermittent and perennially flooded areas.

b. Threats

In a statewide assessment, the following threats to Aquatic - Forested Habitat were identified as WAP priority threats - those that negatively impact many species and habitats including Aquatic - Forested Habitat.

- Presence of Dams
- Sediment Transport Imbalance
- Roads - Transportation Network
- Improper Grazing (current)
- Channelization / Bank Alteration (direct, intentional)
- Presence of Diversions Dam / Reservoir Operation
- Droughts
- Water Allocation Policies
- Housing and Urban Areas
- Agricultural / Municipal / Industrial Water Usage
- Invasive Plant Species - Non-native

c. Improving Condition

A good strategy for management may include the following elements:

- Promoting policies that maintain or restore natural water and sediment flow regimes.
- Promoting policies that reduce inappropriate grazing by domestic livestock and wildlife.
- Promoting policies that reduce inappropriate locating of roads in riparian zones.
- Promoting policies that reduce inappropriate residential and commercial development in floodplains.
- Continuing the use of appropriate methods for reducing the spread and dominance of invasive weeds, including “early detection - rapid response” programs.

Essential Conservation Actions

The following WAP discussion of essential conservation actions integrates well with the FAP 2020.

Conservation professionals need to understand both the biological systems and the human social systems in which they work. The core strategy of conservation is to influence these biological and social systems, for the good of wildlife and their habitats. Actions are essential to bring this strategy to life, to actually improve the conservation status of species and habitats. Actions are taken to do such things as:

- Restore and/or improve degraded wildlife populations and habitat conditions or functions.
- Respond to emergencies.
- Take advantage of valuable opportunities.

Appropriate actions will need to be chosen or developed in concert with the administrators and stakeholders of the activities - many being legitimate economic, cultural, and/or recreational pursuits - which have been identified as “priority threats”.

Growth and Development

The following WAP discussion of residential and commercial development is consistent with priorities and strategies in the FAP 2020 to address growth and development.

Threats from human settlements or other non-agricultural land uses with a substantial footprint. Within this broad category, one threat was ranked as a priority: Housing and Urban Areas.

Utah is one of the fastest growing states in the nation. From 1970 to 2013 the state’s population nearly tripled from 1.1 million to 2.9 million and it is projected that there will be 1 to 2.5-million new Utahns by 2050. That growth will necessitate more places for people to live, work, shop, and play (often at the expense of wildlife and their habitats). For every new resident, open space is lost due to construction of housing, roads, schools, commercial buildings, and other infrastructure. Additionally, urban growth requires the development and use of limited water resources.

Land use planning decisions occur at a high level with wildlife concerns often taking a back seat to economic and other quality of life factors such as transportation, clean air, and education. Rather than driving the conversation, wildlife concerns need to be incorporated into planning efforts in order to achieve the greatest impact. Although the primary aim of the WAP is to propose actions that directly benefit species of greatest conservation need, the indirect benefits of preserving wildlife habitat in and around urban areas are many. Experiencing nature in an urban context can foster support for ecological preservation and has the potential to improve quality of life and health of urban and suburban residents.

B. Community Wildfire Preparedness Plans (CWPPs)

The Utah FAP 2020 integrates with Community Wildfire Preparedness Plans (CWPPs)⁸ through the State’s Cooperative Wildfire System (CWS). CWS reflects a philosophical shift for FFSL from a reactive, suppression-focused system to a proactive wildfire risk-reduction system.

The shift is part of a broader change in Utah toward a comprehensive statewide wildfire management system focused mitigating catastrophic wildfire. Figure 30 illustrates the five key components of this system, which are discussed below:

⁸ Utah has adapted the CWPP acronym to fit its shift in approach to wildland fire policy, from reactive to proactive. In developing the State’s new Cooperative Wildfire System in 2017, Utah changed the CWPP acronym from Community Wildfire Protection Plan to Community Wildfire Preparedness Plan.

1. Cooperative Wildfire System (CWS)—Wildland Fire Policy
2. Catastrophic Wildfire Reduction Strategy (CatFire)
3. Utah’s Wildfire Risk Assessment Portal (UWRAP)
4. Watershed Restoration Initiative (WRI)
5. Utah’s Shared Stewardship Agreement



Figure 30: Key Components of Utah’s Wildfire Risk Reduction Strategy

1. Cooperative Wildfire System (CWS)—Wildland Fire Policy

CWS became the State’s new wildland fire policy on January 1, 2017. It clarifies the roles of the State relative to local governments with respect to reducing wildfire risk and implementing wildfire suppression activities.

- The State assumes responsibility for suppression costs related to large and extended-attack wildland fires.
- Local governments are responsible for:
 - Providing effective initial attack of wildfire by local fire departments; and
 - Implementing measurable prevention, preparedness and mitigation actions to reduce fire risk locally.
- Eligible Entities may include counties, cities and certain special service fire districts.
 - CWS is an opt-in system but all 29 counties and most cities have joined.
- Participating Entities that opt in commit to a “Participation Commitment” of measurable wildfire risk reduction work in their jurisdiction each year.
 - Participation Commitment is calculated annually using:
 - ◆ Historic fire cost average within that jurisdiction; and,

- ◆ A risk assessment by acreage using the Division’s innovative Utah Wildfire Risk Assessment Portal (UWRAP).
- These two components provide incentives for Participating Entities to take key steps to reduce wildfire risk and impacts:
 - ◆ Effective initial attack (keeping fires small and less costly) to reduce historic fire-cost average; and,
 - ◆ Well-planned mitigation actions that reduce an entity’s risk assessment.
- Participating Entities sign a five-year cooperative agreement with the FFSL.
 - With FFSL’s assistance, Participating Entities must maintain a Community Wildfire Preparedness Plan (CWPP) that:
 - ◆ Identifies local values at risk, priority areas, and actions to reduce risk.
 - Nearly every acre of the state is covered by a current CWPP.
 - FFSL provides assistance to each Participating Entity to prioritize actions and cooperatively implement projects to truly reduce risk in their community.
- CWS maintains cost-shared county fire wardens—50/50 between each county and FFSL.
 - Fire wardens are essential for ensuring that local participating entities understand and are successful in the new system, and every county now has a fire warden.
- CWS fully complements the Governor’s Catastrophic Wildfire Reduction Strategy.

2. Catastrophic Wildfire Reduction Strategy (CatFire)

The Catastrophic Wildfire Reduction Strategy (CatFire) responded to Governor Gary Herbert’s call in 2012—after a devastating wildfire season—to:

“... develop a comprehensive and systematic strategy to reduce the size, intensity, and frequency of catastrophic wildland fire in Utah . . .”

Completed in 2013, the CatFire report included the following recommendations:

1. Statewide Coordination of Mitigation Resources.
2. Catastrophic Fire Reduction Fund.
3. Regional Collaborative Working Groups to Perform Needs Assessment and Prioritization Across the State.
4. Technical Committees to Respond to Specific Concerns of Statewide Importance.
5. Adopt Key Recommendations from the National Cohesive Wildfire Strategy.
6. Increase Public Understanding and Participation.
7. The central steering committee should report annually to the governor and the legislature the action planned and taken.

These recommendations have been implemented and have created a statewide, coordinated, consistent discussion about wildfire management involving state and federal partners, local communities and stakeholders. CatFire has also resulted in the use of consistent tools and processes statewide with respect to wildland fire management.

CatFire adopts the recommendations of the National Cohesive Strategy and focuses on the goals of restoring and maintaining landscapes and creating fire-adapted communities. CatFire projects generally take a community perspective and focus on the landscape around communities, or the wildland-urban interface (WUI).

3. Utah's Wildfire Risk Assessment Portal (UWRAP)

In 2016, FFSL developed the Utah Wildfire Risk Assessment Portal (UWRAP), which provides a comprehensive, scientifically based decision support tool to assist wildfire and land managers in reducing wildfire risk across the State. UWRAP is an adaptation of wildfire risk-assessment tools developed through the West Wide Wildfire Risk Assessment and the National Cohesive Wildfire Management Strategy.

UWRAP is a mapping tool that enables partners within the State to consider wildfire risk using consistent terms (e.g., risk, threats, effects), to have discussions informed by wildfire-risk data, and to identify high-risk areas and determine where to allocate resources investments based on local joint decision-making processes. Figure 31 illustrates the data structure for UWRAP and defines key terms related to wildfire risk.

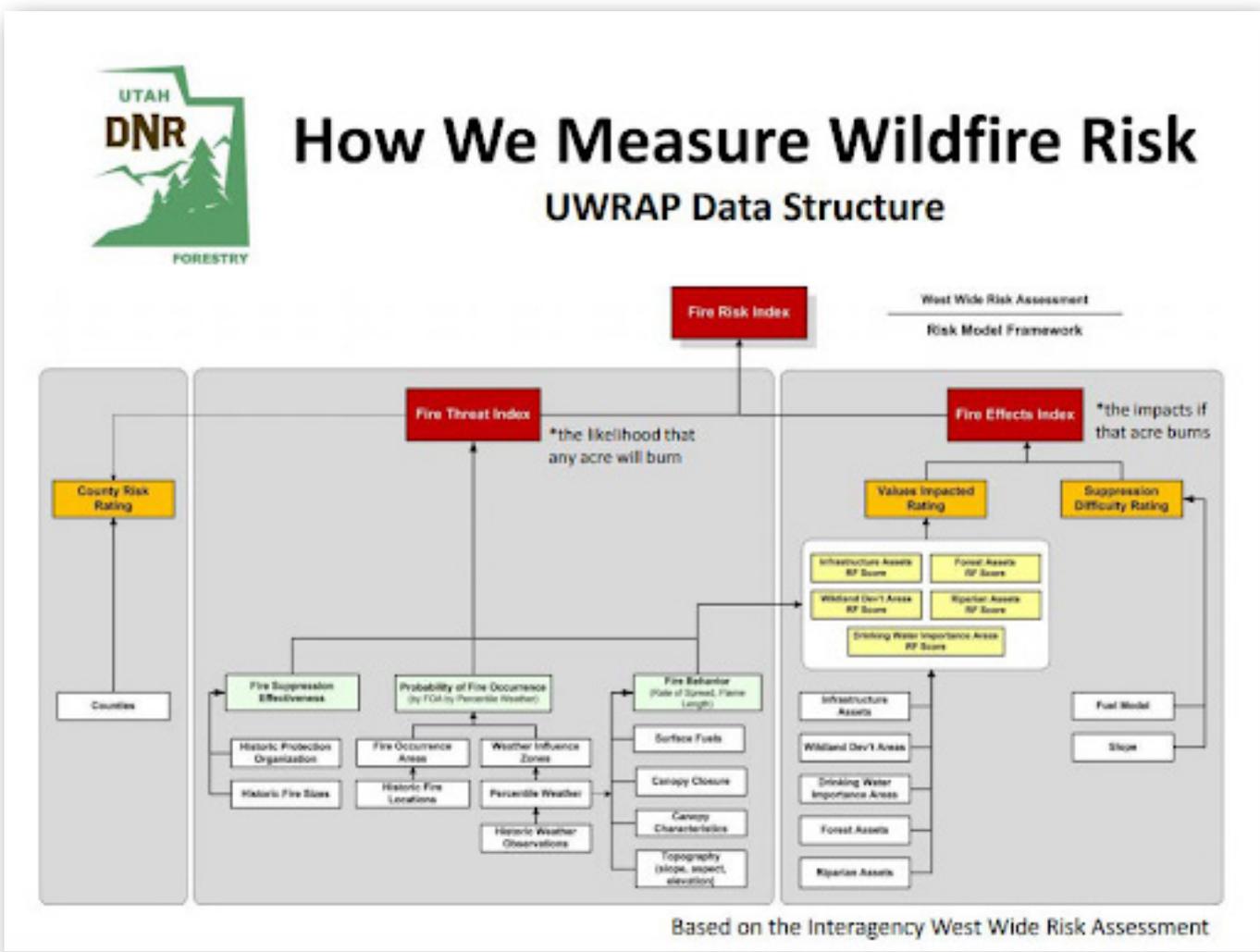


Figure 31: UWRAP Data Structure Source: UT Division of Forestry, Fire, & State Lands, 2017.

The Fire Risk Index is a measure of overall wildfire risk. It is calculated by multiplying the Fire Threat Index (FTI), which estimates the likelihood of an acre to burn, and the Fire Effects Index (FEI) that identifies areas with important assets where wildfires are costly to suppress and the economic impacts of that acre burning.

UWRAP is used throughout the State as a tool for discussions and decisions about wildfire risk reduction, by local communities as well as state and federal agencies. Figure 32 shows key applications of UWRAP for CWS and CatFire. For example, CWS’s participation commitment requires counties and municipalities to have a conversation about fire policy with FFSL at least twice a year, focused on high fire-risk areas and taxing policies for local actions. CatFire uses UWRAP to identify high-priority projects and to provide information back to UWRAP, tracking where projects have been implemented and risk has been reduced.

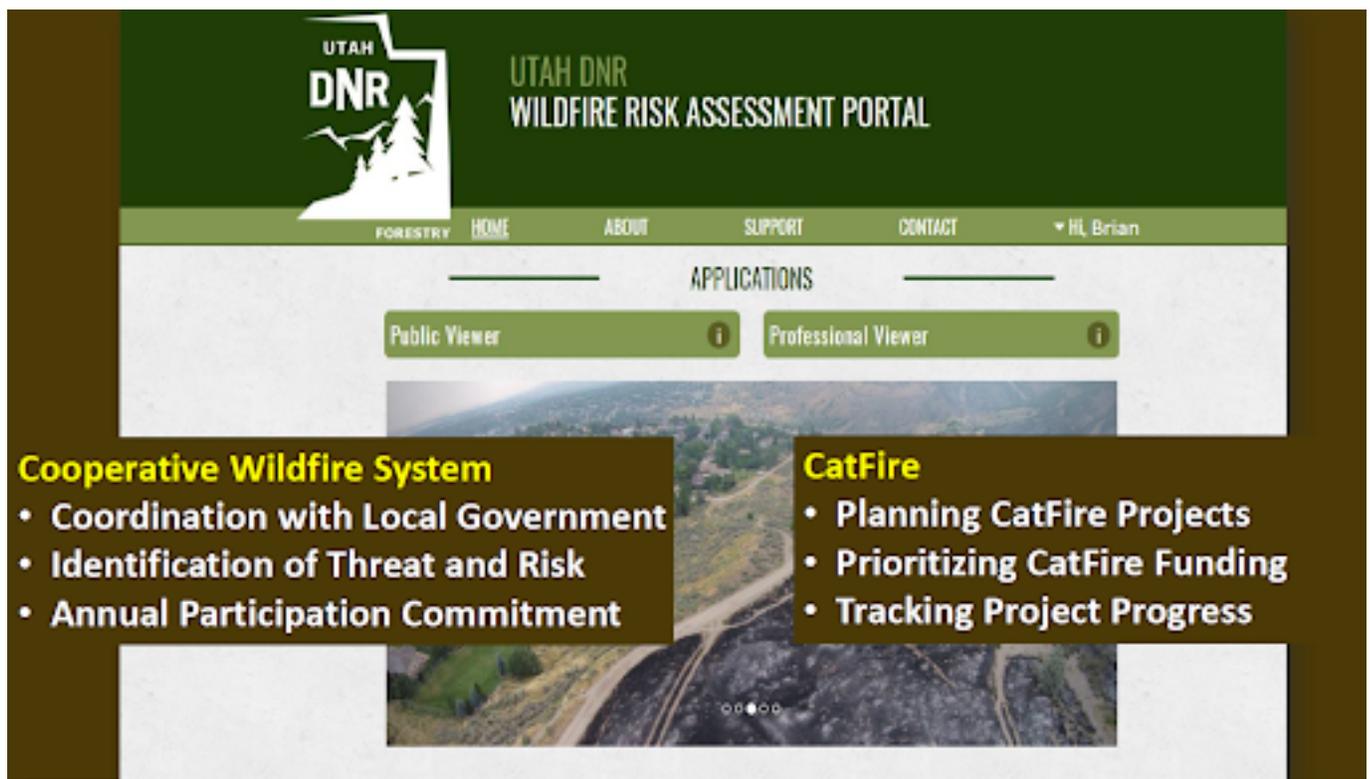


Figure 32: UWRAP applications for CWS and CatFire.

4. Watershed Restoration Initiative (WRI)

Utah’s Watershed Restoration Initiative (WRI) is a unique collaborative initiative through the State’s Department of Natural Resources that focuses on landscape-scale restoration for multiple benefits, including watershed restoration, wildlife habitat improvement, and wildfire risk reduction. WRI is a critical component of Utah’s wildland fire management framework and focuses on the first goal of the National Cohesive Strategy: Restoring and maintaining landscapes.

As a unique DNR initiative, WRI has been very effective in working with federal, state, and local partners to identify high-priority landscape-scale restoration projects and allocate funding toward those projects through collaborative processes. WRI has provided an incredible service to Utah’s statewide wildfire-risk reduction strategies by supporting projects that help restore and maintain landscapes.

5. Utah's Shared Stewardship Agreement

Utah's Shared Stewardship Agreement is a new addition to the State's wildfire risk-reduction approach. Shared Stewardship derives from the National Cohesive Strategy and is consistent with its management philosophy and strategies toward collaborative landscape-scale restoration. Commitments by the State and the Forest Service include shared planning and decision making, shared prioritization and funding of projects, community engagement and collaborative learning.

Two key mutual commitments related to wildfire risk-reduction include:

- A commitment to "existing partnerships, programs, and initiatives that have been successful in Utah." The Watershed Restoration Initiative, CWS, CatFire and UWRAP are specifically referenced.
- A commitment to co-managing wildfire risks and supporting each other in decisions that have been jointly made. This commitment recognizes the challenges and risks of managing wildfires across ownerships and using tools such as prescribed fire and natural fire to achieve resilient, fire-adapted landscapes.

C. National Forest 5-Year Vegetation Plans

Utah Shared Stewardship Agreement, Mutual Commitment on Shared Planning.

5. We are committed to shared planning efforts, including the integration of Utah's Forest Action Plan and the Forest Service's 5-Year Vegetation Management Plans. (future)

The State and the Forest Service are developing long term five year vegetation management plans on the five National Forests in Utah and on non-federal forest lands through the Utah Forest Action Plan revision process. Through this agreement, the State and the Forest Service are committed to integrating these planning efforts to reflect landscape-scale, cross-boundary priorities for all forest lands in Utah. The purpose of this groundbreaking shared planning approach is to leverage resources across landscapes to address the threats and risks at a strategic, meaningful level that will ultimately protect communities, restore watersheds, and improve forest conditions.

Commitment 5 of the Utah Shared Stewardship Agreement promises an effort to integrate the State's FAP with 5-year Vegetation Plans of each National Forest in the State. The commitment seeks to bring together the comprehensive, 10-year FAP planning process for all forests in Utah with the 5-year adaptive planning process for vegetation or timber management projects on each National Forest in the State. The purpose is to leverage resources of the State and the Forest Service by integrating planning efforts to identify landscape-scale, cross-boundary priorities for all forest lands in the State and to develop collaborative projects toward Shared Stewardship goals.

National Forest 5-year vegetation management plans are adaptive plans through which projects—e.g., timber sales, fuels reduction, forest restoration—and volumes of woody material are planned out to five years, but 5-year plans are updated each year. The plans present projects over five years but are adaptive to address the uncertainties, such as delays due to natural disturbances (e.g., wildfires, wind storms) or planning processes (e.g., appraisals, sales, environmental review).

Utah's National Forests are working to align their 5-year vegetation plans with Shared Stewardship landscape and issue priorities. For example, 5-year vegetation plans are evolving to incorporate priority landscapes and to address at-risk communities and watersheds. In addition, the 5-year vegetation plans are using new policy and technology tools to help increase the pace and scale of forest restoration and to stimulate more forest-related jobs and economic development through the utilization of increased wood supplies.

New policies and practices for stewardship contracts and timber sales are being developed through the agency's Forest Products Modernization initiative, and new mapping tools are creating greater opportunity for landscape-scale planning with partners. Figure 33 shows a map of the planned FY 2020 Nebeker Timber Sale on the Ogden Ranger District of the Uinta-Wasatch-Cache National Forest. The map is a tool to help the Forest Service plan and implement landscape-scale projects with partners, both on National Forest lands and across ownership boundaries.

Shared Stewardship mutual commitment 5 focuses on integrating two long-term plans—the 10-year FAP and 5-year vegetation management plans. However, it more accurately reflects a process toward shared planning and ongoing collaboration, particularly at the ground or project level. It also reflects how Shared Stewardship is a top-down and bottom-up vision and process. In this case, it requires National Forest project planning teams to work closely with FFSL Area Managers and staff in identifying priority landscapes and planning projects for active management, particularly where they involve cross-boundary activities.

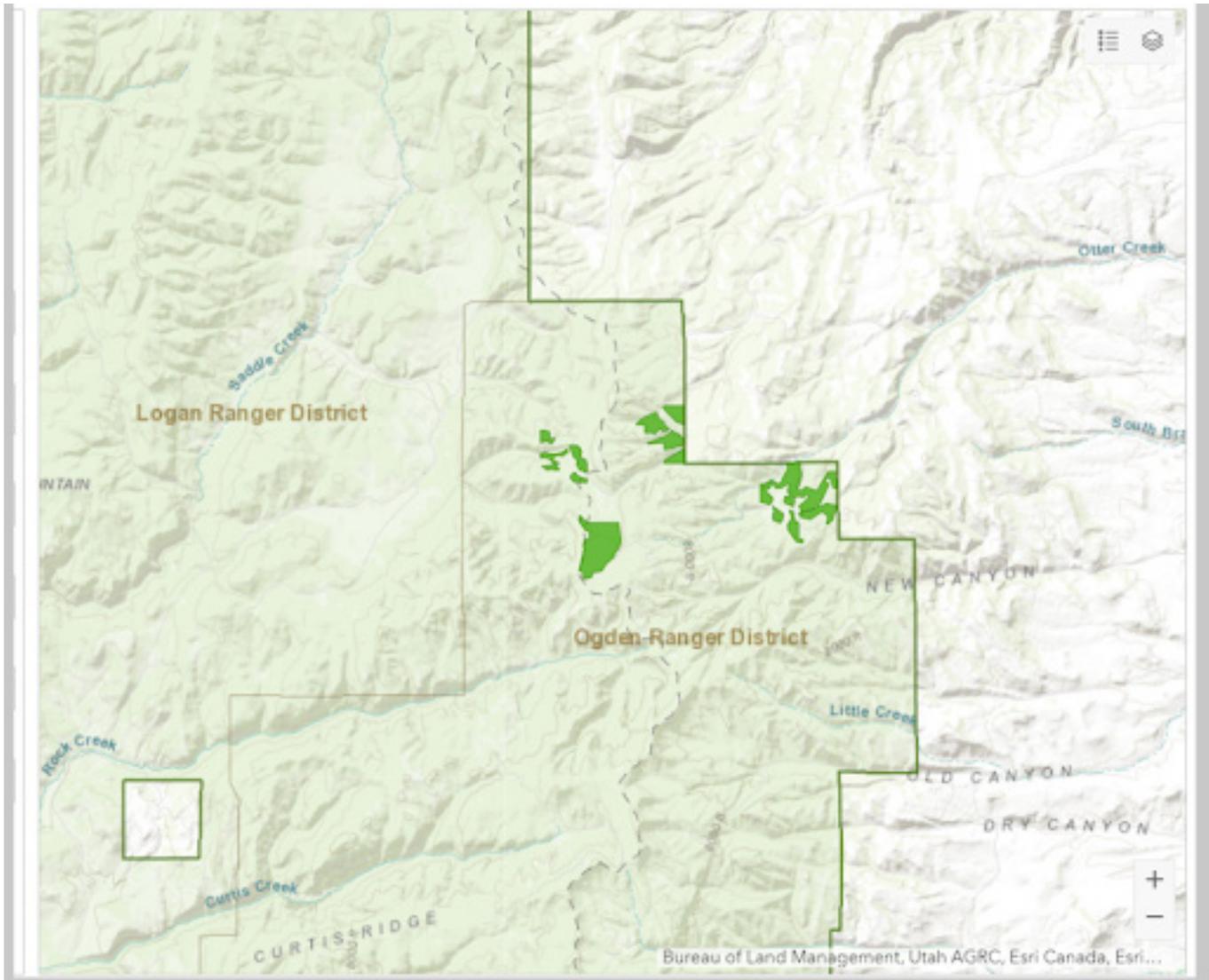


Figure 33: Planned FY 2020 Nebeker Timber Sale, Uinta-Wasatch-Cache National Forest.

The need for FFSL Area Managers and staff to participate early in project review and planning processes with National Forest project planning teams has been recognized in the development of Key Performance Indicators (KPIs) for Shared Stewardship. This is a process measure (Measure #6) focused on shared decision-making when establishing statewide and local priorities. The integration of Utah's FAP 2020 with National Forest 5-year vegetation management plans will strengthen the partnership between the State and the Forest Service to effectively leverage each other's resources, build mutual capacity, address potential economic development opportunities and encourage landscape-scale, cross-boundary projects.

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Chapter 6: Cooperative Forestry Program Plans

This chapter presents plans for three Cooperative Forestry Programs important to the FAP. The plans provide updated assessments and strategies for each of the programs. Information from these program plans has been incorporated into the FAP.

The three Cooperative Forestry Programs are:

1. Forest Legacy Program
2. Forest Stewardship Program
3. Urban & Community Forestry Program

1. Forest Legacy Program

Current Condition

Utah's forest lands embrace many of the state's most vital natural, economic and social resources. Whether it is clean, abundant water, year-round recreational opportunities or forage and cover for wildlife, virtually every Utah citizen enjoys significant benefits from the rich storehouse contained in these wooded areas. Privately-owned forests play an important role in maintaining the overall integrity of these forest resources and the diverse opportunities they provide. As Utah's population continues its rapid growth, private forest landowners face tremendous pressure to convert their lands to non-forest uses, namely residential subdivision and commercial development. Although many of these landowners wish to retain the traditional landscape and uses of their forests, these pressures, combined with current tax structures, often make it economically difficult for them to do so.

Program Overview

Utah's Forest Legacy Program (FLP) is designed to facilitate state, local and private open space and resource conservation initiatives by assisting with the purchase of conservation easements or fee title on non-industrial private forest lands and by aiding private forest landowners with the development of long-term Forest Stewardship Plans. The Forest Legacy Program fulfills both of these directives by providing the vital educational, technical and financial tools needed by private landowners and local governments to accomplish their goals with regard to conservation and sustainable forestry. Because the Forest Legacy Program was created through a 1990 amendment of the Cooperative Forestry Assistance Act of 1978, many aspects of Utah's program follow national requirements and criteria. The remaining elements specifically reflect the state's unique resource needs, political climate and public attitudes. Valuable input from private landowners, public citizens and several resource management agencies played a primary role in the development of these components. The following explains Utah's Forest Legacy Program functions and provides detail on the national program, the eligibility criteria for lands to be included in the program, the selection of Utah's Forest Legacy Areas and the process through which willing forest landowners can benefit from the program's many opportunities.

Utah's Forest Action Plan 2020 maintains the State's existing Forest Legacy Assessment of Need (AON) as the basis for its strategies. FFSL has chosen to incorporate the Forest Legacy elements into the FAP by including the AON. The AON was completed in 1996 and is found in Appendix C, page 94. The AON

is an assessment that was conducted by FFSL, with consultation of the Forest Stewardship Coordinating Committee, containing a description of the forest resources within Utah and the trends affecting those resources. This assessment establishes the eligibility criteria for tracts to be considered for inclusion in the FLP, identifies Forest Legacy Areas (FLAs), and creates a guide to implementation of FLP in Utah. FFSL has decided that the original AON's strategies are still applicable today, therefore a new AON was not warranted.

The National Program

The United States Congress created the national Forest Legacy Program (FLP) recognizing that the majority of the nation's productive forest lands are in private ownership and that private landowners are facing growing pressures to convert their lands to non-forest uses, namely residential subdivisions and commercial development. Greater population density and user needs are increasing this pressure by demanding that private lands not only compensate for the current timber shortfalls on federal lands but that they also provide a wider variety of products and services, from fish and wildlife habitat to aesthetic and recreational opportunities. The FLP mitigates the negative effects of these pressures and facilitates long-term resource management partnerships between local, state and federal governments. Authorization for the FLP was granted through Section 1217 of Title XII of the Food, Agriculture, Conservation and Trade Act of 1990, also referred to as the 1990 Farm Bill. This law amended the Cooperative Forestry Assistance Act (CFAA) of 1978 in order to allow the Secretary of Agriculture to establish the FLP for the protection of environmentally important forest areas that are threatened by conversion to non-forest uses. This authority continues indefinitely. The USDA Forest Service serves as the lead federal agency for the FLP and implements the Program through close cooperation with a lead state agency as designated by the Governor. In 1996, Utah's then Governor, Michael Leavitt, designated the Division of Forestry, Fire and State Lands as the state's lead agency.

The establishment of a state FLP includes several steps that are specified by the Forest Legacy Program Implementation Guidelines. The first step in these guidelines is the completion of a state-wide Assessment of Need (AON) which documents the demand for a FLP in the state; identifies and delineates the boundaries of eligible forest areas; and recommends to the Forest Service areas which should be included in the FLP. At a minimum, the AON must address the following as they relate to the purpose of the FLP:

1. Forested areas threatened by conversion to non-forest uses;
2. Forest resources including:
 - a. Aesthetic and scenic values,
 - b. Fish and wildlife habitat, including threatened and endangered species,
 - c. Mineral 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 on forested lands;
6. Outstanding geological features;
7. Demographic trends as they relate to conversion of forest areas; and
8. Other ecological values

Based on the AON, the state lead agency identifies specific geographic Forest Legacy Areas (FLA) that meet both national and state eligibility requirements. It then recommends these areas to the Forest Service for inclusion in a state FLP. Once designated, FLAs and resulting maps of FLAs may be modified and amended upon recommendation by the state lead agency if future conditions make changes necessary. Following completion, the AON and identification of proposed FLAs must be submitted by the state to the Forest Service for review. The Secretary of Agriculture provides final approval for establishing the state's FLP.

Selection of Forest Legacy Areas

Utah Forest Legacy Priority Areas

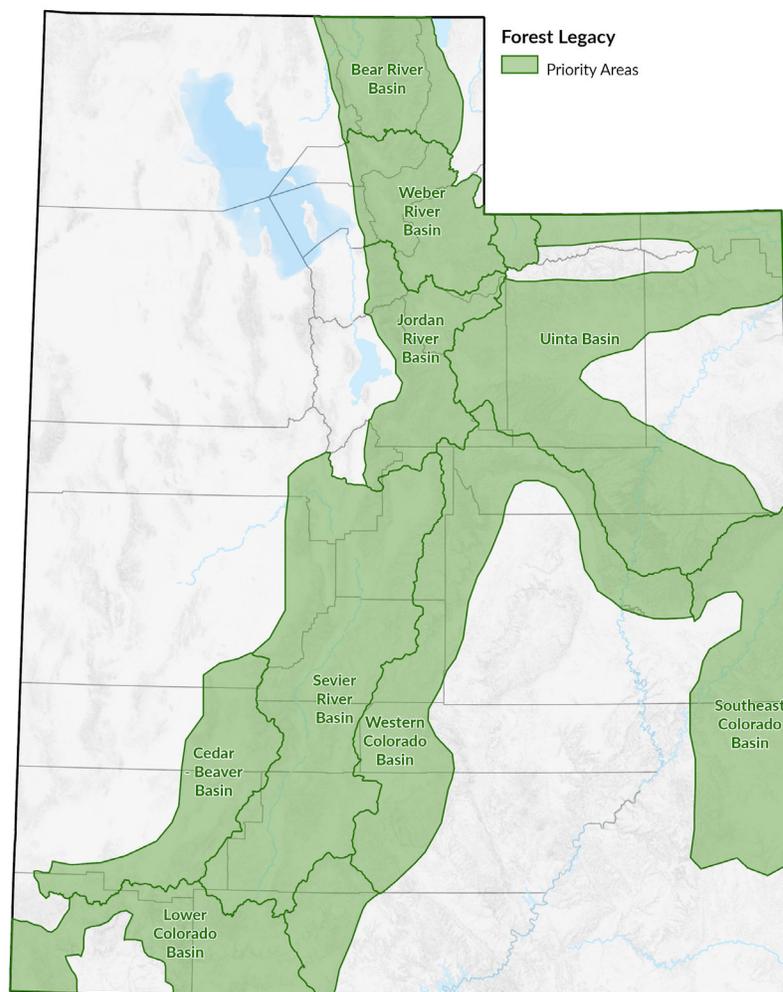


Figure 34: Forest Legacy Priority Areas-Map.

National Eligibility Criteria

Forest Legacy Area boundaries must encompass forest lands with significant environmental and other resource-based values. These areas may also include non-forested areas such as farms and villages if they are an integral part of the landscape and are within the logical boundaries. In order to ensure that all lands nominated for FLA designation meet the minimum goals and intent of the program, the Implementation Guidelines specify the following eligibility criteria:

1. Proposed Forest Legacy Areas must represent an important forest area that is threatened by conversion to non-forest uses.
2. Proposed Forest Legacy 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; and/or other ecological values.

3. Proposed Forest Legacy Areas should provide opportunities for the continuation of traditional forest uses, such as timber harvesting, forest management and outdoor recreation.

State Evaluation Process

The delineation of boundaries for Utah's FLAs stemmed from a multi-level review involving public attitudes and input from local, state and federal resource managers. The Division began this review by generating a map of the state's public and private forest lands using information contained on Geographic Information Systems (GIS) data layers. For the purposes of analysis, these forested areas were then divided according to critical hydrologic basins as established by the Utah Division of Water Resources. The use of these regional boundaries reflects the Division's concern for landscape level management of forest resources and its commitment to working with local and regional entities in facilitating their existing plans for land conservation. Due to the limited private forest ownership on tribal lands within the state, tribal lands were not considered as part of the Assessment of Need process.

The Division's second phase of review entailed soliciting input from various resource managers and considering a wide array of printed and computerized data regarding Utah's forest resources. This data included information on water quality and quantity, critical wildlife habitat, high density recreation areas, demographic and economic factors affecting forest conversion, regional activity of private land trusts, opportunities for the continuation or development of wood products industries, existing open space plans and public attitudes regarding land conservation. A report regarding this information was presented to Utah's Forest Stewardship Coordinating Committee which subsequently established the following resource priorities for the selection of Utah's Forest Legacy Areas:

1. Protection and enhancement of water quality;
2. Protection of wildlife/fish habitat and maintenance of habitat connectivity;
3. Protection of riparian areas and restoration of natural ecosystem functions;
4. Maintenance of traditional forest uses; and
5. Contribution to rural economies.

After comparing all these factors to the national eligibility criteria, the Division designated nine FLAs with boundaries corresponding to established state hydrologic basins. Two of the state's eleven basins were not designated as FLAs at this time because of limited forest resources or Legacy-related opportunities in those areas. The widespread nature of these Areas reflects the dispersed distribution of Utah's forest resources and the close proximity of nearly all significant forest stands to rapidly developing urban locations. Detailed descriptions and maps of each of Utah's FLAs are contained in the Assessment of Need. See Appendix C, page 94.

Landowner Participation and Parcel Acquisition

All owners of private forest land within a designated FLA are eligible to apply for enrollment of interests in their lands in the state's FLP. It is important to note, however, that participation of any landowner in Utah's Forest Legacy Program is entirely voluntary. Under no circumstances will the right of eminent domain be used for the unwilling "taking" of any private property rights. Participation also requires preparation of a Forest Stewardship Plan for the forest resources located on a proposed parcel and, the proposed parcel must have 75% forest cover. Eligible landowners who want to participate in the Program may

contact the Division of Forestry, Fire and State Lands at any time. The Division will provide the landowner with an application form which requests information regarding the parcel's environmental values and the landowner's conservation and management objectives. A subcommittee of the Forest Stewardship Coordination Committee reviews and prioritizes the applications for acquisition each year based on the program goals. The top three applications are submitted to the National Review Panel for review and prioritization.

Program Goals:

- Prevent future conversions of forest land and forest resources;
- Protect and enhance water quality and water supplies;
- Protect wildlife habitat and maintain habitat connectivity and related values needed to ensure biodiversity;
- Protect riparian areas;
- Maintain and restore natural ecosystem functions; and
- Maintain forest sustainability and the cultural and economic vitality of rural communities.

Strategy

As of 2020, Utah has 30 Forest Legacy properties (41 tracts) protecting working forests on 77,193 acres. The Division will continue to use the Forest Stewardship Program as the gateway for outreach for new private forest landowners interested in the FLP. There has been consistent interest in the FLP from new Forest Stewardship landowners as FSPs are completed throughout the state on private forest lands.

As additional projects are funded, the program's administrative duties increase accordingly. Frequent communication with FLP landowners and property managers is essential to ensuring compliance with the goals of the program, confirming the conservation values of these properties are maintained. Responding to FLP landowners' inquiries and activity requests involves reviewing the tract's conservation easement, and often involves consultation with the attorney general's office. The Division is exploring options for additional staff capacity to meet the increasing demands of the FLP.

The Division has been meeting its responsibility by conducting annual monitoring of all FLP projects. As the number of projects has increased over the past 20 years, there have been challenges with the increased time and funding needed for the required annual monitoring. Monitoring is conducted by the Division's Area Foresters, who maintain a close relationship with FLP landowners through various FSP related activities. Through future discussions with the USFS, the Division hopes to explore potential funding alternatives to conduct monitoring of an increasing number of FLP projects.

To increase efficiency, the Division's GIS staff partnered with Esri (Environmental Systems Research Institute, Inc.) to produce a mobile app that combines the functions of the monitoring form, repeat photo points, and mapping capabilities. This digital workflow allows the information from the monitoring visit to be immediately uploaded to shared network drives and subsequently available for review by the FLP Coordinator. The success of this methodology has since been shared with other states.

The Forest Legacy Program will maintain the existing Forest Legacy Areas (FLAs) and Assessment of Need, and also work to identify and prioritize projects within the FLAs. Within the FLAs potential projects and tracts are required to have 75% forest cover.

In order to protect and enhance water quality and water supplies, priority will be given to:

- Parcels on which land management directly affects streams and other waterways that support domestic and agricultural water supplies.
- Parcels owned by landowners who will identify and seek to minimize past and potential sources of non-point source pollution, including erosion potential and sedimentation resulting from road construction.

In order to prevent future conversion of forest land and forest resources, priority will be given:

- Parcels in danger of conversion to non-forest uses within five years.
- Parcels for which there is a cost share match available.
- Parcels in danger of being over-harvested or degraded through surface mineral development.
- Parcels containing 100 or more available acres.
- Parcels held by owners who will preclude parcel divisions and non-forest development projects on parcels included in the Program. Appropriate exemptions may be negotiated for maintaining compatible development.

In order to protect wildlife habitat and maintain habitat connectivity and related values needed to ensure biodiversity, priority will be given to:

- Parcels located adjacent to public lands managed for wildlife habitat.
- Parcels which currently exhibit connective habitats, migratory corridors, habitat linkages and areas that reduce biological isolation or could be managed to do so.
- Parcels held by owners who will identify and protect areas with species or communities of concern and seek to manage for key habitats.
- Parcels held by landowners who will maintain and/or restore forest cover and structure to provide habitat connectivity for the range of wildlife species which would normally populate the area.

In order to protect riparian areas, priority will be given to:

- Parcels owned by landowners who will encourage regeneration of healthy stands of native species in riparian areas where they are/were naturally occurring.
- Parcels owned by landowners who will identify and protect sensitive riparian habitats, including stream banks.
- Parcels including over 300 feet of river or wetland shoreline.
- Parcels including a minimum 80 foot strip of native trees and shrubs as a natural buffer and sediment filter.

In order to maintain and restore natural ecosystem functions, priority will be given to:

- Parcels which include healthy forests, including a natural species mix and a genetically sound mix of trees within the species represented on the parcel.

- Parcels owned by landowners who will manage the parcel or key portions of it to restore a natural mix of forest species, structure and stages across the landscape.
- Parcels owned by landowners who will utilize prescribed fire or other practices to restore more naturally functioning landscapes.

In order to maintain forest sustainability and the cultural and economic vitality of rural communities, priority will be given to:

- Parcels which could contribute to the development or sustainability of local and regional wood products industries.
- Parcels owned by landowners who will work cooperatively to develop a long-term forest stewardship plan for their property.

2. Forest Stewardship Program

Program Overview

The Forestry Title of the Food, Agriculture, Conservation and Trade Act of 1990 (also known as the Farm Bill) established the Forest Stewardship Program. The purpose of the Forest Stewardship Program is to encourage the long-term stewardship of non-industrial private forest (NIPF) lands to enhance and sustain the long term productivity of forest resources and produce healthy, resilient forest landscapes. NIPF lands are defined as land having existing tree cover, or suitable for growing trees, that is owned or leased by any private individual, group, association, corporation, Indian tribe or other private legal entity. Participation in the Forest Stewardship Program is voluntary. Landowners can participate in the program through technical assistance, educational programs, or planning assistance through Forest Stewardship Plans. The Division has also partnered with the USDA Natural Resources Conservation Service (NRCS) in providing financial assistance to NIPF landowners for forestry and agroforestry management practices for conservation.

Utah's private forest landowners are a diverse group, consisting of corporate owners and private individuals, owners of large and small acreages, multi-generation owners and those who have only recently acquired forestland. Utah's NIPF landowners are distributed throughout all twenty-nine counties and own forest land for a variety of reasons.

Many of these private forests were originally acquired for cattle grazing, agriculture or mining development and are typically located near larger tracts of public forest where critical watershed areas exist. Although relatively small in acreage, these private forestlands overlay many of the state's most valuable watershed, wildlife and recreation areas and form critical fringe and connectivity zones throughout larger tracts of public forests. Because of their location, these lands are capable of providing benefits as well as posing risks for nearby communities if not properly managed.

Providing technical assistance to NIPF landowners is not new to the Division. Chapter 65A_8_1 of the Utah State Code provides guidance to the Division, which facilitates management on private forest lands by "encouraging a landowner to conserve, protect, and manage forest or other land throughout the state." Recent trends in Utah's timber resources indicate increasing numbers of landowners with smaller land holdings further fragmenting the landscape from an ownership perspective. Forest sustainability, ecosystem process and function, thus become larger challenges. With increased acreage of bark beetle mortality, aspen

decline, and wildfire fuel loading, there is high demand for technical and financial assistance from Utah's private forest landowners.

Forest Stewardship Plans

A Forest Stewardship Plan serves as the foundation for engaging forest landowners in a plan that addresses individual landowner objectives while adhering to National and State Forest Stewardship Management Plan guidelines. The guidelines identify required plan criteria and elements, including the recommendation of practices aimed at reaching desired forest conditions. Monitoring of completed landowner Forest Stewardship Plans provides an important component of tracking successful implementation of recommended activities.

Education and Routine Technical Assists

The Cooperative Forestry Assistance Act authorizes the provision of technical assistance to private landowners. Specifically, the CFAA authorizes:

- Assisting landowners to implement forest management activities, including the use of existing technical and financial assistance programs where appropriate.
- Educating landowners about forest management practices and issues.

In Utah, routine technical assists may include education and advisement regarding forestry related topics such as timber sale preparation, invasive species management, forest health issues, and wildlife habitat improvement.

Agro-Forestry

With over 13,000 farms and ranches throughout the state, Utah has substantial agricultural acreage that can benefit from agro-forestry practices. Rural forest landowners, ranchers and farmers can, through use of conservation plantings and other management practices, improve forest health and productivity, reduce soil erosion, improve riparian areas, improve crop and livestock productivity and improve wildlife habitat.

Recognizing the need and benefits of improved management practices on rural agricultural lands, landowners have become increasingly reliant upon cost-share programs to achieve their objectives. Likewise, delivery of technical assistance associated with agro-forestry applications contributes to the Division's program goals. As awareness among landowners grows, participation in cost-share incentives programs and delivery of technical assistance will grow as well.

Timber Harvest and Land Management Practices

Perhaps the most immediate threat to Utah's private forestlands is the degradation of watersheds and potentially irreversible change in forest health that results from destructive management practices such as overgrazing, improper timber harvesting methods and surface mineral development. The consequences of poor management practices may not be confined to the land on which those activities occur. Neighboring landowners may be impacted by increased fire risk, soil erosion and the spread of insects, disease and noxious or invasive weeds.

Ownership Fragmentation

The conversion of Utah's forest lands stems from a trend toward parcelization of forest ownerships into smaller and less-manageable areas. Increasing numbers of landowners along with decreasing tract size

affects forest sustainability and production. In addition, population increases and development pressures are likely to shift more private forestland to non-forest uses. The loss of large, contiguous tracts of forestland can have a devastating impact on traditional forest practices and the maintenance of forest values.

Forest Health

Several factors have contributed to the decline in forest health conditions, including past livestock grazing practices, fire exclusion, and an increase in mortality due to insects and disease. Combined, these factors have resulted in forest conditions that are denser and less diverse, with a greater abundance of late successional species and have increased fuel loads. Wildfires affecting mixed species stands and densely stocked sites tend to be severe, causing adverse impacts to soil, wildlife habitat, recreational resources and important watersheds.

Strategies for Utah's Forest Stewardship Program:

- Promote active management on private lands by targeting an increased number of private forest landowners located in Priority Stewardship areas for assistance with stewardship or other planning purposes.
- Encourage activities on private forest lands focusing on improving forest health and resilience, reducing the potential for land fragmentation and addressing wildfire risk reduction. Use Forest Stewardship Plans to assist landowners with achieving their resource conservation objectives.
- Advance landscape-scale, cross-boundary partnerships by including non-federal landowners in such ecosystem-based planning where appropriate and acceptable to the landowner.
- Continue to foster cooperative relationships with partner agencies and multi-agency partnerships that incentivize forestry management on private lands such as the Natural Resources Conservation Service (NRCS) and Utah's Watershed Restoration Initiative (WRI), and encourage timber industry development in the state.
- Support program integration between FFSL programs in forestry and hazardous fuels reduction treatments in the common goal of pre-fire vegetation management.
- Educate landowners and logging contractors on Utah's Forest Practices Act and related Forest Water Quality Guidelines. Collaborate on timber harvest tours and public demonstration days to showcase the importance of sustainable forest stewardship.

Process for identification of Stewardship Priority Areas

The USDA Forest Service, in cooperation with the National Association of State Foresters, developed and implemented a modernization initiative for the FSP in 2020 calling on states to identify Stewardship Priority Areas in state FAPs. Using the National Land Cover Database (NLCD), we first identified all forest cover in Utah that falls on private lands. We then combined this layer with the Utah Automated Geographic Reference Center (AGRC) private parcel layer, and identified all private parcels that have at least 10% forest cover. Therefore, private 'forest' is defined by an individual private parcel having at least 10% forest cover, which is the general federal guideline for providing Stewardship assistance to private landowners.

Our methodology involved the following GIS layers and geospatial analysis to identify priority areas:

- Utah Forested Land Cover - National Land Cover Data Set (NLCD) from 2016
 - Each of the 30m pixels in this layer is one of the three Forest types in that data set
 - ◆ Deciduous Forest

- ◆ Evergreen Forest (includes pinyon-juniper forest type)
- ◆ Mixed Forest
- There are 55,682,143 forest pixels within the state boundaries
 - ◆ Each pixel is 900 square meters, totaling 12,383,411 acres of forest land in Utah
 - ◆ This is the NLCD acreage figure for total acres of all forest land in Utah
- Private Land ALL
 - This is all land classified as Private Ownership in the State of Utah's official Land Ownership layer
 - There are 11,427,617 acres of Private land
- Private Forest Polygons
 - ◆ These are the 30m NLCD forested area pixels, converted to polygons, and clipped to the Private land polygons
 - ◆ The total area of these clipped polygons is 2,236,035 acres
 - ◆ This is the most accurate method of calculating total private acres with forest cover, if we assume that the NLCD is the best layer of Forest coverage, and that the State of Utah's official Land Ownership layer is the most accurate property layer.

However, this provided us just the actual forest cover- it is not representative of the entire private forest land ownership. For instance, many private properties in Utah are not 100% forested, but we normally complete a Forest Stewardship Plan or provide landscape level resource management recommendations for the entire (100%) property. So, only the forest cover of their property would be included in the new Stewardship Priority Area; not the entire property acreage. Therefore, we decided to take the process further by identifying all private land parcels that are at least 10% forested. So, the final steps involved identifying:

- Private Land with Forest
 - These are the Private Forest Polygons, from the previous layer, that contain 1 or more Forest pixels from the Utah Forested Land Cover - NLCD 2016 layer
 - The attribute table for this layer contains:
 - ◆ the number of Forest pixels within the polygon
 - ◆ the Acres of forest land within the polygon (based on 900 square meters per pixel)
 - ◆ the percent of the polygon's total area covered by forest
- Private Forested Land %Cover
 - This is the previous layer (Private Land with Forest) with the polygons containing less than 10% forest cover removed.

If we include all private parcels in Utah that are at least 10% forested, this acreage= 3,672,000 acres.

We have used this final layer as our Stewardship Priority Area. We believe these areas are the highest priority for providing assistance to private landowners through the Forest Stewardship Program.

Private forest lands in Utah are interconnected to neighboring public lands and impact downstream resources. These forests are currently at risk of fragmentation, development, catastrophic wildfire, and

the ecological impacts of climate change (most notably, insect and disease). As Utah is a mostly desert state, these private forest lands are essential for targeted management and care to provide forest resource benefits including: fish and wildlife habitat, forest products, and water quality and quantity. For these reasons, all of Utah's private forest lands are important, and there was no need to neither further refine nor decrease the acreage of these significant areas.

Utah Forest Stewardship Priority Area Potential

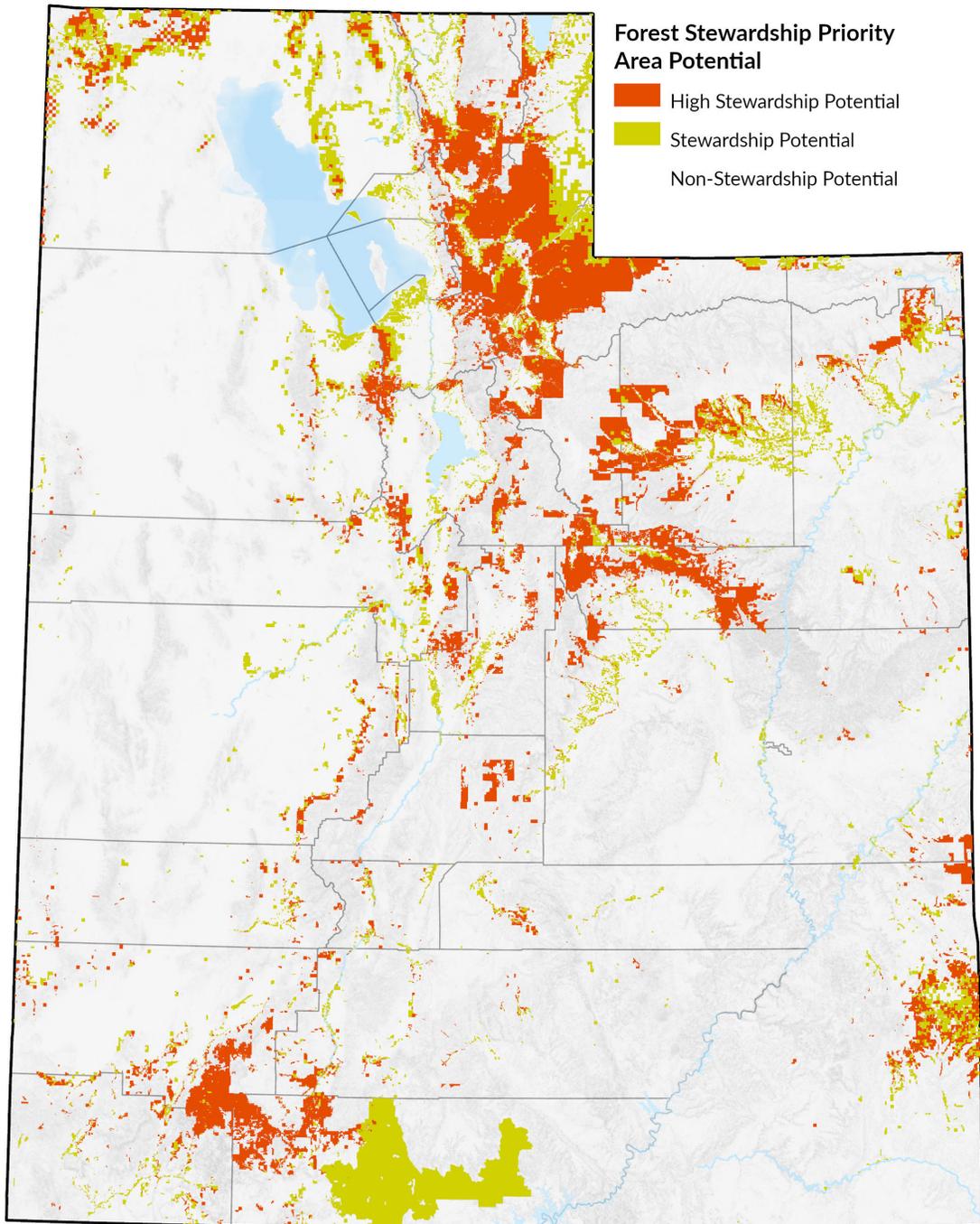


Figure 35: Forest Stewardship Priority Area Potential.

3. Urban & Community Forestry

Utah's Urban and Community Forestry (U&CF) Program is guided and supported by the National U&CF Program of the USDA Forest Service. Figure 36 shows the *Ten-Year Urban Forestry Action Plan (2016-2026)* which provides strategic direction for U&CF programs nationwide[1]:



Figure 36: *Ten-Year Urban Forestry Action Plan (2016-2026)*, USDA Forest Service.

Our State U&CF program strives to address these national goals with strategies outlined in the FAP 2020.

Current Condition

The estimated population in Utah as of 2020 is 3.28 million, which, compared to 2.76 million in 2010, is significantly higher. This is a 1.64% annual growth rate, making Utah the 4th fastest-growing state in the country[2]. The majority of this growth is occurring in the northern half of the state, including the Wasatch Front, Cache Valley, and the counties of northeastern Utah. However, the southwest counties of Washington and Iron are experiencing explosive growth as well.



Figure 37: *Trees now thrive in a valley that was historically barren, as seen in this view of the Salt Lake Valley from Corner Canyon in Draper.*
Photo by Jeran Farley

This rapid growth may affect existing vegetation in an area, but it also provides opportunities for urban trees and forests to spring up where previously there might have been few if any trees whatsoever. Utah's urban trees were introduced when the pioneers settled Utah beginning in 1847. These pioneers brought cultivated trees with them from the Eastern and Midwestern United States. Many of these original trees are still providing an urban canopy cover over older sections of cities and towns throughout the state. The pioneers' zeal for tree

planting has not carried down to present-day Utah in many situations. Trees are often overlooked when initial urban planning is underway. This leaves the installation of trees as an afterthought, often resulting in poor site locations with compacted soil and improper irrigation. Often there is not adequate room left for urban trees to reach their full potential, due to insufficient soil area for root expansion.

Additionally, tree selection often comes from a dozen or so overly planted tree species, leaving communities with a monoculture of species, ripe for destruction from insects or disease. Just like the elm population was ravaged in the early 20th century by Dutch elm disease, the current population of ash trees is likely in jeopardy sometime in the near future by the invading emerald ash borer, which is already decimating ash trees in other parts of the US.

Water continues to be a fundamental factor in the survivability of urban trees in Utah. As stated in the Forestry Strategic Plan for FFSL, "...disturbances... attributed to climate-related factors, such as drought, warmer temperatures, and longer summers... have significant consequences for watersheds, landscapes, and human communities[3]." Since the majority of the state is particularly arid, supplemental water is often required for urban trees to survive and thrive. Ironically, however, many urban trees receive too much water as irrigation schedules and methods are inappropriate in many landscapes throughout the state. As the

population of the state continues to increase, water use will need to be more strategic and conservation-minded as it becomes more scarce in the face of increasing demands.

Additionally, an increase in population will only exacerbate the smog-filled inversions that frequent many of the valleys in the state, particularly along the Wasatch Front. Energy consumption will continue to rise, particularly in the hot summer months, due to air conditioning.

Trees will likely play an essential role in remediating some of these issues, such as capturing, retaining, and regulating water, decreasing air pollution, assisting in building cooling, and shading expansive areas of asphalt and concrete from our roads and parking lots.

Urban forestry is increasingly becoming an integral partner in issues such as community stream and watershed restoration, as well as mitigation projects in wildland urban interface areas. Communities are cleaning up waterways and striving to restore them to their historic setting. These projects often involve urban forestry elements as parks and trails are designed around these water features. As residential areas extend further into wildland urban interface areas, urban forestry practices can aid in developing fire-wise landscapes for homes and other structures.

Communities are stepping up and discovering the value of tree inventories and urban forestry management plans. The number of full-time city foresters in the state continues to increase as communities see the value of their urban forest resource. With support from communities, nonprofit organizations, educational institutions, industry, and the U.S. Forest Service, urban forestry in Utah continues to move forward with increasing momentum.

Program Overview

The State's U&CF program is delivered through the Utah Division of Forestry, Fire and State Lands (FFSL) in cooperation with the U.S. Department of Agriculture (USDA) Forest Service, Utah Community Forestry Council/ISA Utah Chapter (UCFC), TreeUtah, Utah Society for Environmental Education (USEE), Utah State University Extension, and other partners. Federal assistance currently provides funding for a full-time urban and community forestry coordinator and for technical assistance in urban and community forestry from area foresters in six areas across the state. Federal assistance also provides volunteer coordination through a non-profit 501(c)(3) organization (TreeUtah), and a state advisory council (UCFC). The state provides funding for a full-time urban and community forester in the Southwest



Figure 38: Outreach to local elementary school children to instill excitement about elements of urban forestry and how they can be a part.

portion of the state as well as community cost-share grants. The State's UCF program receives significant leverage through in-kind contributions of public and private partners from the national to local levels, some of whom are listed below. This leverage is estimated at \$85,000 annually.

The state values education and awareness of environmental issues. The UCF program has provided successful outreach to youth across the state through the annual Arbor Day Poster Contest and its coordination with the Conservation Education Program, through a partnership with USEE, which oversees Project Learning Tree.

The state has vibrant success with the Tree City USA program, a national partnership program of the National Arbor Day Foundation. On average, Utah has 80-90 Tree City USA communities with at least 5 college campuses participating annually in the Tree Campus USA program.

Various federal and state agencies, local governments, educational institutions, corporations, professional associations and individuals have a direct or indirect interest in management of the urban and community forests of Utah.

Some of the cooperators and partners active in this regard are as follows:

- U.S. Department of Agriculture (USDA) Forest Service, State and Private Forestry
- Utah Division of Forestry, Fire and State Lands
- Utah State University, Cooperative Extension Service
- Utah Community Forest Council/ISA-Utah Chapter
- Rocky Mountain Power
- Red Butte Garden & Arboretum
- TreeUtah
- Utah Society for Environmental Education
- National Arbor Day Foundation
- International Society of Arboriculture
- American Forests
- Utah Nursery and Landscape Association
- Community foresters, elected officials, shade tree commissions, and citizens

Priority Areas

A major component of state urban and community forestry programs is assisting communities with the expansion and management of their urban forest resources. In order to compete for federal funds, state urban and community forestry programs are required to maintain records on the 'Managing' or 'Developing' status of communities throughout the state[4]. The importance of keeping track of this information, as well as continually reaching out to communities to assist with their individual urban forestry needs, cannot be overstated. Because of the overarching importance of assisting communities in sustainably developing and managing their community forestry programs, state urban forestry staff teamed up with state GIS staff to create an interactive map to assist in keeping track of each community's forestry program throughout the

state. According to federal guidelines^[5] a community is considered “developing” if it meets one or more of the following criteria:

1. **Management Plans:** Possessing, using and periodically updating a management plan demonstrates a community’s commitment to the comprehensive management of its community tree and forest resources.
2. **Professional Staff:** Professional staff members have education, training and experience in the fields of urban forestry, arboriculture, forestry, natural resource management, and/or horticulture. These requirements are intended to ensure that the person with the primary responsibility for program management has the training and experience to properly and professionally manage the urban forest resource and advance the community’s UCF program.
3. **Ordinances/Policies:** Ordinances and/or policies must be codified, be followed and/or routinely enforced by some mechanism within the community, and guide the community in the proper care, establishment and protection of community trees and forests. Effective public policies are not always contained in a single “Tree Ordinance,” and are likely to be delivered through a variety of policies and regulations.
4. **Advocacy/Advisory Organizations:** Many local UCF programs began through the efforts of local citizens’ groups, and these groups often serve as a catalyst to encourage active local urban forest resource management for the long term. This measure aims to ensure that community residents and program stakeholders are informed, educated, and provided with opportunities for active stewardship and community leadership in the development and implementation of a sound community forestry program at the local level.

For a community to be considered as “managing” it must meet all four criteria.

The state urban forestry program has implemented these requirements to keep track of its main priority areas. The interactive map that the state urban forestry program will be using includes boundaries for all the communities throughout the state. Additionally it maps out whether each of these communities is “managing” or “developing,” as well as which of the required elements a community does or does not have. This map also highlights which communities are currently a Tree City USA community, or if they have previously held that designation. This is important information due to the fact that a few requirements of becoming Tree City USA (ordinance as well as professional staff and/or advocacy organization)^[6] overlap those of becoming a “developing” or “managing” community.

This map will enable state forestry staff to more easily target communities that require assistance in building or strengthening their urban forestry program. This will ultimately lead to more “developing” and “managing” communities in the State of Utah, which in turn, will allow Utah to be more competitive in acquiring grant funding. The most important outcome, however, will be reflected in the health and sustainability of the urban forests in Utah, at the community level as well as the state level.

Managing & Developing Utah Communities

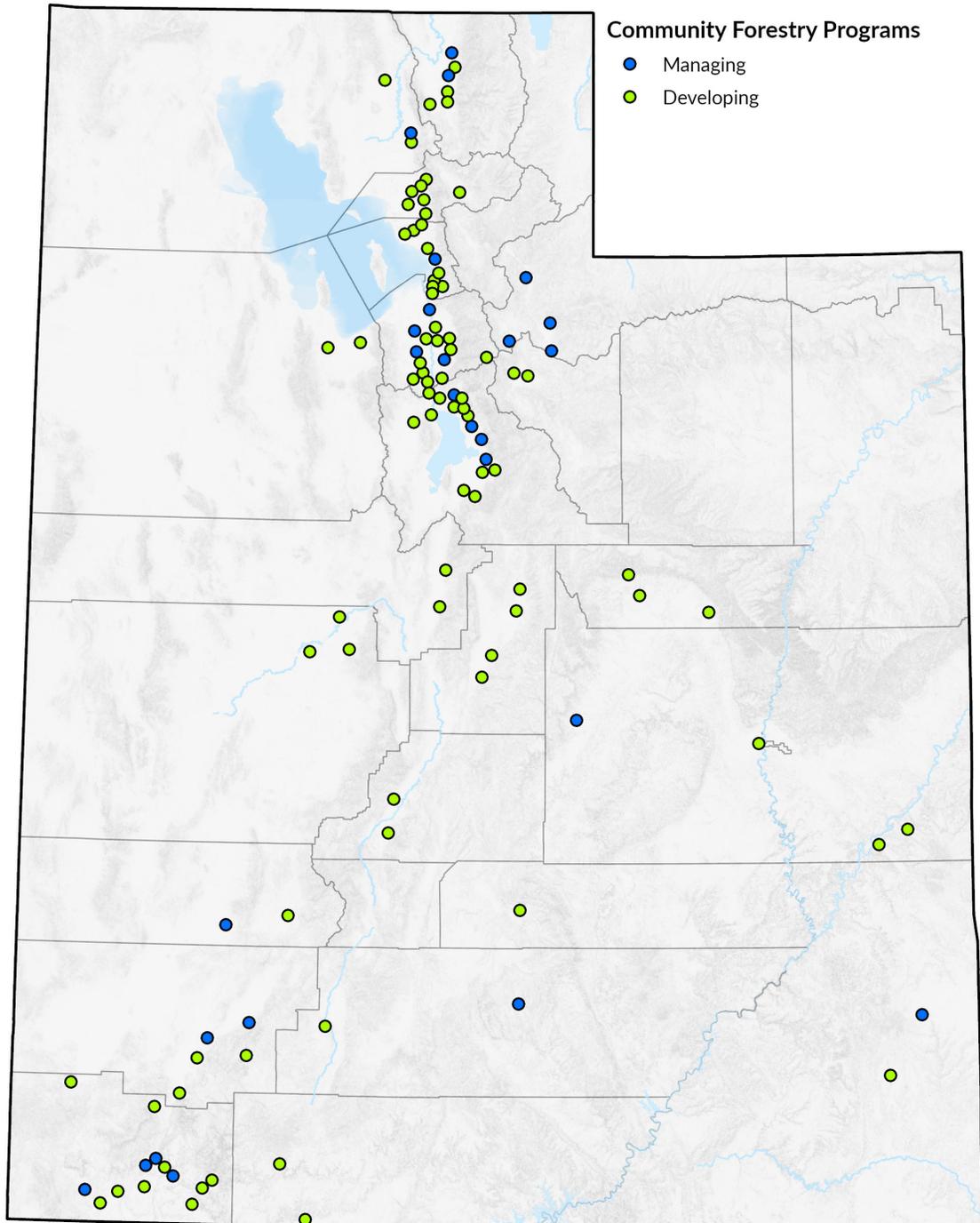


Figure 39: Map of Managing and Developing Communities in Utah.

List of Managing and Developing Communities in Utah, 2020

<i>Managing Communities</i>	<i>Developing Communities</i>		
Boulder	Alta	Herriman	Oak City
Brigham City	American Fork	Hill AFB	Ogden
Coalville	Apple Valley	Holladay	Orderville
Enoch	Beaver	Huntsville	Panguitch
Farmington	Blanding	Hurricane	Payson
Ferron	Bluffdale	Hyrum	Perry
Francis	Bountiful	Kanab	Pleasant Grove
Highland	Brian Head	Kanarrville	Price
Leeds	Camp Williams	Kaysville	Richfield
Logan	Castle Valley	La Verkin	Riverton
Minersville	Cedar City	Lehi	Rockville
Monticello	Cedar Hills	Levan	Saratoga Springs
Oakley	Centerville	Lindon	South Jordan
Orem	Clearfield	Lynndyl	South Ogden
Park City	Cottonwood Heights	Manti	South Salt Lake
Parowan	Delta	Mapleton	Spanish Fork
Provo	Draper	Marriott-Slaterville	Springdale
Salt Lake City	Eagle Mountain	Midway	St George
Sandy	East Carbon	Moab	Stansbury Park
Santa Clara	Elk Ridge	Monroe	Syracuse
Smithfield	Enterprise	Mount Pleasant	Taylorsville
Springville	Ephraim	Murray	Torrey
Toquerville	Fairview	Nephi	Tremonton
Virgin	Grantsville	New Harmony	Washington
West Jordan	Green River	Nibley	Wellsville
West Valley City	Harrisville	North Logan	West Bountiful
	Heber City	North Ogden	West Haven
	Helper	North Salt Lake	Woods Cross

Figure 40: List of Managing and Developing Communities in Utah.

Objectives and Strategies

Although Utah currently has a strong urban forestry program and many long-standing partnerships, there is opportunity and need to expand and strengthen the program, as the State sees increasing population, growing numbers of communities, and greater interest in the environment, social and economic benefits that urban trees and forests can provide. Specific objectives and strategies have been identified in Utah to strengthen urban and community forestry. The program needs to address the importance of outreach to communities and an evaluation of what resources each community requires to expand and sustainably

manage its individual urban forest. Exploration of new methods of introducing children to urban forestry through educational programs, as well as developing ways to integrate urban and community forestry with related fields in natural resources to address issues such as water supply, air quality and wildfire protection, crossing boundaries and urban-rural landscapes. Success of the urban forestry program in the state can be enhanced by identifying methods of reaching out to underserved communities as well as instilling the importance of diversifying the assortment of tree species that are planted throughout the state.

In order to propel the urban forestry program in Utah to increase sustainability and become a true resource in responding to challenges in the state, the following are strategic goals for the urban and community forestry program:

Tree Species Diversity

There is a vast palette of tree species that can grow and will thrive in the various regions of Utah. Tree species diversity is vitally important in an urban forest for a number of reasons. When a community is forested largely with one main tree species, it becomes more susceptible to disease or insect outbreaks. This has happened throughout history with the decimation of the American elm by disease and species of ash by insects, as mentioned earlier. Having a diverse population not only helps in preventing outbreaks of insects or disease, but it lessens the loss of the overall tree canopy when an outbreak does occur.

Diversity is also important when it comes to planting the right tree in the right place. Many of the commonly planted tree species in Utah require large amounts of water to thrive. Communities are becoming more aware of the need to plant water-wise landscapes, and trees are a vital component to these landscapes, as there are many tree species that can thrive on minimal amounts of water. There are many native tree species that are currently underutilized. However, being native, does not mean a tree can survive anywhere in the state. Quaking aspen (*Populus tremuloides*) is the perfect example of a native tree that is erroneously planted in low elevation areas where the summer temperatures are much too high for this tree to thrive.

Tree species diversity can also play a role in increasing opportunities for animal habitats. A varied landscape will provide more options for attracting birds, for example, that may be attracted to a certain kind of fruit or nut.

Additionally, a diverse urban forest is aesthetically pleasing, providing splashes of color with different spring blossoms and shades of fall color. Some trees provide unique winter interest, and the variety of colors, shapes, and textures of a diverse urban forest creates a more enjoyable environment to live in year-round.

There are other benefits to tree species diversity, depending on the location of the planting. Some species can tolerate salt spray and make excellent choices along roadways; some can handle being planted in small sections of soil, yet still provide a nice canopy, making ideal candidates for parking lots. Some tree species can tolerate solar radiation from buildings, while others can thrive in areas that are constantly flooded, such as retention basins. With so many species to choose from, there is a good tree to fit nearly every conceivable location. In this way, trees can assist in mitigating pollution, water runoff, and reduce the footprint of urban heat islands.

Unfortunately, most communities barely scratch the surface of what can potentially grow in Utah. Admittedly, much of this is due to a lack of information and the ease of planting what is familiar. Nurseries, however, play a crucial role in acquiring, marketing, and selling different tree species. Before species

diversification can truly take place in urban forests, both problems must be addressed. The state urban forestry program maintains a database of the largest specimen of each tree species that exists in the state. This is an underused resource that can also aid in promoting the vast array of species that can grow in Utah, with examples of mature specimens. This resource can be polished into a presentable source of information for communities and the general public throughout the state. Additionally, the collaborated lists of tree species known as the Utah Preferred Tree Species Lists can be revisited and updated annually and distributed on websites, through social media, and to nurseries throughout the state as a way to promote stellar tree species that are currently underutilized. Increasing tree species diversity reaches into human health and the environmental health principles outlined in the Overarching Principles of the USDA Forest Service Ten Year Urban Forestry Action Plan.

Resources Required: Provide state champion tree list to the public in an interactive platform on the internet. This resource will provide photos and locations for the public to visit these trees and familiarize them with the stunning variety of tree species that can be grown in the state. This will require funding for maintenance of the site and increased effort from the State Big Tree Committee to keep the resource updated.

Reassemble a committee through the Utah Community Forest Council to update the Utah Preferred Tree Species lists for the three regions designated for the state: northern, southern, and high altitude. Endorse these lists with partner organizations such as TreeUtah and Utah Nursery and Landscape Association. Get nurseries to stock these tree species and market them for use in the landscape industry. This process will likely require funding for materials to distribute to nurseries. It will also require personnel to create and maintain contacts with local nursery managers and personnel.

Environmental Education

Currently, the main avenue for environmental education in Utah elementary schools is through Project Learning Tree, which is administered to elementary schools through the Utah Society of Environmental Education (USEE). FFSL also hosts an annual Arbor Day Poster Contest. This contest is currently very time-demanding. It would be beneficial to seek out additional networks to assist in administration of the poster contest. One avenue might be the Utah Community Forest Council. Another unique opportunity for the state to explore environmental education is through outdoor classrooms. These classrooms can exist in a variety of different places, such as a location on a school's campus, or a nearby park or open space area. As children are growing up in an ever-increasing technical world, they have fewer opportunities to learn and explore in outdoor settings. Outdoor classrooms provide a unique resource for educators to foster creativity and awareness for the environment in an outdoor setting. The availability and functionality of these classrooms could be expanded through grant opportunities. It would also be beneficial to integrate programs and activities that relate to urban and community forestry and other forest conservation protection programs such as forest health, wildfire protection and management. Environmental education directly ties into the education and awareness principle outlined in the Overarching Principles of the USDA Forest Service Ten Year Urban Forestry Action Plan.

Resources Required: In order for the environmental education program to continue to grow in the state, it must lean more heavily on partnerships with organizations such as USEE, TreeUtah, UCFC, and Utah State Extension. These organizations have resources and personnel who can provide outreach to schools and resources to teachers. The Arbor Day Poster Contest is working, but has seen a decline in participation recently, as teachers are now required to meet state and federal benchmarks under the Common Core Curriculum. Because of this, less time is devoted to art and environmental education. It would be beneficial

for teachers to understand how this program is relatable to current core curriculum standards. USEE, or a similar partner might be able to assist with this integration.

Learning opportunities such as outdoor classrooms are dependent on funding sources. These sources could come from collaboration with communities that apply for Community Forestry Partnership Grants, or a new source of funding could be derived.

Collaboration with state forest health and fire prevention coordinators would be the first step in integrating educational opportunities with these related fields.

Urban Forestry across Program and Landscape Boundaries

Programs exist within the Utah Division of Forestry, Fire and State Lands that are extremely relatable to urban forestry. It would be a great opportunity to collaborate with the state's wildland urban interface (WUI) program. The urban and community forestry industry statewide would benefit greatly with training on proper establishment and maintenance of WUI landscapes, as the majority of communities throughout the state have wildland urban interface areas in one way or another. It would be beneficial to hold WUI trainings for urban foresters and perhaps collaborate on projects that impact both realms. Community forestry staff could learn what tree and shrub species are better suited to assisting wildfire mitigation. They could be trained on how to inspect properties and provide advice to homeowners on wildfire prevention techniques.

The state sovereign lands program maintains areas along Utah's waterways. Many of these are within communities and are laced with trails and recreational areas. There are countless project opportunities for both programs to work together to create sustainable community spaces with urban forest and water elements. Community forestry staff could learn habitat restoration techniques and familiarize themselves with tree and shrub species that grow along Utah's waterways. Integrating cross-boundary projects relates to planning and funding principles outlined in the Overarching Principles of the USDA Forest Service Ten Year Urban Forestry Action Plan, as it collaborates between different fields and works with these programs to address community public space planning, infrastructure and private development.

Resources Required: Collaboration with the state wildfire prevention coordinator and state sovereign lands coordinators is essential for project integration. Funding for these cross-boundary projects is also essential. Another element that would provide more opportunities for these projects would be the availability of a grant administrator. It would be helpful to have someone on staff who is familiar with grants and can oversee the budget side of these projects, freeing up the time of project coordinators to focus on technical expertise.

Urban Forestry Management Plans

A management plan is essential for a community to have a sustainable urban forest. These living documents are tailored to the specific needs and goals of an individual community, and can assist in planning for future expansion of an urban forest, as well as managing the current forest responsibly. It can be a paramount tool for acquiring additional urban forestry funding from local elected officials as well as from outside grant opportunities. Currently, 32 communities in Utah have urban forestry management plans. Utah's state community forestry program is dedicated to increasing this number and providing resources to help communities adopt their own management plan, through technical assistance, training, and funding through competitive grants. This objective will help Utah meet one of the objectives of the US Forest Service by increasing the amount of communities that fully manage their urban forests.

Resources Required: Funding for grants that will allow communities the option of hiring a consultant to assist in writing an urban forestry management plan is an essential resource for achieving the goal of increasing the amount of management plans throughout the state. Staff time is also essential to provide communities with training and technical assistance as a means to educate communities on the value of these documents.

Promote Collaboration and Communication to Urban Forestry Community

There are exquisite networking opportunities in the field of urban forestry throughout the state. Besides the state urban forestry program in Forestry, Fire and State Lands, the Utah Community Forest Council is an excellent resource for collaboration and networking. There are, however, far too many communities that are not currently receiving these networking benefits. With all the complex challenges that face city foresters, arborists, and tree care professionals, it is essential to find ways to disseminate information and provide apprenticeship opportunities from those who have experienced similar challenges. The state urban forestry program would ultimately be more successful if it were able to reach these communities and individuals that are currently not participating in established programs such as Tree City USA, the Utah Green Conference, webinars, or the various trainings hosted by the UCFC.

The state needs to establish a network, reaching farther than it ever has, to invite appropriate individuals and provide information to remote or underserved communities. Initial contacts must be made, and then platforms must be established to provide expertise and training opportunities to these communities. This objective is in line with the US Forest Service by assisting underserved communities to develop an urban forestry program.

Resources Required: For this objective to be successful, technical assistance will be required from the area offices of FFSL, as well as the expertise of the UCFC, and possibly other organizations. Additional funding may be required to establish programs or platforms to reach these currently underserved communities.

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Appendix A – Utah Shared Stewardship Agreement



AGREEMENT FOR SHARED STEWARDSHIP
Between
THE STATE OF UTAH
And the
UNITED STATES DEPARTMENT OF AGRICULTURE
FOREST SERVICE
INTERMOUNTAIN REGION

This agreement for Shared Stewardship is hereby made and entered into by and between the State of Utah (State) and the United States Department of Agriculture Forest Service (Forest Service).

Introduction

The State of Utah and the U.S. Department of Agriculture, Forest Service have developed mutual commitments to advance Shared Stewardship in Utah. This document supports the national vision and framework for Shared Stewardship. These mutual commitments developed jointly by the State and the Forest Service adapt Shared Stewardship to Utah's unique conditions and environment. This document stands as an enduring model of the relationships and mutual commitments agreed upon that will persist over time.

It is agreed that this document does not serve as an authorizing tool. The State and the Forest Service will rely on all available authorities to implement priority projects (including, but not limited to, Good Neighbor Authority, Farm Bill Authorities, Cooperative Forestry Assistance Act). Specific authorities for actions will be identified prior to project implementation and development.

A National Vision and Framework

In August 2018, the Forest Service released a document outlining a new strategy for land management called *Toward Shared Stewardship Across Landscapes: An Outcome-Based Investment Strategy*. The new strategy responds to the urgent and growing challenges faced by managers and owners of forests across the Nation, among them catastrophic wildfires, invasive species, drought, and epidemics of forest insects and disease. Of particular concern are longer fire seasons and the increasing size and

severity of wildfires, along with the expanding risk to communities, water sources, wildlife habitat, air quality, and the safety of firefighters.

Through Shared Stewardship, the State and the Forest Service have an unprecedented opportunity to work together to set landscape-scale priorities, implement projects at the appropriate scale, co-manage risks, share resources, and learn from each other, while building long-term capacity to live with wildfire. This approach helps meet the greatest short-term needs and builds upon opportunities towards long-term desired outcomes. Nationally the concept for an outcome-based investment strategy has three core elements:

1. *Determine management needs on a State level.* The States and the Forest Service will set priorities together and combine mutual skills and assets to achieve desired cross-boundary outcomes. States will take lead roles in convening stakeholders to discuss issues, priorities, and strategies. State Forest Action Plans can provide guidelines for coordinating activities across jurisdictional boundaries.
2. *Doing the right work in the right places at the right scale.* The States and the Forest Service will use new mapping and decision tools to identify the highest priority areas for treatment.
3. *Using all available tools for active management.* The States and the Forest Service will use every available authority and tool to do more work on the ground, including timber sales, mechanical treatments, prescribed fire, hazardous fuels reduction, long-term stewardship contracts, innovative wood-product utilization, carefully managing fire, and working with partners.

Mutual Commitments for Shared Stewardship in Utah

Utah and the Forest Service Intermountain Region have a long history of cooperation across the State's public and private lands to address forest management and conservation issues, such as managing wildland fire, reducing community wildfire risks, protecting and restoring watersheds, improving wildlife habitat and recreation opportunities, and stimulating forest-based economic development. Shared Stewardship provides an opportunity to strengthen our collaboration in the State to advance landscape-scale efforts.

The State and the Forest Service Intermountain Region have developed six mutual commitments for Shared Stewardship in Utah. These commitments will guide our immediate efforts and long term strategies toward implementing Shared Stewardship on priority landscapes across all forestlands in the State.

The State and the Forest Service make the following mutual commitments to advance Shared Stewardship in Utah:

1. We are committed to existing partnerships, programs, and initiatives that have been successful in Utah. (past and ongoing)

Utah has a solid foundation for Shared Stewardship built on years of cooperation between the State and the Forest Service through a variety of programs, several unique to the State. These partnerships and programs provide a strong basis to further advance Shared Stewardship in Utah:

State Initiatives Including:

- Governor Herbert's Catastrophic Wildfire Reduction Strategy (CatFire), Utah's approach to the National Cohesive Strategy;
- The Utah Department of Natural Resource's Watershed Restoration Initiative (WRI) and Utah Partners for Conservation and Development;
- The Utah Division of Forestry, Fire & State Lands' Utah Wildfire Risk Assessment Portal (UWRAP), Wildland Urban Interface Program, and Cooperative Wildfire Management System.

Forest Service Initiatives Including:

- Forest Stewardship, Landscape-Scale Restoration, Forest Legacy, Forest Health, Urban & Community Forestry, Volunteer Fire Assistance, State Fire Assistance including Hazardous Fuels Reduction, Wildland Fire Prevention, All-Lands coordination meetings, Joint Chief's projects with the Natural Resources Conservation Service, National Fire Plan and the National Cohesive Wildland Fire Management Strategy.

2. We are committed to working together to identify and map shared priorities for protecting at-risk communities and watersheds across all lands. (present and ongoing)

The State and the Forest Service are sharing technical tools and data in order to map priority landscapes for wildfire risk reduction and watershed restoration treatments. We are identifying risks and trade-offs using all tools available, such as the Scenario Investment Planning tool. Initial key objectives are to identify the highest risk communities and water sources, and set priorities for treatment state-wide.

3. We are committed to making joint decisions and sharing resources for immediate and ongoing work in priority areas. (present and ongoing)

The State and the Forest Service are working together to determine where and how to use new legal authorities and management tools, share financial resources, and leverage those resources to the greatest extent possible to accomplish work in

priority areas. Of note, is the Utah Legislature's first-ever appropriation during the 2019 legislative session intended specifically to be used to enhance forest management on National Forest System lands in Utah.

4. We are committed to engaging local communities in dialogue and learning about active management and desired landscape-scale outcomes, including capacity building and economic development opportunities. (present and ongoing)

The State and the Forest Service seek to unify groups and efforts across the state so that we are all working together towards shared stewardship. We agree to engage tribes, collaboratives, partners, and local communities in Shared Stewardship dialogue through existing initiatives, such as the Catastrophic Wildfire Reduction Strategy's six regional work groups. Strategies will aim to include local communities in planning and decision-making as well as addressing broader goals, such as developing capacity for forest work, utilizing wood products for innovative businesses and economic development, and supporting fire adapted community development.

5. We are committed to shared planning efforts, including the integration of Utah's Forest Action Plan and the Forest Service's 5-Year Vegetation Management Plans. (future)

The State and the Forest Service are developing long term five-year vegetation management plans on the five National Forests in Utah and on non-federal forest lands through the Utah Forest Action Plan revision process. Through this agreement, the State and the Forest Service are committed to integrating these planning efforts to reflect landscape-scale, cross-boundary priorities for all forest lands in Utah. The purpose of this groundbreaking shared planning approach is to leverage resources across landscapes to address the threats and risks at a strategic, meaningful level that will ultimately protect communities, restore watersheds, and improve forest conditions.

6. We are committed to co-managing wildfire risks and supporting each other in decisions that we have made together. (future)

The State and the Forest Service recognize that fire is an integral part of the landscape and ecosystem. There are opportunities to manage wildfire on the landscape in the right place at the right time. We are committed to supporting each other when we have identified managing wildfire as an opportunity to reduce fuels and create a safer working environment for our firefighters.

Modifications and Periodic Review of Agreement

The State and Forest Service agree to periodically review this agreement every 5 years or earlier to evaluate the mutual commitments identified and make necessary adjustments as appropriate.

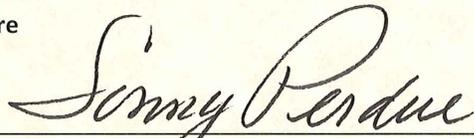
Authorized Representatives

By signing below, each party certifies that the individuals listed in this document as representatives of the individual parties are authorized to act in their respective areas for matters related to this agreement for shared stewardship.

In witness whereof, the parties hereto have executed this agreement as of the last date written below.

U.S. Department of Agriculture

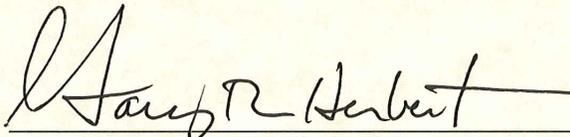
Date: 5/22/2019



Sonny Perdue, Secretary of Agriculture

State of Utah

Date: 5/22/19



Gary R. Herbert, Governor of Utah

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Appendix B - Key Performance Indicators for Shared Stewardship in Utah

Background

On May 22, 2019, Governor Gary R. Herbert and Secretary of Agriculture Sonny Perdue signed the Agreement for Shared Stewardship between the State of Utah and the USDA Forest Service Intermountain Region. The agreement established six mutual commitments that support the national vision and framework for Shared Stewardship. The State of Utah Division of Forestry, Fire and State Lands (FFSL), Public Lands Policy Coordinating Office (PLPCO), and US Forest Service (USFS) have developed outcome-based success measures and annual reporting requirements for the Shared Stewardship agreement.

The joint agency effort was informed by an internal assessment and a series of workshops with State and Forest Service regional and area managers to identify key performance indicators as the agencies work to build relationships and improve forest conditions across all lands in Utah.

National Vision and Framework for Shared Stewardship

1. Determine management needs on a state level
2. Do the right work in the right places at the right scale
3. Use all available tools for active management

Utah Shared Stewardship Mutual Commitments

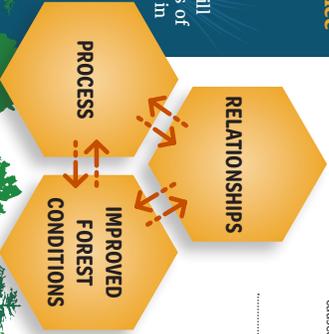
- Existing partnership, programs, and initiatives that have been successful in Utah.
- Working together to identify and map shared priorities for protecting at-risk communities and watersheds across all lands.
- Making joint decisions and sharing resources for immediate and ongoing work in priority areas.
- Engaging local communities in dialogue and learning about active management and desired landscape-scale outcomes, including capacity building and economic development opportunities.
- Shared planning efforts, including the integration of Utah's Forest Action Plan and the Forest Services' Five-Year Vegetation Management Plans.
- Co-managing wildfire risks and supporting each other in decisions that we have made together.



National Forests in Utah

Key Performance Indicators

Key Performance Indicators (KPIs) provide insight into how the agencies will measure the success of shared stewardship in Utah.



Key Performance Indicators for Shared Stewardship in Utah

Relationships

Continue to build on successful state-federal relationships at all organizational levels. Collectively build relationships with other partners



Improving Forest Conditions

Increase the number of acres directly and effectively treated in priority areas



Process

Share decision-making when establishing statewide and local priorities for Shared Stewardship



Cultivate diverse community-based support for Shared Stewardship through engaging partners at the local and state levels



Increase the number of acres treated on National Forest System land through management of natural ignitions



Local, state and federal partners jointly agree on fire management priorities during pre-season planning



Decrease the number of human-caused fire starts



Refine priority landscape maps to accurately reflect changes in landscape conditions



Use special authorities, such as Good Neighbor, that provide opportunities to improve forest conditions in coordination with state, tribal, and county partners



Increase forest-related economic opportunities in Utah



Defining Success For Shared Stewardship



Relationships

Measure #1	Continue to build on successful state-federal relationships at all organizational levels. Collectively build relationships with other partners
Target	<p>Yr 1: Create survey for State and FS employees to evaluate relationship. Identify survey audience, implement After Action Review process for all funded projects, progress reporting</p> <p>Yr 2: Administer State and FS survey, analyze results and incorporate into progress reporting</p> <p>Greater than 70% satisfaction rate among survey participants</p> <p>Yr 3+: Develop and administer survey to Shared Stewardship partners to evaluate relationships and collaboration.</p>

Measure #2	Cultivate diverse community-based support for Shared Stewardship through engaging partners at the local and state level
Target	<p>Yr 1: Develop a community-based convening framework in coordination with state and Forest Service employees and begin implementation</p> <p>Yr 1+: Convene one or more partner meetings at the state and local scale. Local stakeholder input will assist the USFS and State in identification of projects within priority areas.</p> <p>Yr 2-5: Increase diversity of funding for shared stewardship work supported with partner funding (i.e., an entity other than State of Utah or USFS)</p> <ul style="list-style-type: none"> Partner funds cover an average of 50 percent of implementation or planning costs

Improving Forest Conditions

Measure #3	Increase the number of acres directly and effectively treated in priority areas
Target	<p>Yr 1: Establish baseline of number of treated in 2020.</p> <ul style="list-style-type: none"> Establish a method to calculate acres effectively treated or mitigated. Establish project coordination between CalFire and Shared Stewardship. <p>Yr 2-3:</p> <ul style="list-style-type: none"> 30-50% of the acres treated by Utah's National Forests are in shared stewardship priority areas. Evaluate opportunities to expand priority areas to include all lands in Utah 30% of CalFire projects are within priority areas. <p>Yr 3+: 50% of acres effectively treated by Utah's National Forests are in shared stewardship priority areas</p>

Measure #4	Increase the number of acres treated on National Forest System land through management of natural ignitions
Target	<p>Establish fire suppression priorities through pre-season planning. Make joint decisions when considering tactical response for unplanned ignitions.</p> <p>Yr 1: Implement fire communications protocol, which structures deliberate communications between FFSL and USFS managers and decision-makers before, during and after fire season.</p> <p>Yr 2-5: Increase trend in # acres treated using fire on landscape and update communication protocol.</p>

Measure #5	Decrease the number of human-caused fire starts
Target	<p>Yr 1-5: Use fire start statistics when co-developing statewide and regional messages aimed at reducing human caused fire starts</p> <p>Yr 2-5</p> <ul style="list-style-type: none"> Statistical decrease in percent of human caused fires Statistical decrease over all and decrease in state, fed and private Data specific - geographic specific data driven prevention efforts

Process

Measure #6	Share decision-making when establishing statewide and local priorities for Shared Stewardship
Target	<ul style="list-style-type: none"> FFSL Area Managers or staff participate in early review process on USFS planning team for fuels, fire or timber projects in Shared Stewardship priority areas Each National Forest and corresponding FFSL Area(s) collaborate in the planning and implementation of at least one landscape-scale, cross-boundary project in the next 3 years. Continue to utilize the Shared Stewardship Steering and Technical Committees to inform decision making on items such as adjustments to priority maps, review of proposed projects, and identification of funding priorities

Measure #7	Local state and federal partners jointly agree on fire management priorities during pre-season planning.
Target	<ul style="list-style-type: none"> Co-develop fire management mapping tools during pre-season fire meetings Maintain regular communication and coordination on management throughout the season

Measure #8	Refine priority landscape maps to accurately reflect changes in landscape conditions
Target	<ul style="list-style-type: none"> Annually review and adjust shared stewardship priority maps to include best available information and, where possible, in response to changing conditions (e.g., fire regime condition class, wildfires, and treatments) Evaluate opportunities to expand priority maps to include all lands in Utah using science-based process.

Measure #9	Use special authorities, such as Good Neighbor, that provide opportunities to improve forest conditions in coordination with state, tribal and county partners
Target	<p>Yr 1:</p> <ul style="list-style-type: none"> Establish baseline of projects completed using authorities Develop Shared Stewardship communication channel to share best practices in project development <p>Yr 2+: Maintain or increase percentage of Shared Stewardship projects completed in coordination with the state and other partners.</p>

Measure #10	Increase forest-related economic opportunities in Utah
Target	<ul style="list-style-type: none"> Increase supply of timber or woody materials to support wood utilization industry in Utah. Improve certainty and consistency of timber or wood-product supply from National Forests to support wood utilization industry in Utah. Increase the number of jobs in forest management and fuels-reduction, and in timber and wood-product processing and utilization in Utah. Retain and expand businesses in forest management and fuels reduction, and wood-product processing and utilization in Utah.

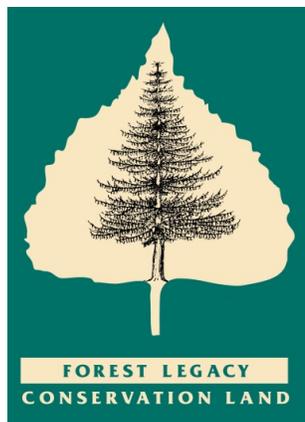
Defining Success For Shared Stewardship • Key Performance Indicator Overview



Appendix C - Forest Legacy Program Assessment of Need

Utah's Forest Legacy Program

Assessment of Need



ACKNOWLEDGMENTS

With the completion of this Assessment of Need [AON] in support of Utah's Forest Legacy Program, it is important to recognize and acknowledge those that were instrumental in moving this document ahead. First, thanks to Edward Frandsen, State and Private Forestry, Region Four, for his encouragement, direction and guidance throughout the entire process, and especially for arranging Utah's participation in the formulation of the new *Forest Legacy Implementation Guidelines*. Second, to Paige Lewis, Utah Division of Forestry, Fire and State Lands, for taking the AON concept, formulating it into an action plan and preparing the report that is being offered for your consideration. Third, to University of Utah intern Brent White for assisting with research in anticipation of the AON. And finally, to the Division's dedicated Area Managers for taking time out of one of the busiest field seasons on record to identify key parcels for inclusion in the Utah Forest Legacy Program -- a vision for Utah's forests!



EXECUTIVE SUMMARY

The Utah Forest Legacy Program (the “Program”) represents one of the most valuable tools available to both private landowners and local governments for the accomplishment of their open space goals. By providing funding, coordination and optional technical assistance, 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.

Utah’s forest lands embrace many of the state’s most vital natural, economic and social resources. Whether it be clean, abundant water, year-round recreational opportunities or forage and cover for wildlife and domestic livestock, virtually every Utah citizen enjoys significant benefits from the rich storehouse contained in these wooded areas. Privately owned forests play a significant role in maintaining the overall integrity of these forest resources and the diverse opportunities they provide. But as Utah’s population continues its rapid growth, private forest landowners face tremendous pressure to convert their lands to nonforest uses, namely residential subdivision and commercial development. Although many of these landowners wish to retain the traditional landscape and uses of their forests, these pressures, combined with current tax structures, often make it economically difficult for them to do so.

In the summer of 1995, Governor Michael Leavitt and bi-partisan leaders of the Utah Legislature announced their plans to hold a statewide “Summit” that would address similar growth-related challenges occurring throughout the state. Specific topics of concern for this three-day event included open space, water and transportation. Preparations for the gathering, titled “Preserving a Century of Quality,” involved widespread citizen participation, several local, county and state forums and a special Open Space Conference where specific preservation proposals were discussed.

As a result of this intense focus on open space and resource conservation, several local needs became evident. City and county representatives explained that private landowners and local governments want to protect open space but feel frustrated by their perceived lack of both tools and funding. These same local advocates felt that the state has a proper role in providing leadership, education and fiscal support that will enable cities and counties to sustain their land base. In the spring of 1996, Governor Leavitt created the Utah Open Lands Committee to address some of these concerns and to serve as an information clearinghouse and catalyst for locally-initiated land preservation plans.

The Forest Legacy Program facilitates the accomplishment of both individual and regional resource management plans by supplying the funds and education needed to bring them to fruition. Private forest landowners who wish to participate in this option may either donate conservation easements to the Program or have the Program purchase a conservation easement at fair market value. Funds for the purchase of these easements may include grants to the State from the USDA Forest Service’s National Forest Legacy Program as well as other public and private sources as available. Title to conservation easements acquired under the Program may be held by selected state or local agencies, with administration of the easement conducted by these same agencies or by an approved non-profit land trust.

Acquisition of conservation easements on eligible lands will be considered according to the goals of Utah's Forest Legacy Program which were established through public involvement and resource-based analysis. These goals are as follows:

- Prevent future conversions of forest land and forest resources;
- Protect and enhance water quality and water supplies;
- Protect wildlife habitat and maintain habitat connectivity for biodiversity;
- Maintain and restore riparian areas;
- Maintain forest sustainability; and
- Assist in maintaining the cultural and economic vitality of rural communities.

Any easement obtained through the Program must be totally voluntary and involve both a willing seller and a willing buyer. Once completed, conservation easements will protect specific forest values identified by each landowner, provide the landowner with fiscal compensation and relief from certain property tax and inheritance liabilities, maintain the land in private ownership and boost local economies by encouraging "working forests."

In order for Utah to participate in the national Forest Legacy Program, the Utah Division of Forestry, Fire and State Lands must submit to the U.S. Forest Service a statewide Assessment of Need [AON] which provides an overview of the state's forest resources, documents current and future threats to those resources and identifies eligible forest areas for inclusion in a state Forest Legacy Program. The document to follow represents Utah's fulfillment of the above requirements.

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- Appendix C: Utah Forest Landowner Survey
- Appendix D: Utah’s Endangered and Threatened Wildlife Species
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I. UTAH'S FORESTS AND WOODLANDS

An Historical Perspective

From Ibapah and Ticaboo to Moab and Nephi, Utah's colorful and uniquely named landscape reflects the state's rich heritage of human habitation and exploration. The ancient Fremont and Anasazi civilizations once roamed Utah's southern reaches, maintaining their hunter-gatherer lifestyle from the region's rich bounty of plants and animals. Catholic Fathers Dominguez and Escalante passed through Utah in 1776 while searching for a practical overland route linking New Mexico and California. And during the early nineteenth century, "mountain men" from William Ashley's Rocky Mountain Fur Company moved into Utah and began exploiting the fur-bearing resources along every lake, river and minor water way in the area. But it was not until the arrival of Mormon pioneers in July of 1847 that Utah's topography and natural resources began to experience the strains of a permanent population.¹

Mormon settlers entered the Salt Lake Valley ready to construct the "City of Zion", a vision of urban planning espoused by the religion's founder Joseph Smith. Central to this community-building concept was a principle of stewardship which declared that all natural resources would be managed cooperatively for the public good. Mormon leader Brigham Young explained this policy as follows: "There shall be no private ownership of the streams that come out of the canyons, nor the timber that grows on the hills. These belong to the people: all the people."² Despite this vocal concern for wise use of natural resources, Utah's first fifty years of permanent settlement resulted in intensive exploitation and the destructive alteration of the surrounding natural landscape.

Eager to harvest the substantial timber stands lining the slopes of the Wasatch Range, early pioneers quickly began constructing access roads into nearby canyons. Busy sawmills soon filled Utah's mountains with a flurry of activity and once-forested hillsides began to dwindle as their trees were converted to homes, businesses, churches and, later, railroad ties, mining timbers and telegraph poles. Unregulated grazing by large livestock herds further contributed to the denudation of Utah's vital watersheds. By the 1880s, numerous reports began to appear which documented the critically degraded condition of the region's natural resources. According to one government assessment of the area, "Between 1888 and 1905, the Wasatch Range, from Thistle to Salina, was

¹The "Mormons" are properly known as members of the Church of Jesus Christ of Latter-day Saints, a religion characterized by its belief that *The Book of Mormon* is an additional book of scripture to be considered along with the Bible.

²Leonard J. Arrington, *Great Basin Kingdom: An Economic History of the Latter-day Saints 1830-1900* (Cambridge: Harvard University Press, 1958; Salt Lake City: University of Utah Press, 1993), 52.

a vast dust bed, grazed, trampled, and burned to the utmost.”³ Floods, mudslides and silted streams and canals were common throughout the state.

By 1890, the federal government, who owned most of the land in Utah Territory, realized the severity of the region’s resource deterioration and encouraged Congress to pass legislation authorizing the creation of forest reserves.⁴ This legislation came in the form of the *Creative Act of 1891* which allowed the President to set aside forest reservations that would protect watersheds and valuable timber supplies from further degradation.⁵ In 1905, President Theodore Roosevelt transferred administration of these reserves from the General Land Office to the newly created Forest Service operating under the direction of Gifford Pinchot.

Prominent Utah leaders followed this national example by encouraging improved forest land practices in the state and implementing many innovative, community-oriented management practices.⁶ It was because of Utah’s strong support for the forest reserve program that President Grover Cleveland included the multi-acre Uinta Reserve in the areas he chose to protect shortly before leaving office in 1897. By 1902, Utah boasted a series of forests totaling nearly four million acres and stretching from Cache Valley in the north to Pine Valley Mountain in the south.⁷ In 1903, Mormon Church President Joseph F. Smith offered the following admonition regarding wise forest management:

...at the present rate of consumption our supply of timber suitable for manufactured lumber will not last thirty years...[But] the use of lumber is not the only question involved. Our trees aid the precipitation of moisture and store it away for its gradual distribution during the hot summer months...It would be commendable in the highest degree to the Latter-day Saints if they would set apart here and there a small acreage of their land to tree culture.”

³Aaron R. Kelson and Robert J. Lilieholm, *A Review of Private Forest Management Incentive Programs and Recommendations for Improving Forest Management Incentives* (Logan: Utah State University Department of Forest Resources, 1996), 3.

⁴Allen Kent Powell, *Encyclopedia of Utah History* (Salt Lake City: University of Utah Press, 1994), 114.

⁵See the *Creative Act of 1891* (Ch. 561, 26 Stat. 1103; 16 U.S.C. 471).

⁶Kelson and Lilieholm, 4.

⁷Charles S. Peterson, “Natural Resource Utilization,” in R.D. Poll, et. al., eds., *Utah’s History* (Logan, UT: Utah State University Press, 1989), 660.

Five years later, Governor John C. Cutler added a vote for resource sustainability by stating, “The forests, the streams, the soil, the minerals, and all other natural elements of wealth should remain as nearly as possible undiminished as the centuries pass.”⁸

From the establishment of the forest reserves until the 1950s, the main commercial use of Utah’s forests and woodlands came from grazing rather than timber harvesting. Generations growing up during and after World War I saw Utah’s forested canyons less as a place of work and more as a source of recreational and scenic enjoyment, a place where families and friends could gather to experience both adventure and beauty. Substantial improvements in camping and picnic facilities, access roads, trails and revegetation completed by the Civilian Conservation Corps during the Depression further enhanced recreational use of Utah’s forest lands, both public and private.

In 1960, Congress passed new legislation involving a substantial ideological shift in the management of the nation’s forests. Known as the *Multiple-Use Sustained-Yield Act*, this ground-breaking policy stated that managers of National Forests must consider a variety of activities such as outdoor recreation, habitat protection, grazing, timber production and watershed preservation when developing an overall management plan for the lands under their stewardship.⁹ As a concurrent rise in environmental consciousness swept the nation, both resource managers and private landowners in Utah found themselves divided between commodity versus intrinsic or aesthetic values.

In the early 1980’s, rural discontent over federal land management trends led to a “Sagebrush Rebellion” in which proponents suggested that ownership of all public lands be turned over to the states. During the most recent decade, impassioned debates over wilderness designation have revealed that this battle over public versus private interests, commercial versus scenic values, continues to affect the management of Utah’s forests and to characterize the philosophical differences among those responsible for their care.

Utah Forest Types and Distribution

Maps displaying Utah’s vegetation zones reveal a narrow corridor of dark green forest land running roughly parallel to I-15, the state’s main north-south artery. Scattered branches of verdant color supplement this centralized zone and accentuate higher elevation landscapes such as the south-central Book Cliffs Area and the Uinta, Raft River and Wasatch Plateau mountain ranges. Of Utah’s nearly fifty-three million acres of land, only sixteen million contain the ten

⁸Ibid.

⁹See *Multiple-Use Sustained-Yield Act of 1960* (P.L. 86-517, 74 Stat.215; 16 U.S.C. 528(note), 528-531).

percent canopy required for forest land designation. Ownership of these valuable forest resources is primarily public with a large percentage administered by the U.S.D.A. Forest Service.¹⁰ Private landowners maintain stewardship over approximately 2.7 million acres or seventeen percent of the state's total forested lands.¹¹ Although relatively scarce in acreage, these private forest lands overlay many of the state's most valuable watershed, wildlife and recreation areas and form critical fringe and connectivity zones throughout larger tracts of public forest.

The vegetation communities which characterize Utah's forests and woodlands vary widely according to soil, climate and topography, with availability of water being the primary determining factor.¹² Utah woodlands generally begin at elevations of 4,500 feet where pinyon-juniper combinations join mountain-mahogany, Gambel oak and sagebrush to form the "pygmy forest." As elevation and precipitation increase, the highly valued timber species of lodgepole and ponderosa pine begin to appear along the Uinta Mountains and in select areas of southern Utah, respectively.

The state's greatest variety of traditional forest species flourishes in the Montane Zone which includes all landscapes from 7,500 to 9,500 feet and receives annual precipitation of eighteen to forty inches. Nearly pure stands of Douglas-fir dominate the cool north-facing slopes and canyon walls of this region with Englemann spruce, blue spruce and subalpine fir creeping in at elevations generally above 9,000 feet. Other coniferous species found in Utah's subalpine zone include modest stands of limber and bristlecone pine and a concentrated band of white fir running south through the central portion of the state. Clustered stands of quaking aspen, second only to Douglas-fir in state-wide distribution, add deciduous texture and golden fall color to Utah's forest lands lying between 6,000 and 10,000 feet.

For the purposes of inventory, forest management agencies traditionally classify forests and woodlands by their inherent ability to produce industrial wood products.¹³ According to recent Utah surveys, the majority of Utah's forest land consists of non-commercial species such as oak, maple, pinyon pine and Utah and Rocky Mountain juniper.¹⁴ These wooded communities cover more than nine million acres, are in ninety percent public ownership and hold tremendous value for nontimber uses such as wildlife habitat and livestock grazing, watershed protection, recreation

¹⁰Michael R. Kuhns, *Utah's Private Forest Land Characteristics* (Logan, UT: Utah State University Department of Forest Resources, 1996). See Appendix A.

¹¹Duane Van Hooser and A.W. Green, *Utah's Forest Resources, 1978*, USDA Forest Service Resource Bulletin INT-30 (Ogden, UT: Intermountain Research Station, 1991), 9.

¹²See Appendix B for a list of common plant species found in Utah's forests.

¹³Van Hooser and Green, 2.

¹⁴Kuhns, 4.

and production of firewood, fence posts and Christmas trees. Private landholders own 1.3 million acres of forest woodland.

Approximately 3.4 million acres or twenty-one percent of Utah's forested lands are considered commercially viable "timberlands." This means they are producing, or are capable of producing, crops of industrial wood. Eighty-one percent of these commercial stands are managed by public agencies with approximately 594,000 acres under the administration of private landowners. The largest concentration of private timberland lies in the northern half of Utah where counties with over 50,000 acres of private timberland include Summit, Wasatch, Morgan, Duchesne and Cache. Aspen is by far the most prevalent commercial species in the state, comprising sixty-two percent of Utah's private timberlands. Douglas fir, ponderosa pine, Englemann spruce, subalpine fir and lodgepole pine make up the remaining thirty-eight percent.

Private Forest Landowners

Utah's private forest landowners are a diverse group, consisting of corporate owners and private individuals, owners of large and small acreages, multi-generation owners and those who have only recently acquired forest land. They are distributed throughout twenty-eight of Utah's twenty-nine counties and own land for a variety of reasons. Despite these differences, the state's forest owners do share important characteristics such as a high regard for private property rights, a personal connection with the land they own and a keen interest in seeing their land managed properly.

The majority of Utah's forest landowners own relatively small parcels which they often manage themselves. In a 1994 survey of forest landowners, nearly one-half of the respondents reported owning from ten to ninety-nine acres of wooded land.¹⁵ Over three-fourths of those responding owned less than one thousand wooded acres. Almost ninety percent of these lands are held in individual or family ownerships and nearly half of all forest landowners obtained their property from other family members through inheritance, gift or sale. Of those who purchased their forest land, the primary reasons for doing so include personal recreation, preservation of natural beauty and wildlife habitat, sentimental attachment and simple satisfaction in owning land. Use of forests for grazing and pasture land was also reported by approximately twenty-nine percent of private owners.

Although most landowners do not reside on their forested land, many live in Utah or adjoining states and visit their property regularly. Most landowners also manage their forest lands themselves rather than hiring an on-site assistant. Only thirty percent of forest owners say their land is not actively managed at all. Although they value principles of forest stewardship, most

¹⁵Mark W. Brunson and Michael R. Kuhns, *Characteristics and Attitudes of Utah's Private Forest Owners* (Logan, UT: Utah State University Department of Forest Resources, 1994). See Appendix C for an updated version of this survey.

Utah landowners have never taken a college course in forestry or forest ecology. Over half of landowners report getting their forestry information from newspaper or magazine articles, while smaller percentages garner information from extension brochures and booklets, Forest Service personnel and conversations with friends and relatives. In considering a management plan for their property, forty-six percent of forest landowners believe that principles of ecosystem management are “sometimes, but not always appropriate.” On the extremes of this issue, ten percent feel ecosystem management is “never” appropriate while thirty-three percent believe it should be used “whenever possible.”

Many landowners prize their private forests for personal enjoyment and outdoor recreation, but few report earning any significant income from these lands. Eighty-five percent of respondents to the 1994 survey claimed no forest product-based income from their private lands. Thirteen percent reported that up to half of their annual income came from forest uses such as livestock grazing, sale of firewood, sale or lease of hunting rights and harvest of timber or Christmas trees. The majority of landowners anticipate continuing the present uses of their land for at least five years into the future.

Timber and Wood Products

From railroad ties, mine timbers and fuel wood to lumber for homes and businesses, Utah’s forests have a long history of providing wood products to local and regional communities. Although many of the state’s timberlands are now managed for multiple uses such as recreation, grazing and scenic values, harvests from both public and private lands continue to support a significant primary forest products industry in Utah.

The most comprehensive data regarding timber harvest on Utah’s forest lands comes from a 1992 analysis prepared by the Forest Service’s Intermountain Research Station using its Forest Industries Data Collection System.¹⁶ This report indicates that in 1992 timber harvests occurred in eighteen of Utah’s twenty-nine counties, with the greatest amount of activity in Uintah, Summit, Garfield, San Juan and Kane counties. These same five counties have been major timber producers for many years because of their concentration of desirable species on lands available for harvest. Public and tribal lands provided the majority of 1992’s timber harvest with National Forests being the single largest source at seventy-seven percent. It is important to note, however, that the proportion of harvest coming from private lands has risen from six percent in 1966 and twelve percent in 1970 to a 1992 high of seventeen percent. This percentage is likely to continue escalating as recent high timber prices and supply tightening on public forests in the Pacific Northwest prompt Utah’s private landowners to sell their harvestable timber.

¹⁶C.E. Keegan, D.P. Wichman and D.D. VanHooser, *Utah’s Forest Products Industry: A Descriptive Analysis, 1992*, USDA Forest Service Research Bulletin INT-RB-83 (Ogden, UT: USDA Forest Service Intermountain Research Station, 1995).

Lanky and abundant stands of lodgepole pine topped the list of harvested species in 1992 with Englemann and blue spruce following closely behind. The remaining species harvested in Utah were ponderosa pine, aspen and true firs at five percent each and Douglas-fir at four percent. Pinyon accounted for less than 0.5 percent of the total harvest. This order of species reveals a marked reversal from the period of 1966-1974 when ponderosa pine dominated Utah's timber harvest. Likely causes for this shift include an increase of fire suppression activities which have reduced ponderosa stands by allowing the entrance of competitive species; an increase in constraints on sales of ponderosa from National Forest lands; extensive removal of old-growth and harvest size ponderosa stands during previous years; and the prevalence and relative accessibility of lodgepole pine throughout Utah's Uinta Mountains.

Thirteen counties scattered throughout the state contain active facilities for processing Utah's timber. As of 1992, these facilities included thirty-four sawmills, thirteen house log manufacturers, three post and pole producers and one manufacturer of roundwood furniture parts. Timber processing continues to center in its traditional areas of northeastern and south central Utah, with the most volume being produced in Wasatch, Summit, Duchesne, Uintah and Wayne counties. Private timberlands account for about eighteen percent of the total wood received by Utah's timber industry and twenty-eight percent of that processed in southern Utah facilities.

The number of Utah sawmills has declined since 1966 but the average output per mill has risen from 1.4 million board feet [MMBF] to 1.9 MMBF. In 1992, sawmills alone produced 63.6 MMBF of lumber and other sawn products. House log, log home and other roundwood product manufacturers processed an additional 7.6 MMBF of Utah timber. In addition to these traditional wood products, Utah's timber industry utilizes eighty-two percent of the mill residue it produces during processing. Because Utah's sawmills are not close to pulp mills or particle board plants, most of this residue is used locally for firewood, fencing material, windbreaks, hogfuel, landscaping material and animal bedding.

The harvest and processing of timber has a significant impact on Utah's economy. In 1992, Utah's forest products industry generated \$27.4 million in sales, supported 517 full-time-equivalent workers and provided \$9.3 million in local wages. Private timber harvests accounted for about \$5 million in sales, 112 full-time workers and \$2 million in employee wages. According to Forest Service estimates, Utah sawmills are operating below capacity with only fifty-eight percent of the state's potential for sawtimber production being utilized. By emphasizing the importance of "working forests" and traditional forest uses, the Forest Legacy Program can assist Utah's forest products industry in reaching its full potential.

II. UTAH'S FOREST RESOURCES

Geologic Features and Mineral Resources

Sculpted sandstone canyons, steep, glaciated mountain ranges and an abundant collection of fossils and mineral deposits lure scientists and sightseers alike to marvel at Utah's striking display of geologic history. The prominent features of this ancient landscape fall into three major physiographic provinces: the Colorado Plateau, the Basin and Range and the Middle Rocky Mountains.

The high, desert-like region of the Colorado Plateau encompasses most of southeastern Utah and is composed primarily of colorful, sedimentary rock layers, some of which date back over 250 million years. In the Plateau's spectacular Canyonlands subregion, constant erosion from wind, weather and the sinuous Colorado River have shaped these rock layers into an oversized sculpture garden filled with natural bridges, high stone arches, balancing rocks and island-like mesas. Five national parks, six national monuments and several state parks pay tribute to the unique nature of the Colorado Plateau's beauty.

The western third of the state forms an expansive internal drainage known as the Great Basin. An eastern subregion of the larger Basin and Range Province, the Great Basin contains some thirty-five fault-block ranges which trend north to south and are separated by an equal number of sediment-filled valleys.¹⁷ Toward the end of the last Ice Age, an inland sea known as Lake Bonneville covered most of this area and left prominent lake terraces, beaches, fans and valley plains as a reminder of its formidable presence. Great Salt Lake and the Bonneville Salt Flats are virtually all that remains of this prehistoric giant. Life in the arid Great Basin, like the rocky Colorado Plateau, exists under conditions of scarce precipitation and thin vegetative cover.

Geologists often describe the jagged peaks of the Rocky Mountain Province as Utah's "backbone." Dominated by the imposing but dissimilar Wasatch and Uinta Mountain Ranges, the Rocky Mountain region covers Utah's northeastern corner and contains the state's heaviest concentration of forests, streams and alpine lakes. Within this province, the north-south trending Wasatch Range was created by violent uplift and displacement along the still active Wasatch Fault. Nearly three-fourths of Utah's population make their home on the benches of this volatile area. The broad, gently arched anticline of the Uinta Range extends east to west for nearly 150 miles and displays rugged, glacially-carved peaks along much of its crest.¹⁸ The headwaters of the Provo,

¹⁷William L. Stokes, *Geology of Utah* (Salt Lake City: Utah Museum of Natural History, University of Utah and Utah Geological and Mineral Survey, 1986), 2.

¹⁸Weber State College [WSC], *Atlas of Utah* (Provo, UT: Brigham Young University Press, 1981), 17.

Weber, Duchesne, Uinta and Bear Rivers flow from melting snowfields in the Uinta's higher elevations, many of which soar beyond 12,000 feet.¹⁹

A wealth of mineral, oil and natural gas reserves underlies these surface expressions of Utah's geologic past. Buried in the mountains of the Great Basin and Wasatch Range are deposits of gold, silver, lead and zinc which once made Utah one of the Railroad Era's greatest metal producers. With changing national demands, Utah's metal industry has shifted to production of copper, iron, uranium, magnesium and hydrocarbons. In the eastern half of the state, valuable stores of coal, oil and natural gas fuel the resource-based economies of several rural Utah counties. Because significant mineral deposits may lie beneath valuable private timber stands, it is important for landowners and resource managers to consider the potentially harmful effects of mineral development when establishing a forest stewardship plan for a given acreage.

Forest Soils and Productivity

Widely varying factors of climate, vegetation, topography and parent material have combined over time to produce a colorful and texturally-diverse collection of Utah soils. Most of the state's forest lands occur on high elevation soils which are formed from sedimentary rock found in Utah's central mountain ranges.²⁰ These dark brown, loamy soils are usually shallow to moderate along the steep mountain faces but deep and fertile on more gentle, vegetation-covered slopes. Heavy concentrations of quartzite distinguish soils of the glaciated Uinta Mountains while pink to pinkish-gray sandy loams cover forest ground in the southern parts of the state where sandstone and wind-worked sediment dominate the geologic landscape. Thin, light-colored soils support Utah's pinyon-juniper communities where lower elevations and precipitation are the norm.

In Utah's generally arid climate, good forest and range management are vital to the overall health of the state's precious soils. The high mountain associations which sustain Utah's forests also supply the major water yielding areas of the state and support critical components of Utah's wildlife habitat, recreation and high elevation range lands.²¹ Steep slopes and lower elevation soils, in particular, need responsible management to maintain the best plant cover and protection from accelerated erosion. Currently, two of the greatest threats to Utah's forest soils include the construction of roads and trails and activities associated with residential or recreational development. By providing forest landowners with an incentive to maintain their land in traditional forest uses, the Forest Legacy Program offers a valuable tool toward the protection and maintenance of Utah's soil stability and productivity.

¹⁹Stokes, 242.

²⁰LeMoyne Wilson et al, *The Soils of Utah*, Agricultural Experiment Station Bull. 492 (Logan, UT: Utah State University, 1973), 6.

²¹Ibid, 10 and WSC, 29.

Watershed Resources

With an average annual precipitation of thirteen inches, Utah ranks as the second driest state in the nation. Given these restrictive conditions, the quantity and quality of Utah's water supply is critically important not only to the state's human population but to its diverse flora and fauna as well. Most of Utah's precipitation comes in the form of snow which is stored in mountain watersheds during the winter and released through a network of lakes, rivers and streams during spring and early summer. Ten principal watershed areas collect this runoff and funnel it toward one of the state's two major drainages -- the Great Basin and the Colorado River. Public and private forest lands cover fifteen to twenty percent of the acreage contained in the five watersheds along Utah's highly populated Wasatch Front.

The Utah Division of Water Quality [DWQ] estimates that Utah's surface water resources currently include 16,457 miles of rivers and streams, over 3,000 lakes and reservoirs, and approximately one million acres of wetlands.²² A complex system of reservoirs, dams, canals and aqueducts captures and diverts much of this water to ensure its availability to municipal, agricultural and industrial users during the dry months of late summer and fall. In addition to these surface flows, Utahns tap into a limited supply of groundwater which has been stored in tiny spaces within the earth's crust by thousands of years of precipitation and streamflow.²³ This groundwater is accessed via springs and wells and provides a clean, alternative water source to supply the ever increasing demands of Utah's urban communities.

As a result of Utah's arid climate, nearly one-half of the state's total water supply goes to irrigation for thirsty crops and gardens. Two percent of this supply goes to industrial uses such as manufacturing and mining and three percent is consumed in domestic uses such as cooking and drinking water. During Utah's early decades, settlers used irrigation streams for both drinking water and food preparation. This water contained typhoid germs and resulted in 2,028 cases of typhoid fever between 1905 and 1914. Modern water treatment facilities and a detailed monitoring system administered by the DWQ helps to ensure that Utah's current water sources are disease free and able to support the uses for which they are classified (e.g. domestic water systems, recreations, aquatic life support, agricultural use, etc.).

In the DWQ's most recent survey of Utah streams, forty percent of all stream miles assessed in the state were found to be partially or totally nonsupporting of their designated uses.²⁴ Non-point source pollution, which stems primarily from agricultural and resource extraction activities, contributes to much of this degradation by increasing nutrient and sediment loading in streams and

²²T.W. Toole, ed., *Utah Water Quality Assessment Report to Congress* (Salt Lake City: Utah Department of Environmental Quality, 1994), 1.

²³Weber, 50.

²⁴Toole, 1.

lakes. Unmonitored silvicultural practices have had a moderate to major impact on over 1,000 acres of lake water bodies.²⁵

Because most private forest lands are located in vital watershed areas, a landowner's forest management practices can have a significant impact on the quantity and quality of downstream water supplies. Healthy forests can efficiently filter sediments and other pollutants from lakes and streams and prevent erosion by stabilizing stream banks. Utah's Forest Legacy Program can help maintain and improve the state's overall water quality by assisting participating landowners in the development of forest management plans which emphasize non-polluting practices such as stream bank and slope stabilization, reseeding for erosion control and regulation of off-road activities.

Wildlife and Fish Habitat

Utah's diverse topography and varying climate provide a complex system of habitats for the state's dynamic population of wildlife species. As of 1992 this lively community included 247 types of mammals, forty-six types of reptiles, thirteen types of amphibians, 436 types of birds and forty types of fish.²⁶ Forests and forested wetlands throughout the state supply critical cover, forage and water supplies to a large percentage of these species. Because wildlife do not recognize boundaries of ownership or administration, private forest lands play an important role in maintaining habitat connectivity and migratory corridors between these areas.

The dense cover of grasses, sagebrush, oak and maple that characterizes Utah's foothills provides cozy hibernating spots and vital winter feeding grounds for lower elevation species such as the deer mouse, desert cottontail, coyote and mule deer. At various times of the year these wooded regions also provide temporary habitat for many of Utah's migratory visitors. As elevations rise, forest species such as the dark-eyed junco, Abert's squirrel, long-tailed weasel and an occasional bobcat begin to appear on the scene. In the tangled spruce-fir forest above 9,500 feet, the climate is cold, windy and moist and dense stands of conifers provide valuable food and shelter to inhabitants such as the mountain chickadee, ruby-crowned kinglet and snowshoe hare. Deer, black bear, moose and elk also find fresh grass and respite from summer heat in these cool subalpine regions.

Forest lands of all elevations often encompass riverine wetlands and riparian habitats where available water and several layers of vegetation support a broad diversity of wildlife species. The state's sensitive aquatic populations are particularly reliant on healthy riparian zones because nearby trees increase the amount of oxygen dissolved in streams and rivers, lower water temperatures in the summer and improve living conditions for cold-water fish. At the time of Utah's settlement, all permanent streams supported populations of up to thirty species of native

²⁵Ibid, 127.

²⁶For more information see Utah Division of Wildlife Resources, *Utah's Wildlife Habitats*, Utah Nongame Leaflet, Vol. 2, No. 1 (Salt Lake City: Utah Department of Natural Resources, 1991). See also Appendix D for a list of Utah wildlife species of special concern.

fish with most streams containing the now extinct Utah cutthroat trout. As a result of habitat degradation, water pollution and diversion of streams for agricultural and domestic use, only seventeen of these native species remain.

The bald eagle, osprey, American dipper and belted kingfisher, in addition to several small birds and mammals, depend on riparian forest habitats for critical nesting, feeding and roosting activities. Shorebirds, raptors, songbirds and larger mammals such as the mule deer, elk, moose and red fox frequent the lush, wet meadows hidden within Utah's mid to high elevation conifer forests. Perhaps most importantly, forest wetlands provide cover, food and water for animals traveling or migrating from one location to another. Without these forest corridors, species which require larger land areas or specific habitats would dwindle or disappear.

Many changes have occurred in Utah's wildlife populations since the pioneers first arrived in this region. Big game species, for example, were reportedly scarce at the time of settlement. But improved management and the decimation of predators have returned healthy populations to Utah's forest and range lands. Mule deer now number six to seven million and can be found throughout the state's forested elevations. Excessive hunting nearly extinguished Utah's elk population but recovery efforts begun in the 1900s have returned elk to numbers above 50,000. Moose, Rocky Mountain bighorn sheep and mountain goats have either wandered or been reintroduced into the state since the turn of the century. Some larger mammals such as beaver, bison, antelope and black bear are presently being hunted but exist in much more limited numbers than earlier times. The timber wolf, grizzly bear and fisher, once prominent throughout the state, have been entirely eliminated from Utah's borders.

Recreation, Scenic and Cultural Resources

Unparalleled recreational opportunities and an outstanding array of cultural and scenic landscapes entice more than fifteen million out-of-state visitors to Utah every year. Since 1950, recreational activities such as hiking, biking, hunting, picnicking and sightseeing have represented, by far, the primary use of both public and private forests. Recreation and aesthetic enjoyment are also the main reasons cited by private landowners for both purchasing and retaining their forested lands.

During Utah's winter months, skiers from around the world flock to the state's fourteen major ski resorts where abundant snow fall combines with low humidity and temperatures to create the "greatest snow on earth."²⁷ Utah's 1994-1995 ski season set new records for visitation with 3.1 million skier visits reported. These numbers are likely to continue rising due to the recent selection of Salt Lake City as the host of the 2002 Winter Olympic Games. In addition to alpine skiing, Utah's winter recreationists enjoy 6,600 miles of snowmobile trails and 14,700 acres of nordic skiing areas. Both public and private forest lands play an important role in providing access to

²⁷Utah Division of Parks and Recreation [Parks], *1992 Utah State Comprehensive Outdoor Recreation Plan (SCORP)* (Salt Lake City: Utah Department of Natural Resources), 187.

these winter activities and in enhancing the exquisite beauty of the surrounding mountain landscapes.

A variety of recreational opportunities can be found during all four seasons in any of Utah's world-renowned national recreation and scenic areas. In southern Utah's red rock country, five national parks introduce visitors to some of the most breathtaking vistas and narrow canyons displayed anywhere in the world. All of these parks reported record visitation numbers during the 1994-1995 season. Zion National Park, for example, hosted 2.41 million visitors, while Arches National Park saw a twelve percent visitor increase during the same year. Other National Park Service sites in Utah include seven national monuments, one national historic site and two national recreation areas. As local and out-of-state visitors seek alternatives to these crowded National Parks, recreational sites administered by the Bureau of Land Management [BLM] have also begun to experience rises in visitation pressure. The explosive popularity of mountain biking has placed particular strains on the BLM's Slick Rock and Kokopelli mountain biking trails.

Six national forests scattered throughout the state's higher elevations supply an ideal outdoor setting for many Utahns favorite activities, namely developed and primitive camping, picnicking, fishing and sightseeing.²⁸ The Wasatch-Cache National Forest borders much of the state's highly populated Wasatch Front and accounted for 6.7 million recreation visitor-days in 1980, making it the busiest national forest in the country in terms of recreation. Utah's Manti-LaSal National Forest gained recognition in 1996 when it supplied a seventy-foot Englemann spruce for the Nation's Holiday Tree. Utah's own Division of Parks and Recreation, a subset of the state's Department of Natural Resources, operates forty-eight state parks including twenty-six lakes and reservoirs suitable for the enjoyment of water sports. Other state facilities such as Fremont Indian State Park and Deseret Village State Park, offer more historical fare by preserving and reenacting the traditional lifeways of Utah's native American and pioneer inhabitants.

The impact of both cultural and recreational tourism on Utah's economy cannot be overstated. The Governor's Office of Planning and Budget [GOPB] estimates that travelers spent approximately \$3.55 billion in Utah during 1995. These expenditures resulted in \$262 million tax dollars for state and local government and 73,000 Utah jobs.²⁹ But with popularity come concerns, particularly with regard to the maintenance of high-quality recreation facilities and the protection of the state's vital natural and cultural resources. According to a statewide survey conducted in 1993, Utahns see the state's main recreation-based issues as: the improvement of outdoor ethics for recreation in the state; comprehensive planning regarding natural resources; resolution of outdoor recreation conflicts; and the availability of and funding for quality recreation facilities.³⁰

²⁸Ibid, 153-154.

²⁹Governor's Office of Planning and Budget[GOPB], *Economic Report to the Governor* (Salt Lake City: Utah State Office of the Governor, 1996), 208.

³⁰Parks, 38.

Private lands form fringe and connective zones in and among many public recreation, cultural and scenic areas. These private lands contribute to the state’s recreational opportunities by providing vital access points, maintaining scenic corridors and offering an outlet for intense recreation pressures being placed on public lands and resources. Through the purchase of conservation easements, Utah’s Forest Legacy Program can protect significant cultural resources in the state and enable private forest landowners to retain and enjoy the scenic and recreational uses for which many of them acquired their land.

III. TRENDS AND THREATS IN FOREST MANAGEMENT

Utahns rely on their surrounding forest lands for an astounding variety of goods and services. They seek timber to support local industries, grazing land for sheep and cattle, clean, productive streams for fishing and water supply and scenic beauty to enhance their quality of life. With the majority of Utah's forests under the management of public agencies, local residents have reliably turned to entities such as the Forest Service and Bureau of Land Management to provide the majority of these forest-related resources. But this practice is changing. During the last decade, restrictions on activities such as timber harvest, grazing and recreation on public lands have increasingly shifted the burden for supplying forest products and benefits from public agencies to private landowners.

Utah's booming economy and historically rapid population growth have further accelerated the pressure on private forests by generating a new set of expectations, many of which threaten the land's overall health and long-term sustainability. Conversion of forests and woodlands to low density and recreational housing, a lack of coordinated, long-term resource planning, fragmentation of forest ownerships and tract sizes and uninformed and degrading forest management are converging to lay siege to the traditional uses of Utah's private forest land. Loss of private forests could have a devastating impact on many of the state's vital natural resources, including the timber and wood products needed to sustain industries in many rural communities. The window of opportunity for preserving traditional forest lands is short and pressing.

Utah's Economy and Demographics

In 1996, Utah's population broke the two million mark and began surging toward the 3.11 million inhabitants predicted to fill the state's open spaces and economic rosters during the next thirty years. According to the U.S. Bureau of the Census, Utah's population expanded by 18.9 percent from 1985-1995, while the nation's population only grew by 10.4 percent. Almost every county in Utah bore part of this record growth, with Washington, Salt Lake, Utah, Iron and Summit Counties experiencing growth from five to eight percent.³¹ This sky rocketing population is nothing new for Utah, a state whose relatively young population consistently exhibits higher than average birth rates, lower than average death rates and a longer life expectancy.

Fueling the state's continued growth is a four-year economic boom which has launched urban Utah and the surrounding Mountain Region to the top of the nation in economic vitality and expansion. Since the turn of the century, Utah's economic foundation has shifted from mining, agriculture and rail transportation to new industries such as tourism, computer hardware and software, health care and a wide variety of educational, legal, financial and business services. Due to the success of these industries, Utah's current economic profile is highlighted by a low unemployment rate of 3.0 percent, job growth that is three times that of the nation, rising personal incomes and robust fiscal health.³²

³¹GOPB, 90-91.

³²Ibid, 3.

Over the past five years, the construction industry has consistently shown the highest growth rate of any major enterprise in Utah. This tremendous growth is both a reflection of the state's enticing economic strength and an incentive for further in-migration. In 1995, dwelling unit permits exceeded 20,000 for the first time since 1978 and the value of residential construction grew from approximately \$700 million in 1990 to \$1.72 billion in 1995. Total residential facilities erected during the previous year included 13,000 single family units, 6,000 multi-family units and 1,200 mobile homes and cabins.³³

Although more of this growth is occurring in rural counties than in the past, nearly seventy-seven percent of Utah's population remains concentrated along the metropolitan Wasatch Front. Local and state planners throughout this region face tremendous challenges in maintaining infrastructure and resources to support these disproportionate numbers. Issues such as traffic congestion, air quality, water development, land availability and open space are of utmost concern.

Forest Land Conversion

Residential and Commercial Development

Utah's rapidly growing population, bolstered by a consistently strong economy and healthy construction industry, have made buildable space a precious commodity throughout the state. As urban sites along the congested Wasatch Front become exhausted or less desirable, developers are increasingly looking to Utah's wooded foothills, forested canyons and scarce agricultural lands to provide the necessary space for expansion. During the decade from 1982 to 1992, the Natural Resources Conservation Service (NRCS) recorded a net loss of 42,000 acres of non-federal forest land and 54,000 acres of cropland in Utah.³⁴ The state experienced a concurrent increase of 108,000 acres of urban land which the agency attributed largely to recent development trends in Washington County and along the Wasatch Front.

Utah's private forest lands are particularly vulnerable to conversion for single family dwellings and recreational properties because they offer tremendous scenic and outdoor amenities, are often located within commuting distance of major urban areas and, unlike the majority of Utah's forests which are managed by public agencies, they are available for purchase. Significant resort and residential communities already exist in Emigration, Weber and Huntington Canyons and in interface areas adjacent to Heber and Park City. The risk to these areas is further enhanced by a lack of coordinated local resource planning.

³³Ibid, 173.

³⁴Natural Resources Inventory Division [NRI], *Summary Reports: 1992 National Resources Inventory* (Washington, D.C.: USDA Natural Resources Conservation Service, 1995).

Both residential and commercial development on private forested lands are of primary concern to state resource managers because of their detrimental and permanent impacts on vital forest values. A decade of intense development in Utah's wooded foothills, for example, has endangered the water quality of several downstream communities by crisscrossing roads through important watershed drainage areas and clearing land of soil-stabilizing vegetation. In their *Assessment Report to Congress*, the Utah Division of Water Quality cited siltation and sediments as a major source of stream impairment in the state and noted that related urbanization activities threaten groundwater supplies by putting them at risk for infiltration by lower quality water.

Development in lower elevation forest lands has also resulted in a critical loss of winter range for Utah's big game species. The Executive Director of the State's Department of Natural Resources recently defined preservation of wildlife habitat as "one of the most critical issues facing the state."³⁵ In defense of this position he noted that in Davis County, alone, twenty-five hundred acres of critical winter range have been reduced to only fifty acres as a result of urbanization during the past five years. According to the State's Division of Wildlife Resources (DWR), approximately thirty percent of winter habitat for big game is on private lands. Loss of this habitat drives elk and deer to feed on lawns, gardens and shrubbery which have replaced their former feeding grounds and increases the conflicts already occurring on the urban-wildland interface. By altering and eliminating habitat, interface development also threatens the biodiversity of Utah's wildlife species by enabling only human tolerant "edge" species to survive.

Residential developments in relatively remote forested areas increased the fiscal and administrative burdens placed on the agencies responsible for providing public services to those areas. This is particularly true with regard to wildland fire suppression. The incidence and cost of wildland fire in Utah's urban interface have exploded over the last decade, with at least 122 interface fires identified in 1995. During Utah's 1994 fire season, values at risk topped \$46 million and total suppression costs exceeded \$6 million. These costs surpassed county fire suppression budgets by nearly \$1.5 million and placed severe if not ruinous strains on several counties' overall spending capabilities. In addition, lack of defensible space and fire-safe building materials in many forested subdivisions continues to raise critical safety issues among fire suppression agencies whose leaders are concerned with protecting their crews as well as defending threatened lands and structures.

Finally, development on Utah's private forest lands can degrade the state's valuable scenic resources by breaking up open space; increasing the demand for new roads, power lines and other infrastructure projects; and impacting the viewshed of adjacent scenic areas, roadless and wilderness areas and national parks and forests. Much of Utah's thriving tourist industry is based on the state's internationally recognized scenic resources, including forested canyons, mountains and foothills, and many Utahns rate scenic beauty and open space as major contributors to their quality of life. During the state's 1995 Growth Summit, both government officials and local

³⁵Minutes of the *1995 Utah Land Conservation Task Force* [Minutes], August 23, 1995 and September 6, 1995.

residents identified undisturbed open space as “essential to...mental well being and cultural heritage” and described it as a window to the soul, offering solitude and peace.³⁶

Forest Fragmentation and Parcelization

The conversion of Utah’s forest lands also stems from a trend toward the parcelization of forest ownerships into smaller and less manageable acreages. A recent report on private forest landowners compiled by the Northeastern Forest Experiment Station indicated that this rapid turnover is occurring nationwide due to changes in the characteristics and attitudes of landowners themselves.³⁷ A change of particular concern in Utah is the shift toward an aging landowner base and its implications for a major turnover of ownerships during the next ten to twenty years.

A recent survey of Utah’s private forest landowners revealed that nearly forty percent of survey respondents were past retirement age, with the respondents’ average term of ownership being a lengthy twenty-eight years. As landowners age they begin planning and carrying out the transfer of their land either through inheritance or sale. Rising property values and development interest in forested areas may encourage older landowners to sell parcels of their land in order to build a nest-egg for retirement. In Utah, where forest land ownership is largely a family tradition, this disposition of land more often means dividing a large acreage into several smaller sections so as to provide each child with a part of the family estate. Unfortunately, well intentioned landowners may be saddling their children with heavy estate tax burdens which can account for up to fifty percent of an estate’s total value. Because the current tax structure requires appraisal of forest land at its “highest and best use” rather than its forest value, heirs of forest land often find it necessary to further subdivide, harvest or develop their property in order to raise cash for inheritance expenses.

Parcelization of Utah’s forest land is also influenced by a significant percentage of forest landowners who earn their primary income from sheep and cattle ranching and are subsequently vulnerable to the roller coaster ride of agricultural markets. The recent stagnation of U.S. cattle prices and concurrent rise in timber and property values has caused many of these landowners to sell off their forested lands and resources. The decision of these landowners to sell all or part of their forest land may also stem from the landowner’s perception that he or she cannot afford the costs of managing forest land for long-term production. In a 1994 Utah landowner survey, nearly twenty percent of respondents indicated they plan to sell their land in the next five years.

As a result of forest fragmentation, over forty percent of Utah’s private forest landowners currently own one hundred acres or less. Only twenty-three percent retain the one thousand-plus acres recommended for maintaining a successful timber and wood products industry. The loss of

³⁶Ibid, November 7, 1995.

³⁷T.W. Birch, *Private Forest-land Owners of the United States, 1994*, Resource Bulletin NE-134 (Radnor, PA: U.S. Department of Agriculture, Forest Service, Northeastern Forest Experiment Station, 1996).

large, contiguous tracts of forest land can have a devastating impact on traditional forest practices and the maintenance of forest values. The sustainability of rural timber operations is particularly at risk because loggers and saw millers face increased difficulties in obtaining timber from smaller parcels of land with proliferating numbers of landowners. Owners of small acreages also tend to be motivated more by recreation and scenic values and less inclined to actively manage or harvest their timber. These complications add further expense to the harvester's basic costs of machinery, fuel, labor and timber purchase.

The health and variety of Utah's natural heritage, including several threatened and endangered species, relies on the maintenance and stability of viable ecosystems. Parcelization of forests and woodlands disrupts these ecosystems by fragmenting vital migration corridors and eliminating specialized niches in forested habitats. The importance of habitat connectivity to overall biodiversity has led many biologists to question the usefulness of preserving small, unconnected acreages for the protection of plants and wildlife. Instead, they advocate a system of linkages or "corridors" which will allow protected lands to continue as biologically diverse ecosystems regardless of ownership boundaries. In Utah, this type of coordinated management requires cooperation among private, state and federal landowners. As fragmentation continues, this cooperation will become increasingly difficult, placing habitat integrity in further jeopardy.

In addition to the problems discussed above, forest land fragmentation complicates access to recreational opportunities such as hunting, fishing and camping, affects water quality and results in a loss of traditional culture and ownership. Although many of the issues associated with land parcelization can be addressed through local planning and zoning, Utah's pattern of random and often short-sighted subdivision reflects the state's lack of comprehensive resource planning, particularly with regard to forest management. According to the Governor's Office of Planning and Budget, open space is increasingly being identified by counties and cities in their planning processes as a valuable resource and an important characteristic in need of retaining. But zoning for open space and ecosystem integrity remains a fairly new and difficult issue for most of Utah's local governments.

Poor Forest Management Practices

Perhaps the most immediate threat to Utah's private forest lands is the degradation of watersheds and potentially irreversible change in forest health that results from destructive management practices such as overgrazing, excessive timber harvest and surface mineral development. The decline in timber harvesting on federal lands combined with favorable timber prices has increased pressures to log private and state lands throughout the intermountain west. Utah's geographic proximity to the Pacific Northwest makes it particularly susceptible to these pressures. Private landowners are being approached by timber contractors or brokers who scout good stands of timber, obtain landowner names from the county recorder's office and contact landowners in an attempt to negotiate timber contracts. Nearly one-third of the landowners who responded to a 1996 landowner survey had been approached about selling their timber. This initiative on the part of contractors, combined with recent increases in prices, has caused more of Utah's private timber to be put under contract, making it likely to be harvested in the coming years.

Unfortunately, timber harvesting on nonfederal lands in Utah as currently practiced often leads to degradation of the biological and physical condition of the land, compromises the regenerative capacity of timber resources and affects other resource values such as water quality, forest health and wildlife and fisheries. The consequences of poor harvesting practices may not be confined to the land on which those activities occur. Neighboring landowners may be affected through increased fire risk, soil erosion and the spread of insects, disease and noxious weeds. Nearby communities may be affected, particularly by poor harvesting practices in watersheds that they depend on for domestic and agricultural water supplies, and by the loss of economic benefits when timber is harvested and processed by operators and mills from out-of-state locations.

Poor harvesting practices can also have a variety of consequences for private landowners: waste of wood and lack of compensation for the full value of the timber removed; potential liabilities for off-site impacts resulting from poor harvesting; degradation of the physical condition of the land that may reduce its economic value; and the foreclosing of future options in terms of alternative uses of the land, its sustainability, its marketability or its desirability as part of an inheritance. Regeneration is a particular concern on Utah's forest lands because tree stands are not very dense or uniform and the sites are generally dry. If logging is not done in the context of silvicultural prescriptions designed for site regeneration, the productive capacity, commercial value and alternative future use of a site may be compromised.

Over the past twenty-five years, most states have implemented programs to manage and control logging on nonfederal land, making those few states without forest practices programs more desirable places for loggers to operate. Utah remains only one of four western states (along with Arizona, Colorado and Wyoming) that do not regulate or monitor forest harvesting practices on nonfederal lands. This leads to the concern that Utah has "put out the welcome mat for bad operators" and that we are robbing our grandchildren by failing to provide for regeneration of healthy timber stands today.

During its 1996 session, the Utah Legislature approved a review of timber harvesting practices in Utah and an assessment of the need for programs to encourage economically efficient and sustainable forest practices. Utah's state forester convened a Forest Practices Task Force in the spring of 1996 to investigate these issues. After holding meetings, attending several investigative field trips, reviewing secondary information, considering related research conducted by Utah State University and taking into account their personal knowledge and experience, this Task Force recommended a three-pronged approach in addressing forest practices in Utah. Their recommendations includes a combination of educational efforts, incentive programs and administrative oversight designed to work together in effectively addressing the diverse interests and needs of forest landowners, the forest products industry and the public. The final report and recommendations of the Utah Forest Practices Task Force were presented to the Legislative Interim Committee for Energy, Natural Resources and Agriculture on September 18, 1996. Draft legislation is underway following recommendation by this Committee.³⁸

³⁸See Appendix E for a summary of the recommendations presented by the *Utah Forest Practices Task Force*.

Many of Utah’s private forest landowners hold a deeply felt land ethic and desire for proper stewardship of their forests. What they lack is the proper tools and understanding to accomplish these desires. Programs such as Forest Legacy help combat all types of forest land conversion by enabling both land owners and local officials to recognize and preserve significant forest values. By participating in Legacy, forest landowners can meet their needs for income, reduce inheritance costs for their families *and* ensure the continuance of traditional forest uses.

IV. CONSERVING THE LAND BASE

National magazines such as *U.S. News and World Report*, *Forbes* and *Financial World* have consistently ranked Utah among the country's most desirable places to live and do business.³⁹ But along with popularity come concerns for how to maintain this enviable quality of life for our children and grandchildren. As unprecedented population growth and a related construction boom put "roofs and pavement" over many of the state's most valuable resource lands, both state and local officials are increasingly searching for ways to protect the sustainability of their vital forest lands, agricultural tracts and open spaces.

In Utah, where many residents believe the best government is the one closest to the people, state leaders have historically insisted that land use decisions are the responsibility of local government. As a result of this cultural preference for self-sufficiency, Utah exhibits a relative lack of coordinated state planning or initiative regarding resource conservation. In 1974, the state legislature passed a *Utah Land Use Act* which recognized the need for a "planned land use policy to insure the orderly use and development of land and related natural resources...for the benefit of present and future generations."⁴⁰ This act was later defeated by referendum because many citizens perceived it to be the state enforcing its land use policies on local governments rather than working from the local level up. Subsequent attempts at similar statewide land use planning have also failed.

Recently, a small number of cities and counties have begun addressing land conservation through planning and zoning tools such as transfer of development rights, agricultural protection areas, open space zoning, cluster zoning, sensitive lands overlays and conversion taxes. Nine of Utah's twenty-nine counties currently have open space or agricultural protection components built into their general plans. Five more have land use planning efforts in progress. During meetings of the Legislature's 1995 Land Conservation Task Force, local leaders repeatedly explained that although many communities recognize the need for natural resource conservation and planning, they feel frustrated by their perceived lack of both tools and funding.⁴¹ These same local advocates felt that the state has a proper role in providing leadership, education and funding that will enable cities and counties to sustain their land base. In spring of 1996, the Governor created the Utah Open Lands Committee to address some of these concerns by functioning as an information clearinghouse for local governments desiring to develop long-term land use plans.⁴² This nascent program is currently being coordinated by the Governor's Office of Planning and Budget.

³⁹GOPB, 23.

⁴⁰Chapter 30, SB 23, 2/2/74.

⁴¹Minutes, July 26, 1995, August 24, 1995 and September 27, 1995.

⁴²*Executive Order: Utah Open Lands Committee, 1996.*

Despite these burgeoning governmental efforts, the preservation of open space and agricultural lands in Utah continues to fall primarily to a limited number of private land trusts now operating in the state. Land trusts are non-profit charitable organizations dedicated to helping private landowners achieve the voluntary preservation of their lands' natural resources for the benefit of both public and private entities. The challenge for land trusts in Utah is to accomplish preservation of valuable landscapes and resources without compromising private property rights.

To achieve this delicate balance, most land trusts rely on the purchase of conservation easements. These easements appeal to all parties involved because they provide landowners with fiscal compensation, allow for the protection of valuable resources, maintain the land in private ownership and on local tax roles, and boost local economies by encouraging active management of the land in question. The paragraphs to follow provide a brief description of all land trusts and private organizations currently working toward land conservation in the state. Additional information on federal tax incentives and cost-share programs of interest to private forest landowners are addressed in Appendix F.

Implementation of the Forest Legacy Program in Utah will expand and multiply the effectiveness of existing private and governmental conservation efforts. By making funds available for the purchase of conservation easements and supplying optional technical assistance for future land stewardship, Forest Legacy enables both private landowners and local governments to successfully meet their land management objectives.

Utah Land Trusts and Private Preservation Organizations

The Nature Conservancy -- Utah Field Office

The Nature Conservancy's mission is to preserve biological diversity through acquisition of important wildlife and plant habitats. The Conservancy is not a land trust but its Utah chapter has completed or facilitated several projects directly related to the preservation of open space. Techniques used by the Conservancy include direct fee acquisition, conservation easements and voluntary landowner agreements and frequently 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.

High visibility sites involving the Nature Conservancy in Utah include the Mayberry Preserve, located near Moab on the Colorado River, the Scott M. Matheson Wetlands in Moab and the Book Cliffs Conservation Initiative. A more recent project involves the heavily forested Snake Creek Canyon located on the eastern side of the Wasatch mountains near Midway, Utah. When a nearby ski resort expressed interest in purchasing and developing this former mining property, some local citizens formed an organization to preserve the canyon intact. In a fairly complex exchange, the Nature Conservancy purchased the property and is in the process of recouping its costs from a diverse group of organizations including two counties, two cities, a utility company, two citizen groups and the Utah Division of Parks and Recreation.

Rocky Mountain Elk Foundation (RMEF)

RMEF works in partnership with public land agencies, non-profit organizations and private landowners to achieve habitat conservation, particularly with regard to critical elk winter range, migration corridors and calving grounds. The organization considers loss of habitat the most critical threat to Utah wildlife and subsequently focuses on water protection, seedings and other habitat development for bear, deer, songbirds, trout and a multitude of other species. Additional organization goals include improved communications between preservation-minded agencies, application of sound scientific management with regard to wildlife and increased ecosystem based management. RMEF joined the Nature Conservancy in facilitating the Book Cliffs Conservation Initiative.

Sonoran Institute

The Sonoran Institute promotes community-based conservation strategies that preserve the ecological integrity of protected lands and, at the same time, meet the economic aspirations of adjoining landowners and communities. The Institute conducts “Successful Communities” workshops to help people identify what they value in their community, create a shared vision for the future and implement specific projects to realize their priorities. The Institute has helped create several regional organizations in Utah and throughout the West which bring together conservationists, government officials, business owners and ranchers toward the common goal of strengthening and diversifying local economies while preserving natural resources and quality of life.

Urban Lands Institute (ULI)

ULI is a non-profit education and research institute that provides responsible leadership for land use in order to enhance the total environment. With a more urban focus, ULI is a forum for information and idea exchange that can lead to better urban land use and planning. Recently ULI has been very involved in the study and dissemination of information on conservation based development in Utah and in the design for the Centennial Project housing development.

Utah Open Lands (UOL)

This private, nonprofit organization formed for the purpose of protecting the scenic, wildlife and agricultural values of open land in Summit County, Utah and its environs. Utilizing its status as a charitable organization, UOL relies primarily on conservation easements and land donations to facilitate significant tax benefits for contributing land owners. The staff members of UOL have extensive expertise in land conservation and function as a clearinghouse for written information and available options. UOL is currently assisting the city of Draper in its efforts to draft an open space plan. Summit County and Park City have also received extensive assistance from UOL in their preservation efforts.

Virgin River Land Preservation Association (VRLPA)

Founded in 1993, the VRLPA is a non-profit organization working to preserve the Virgin River Basin’s unique heritage through donations and purchase of private land and development rights. VRLPA also works to educate the public about the values and benefits of open land in order to

facilitate its protection and encourage sound land use planning in Washington County and the adjoining areas of the Virgin River Basin. VRLPA will hold lands in trust and perpetuity for the benefit of present and future generations.

Resource Conservation and Development Councils (RC&D)

RC&D organizations are private non-profit groups originally started by the USDA Natural Resources Conservation Service (NRCS) as a way to foster community development. The primary goal of RC&Ds is to preserve natural resources and local economies at the community level through citizen involvement and consensus-building. The Wasatch Front RC&D is funded equally by the Forest Service and NRCS and in small part through program fees. Other regional RC & D Councils have individual funding arrangements.

Several communities have approached the Wasatch Front RC&D’s Open Space Committee for help in drafting master plans which include provisions for open space preservation. The organization deals primarily with public relations, education and community-building aspects of open space and attempts to make the complexities of land use planning understandable to local governments, landowners, developers, realtors, legislators and citizens.

V. UTAH'S FOREST LEGACY PROGRAM

Utah's Forest Legacy Program is designed to facilitate state, local and private open space and resource conservation initiatives by assisting with the purchase of conservation easements or fee-title on non-industrial private forest lands and by aiding private forest landowners with the development of long-term forest stewardship plans. In a September 1995 meeting of the Utah Land Conservation Task Force, representatives of the state's League of Cities and Towns explained that local communities are very interested in the preservation of open space but are frustrated at not having the tools or resources to effectively preserve their environmentally important lands.⁴³ Forest Service Chief Jack Ward Thomas echoed this sentiment in a recent address before the National Association of State Foresters. Said Thomas, "with continuing fragmentation of our nonindustrial private forest lands, we must lead in the development and use of a mix of tools... to reach and serve the ever growing number of new forest owners."⁴⁴ Utah's Forest Legacy Program fulfills both of these directives by providing the vital educational, technical and financial tools needed by private landowners and local governments to accomplish their goals with regard to open space preservation and sustainable forestry.

Because the Forest Legacy Program was created through a 1990 amendment of the *Cooperative Forestry Assistance Act of 1978*, some aspects of Utah's program follow national requirements and criteria. The remaining elements specifically reflect the state's unique resource needs, political climate and public attitudes. Valuable input from private landowners, public citizens and several resource management agencies played a primary role in the development of these components.⁴⁵ The following paragraphs explain how Utah's Forest Legacy Program will function and provide greater detail on the national program, the eligibility criteria for lands to be included in the program, the selection of Utah's Forest Legacy Areas and the process through which willing forest landowners can benefit from the program's many opportunities. Specific information and maps on each of the state's Forest Legacy Areas is provided in Section VI.

The National Program

The architects of the national Forest Legacy Program [FLP] recognized that the majority of the nation's productive forest lands are in private ownership and that private landowners are facing growing pressures to convert their lands to non-forest uses, namely residential subdivisions and

⁴³Minutes, 9/27/95.

⁴⁴Speech given by Jack Ward Thomas, Chief, USDA Forest Service at the National Association of State Foresters' Annual Meeting on September 23, 1996, in Springfield, Missouri.

⁴⁵See Section VII for more information on public involvement activities.

commercial development. Greater population density and user needs are increasing this pressure by demanding that private lands not only compensate for the current timber shortfalls on federal lands but that they also provide a wider variety of products and services, from fish and wildlife habitat to aesthetic and recreational opportunities. The United States Congress created the FLP to mitigate the negative effects of these pressures and to facilitate long-term resource management partnerships between local, state and federal governments.

Authorization for the FLP was granted through Section 1217 of Title XII of the *Food, Agriculture, Conservation and Trade Act of 1990*, also referred to as the 1990 Farm Bill. This law amended the *Cooperative Forestry Assistance Act (CFAA) of 1978* in order to allow the Secretary of Agriculture to establish the FLP for the protection of environmentally important forest areas that are threatened by conversion to nonforest uses.⁴⁶ This authority continues indefinitely. Through the recently approved 1996 Farm Bill, the Secretary is further authorized, at the request of a participating state, to make a grant to the State to carry out the FLP, including the acquisition by the state of lands and interest in lands. Currently, the USDA Forest Service serves as the lead federal agency for the FLP. The Forest Service implements the Program through close cooperation with a lead state agency as designated by the Governor. In Utah, Governor Michael Leavitt designated the Division of Forestry, Fire and State Lands as the state's lead agency.

The establishment of a state FLP includes several steps that are specified by the *Forest Legacy Program Implementation Guidelines*. The first step in these guidelines is the completion of a state-wide Assessment of Need (AON) which documents the demand for a FLP in the state; identifies and delineates the boundaries of eligible forest areas; and recommends to the Forest Service areas which should be included in the FLP. At a minimum, the AON must address the following as they relate to the purpose of the FLP:

1. Forested areas threatened by conversion to nonforest uses;
2. Forest resources including:
 - a. Aesthetic and scenic values;
 - b. Fish and wildlife habitat, including threatened and endangered species;
 - c. Mineral 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;

⁴⁶See the *Cooperative Forestry Assistance Act of 1978, as amended* (PL 101-624, Title XII, State & Private Forestry, s. 1217 *et seq.*).

4. Current ownership patterns and size of tracts, and trends and projected future ownership patterns;
5. Cultural resources on forested lands;
6. Outstanding geological features;
7. Demographic trends as they relate to conversion of forest areas; and
8. Other ecological values.

Based on the AON, the state lead agency identifies specific geographic Forest Legacy Areas that meet both national and state eligibility requirements. It then recommends these areas to the Forest Service for inclusion in a state FLP. Once designated, FLAs and resulting maps of FLAs may be modified and amended upon recommendation by the state lead agency if future conditions make changes necessary. Following completion, the AON and identification of proposed FLAs must be submitted by the state to the Forest Service for review. The Secretary of Agriculture provides final approval for establishing the state's FLP.

Thirteen states currently have approved FLPs, including Washington and California in the West. To date, these programs have protected 16,108 acres of private forest land valued at \$10,972,700. Utah, Delaware, Tennessee and Minnesota are in the process of completing AONs for their states.

Selection of Forest Legacy Areas

National Eligibility Criteria

Forest Legacy Area boundaries must encompass forest lands with significant environmental and other resource-based values. These 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. In order to ensure that all lands nominated for FLA designation meet the minimum goals and intent of the program, the *Implementation Guidelines* specify the following **eligibility criteria**:

1. Proposed Forest Legacy Areas must represent an important forest area that is threatened by conversion to nonforest uses.
2. Proposed Forest Legacy 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; and/or other ecological values.
3. Proposed Forest Legacy Areas should provide opportunities for the continuation of traditional forest uses, such as timber harvesting, forest management and outdoor recreation.

State Evaluation Process

The delineation of boundaries for Utah's FLAs stemmed from a multilevel review involving public attitudes and input from local, state and federal resource managers. The Division began this review by generating a map of the state's public and private forest lands using information contained on Geographic Information Systems (GIS) data layers. For the purposes of analysis, these forested areas were then divided according to critical hydrologic basins as established by the Utah Division of Water Resources.⁴⁷ The use of these regional boundaries reflects the Division's concern for landscape level management of forest resources and its commitment to working with local and regional entities in facilitating their existing plans for land conservation. Due to the limited private forest ownership on tribal lands within the state, Indian Reservations were not considered as part of the Assessment of Need process.

The Division's second phase of review entailed soliciting input from various resource managers and considering a wide array of printed and computerized data regarding Utah's forest resources. This data included information on water quality and quantity, critical wildlife habitat, high density recreation areas, demographic and economic factors affecting forest conversion, regional activity of private land trusts, opportunities for the continuation or development of wood products industries, existing open space plans and public attitudes regarding land conservation. A report regarding this information was presented to Utah's Forest Stewardship Coordinating Committee [FSCC] which subsequently established the following **resource priorities** for the selection of Utah's Forest Legacy Areas:

1. Protection and enhancement of water quality;
2. Protection of wildlife/fish habitat and maintenance of habitat connectivity;
3. Protection of riparian areas and restoration of natural ecosystem functions;
4. Maintenance of traditional forest uses; and
5. Contribution to rural economies.⁴⁸

⁴⁷See also Appendix H and Map: Public and Private Forests by Watershed, page 40.

⁴⁸Established by the Utah Forest Stewardship Coordinating Committee (FSCC) at their meeting on September 4, 1996. For a list of the agencies and interests represented on this committee please see Appendix G.

After comparing all these factors to the national eligibility criteria, the Division designated nine FLAs with boundaries corresponding to established state hydrologic basins. Two of the state's eleven basins were not designated as FLAs at this time because of limited forest resources or Legacy-related opportunities in those areas. The widespread nature of these Areas reflects the dispersed distribution of Utah's forest resources and the close proximity of nearly all significant forest stands to rapidly developing urban locations. Detailed descriptions and maps of each of Utah's FLAs are contained in Section VI.

Landowner Participation and Parcel Acquisition

All owners of private forest land within a designated FLA are eligible to apply for enrollment of interests in their lands in the state's FLP. It is important to note, however, that participation of any landowner in Utah's Forest Legacy Program must be entirely voluntary. Under no circumstances will the right of eminent domain be used for the unwilling "taking" of any private property rights. Participation also requires preparation of either a Forest Stewardship Plan or a Multi-Resource Management Plan for the forest resources located on a proposed parcel.

Eligible landowners who want to participate in the Program may submit a letter of interest to the Division of Forestry, Fire and State Lands at any time. After receiving this letter, the Division will provide the landowner with a parcel assessment form which requests information regarding the parcel's environmental values and the landowner's conservation and management objectives. Landowners have the option of donating a conservation easement or fee-title to the Program or applying to have an easement or title purchased through the Program. The process for handling both donation and purchase activities will be handled as specified in the Implementation Guidelines.

Acquisition Goals and Objectives

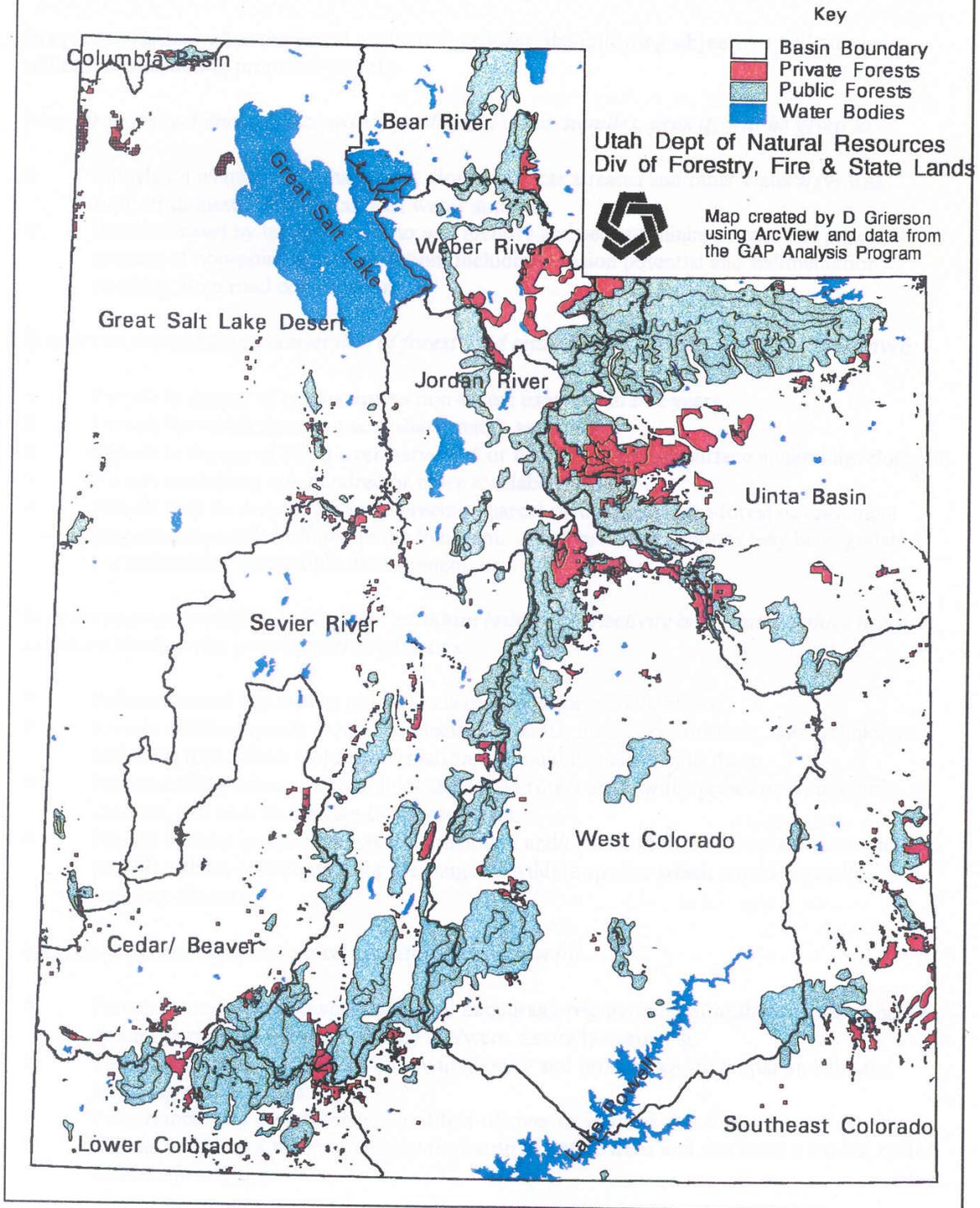
The Division, with involvement from the State Forest Stewardship Coordinating Committee, the Division's Advisory Council and other resource management agencies, will subsequently review these applications and prioritize parcels for acquisition according to the following **Program**

Goals:

- Prevent future conversions of forest land and forest resources;
- Protect and enhance water quality and water supplies;
- Protect wildlife habitat and maintain habitat connectivity and related values needed to ensure biodiversity;
- Protect riparian areas;
- Maintain and restore natural ecosystem functions; and
- Maintain forest sustainability and the cultural and economic vitality of rural communities.

Utah

Public and Private Forests by Watershed



In order to further refine the parcel evaluation process, the following **objectives** will also be utilized in considering proposed parcels:

In order to protect and enhance water quality and water supplies, priority will be given to:

- Parcels on which land management directly affects streams and other waterways that support domestic and agricultural water supplies.
- Parcels owned by landowners who will identify and seek to minimize past and potential sources of non-point source pollution, including erosion potential and sedimentation resulting from road construction.

In order to prevent future conversion of forest land and forest resources, priority will be given:

- Parcels in danger of conversion to non-forest uses within five years.
- Parcels for which there is a cost share match available.
- Parcels in danger of being over-harvested or degraded through surface mineral development.
- Parcels containing one hundred or more available acres.
- Parcels held by owners who will preclude parcel divisions and non-forest development projects on parcels included in the Program. Appropriate exemptions may be negotiated for maintaining compatible development.

In order to protect wildlife habitat and maintain habitat connectivity and related values needed to ensure biodiversity, priority will be given to:

- Parcels located adjacent to public lands managed for wildlife habitat.
- Parcels which currently exhibit connective habitats, migratory corridors, habitat linkages and areas that reduce biological isolation, or could be managed to do so.
- Parcels held by owners who will identify and protect areas with species or communities of concern, and seek to manage for key habitats.
- Parcels held by landowners who will maintain and/or restore forest cover and structure to provide habitat connectivity for the range of wildlife species which would normally populate the area.

In order to protect riparian areas, priority will be given to:

- Parcels owned by landowners who will encourage regeneration of healthy stands of native species in riparian areas where they are/were naturally occurring.
- Parcels owned by landowners who will identify and protect sensitive riparian habitats, including stream banks.
- Parcels including over three hundred feet of river or wetland shoreline.
- Parcels including a minimum eighty foot strip of native trees and shrubs as a natural buffer and sediment filter.

In order to maintain and restore natural ecosystem functions, priority will be given to:

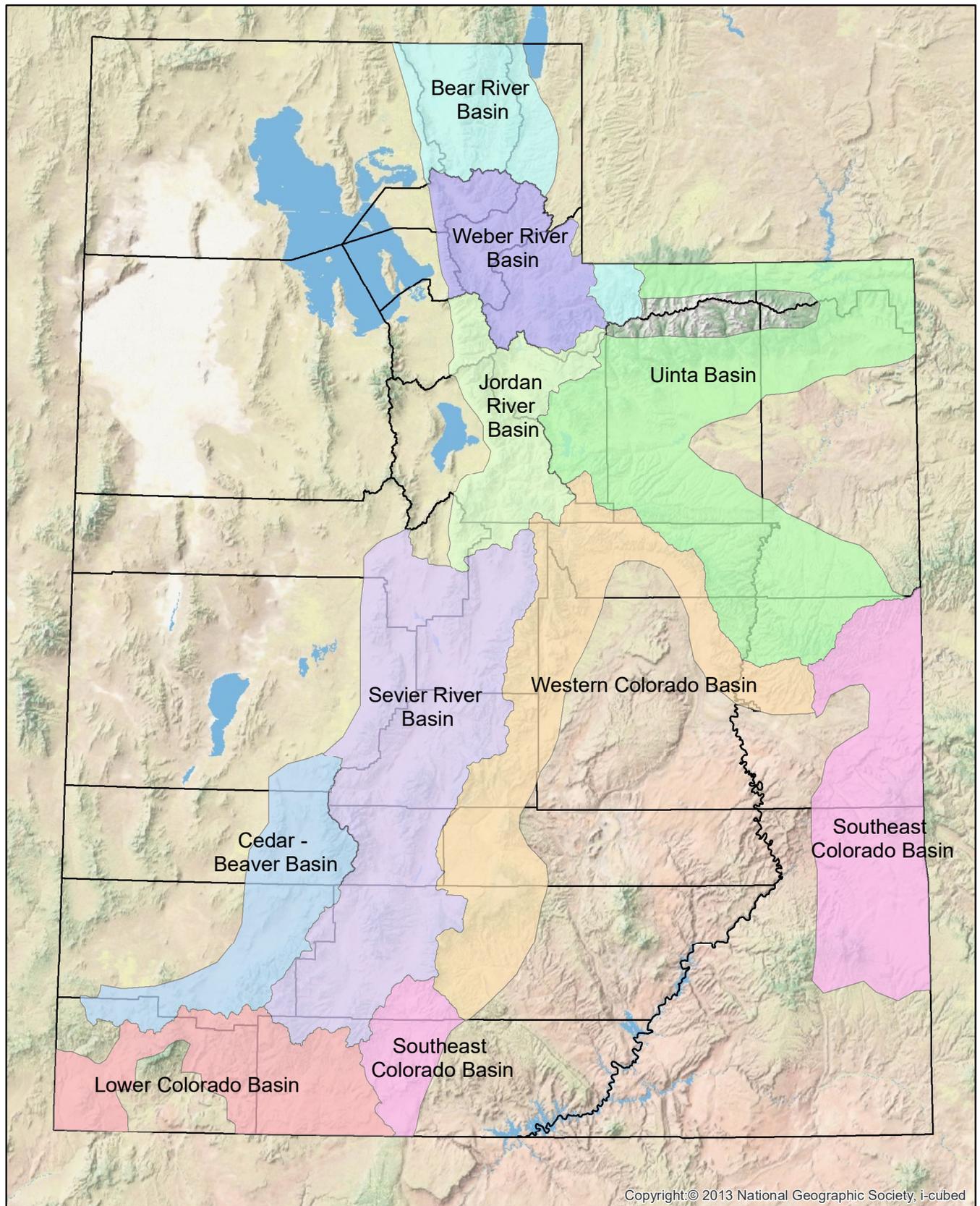
- Parcels which include healthy forests, including a natural species mix and a genetically sound mix of trees within the species represented on the parcel.
- Parcels owned by landowners who will manage the parcel or key portions of it to restore a natural mix of forest species, structure and stages across the landscape.
- Parcels owned by landowners who will utilize prescribed fire or other practices to restore more naturally functioning landscapes.

In order to maintain forest sustainability and the cultural and economic vitality of rural communities, priority will be given to:

- Parcels which could contribute to the development or sustainability of local and regional wood products industries.
- Parcels owned by landowners who will work cooperatively to develop a long-term forest stewardship plan for their property.
- Parcels which could contribute to the continuance of wildlife production and livestock grazing on forested lands.

Acquisition of conservation easements and fee-title under the Utah Forest Legacy Program will be administered by the Division of Forestry, Fire and State Lands according to established Program guidelines and procedures. Monitoring and management of the acquired lands or interests in lands may be conducted by a state or local agency or an approved non-profit land trust. Easements and title may also be acquired and managed by the Forest Service if specifically requested by the participating landowner.

If a private landowner intends to harvest timber or conduct other resource management activities on lands acquired through the Program, a forest stewardship or multi-resource management plan must be prepared and agreed to before signing the acquisition document. A plan is not needed if lands are acquired in fee simple title or if the landowner waives the right to harvest timber or conduct other extractive resource activities. All Program acquisitions are perpetual and 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 or donated to the local, state or federal government.



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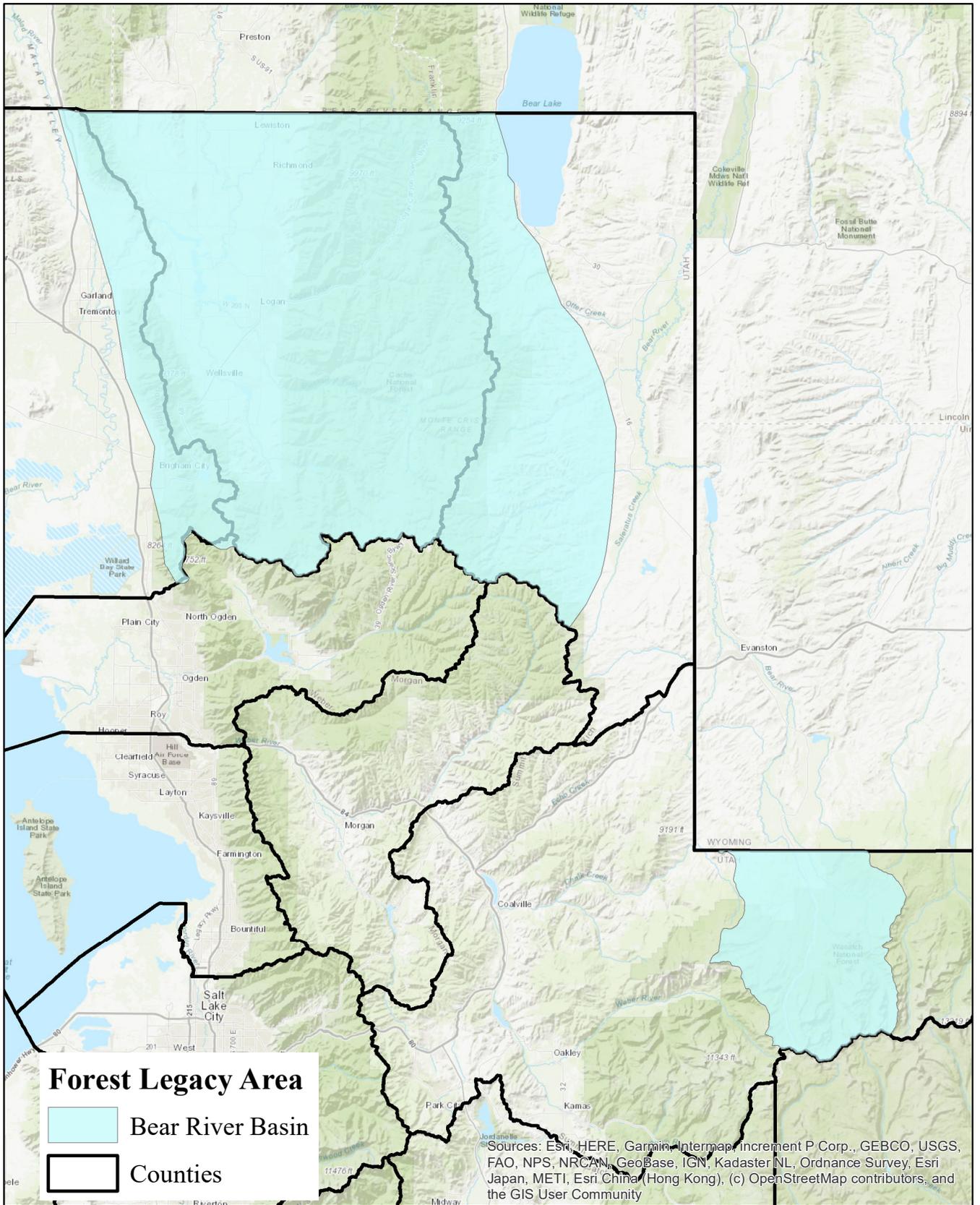
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Utah's Forest Legacy Areas

VI. UTAH'S FOREST LEGACY AREAS

Bear River Basin Forest Legacy Area

A. Map.



Bear River Basin FLA

B. Description of Important Forest Area.

The Bear River Forest Legacy Area covers approximately 3,381 square miles in Utah and contains both the headwaters and the termination point of the five hundred mile Bear River. The headwaters of this lengthy waterway are located in the western end of the Uinta Mountain Range in Summit County, Utah, at elevations approaching 13,000 feet. In the upper reaches of the river, numerous small glacial lakes serve as catchment areas for heavy snowfall and rain. The Bear River eventually empties into Bear River Bay on Great Salt Lake where a federally developed and operated waterfowl management area provides vital freshwater habitat for migratory birds traveling through Utah.

Over one-fourth of this FLA consists of alpine forests with predominant species being Douglas and subalpine fir, lodgepole pine and aspen. Ownership of these forested areas is seventy percent federal, contained primarily in the Wasatch-Cache National Forest, twenty-five percent private and five percent state trust lands. The many rivers and tributary streams which flow through both public and private forest lands in this region support important stream fisheries, waterfowl and wildlife refuges and extensive recreational use. They also provide critical water supplies for residential and commercial use in Box Elder, Cache and Rich counties.

Primary uses of forested land in this region are year-round recreation, timber harvest for both commercial and private use, personal and fee hunting, livestock grazing and residential and recreational development. Risks to these forest lands include conversion to development, non-point source pollution, heavy dispersed recreation and poor forest health as a result of improper timber harvesting techniques.

C. Summary of Important Environmental Values and How They Will be Protected.

Conservation easements should consider the following issues:

- Water quality and supply.
- Threat of conversion.
- Continuation of traditional forest uses.
- Sustainable timber harvest and forest practices.
- Restoration of proper ecosystem functions.
- Possible public access to recreation.

- Protection of critical fish and wildlife habitat.
- Surface and subsurface mineral rights.

D. List of Public Benefits to be Derived.

- Protection of public water supply.

- Continuation of traditional forest uses, including grazing.
- Sustainable timber harvest.
- Valuable wildlife habitat.
- Access to year-round recreation.
- Scenic quality.

E. Identification of Entities that May Participate in Monitoring and Management.

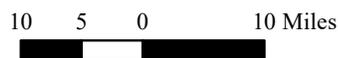
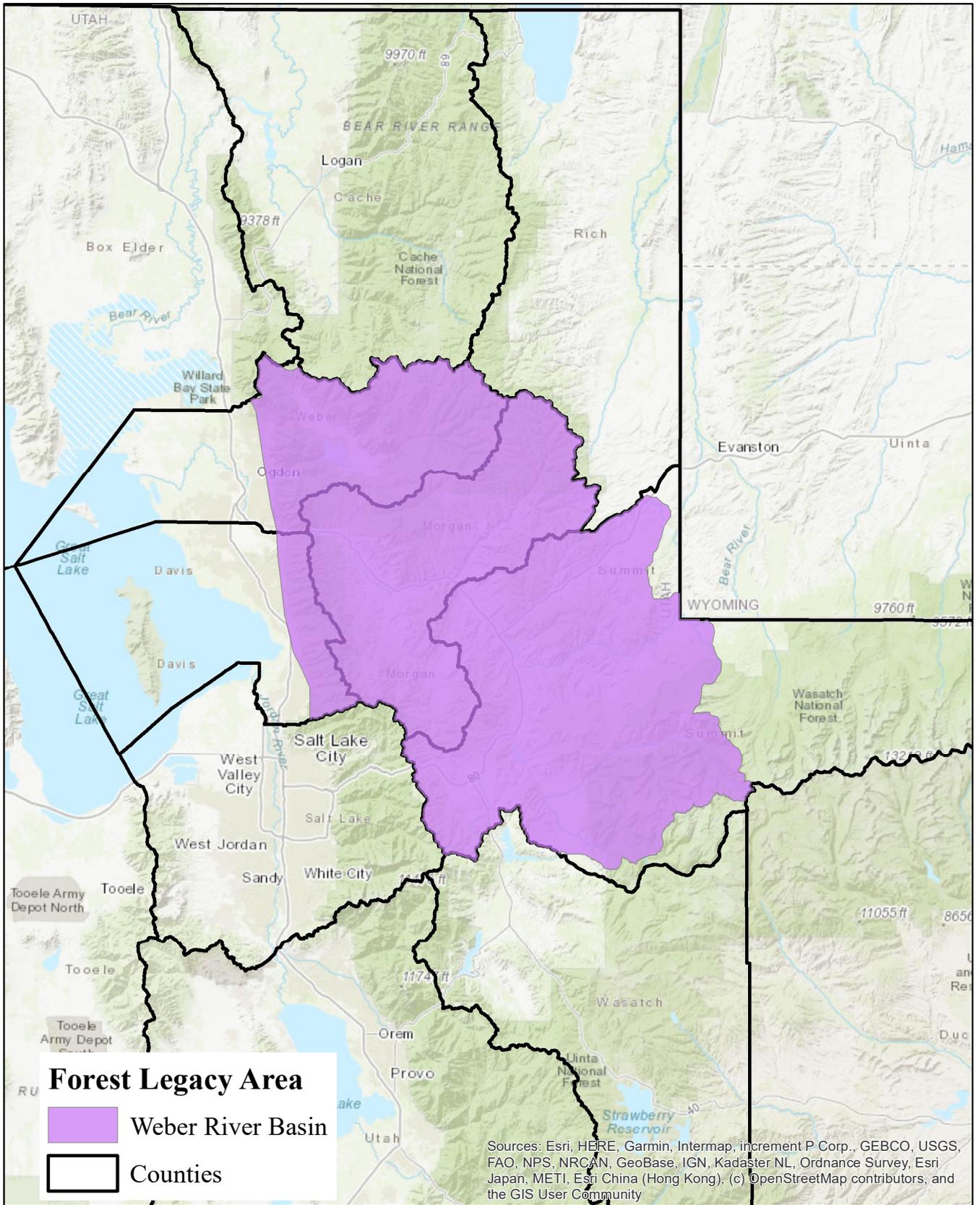
- Rocky Mountain Elk Foundation
- Pheasants Forever
- Nature Conservancy
- Box Elder, Cache or Rich Counties
- Utah Division of Forestry, Fire and State Lands

F. Documentation of Analysis and Public Involvement.

- See Section VII.

Weber River Basin Forest Legacy Area

A. Map.



Weber River Basin FLA

B. Description of Important Forest Area.

The Weber River Forest Legacy Area covers a total watershed area of approximately 1.5 million acres spread throughout Weber, Davis, Morgan and Summit counties. The river and its tributaries provides an average annual water supply of 979,400 acre-feet from both surface water and groundwater sources. This critical water supply supports 138,600 acres of irrigated agriculture, 420,000 people and several related municipal, commercial and industrial uses. About fifty percent of the FLA ranges from 5900 feet to 7450 feet, with much of the upper regions consisting of high mountain valleys, mountain ranges and high bench areas. Many of Utah's most urbanized and rapidly developing communities lie within this region.

The Weber River basin contains more forested acres than any other river basin in the state and includes 201,960 acres of private forest lands. The breakdown of forest ownership consists of fifty-eight percent private acres, forty percent federal acres and two percent state or other public acres. Prominent forest species in this area include Douglas fir, white fir and quaking aspen with Englemann spruce scattered throughout creek bottoms and higher elevations.

The high mountain areas of this basin are used extensively for a wide variety of outdoor recreational purposes and for production of agricultural crops, livestock and timber. The upper basin contains six ski resorts, seven major reservoirs, a matrix of cross-country skiing and hiking trails and a number of streams utilized by sport anglers, rafters and kayakers. Many private landowners are using forested lands in this region for retirement and recreational homes. Risks to the forest land in this FLA include forest fragmentation and conversion for development, heavy recreational use, fire-related dangers and extensive harvest and grazing.

C. Summary of Important Environmental Values and How They Will be Protected.

Conservation easements should consider the following issues:

- Water quality and supply.
- Threat of conversion.
- Continuation of traditional forest uses.
- Sustainable timber harvest and forest practices.
- Restoration of proper ecosystem functions.
- Possible public access to recreation.
- Protection of critical fish and wildlife habitat.
- Surface and subsurface mineral rights.

D. List of Public Benefits to be Derived.

- Protection of public water supply.
- Continuation of traditional forest uses, including grazing.
- Sustainable timber harvest.
- Valuable wildlife habitat.
- Access to year-round recreation.
- Scenic quality.

E. Identification of Entities that May Participate in Monitoring and Management.

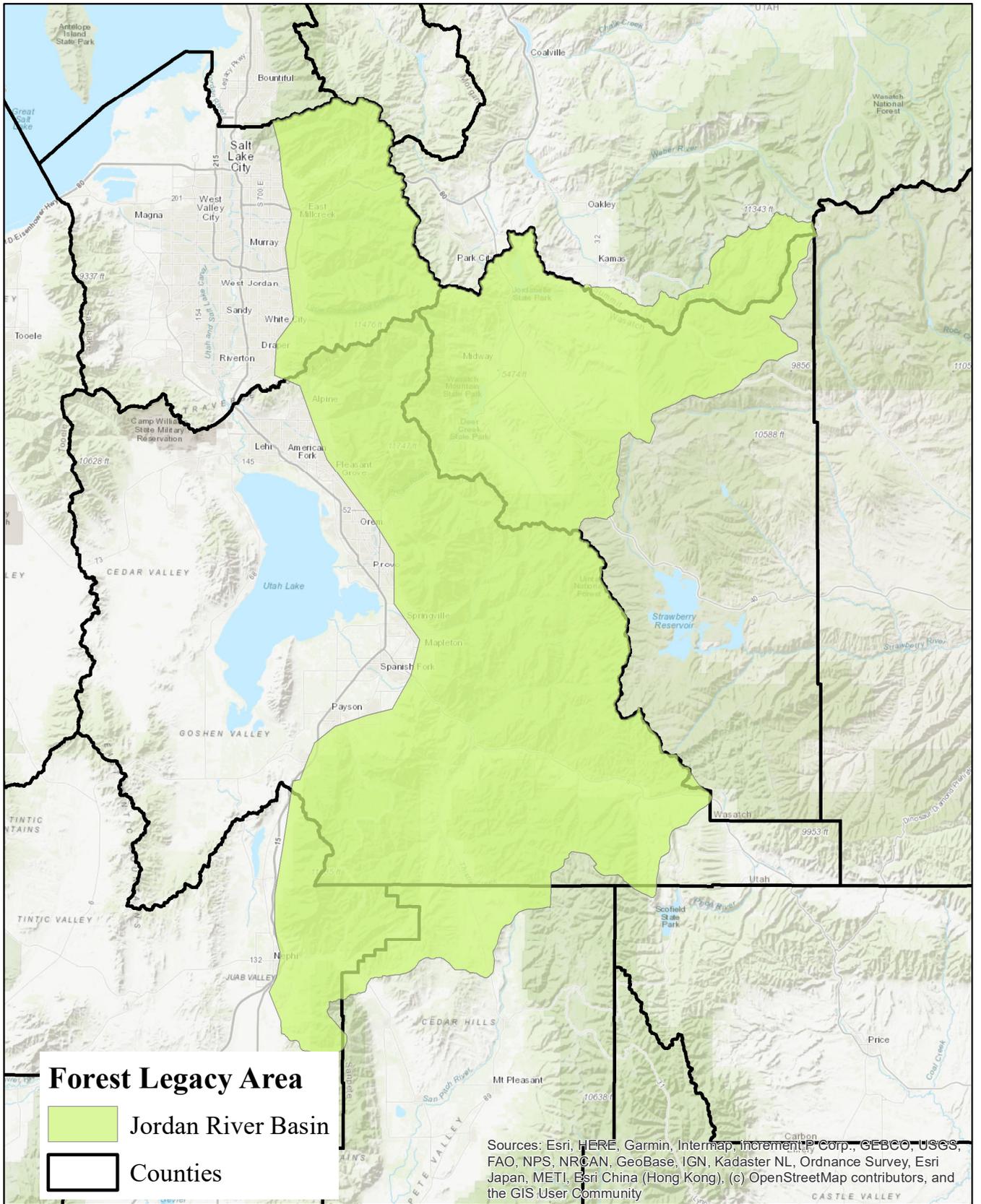
- Utah Open Lands.
- Rocky Mountain Elk Foundation.
- The Nature Conservancy.
- Morgan, Summit and Weber Counties.
- Utah Division of Forestry, Fire and State Lands.

F. Documentation of Analysis and Public Involvement.

- See Section VII.

Jordan River Basin/Utah Lake Forest Legacy Area

A. Map.



Jordan River Basin FLA

B. Description of Important Forest Area.

The Jordan River / Utah Lake Forest Legacy Area is considered unique because of the density and number of people that draw from its existing water supply. The FLA includes much of the Wasatch Front metropolitan area where the majority of Utah's population resides. The area is bounded on all sides by towering mountain ranges including the 11,000-13,000 foot peaks of the Wasatch and Uinta Ranges. Numerous small glacial lakes located in the upper regions of these mountains serve as catchment areas for heavy snowfall and rain. The Provo River and the Spanish Fork River, this region's major tributaries, transport the resulting water supply through the surrounding canyons and down to the valley floor.

Like the other watershed areas along the Wasatch Front, the Jordan River/ Utah Lake area is characterized by forested mountains which rise sharply above the densely populated valley. Nearly eighty percent of the forested lands are contained within the Uinta and Wasatch National Forests. 80,676 acres or seventeen percent is in private ownership with the remaining three percent under the administration of state agencies. Douglas-fir and white fir, Engelmann spruce, occasional Colorado blue spruce and aspen makeup the majority of forest species on both public and private lands.

Almost all of the canyons on the east side of this FLA experience enormous recreational activity. Located within these well-loved sites are six world class ski areas, numerous hiking, mountain biking and horseback riding trails, several resorts and recreational developments and selected restaurants and lodging facilities. The forested lands in this area will shoulder an even greater concentration of visitors with the impending arrival of the 2002 Winter Olympics. Other risks to these forests include water quality degradation, conversion to development and improper timber harvesting practices.

C. Summary of Important Environmental Values and How They Will be Protected.

Conservation easements should consider the following issues:

- Water quality and supply.
- Threat of conversion.
- Continuation of traditional forest uses.
- Sustainable timber harvest and forest practices.
- Restoration of proper ecosystem functions.
- Possible public access to recreation.
- Protection of critical fish and wildlife habitat.
- Surface and subsurface mineral rights.

D. List of Public Benefits to be Derived.

- Protection of public water supply.
- Restoration and maintenance of healthy ecosystem functions.
- Sustainable timber harvest.
- Valuable wildlife habitat.
- Access to year-round recreation.
- Scenic quality.

E. Identification of Entities that May Participate in Monitoring and Management.

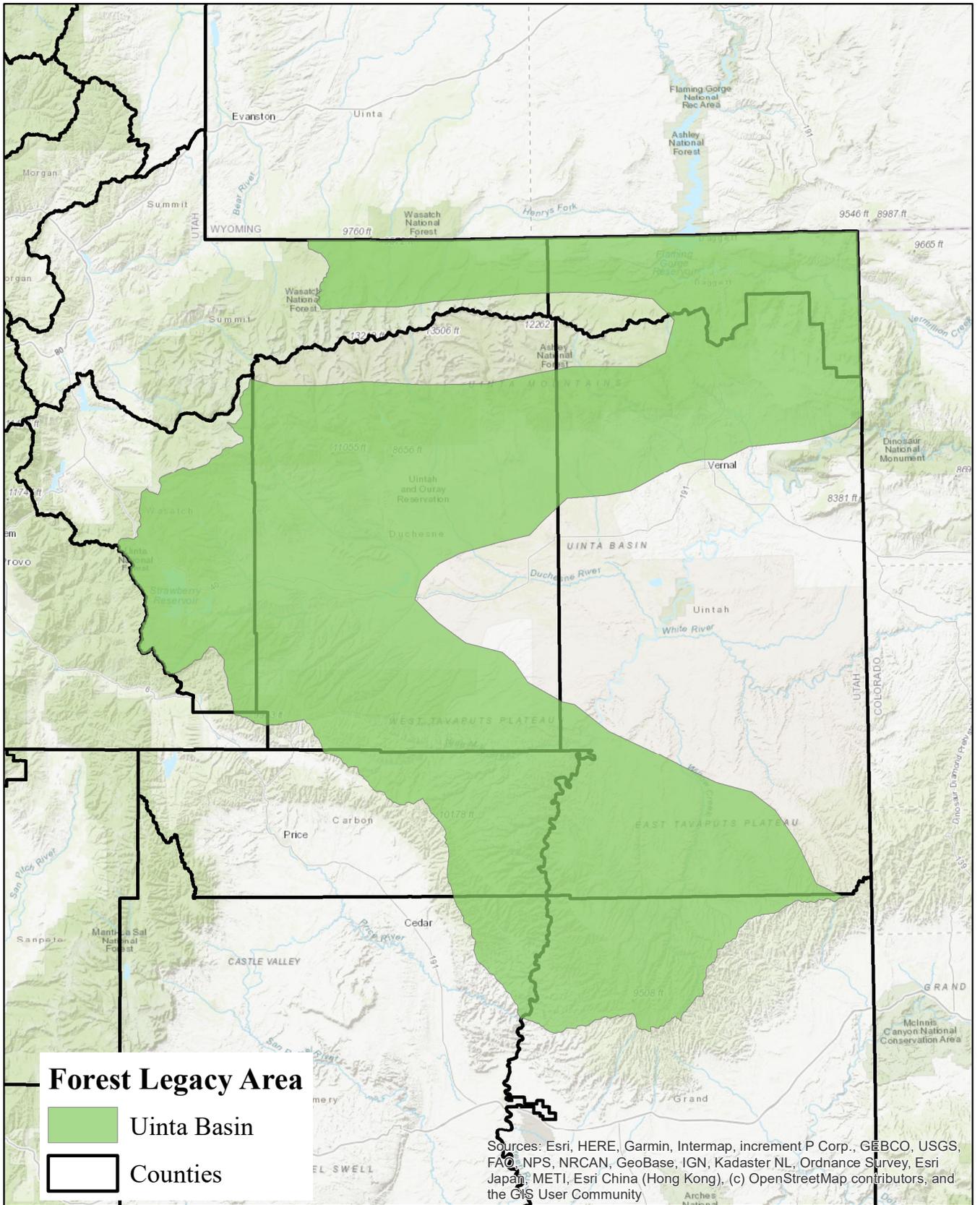
- The Nature Conservancy.
- Utah Open Lands.
- The Rocky Mountain Elk Foundation.
- Salt Lake, Utah and Wasatch Counties.
- Utah Division of Forestry, Fire and State Lands.

F. Documentation of Analysis and Public Involvement.

- See Section VII.

Uinta Basin Forest Legacy Area

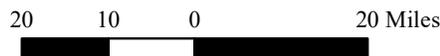
A. Map.



Forest Legacy Area

- Uinta Basin
- Counties

Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), (c) OpenStreetMap contributors, and the GIS User Community



Uinta Basin FLA

B. Description of Important Forest Area.

Although its headwaters are in Wyoming's Wind River Range, the Green River provides the major drainage for the Uinta Basin Forest Legacy Area. Major tributaries of this wandering waterway include the Duchesne, Uinta, Strawberry, White and Yampa Rivers. The striking topography of this region combines the gently rolling floor of the Uintah Basin with the massive beauty of the Uinta Mountain Range. Substantial erosion in the highest reaches of this range reflects the area's long history of glacial activity and its continued role in storing and providing water to the downstream communities of Summit, Duchesne, Wasatch, Uintah and Dagget counties.

Nearly 1.5 million acres of forest land are scattered throughout the higher elevations of the Uinta FLA. Approximately eighty-seven percent of these forests are under the administration of the Wasatch, Ashley and Uinta National Forests and the Uintah and Ouray Native American Tribe. Private landowners oversee 144,982 acres or ten percent of this land, with the remainder in state ownership. The north slope of the Uinta range contains the majority of Utah's lodgepole pine with small pockets of ponderosa pine in selected areas. Other timber species found throughout this region are Douglas-fir, Engelmann spruce, limber pine and aspen.

Communities in the Uinta River Basin have historically served the state in both timber harvest and manufacturing of wood products. Uintah, Summit and Duchesne counties are traditional leaders in both of these areas. Several forested rivers and streams in this FLA support prize-winning fisheries which attract anglers as well as rafters and caulkers to their shores. Other uses of Uinta forest lands include year-round recreation, recreational and resort development and important wildlife habitat. The primary risks to this area stem from rapid conversion for development and improper timber harvesting.

C. Summary of Important Environmental Values and How They Will be Protected.

Conservation easements should consider the following issues:

- Water quality and supply.
- Threat of conversion.
- Continuation of traditional forest uses.
- Sustainable timber harvest and forest practices.
- Restoration of proper ecosystem functions.
- Possible public access to recreation.
- Protection of critical fish and wildlife habitat.
- Surface and subsurface mineral rights.

D. List of Public Benefits to be Derived.

- Sustainable timber industry.
- Maintenance of traditional forest uses.
- Protection of valuable wildlife and fish habitat.
- Protection of public water supply.
- Restoration and maintenance of healthy ecosystem functions.
- Access to year-round recreation.
- Scenic quality.

E. Identification of Entities that May Participate in Monitoring and Management.

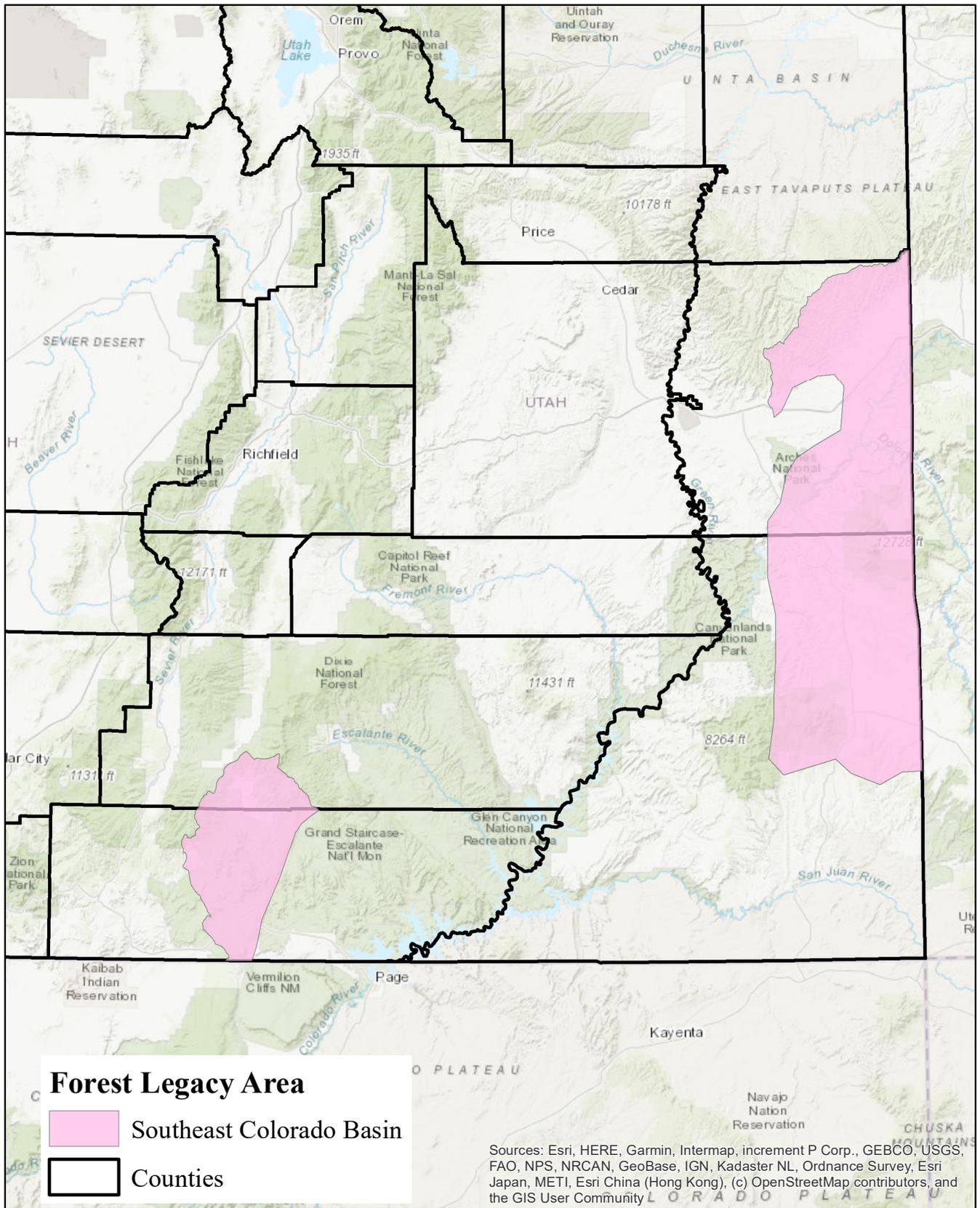
- Utah Open Lands.
- The Nature Conservancy.
- Rocky Mountain Elk Foundation.
- Daggett, Duchesne, Summit, Uintah and Wasatch Counties.
- Utah Division of Forestry, Fire and State Lands.

F. Documentation of Analysis and Public Involvement.

- See Section VII.

Southeast Colorado Basin Forest Legacy Area

A. Map.



Southwest Colorado Basin FLA

B. Description of Important Forest Area.

The Southeast Colorado Forest Legacy Area lies near the center of the vast Colorado Plateau Province and includes portions of the spectacular Canyonlands subdivision, a landscape characterized by arches, spires, needles, broad plains and nearly vertical cliffs. The main channels of the Colorado and San Juan rivers cut through deeply entrenched solid rock canyons in much of this region. Precipitation in the form of rainfall and snowmelt yields the principal water supply used by urban communities and agricultural and industrial interests. This supply is supplemented by inflows from the Dolores, Colorado and San Juan Rivers. Much of the area's culinary water comes through wells which tap the groundwater stores trapped beneath the region's many consolidated sedimentary formations. Dissolved sediments are of concern in both surface and groundwater supplies because of the high saline and mineral content of surrounding rocks and soils.

The Abajo and La Sal Mountain Ranges, with their relatively abundant moisture, contain forests of Douglas fir and ponderosa pine, while pinyon pine and juniper grow on flanking mesas. Other forest species occurring in this region include white fir, subalpine fir and Englemann spruce. Wet areas in the many canyons of this FLA also support precious riparian vegetation. Forest, riparian and other vegetative cover is crucial to this arid landscape because of the need to capture and store all available water. Two endangered fish species, the humpback chub and the Colorado River squawfish, rely on the warm water habitat of the Dolores, San Juan and Colorado Rivers. Healthy populations of mule deer, elk, big horn sheep, mountain lion, coyote and bobcat also call this region home.

Seventy-seven percent of the forests in this region are under federal management, primarily within the Manti-La Sal National Forest. Other federally managed sites include Arches and Canyonlands National Parks, Glen Canyon National Recreation Area, Hovenweep, Natural Bridges and Grand Staircase/ Escalante National Monuments and Grand Gulch and Dark Canyon Primitive Areas. Private landowners administer 20,688 acres or twelve percent of the area's forest land and another 17,270 acres, or eleven percent, are under state administration. Because of their concentration of desirable forest species, San Juan and Kane counties, located within this region, have consistently been two of Utah's most active timber harvesting sites.

Utah's Colorado Plateau region contains an ancient history of human habitation dating back to the early desert archaic peoples and the subsequent Fremont and Anasazi civilizations. As a result, many of the state's most valuable archaeological sites lie within this area. In more recent times, major land uses have shifted from farming and grazing to mineral production, including petroleum, natural gas, uranium and associated metals and potash. Mining industries also consume the largest portion of the region's water, followed closely by irrigation and culinary demands. Tourism and recreation account for increasingly significant portions of the region's economy and for human-related impacts

on the land. Risks to the forest land in this region include water quality and supply, fragmentation of ownership, poor timber harvesting practices and forest health.

C. Summary of Important Environmental Values and How They Will be Protected.

Conservation easements should consider the following issues:

- Water quality and supply.
- Threat of conversion.
- Continuation of traditional forest uses.
- Sustainable timber harvest and forest practices.
- Restoration of proper ecosystem functions.
- Possible public access to recreation.
- Protection of critical fish and wildlife habitat.
- Surface and subsurface mineral rights.

D. List of Public Benefits to be Derived.

- Sustainable timber industry.
- Maintenance of traditional forest uses and culture.
- Protection of valuable wildlife and fish habitat.
- Protection of public water supply.
- Restoration and maintenance of healthy ecosystem functions.
- Access to year-round recreation.
- Scenic quality.

E. Identification of Entities that May Participate in Monitoring and Management.

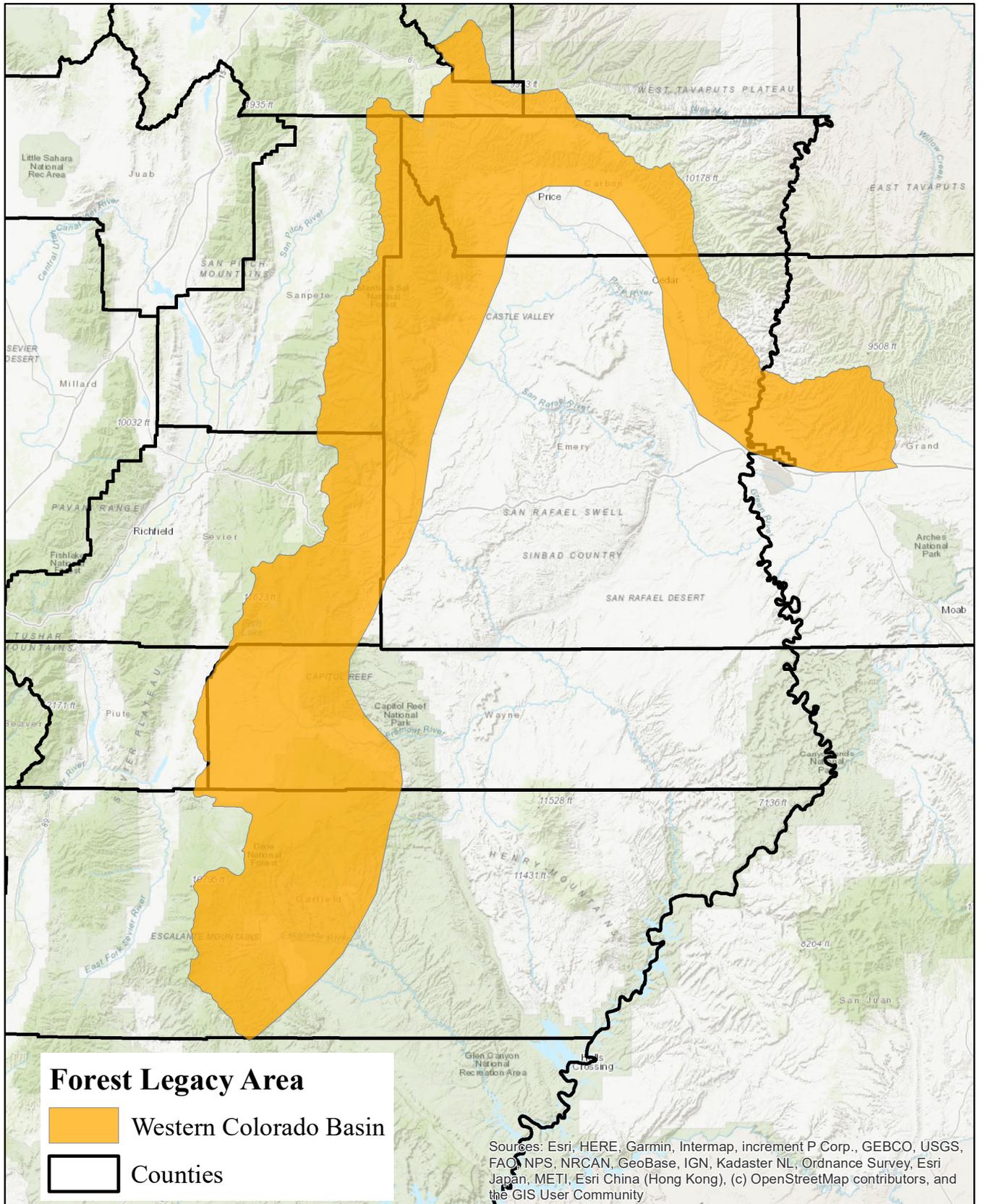
- The Nature Conservancy.
- Rocky Mountain Elk Foundation.
- Grand, Kane and San Juan Counties.
- Utah Division of Forestry, Fire and State Lands.

F. Documentation of Analysis and Public Involvement.

- See Section VII.

West Colorado Basin Forest Legacy Area

A. Map.



Western Colorado Basin FLA

B. Description of Important Forest Area.

The West Colorado Forest Legacy Area lies generally in the High Plateaus subdivision of the Colorado Plateau Province. Major streams flowing from the FLA's higher elevations include the San Rafael, Price, Dirty Devil and Escalante Rivers. High desert conditions predominate over much of this landscape, making capture and storage of available water a crucial issue. Storage reservoirs have been built on most major rivers to help preserve limited water supplies that result from precipitation and surface runoff. Groundwater is available to supplement this use in southern regions of the area, but dissolved solids in underground water of the north makes it unusable for most municipal and agricultural needs. Because of this limitation, healthy forested watersheds are of particular importance to the communities of Carbon and Emery Counties.

Douglas fir and ponderosa pine dominate the forest species in this FLA but are supplemented by stands of subalpine and white fir, Englemann spruce and aspen. Federal ownership accounts for approximately eighty-three percent of this forested acreage and is contained largely in the Manti-La Sal National Forest. Privately owned forests total 131,735 acres or approximately fifteen percent of total forest land. Timber harvesting in this FLA has traditionally been centered in Wayne County but is spreading throughout the area as a result of falling cattle prices and escalating timber markets. Coal mining and coal-fired electric power plants comprise the region's major industries. Livestock grazing and agricultural production are the major land uses.

Important upland and big game habitat overlays many of the forest and woodland zones in this FLA and provides added incentive for recreational use. The fascinating landscape of the San Rafael Swell, primarily managed by the BLM, runs throughout the West Colorado area and joins Canyonlands and Capitol Reef National Park in drawing outdoor enthusiasts to the state. Risks to forest land throughout the West Colorado region include fragmentation and conversion to development, improper and over-extensive timber harvest, water quality and supply and pressure for public recreation.

C. Summary of Important Environmental Values and How They Will be Protected.

Conservation easements should consider the following issues:

- Water quality and supply.
- Threat of conversion.
- Continuation of traditional forest uses.
- Sustainable timber harvest and forest practices.
- Restoration of proper ecosystem functions.
- Possible public access to recreation.
- Protection of critical fish and wildlife habitat.
- Surface and subsurface mineral rights.

D. List of Public Benefits to be Derived.

- Protection of public water supply.
- Sustainable timber industry.
- Maintenance of traditional forest uses and culture.
- Protection of valuable wildlife and fish habitat.
- Restoration and maintenance of healthy ecosystem functions.
- Access to year-round recreation.
- Scenic quality.

E. Identification of Entities that May Participate in Monitoring and Management.

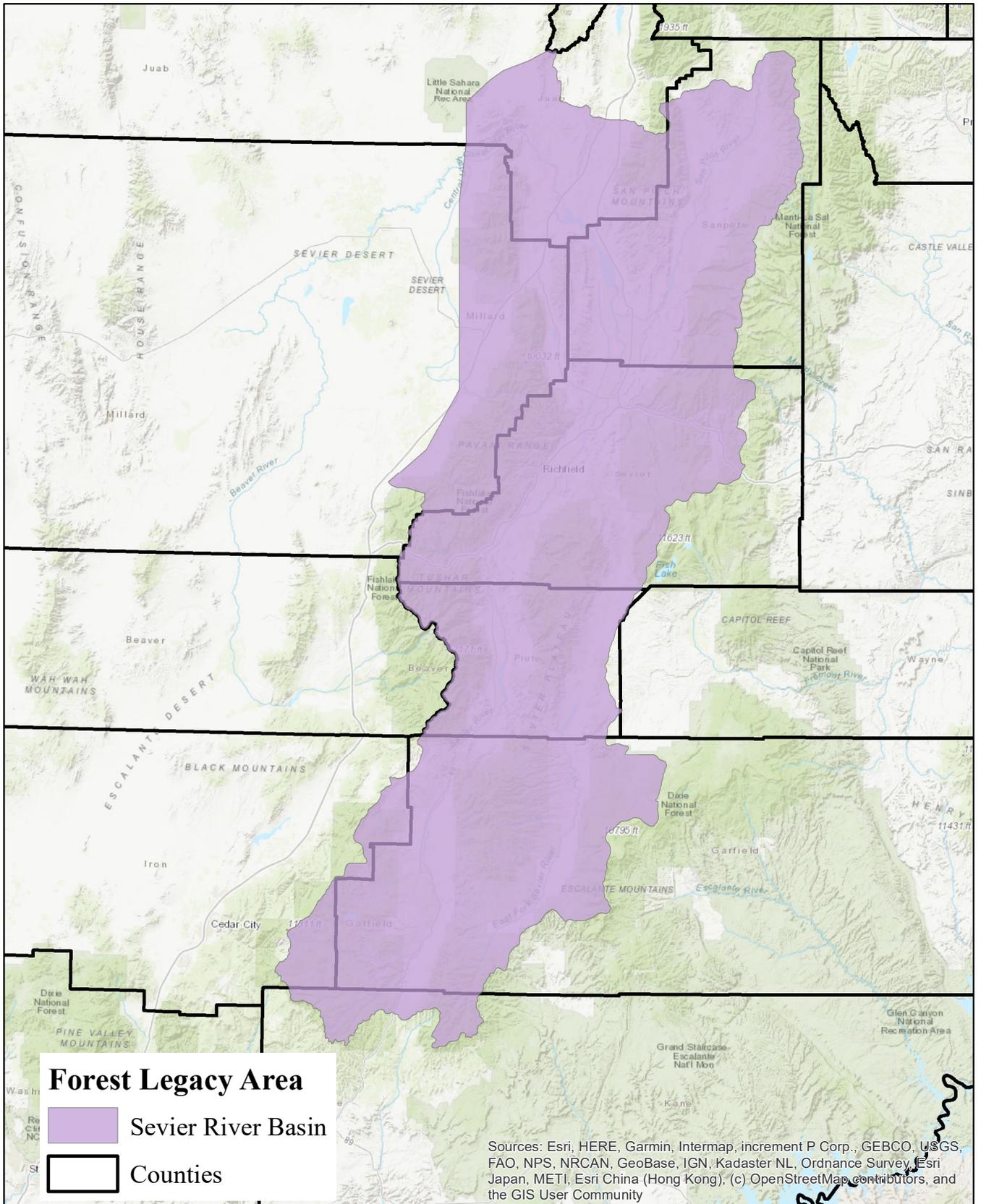
- The Nature Conservancy.
- Rocky Mountain Elk Foundation.
- Carbon, Emery, Garfield, San Juan and Wayne Counties.
- Utah Division of Forestry, Fire and State Lands.

F. Documentation of Analysis and Public Involvement.

- See Section VII.

Sevier River Basin Forest Legacy Area

A. Map.



Sevier River Basin FLA

B. Description of Important Forest Area.

The Sevier River Forest Legacy Area lies in a major landlocked drainage of the Great Basin located in south-central Utah. The region's namesake once flowed into Sevier Lake but irrigation developments since the turn of the century have depleted the river so that only occasional flows now reach the lakebed. The lofty peaks of the Wasatch Range divide this FLA between the High Plateaus region to the east and the Basin and Range Province to the west. Virtually all of the area's domestic and irrigation water is produced in these mountain regions. The topography of the Sevier River FLA contains some of the state's outstanding geological features, including the colorful Markagunt and Paunsaugunt Plateaus which contain the river's headwaters.

Aspen comprises the dominant timber species in this area but Douglas-fir and ponderosa pine are the region's high value commercial types. Other forest species scattered throughout the western half of this FLA include subalpine and white fir, lodgepole pine, Englemann spruce and aspen. Federal managers in the Fishlake and Dixie National Forests administer eighty-nine percent of these forest lands while private owners retain 88,881 acres or 8.6 percent. Bryce Canyon National Park and Cedar Breaks National Monument represent areas of additional federal ownership.

Residents of the Sevier River Basin have a long history of managing their timber resources for harvest. As Forest Service restrictions on this harvest increase, logging companies are increasingly turning to private landowners to make up the difference. Forest lands of all ownership also experience tremendous scenic and recreational use in this region. Thousands of visitors return year after year to enjoy the spectacular vistas and richly forested pathways of areas such as Skyline Drive which follows the divide between the Colorado and San Pitch Rivers. Risks to forested lands within this FLA include forest health issues, improper and degrading timber harvests, fragmentation of ownerships and conversion to residential development.

C. Summary of Important Environmental Values and How They Will be Protected.

Conservation easements should consider the following issues:

- Water quality and supply.
- Threat of conversion.
- Continuation of traditional forest uses.
- Sustainable timber harvest and forest practices.
- Restoration of proper ecosystem functions.
- Possible public access to recreation.
- Protection of critical fish and wildlife habitat.
- Surface and subsurface mineral rights.

D. List of Public Benefits to be Derived.

- Protection of public water supply.
- Sustainable timber industry.
- Maintenance of traditional forest uses and culture.
- Protection of valuable wildlife and fish habitat.
- Restoration and maintenance of healthy ecosystem functions.
- Access to year-round recreation.
- Scenic quality.

E. Identification of Entities that May Participate in Monitoring and Management.

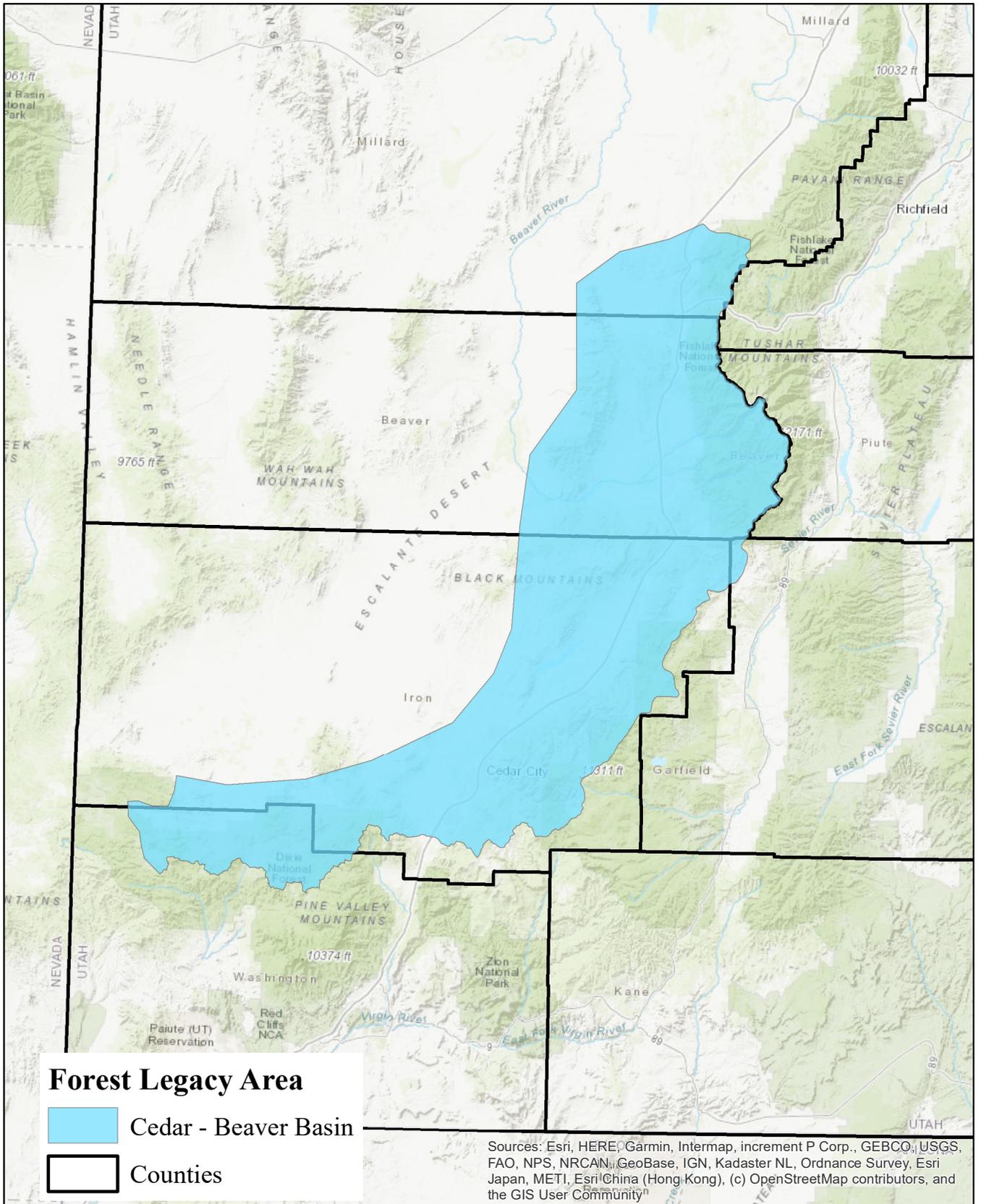
- The Nature Conservancy.
- Rocky Mountain Elk Foundation.
- Beaver, Garfield, Juab, Kane, Millard, Piute, Sevier, San Pete and Washington Counties.
- Utah Division of Forestry, Fire and State Lands.

F. Documentation of Analysis and Public Involvement.

- See Section VII.

Cedar-Beaver Basin Forest Legacy Area

A. Map.



Cedar- Beaver Basin FLA

B. Description of Important Forest Area.

Waterways of the Cedar-Beaver Basin flow into the Sevier River and follow its termination into the closed Great Basin drainage. Erratic precipitation patterns and an arid climate have left this area with a limited water supply, the quality of which is threatened by extensive grazing, recreation and development near critical springs and streams. Culinary water demands are expected to increase by seventy-two percent during the next three decades as Cedar City, the region's urban center, continues to experience significant population growth and economic expansion. Secondary systems can conserve some of this culinary water for later use, but long-term planning will be needed if the area's growth is to continue.

Forest lands in the Cedar-Beaver area are concentrated along the basin's southwest border. Commercial timber species consist mostly of Douglas fir, white fir, spruce and quaking aspen. Pinyon-juniper associations cover lower elevations. The Fishlake and Dixie National Forests manage approximately seventy percent of the basin's productive timberlands, while private forest owners maintain an additional 29,569 acres. The only intensive timber management in the area occurs in the Beaver River drainage on the Tushar Mountains and in the Parowan Creek and Coal Creek drainages. Commercial logging and processing operations are located in the communities of Beaver, Cedar City and Panguitch. Woodland acreages are harvested for Christmas trees, fire wood, fenceposts and pine nuts.

Approximately ninety percent of the Cedar-Beaver area is used for extensive grazing of livestock. Several wildlife populations, including a herd of wild horses, also find cover and forage on the region's varied landscape. Much wildlife habitat in the area is in need of improvement as a result of degradation caused by overgrazing and diversion of water. Residential development and increased recreational activity in surrounding forests and canyons have added additional detriment to vital springs and riparian areas. Risks to private forest lands in this area include conversion to development, on-going forest health problems, fire risk from interface activity and pressure from recreation and improper timber harvesting activities.

C. Summary of Important Environmental Values and How They Will be Protected.

Conservation easements should consider the following issues:

- Water quality and supply.
- Threat of conversion.
- Continuation of traditional forest uses.

- Sustainable timber harvest and forest practices.
- Restoration of proper ecosystem functions.
- Possible public access to recreation.
- Protection of critical fish and wildlife habitat.
- Surface and subsurface mineral rights.

D. List of Public Benefits to be Derived.

- Protection of public water supply.
- Sustainable timber industry.
- Maintenance of traditional forest uses and culture.
- Protection of valuable wildlife and fish habitat.
- Restoration and maintenance of healthy ecosystem functions.
- Access to year-round recreation.
- Scenic quality.

E. Identification of Entities that May Participate in Monitoring and Management.

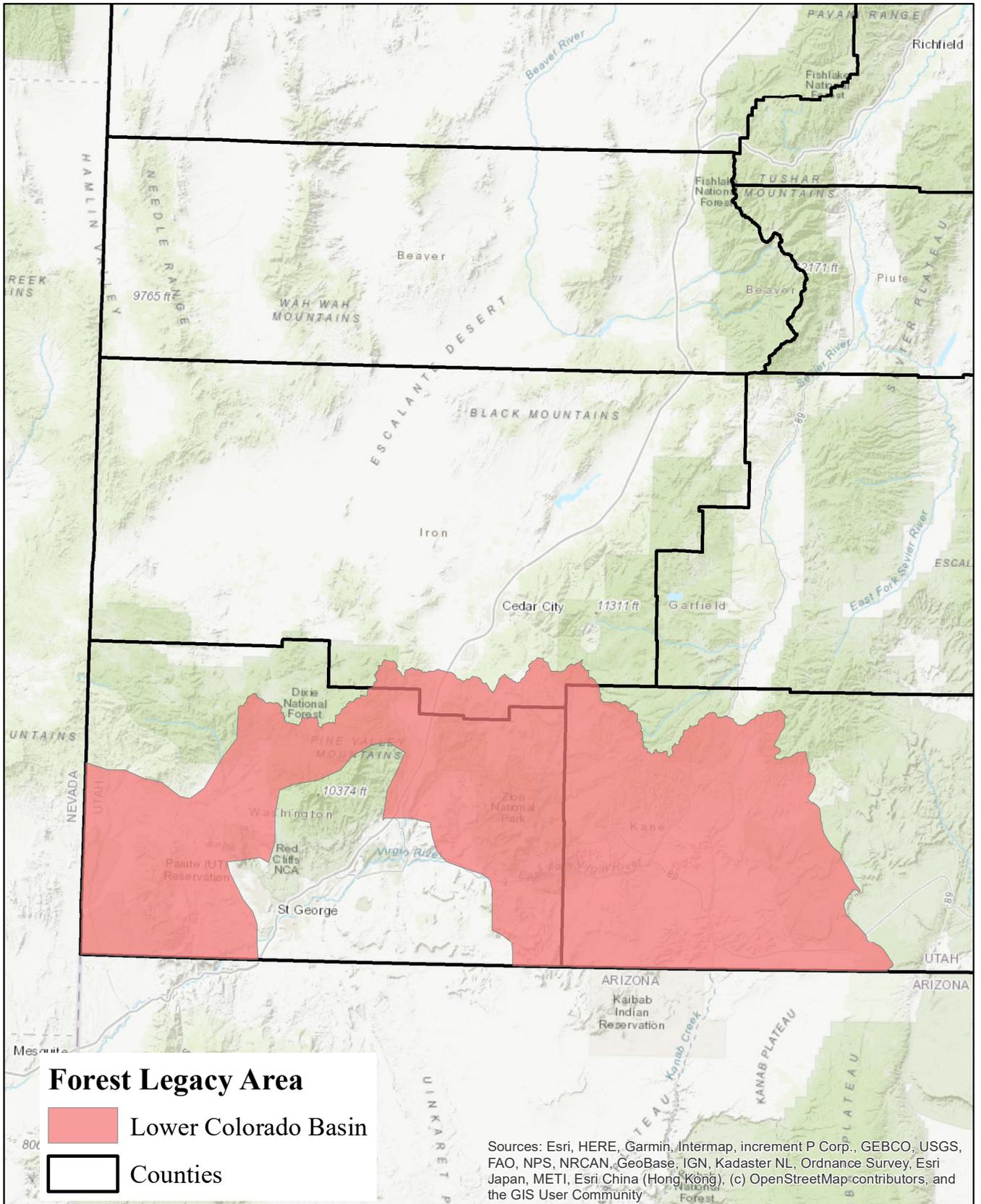
- The Nature Conservancy.
- Beaver, Iron, Millard and Washington Counties.
- Utah Division of Forestry, Fire and State Lands.

F. Documentation of Analysis and Public Involvement.

- See Section VII.

Lower Colorado Basin Forest Legacy Area

A. Map.



Lower Colorado Basin FLA

B. Description of Important Forest Area.

The Lower Colorado FLA is bounded on all sides by the striking mountain ranges and colorful plateaus which characterize much of southern Utah. The jagged Hurricane Cliffs divide the region between the Colorado Plateau Province to the east and the St. George Valley and Pine Valley Mountains to the west. Major waterways in the area include the Virgin River, which flows into Lake Mead near Las Vegas, Nevada, and Kanab Creek which joins the Colorado River in Arizona. The major water producing regions of the Basin lie in the North Fork Area of the Virgin River and in the high elevations of the Pine Valley Mountains and Paunsaugunt Plateau.

Pinyon-juniper associations represent the region's most prevalent vegetative cover but scattered stands of aspen and ponderosa pine line canyon rimlands and mixed conifer species grow along the steep slopes of mountain watersheds. Private landowners account for thirty-eight percent of the total forest acreage in this area. The remaining sixty-two percent lies within the southern boundaries of the Dixie National Forest. Despite the presence of commercially valuable timber, harvesting activity has not been emphasized in this region because of the recreational goals and fragmented acreages of landowners. In addition, many ponderosa pine stands occur on rims close to Zion National Park making harvesting both difficult and environmentally sensitive.

Several wildlife species frequent the varied habitats of the Lower Colorado. The Virgin River, Santa Clara River and West Fork of the Beaver Dam Wash are all important habitat for migrating bald eagles and waterfowl. Both cold and warm water fisheries also thrive in the area providing habitat to rainbow, cutthroat and brown trout as well as largemouth bass, bluegill and channel catfish. The woundfin minnow and Virgin River roundtail chub are endangered species found only in the Virgin River. Hunting, fishing and wildlife observation draw many visitors to this basin's forested areas, where hikers, bikers, campers and other recreationists also enjoy the scenic landscape.

Washington County and its captiol seat of St. George have exhibited record population growth over the past five years. The area's pleasant climate, appealing surroundings and prosperous economy make this growth likely to continue, placing added demands on already taxed water and forest resources. Residential development and construction of recreational cabins represent a significant risk to forest lands in this FLA. Other risks include ongoing forest health problems and degradation as a result of dispersed recreation.

C. Summary of Important Environmental Values and How They Will be Protected.

Conservation easements should consider the following issues:

- Water quality and supply.
- Threat of conversion.

- Continuation of traditional forest uses.
- Sustainable timber harvest and forest practices.
- Restoration of proper ecosystem functions.
- Possible public access to recreation.
- Protection of critical fish and wildlife habitat.
- Surface and subsurface mineral rights.

D. List of Public Benefits to be Derived.

- Protection of public water supply.
- Sustainable timber industry.
- Maintenance of traditional forest uses and culture.
- Protection of valuable wildlife and fish habitat.
- Restoration and maintenance of healthy ecosystem functions.
- Access to year-round recreation.
- Scenic quality.

E. Identification of Entities that May Participate in Monitoring and Management.

- Virgin River Land Preservation Association.
- The Nature Conservancy.
- Kane and Washington Counties.
- Utah Division of Forestry, Fire and State Lands.

F. Documentation of Analysis and Public Involvement.

See Section VII.

VII. PUBLIC ATTITUDES AND INVOLVEMENT

Utah residents are no strangers to the complicated issues of land use and natural resource management. Many local families have been living from and caring for the Utah landscape through several generations, while more recent arrivals have discovered a natural beauty and solitude they believed had been lost to rampant urbanization. In this state, everyone has an opinion regarding proper stewardship of the natural environment. Governor Mike Leavitt and bi-partisan leaders of the Utah Legislature hoped to turn this collective concern into solutions by announcing, in the summer of 1995, a statewide summit addressing the challenges of unprecedented growth. Specific topics of concern for this three-day event included transportation, water and open space.

Preparations for this Growth Summit, titled “Preserving a Century of Quality,” involved widespread citizen participation, including several local, county and state forums, a legislative task force on land conservation, extensive newspaper and television coverage and a statewide survey of public attitudes. From the July announcement to the December meeting date, private and governmental working groups developed over sixty proposals suggesting ways that Utah might preserve its enviable quality of life. In October of 1995, the Legislature’s Land Conservation Task Force and a private organization known as Coalition for Utah’s Future: Project 2000 co-sponsored an Open Space Conference to discuss specific open space preservation proposals for consideration during the Summit. Over 200 farmers, ranchers, business representatives, conservationists, outdoor recreationists, land trust representatives, developers, sportsmen and city, county, state and federal officials came together to discuss and develop ways to protect open space in Utah.

As a result of this focus on open space, much of the Summit’s public involvement directly addresses issues of concern to Utah’s Forest Legacy Program. Topics such as funding mechanisms, tools needed by local governments, educational and financial assistance for landowners, conservation easements and involvement of private land trusts came under intense scrutiny by a variety of interests. An extensive list reflecting the many meetings, proposals, news articles and reports generated by this public process is contained on the following pages. Appendix H provides additional examples of related written materials.

To assist in the development of its AON, the Utah Division of Forestry, Fire and State Lands also solicited the input of several groups and individuals involved with the management and ownership of Utah’s private forest lands. This effort included meetings of the Division’s Forest Stewardship Coordinating Committee, Forestry, Fire and State Lands Advisory Council and Forest Practices Task Force. A list documenting these and other Legacy-related gatherings is also included in the pages to follow. The Division will enlist more focused and active involvement from private landowners, local governments and organizations as it moves forward in implementing the Forest Legacy Program in individual Forest Legacy Areas.

Despite the monumental gathering facilitated by the Growth Summit, discussion regarding the management of Utah’s open lands and natural resources continues at a high pitch. In the spring of 1996, Governor Leavitt issued an executive order creating the Utah Open Lands Committee, an

organization he hopes will catalyze locally-initiated efforts to conserve open lands. When asked why he has placed so much importance on this initiative, Leavitt offered the following explanation. The same could be said of Utah's private forests.

Part of the heritage of Utah is the patchworks of green that dot our landscapes... the fields where we grow crops and learn the value of hard work, the wide open pastures where wildlife roam. As we plan for the future, we have the opportunity and responsibility to protect this sacred heritage. There is only one chance to protect open space. When it's gone it's gone. If we plan carefully now, we can build homes and save open lands. It is our duty to protect our land so that our children and grandchildren can enjoy the beauty and traditions we have known.

Meetings, Articles and Other Public Involvement

A. Utah Growth Summit / Open Space Conference

·Newspaper Articles

Deseret News

6/21/95	Canyon put in the hands of Ma Nature
7/21/95	Farmers, landowners close in on ways to preserve open space
7/21/95	Private Property: Taking an environmentalist tack
10/8/95	Agricultural land getting farmed out to developers
11/16/95	Forum focuses on growth vs. open spaces in Utah
11/21/95	Open spaces not open and shut
2/20/96	Rural lawmakers, Leavitt team up to save open spaces
5/18/96	Open warfare erupts over open lands

Mountain Times

April 1996	Open space too scary for legislature
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Provo Daily Herald

11/12/95	New growth solution offered
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Salt Lake Tribune

8/27/95	Leavitt's summit of discontent
11/12/95	Statute may save Oakley farms from bumper crop of developers
11/14/95	Trio of meetings will try to get a grip on growth
11/17/95	How to save open spaces
12/5/95	Utah must keep growth appetite from devouring open spaces
2/11/96	Despite summit, open space fails to spark debate
2/15/96	Saving the lands that developers forgot
2/20/96	Bill aims to save open spaces

3/10/96 Utah counties among fastest growing in U.S.
3/13/96 Bill to preserve farms didn't preserve funds
5/18/96 Governor to create lands panel
5/31/96 Good step on open space
7/4/96 On the trail of open space

Utah Watershed Review

March/April 1996 Vetoed SB48 recommended for special session
SB48 sponsor vows to introduce it again next year

·**Legislative Committees**

Land Conservation Task Force
State and Local Affairs Interim Committee
State Water Development Commission
Utah Tomorrow Strategic Planning Committee

·**Working Groups**

Democratic Working Group
Local Government Working Group
(Included input from fifty-one organizations involved with local government)
Republican Working Group

·**Organizations/ Individuals Presenting Open Space Proposals** (copies available)

American Planning Association
Audubon Society
Citizen's Committee to save our Canyons
Coalition for Utah's Future / Project 2000
Conference of Salt Lake Valley Mayors/ Salt Lake County Council of Governments
Home Builders Association of Utah
Land Conservation Task Force
League of Women Voters
Martha Crocker (Private Citizen)
Utah Association of Conservation Districts
Utah Association of Realtors
Utah Center for Rural Life
Utah Farm Bureau
Wasatch Front Resource Conservation and Development Council
Warren Peterson (Private Citizen)
Wasatch Front Regional Council

·**Televised Public Meetings**

December 6-8, 1995

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APPENDIX A

UTAH'S PRIVATE FOREST LAND CHARACTERISTICS

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EXECUTIVE SUMMARY

Utah's forests are important sources of wood, water, grazing, wildlife habitat, and recreational opportunities. Though the bulk of these forests are publicly owned, private forests are providing increasing amounts of wood as supply from public lands dwindles. The following are some of the most important points to be made about these private forests:

- Private forests (excluding woodlands) make up about 20% of Utah's commercial forests or timberlands and about 1.1% to 1.5% of the state's total land area.
- Much of this private forest land forms a fringe around much larger tracts of public forest.
- Summit, Carbon, Wasatch, and Morgan counties contain nearly half of Utah's private commercial forest or land, with a total of about 400 thousand acres.
- 62% of Utah's private forest lands are aspen dominated forest types. Much of this aspen is likely old and declining due to fire suppression, but aspen is fairly easily regenerated after clearcutting with some precautions.
- Lodgepole pine types amount to about 2% of private forest land and are also fairly easy to regenerate with clearcutting, though clearcut openings must usually be kept small due to a general lack of cone serotiny in this species in Utah.
- Other private forest land types in Utah include mountain fir (19%), ponderosa pine (10%), and spruce-fir (7%). These types are much more difficult to regenerate after logging or other disturbances, yet their presence in the state is very valuable from a forest products, wildlife, and watershed standpoint.
- More of Utah's total timber harvest (at least 17%) is coming from private forest lands than in the past, amounting to 10.7 million board feet in 1992. This figure has likely increased in the last few years.
- Only about 15% of private forest land shows evidence of past logging, with most of that (75%) having occurred before 1985. Over one-third of this harvest occurred in the Northeast Multi-County Planning Area, with little harvest occurring in the Wasatch Front and Central Areas.
- The Weber River Watershed Management Unit has the largest proportion of its area in private land at 12.9% (202 thousand acres); its total forest coverage in all ownerships was also the highest at 22.2%.
- The Uinta Unit has the most forest in all ownerships with nearly 1.5 million acres and 21.2% of its land area, followed by the Sevier River Unit at just over one million acres, but only 15.3% of its area. The Lower Colorado Unit has the least forest area at 72 thousand acres.
- The Uinta and West Colorado Units each have over 100 thousand acres of private forest, but private forest as a proportion of their total land area is only 2.1% and 1.3% respectively.

- The Bear River and Jordan River Units are next to the Weber River Unit in private forest land acreage as a proportion of their total area at 4.0% and 3.3% respectively.

- The Southeast Colorado and GSL Desert/Columbia Units have the lowest amounts and proportions of private forest land.
- Half of these forests occur at elevations between 7,500 and 8,500 feet.

OVERVIEW

This project involved gathering data from a number of sources to accurately represent acreages, locations, and other characteristics of Utah's private forest lands. Of particular interest were private commercial forest lands, sometimes called timberlands, that produce or are capable of producing crops of industrial wood. Timber-related activities taking place on these lands also were of interest, though availability of such information was limited.

Maps showing forest land locations, acreages, and other information were derived from a geographic information system (GIS) that included vegetation, ownership, and other pertinent data layers. Data also were obtained from the USDA Forest Service, including inventory data that gives some indication of the extent and timing of private land timber harvest activities.

The following sections include a short description of methods used and a qualitative and quantitative assessment of the data presented on the GIS-derived maps and obtained from the Forest Service.

METHODS

This project involved obtaining as much information about Utah's private forest lands (and nearby public lands) as possible in a short time (less than two months). Therefore, existing information sources were utilized, including GIS-based data from the Utah Gap Analysis Program to assess acreages and locations of various forest types by different ownerships, data from previously published Forest Service reports for statewide acreage summaries, and unpublished data from a recent (1991-95) Forest Service forest inventory of Utah for acreage summaries and indications of private timber harvest activity.

The Utah Gap Analysis Program (Utah Cooperative Research Unit, Utah State University, Logan, UT 84322-5210; biod@nr.usu.edu) has developed a GIS that contains many data layers that were of interest in this study. In particular, we used the Gap vegetation layer to characterize the locations and acreages of various forest types, the Gap ownership layer to characterize public versus private ownership, and several other Gap features including watershed boundaries, county lines, county seats, and lakes (Edwards *et al.* 1995).

The Gap vegetation layer was primarily derived from Landsat Thematic Mapper scenes taken in 1988 and 1989 with subsequent field checking at 1,758 field training sites. Overall accuracy of the GAP cover type mapping is 75.3%. Gap ownership data were obtained from BLM 1:100,000-scale Surface Management Status maps. The minimum ownership parcel size mapped was 40 acres, while the minimum parcel size we used for vegetation was 5 hectares (12.35 acres).

The GIS was used to make several maps with acreage summaries, including 1) a map of the state's private, federal, and state forests (found earlier in this report); 2) a map of the state's

non-federal (private and state) forests by watershed management unit (found earlier in this report); 3) a map of non-federal land in ten commercial forest types (roughly equivalent to timberland); 4) a map of non-federal timberlands versus private woodlands (less productive lands, with non-commercial species); and 5) a map of private timberlands by 1,000 foot elevation intervals. For Utah Gap program details, contact the author or the Gap program at the address noted above. A web page also is available that contains a great deal of information about the Gap program, including a Gap Analysis Encyclopedia. Its Universal Resource Locator (URL) is:

<http://www.gap.uidaho.edu/gap/index.html>

Forest Service data also were used, including several figures from a 1992 summary of U.S. forest resources statistics (Powell *et al.* 1993). Most of the figures for Utah in this reference date from before 1987. We also obtained preliminary forest inventory figures on private forest land from the USDA Forest Service Intermountain Research Station Inventory, Monitoring, and Evaluation Unit (507 25th St., Ogden, UT 84401; (801)625-5388). This inventory is part of a continuous forest inventory that the Forest Service conducts in each state approximately every 10 years, with the most recent data collected for Utah between 1991 and 1995.

It is difficult to compare seemingly similar acreages from Gap, the 1993 Forest Service report, and the recent Forest Service inventory, and discrepancies can be found. These discrepancies stem from differences in techniques and in cover type definitions and from error inherent to the inventory and remote sensing techniques. Some of the figures presented in Powell *et al.* (1993) include Indian Lands as private lands, while Indian Lands were included under federal lands in the Gap analysis we conducted. Wherever possible we have pointed out or attempted to reconcile such discrepancies in this report. All maps produced in this report are derived from Gap data layers, while some tabular data is based on Forest Service figures.

RESULTS: UTAH'S PRIVATE FORESTS

General Description of Utah's Forests

Utah's forests are scattered throughout the state, with water availability the primary limiting factor. Forests therefore occur mostly at higher elevations (above 5,000 feet) where precipitation is adequate, though forest presence and species composition at various elevations is heavily influenced by slope, aspect, soil, fire and other disturbance history, and climatological variation on a local or regional scale. Some forests even occur at fairly low elevations along riparian corridors. Most of Utah's forests are located in a north-south band roughly paralleling Interstate 15, with other significant forest areas in the Uinta, La Sal, and Raft River Mountains (Van Hooser and Green 1983).

Following an elevational gradient from low tree line to high tree line, forest or woodland cover types found in Utah include oak-mountain mahogany, pinyon-juniper, ponderosa pine, Douglas-fir, aspen, lodgepole pine, and spruce-fir (Long 1995). Commercial forests or

timberlands are all at higher elevations and consist mostly of coniferous species, though aspen is becoming increasingly valuable as markets are developed.

Utah’s forests have been heavily used since European settlement in the mid-1800’s for wood products, grazing, recreation, wildlife habitat, and as critical watershed areas. More recently, recreation has become the dominant use of most of Utah’s public and private forests. Uses of Utah’s forests will be covered in detail in a later section.

Land Areas

Utah’s land area is about 53 million acres, with nearly a third of that forest (including timber and woodlands)(Table 1). This proportion is similar to that for the entire United States, which is 33% forested. Timberland (reserved or non-reserved forest land producing or capable of producing crops of industrial wood) makes up 3.4 million acres or about 21% of the state’s forest land, with the remainder in less productive or less commercially valuable woodlands like pinyon-juniper, oak, and maple. Differences between Gap and Forest Service timberland figures may partly be due to differences in definitions of timberland and Gap forest types used.

Table 1. Utah’s total area and area in various forest classes as of 1987. Discrepancies in sums and percentages may occur due to rounding errors. Source Powell *et al.* (1993) and Utah Gap.

Land Types	Acreage (1,000's of acres; <i>Gap figures in italics</i>)	Percent of Total
Timberland	3,424 (<i>5,156</i>)	6.6% (<i>9.5%</i>)
Other (mostly woodland)	12,809	24.4%
Total Forest Land	16,234	31.0%
Other Non-forest Land	36,354	69.0%
Total State Area	52,588	100%

Ownership

Ownership of Utah’s timberlands is primarily public (80.6%), with most of that administered by the USDA Forest Service (Table 2). The remainder is in private, non-industrial ownership, with Powell *et al.* (1993) showing 597,000 acres of private timberland in 1987, or about 1.1% of the state’s total land area. Gap showed about 834 thousand acres of the types we included in commercial forest, closer to the Forest Services figures from 1952, 1962, and 1977 of

824, 821, and 735 thousand acres respectively (Powell *et al.* 1993)(see map titled “Utah’s Private and Public Forests” earlier in this report). Again, differences in definitions of timberland and the Gap forest types we included as commercial account for the discrepancies between Forest Service and Gap acreages. For example, the Forest Service in 1978 showed less than one-half of the state’s aspen acreage as commercial timberland (Van Hooser and Green 1983), while with Gap we had no way to distinguish between commercial and non-commercial areas within a forest type.

Table 2. Utah timberland (not including woodlands) ownership in 1987. Discrepancies in sums and percentages may occur due to rounding errors. Source Powell *et al.* (1993) and Utah Gap.

Utah Timberland Owners	Acreage (1,000's of acres; <i>Gap figures in italics</i>)	Percent of Total Timberland (Percent of Utah’s Total Area)
National Forest	2,108	68.5%
BLM	175	5.7%
Other Federal	31	1.0%
Total Federal Timberland	2,314	75.2% (4.4%)
State	150	4.9%
County, Municipal	17	1.0%
Total Public Timberland	2,481 (4,323)	80.6% (4.7%)
Farmers/Ranchers	318	10.3%
Non-Farmers/Ranchers	279	9.1%
Total Private Timberland	597 (834)	19.4% (1.1%)
Total Public Timberland	2,481 (4,323)	80.6% (4.7%)
Total Timberland	3,078 (5,156)	100% (5.8%)

Private, federal, and state commercial forest distribution (calculated from Gap) is shown in Table 3 and in the map titled “Utah’s Private and Public Forests” included earlier in this report. In nearly all cases, private forests comprise a fringe around larger public forest tracts, primarily National Forest. Most timberland and woodland is in northern Utah (from “Utah Private Forests

and Woodlands” map that shows private woodland acreage and distribution). Summit, Carbon, Wasatch, and Morgan counties contain nearly half (48%) of Utah’s private commercial forest lands and have over 10% of their land area in private forest (Table 3). Summit and Carbon counties alone contain 32% of Utah’s private forest land. The Northeastern Area contains much more private forest than any other at about 283 thousand acres and 3.8% of its land area.

Table 3. Commercial forest acreage (from ten Gap timber types) by county and by State of Utah Multi-County Planning Area. Percentages indicate the proportion of a county or area (or the state) in forest in a particular ownership. Discrepancies in sums and percentages may occur due to rounding errors. Source Utah Gap.

County and Multi-County Planning Area (County/Area Acreage)	Private Forest Acreage	Public/Federal Forest Acreage	Public/State Forest Acreage	Forest Acreage Totals
Box Elder (4,314,455 ac)	8,232 ac (0.2%)	17,594 ac (0.4%)	562 ac (0.01%)	26,388 ac (0.6%)
Cache (750,170 ac)	43,070 ac (5.7%)	96,626 ac (12.9%)	14,189 ac (1.9%)	153,885 ac (20.5%)
Rich (694,744 ac)	18,915 ac (2.7%)	31,282 ac (4.5%)	1,739 ac (0.3%)	51,937 ac (7.5%)
Weber (421,993 ac)	31,019 ac (7.4%)	21,649 ac (5.1%)	1,810 ac (0.4%)	54,478 ac (12.9%)
Bear River Area (6,181,362 ac)	101,236 ac (1.6%)	167,151 ac (2.7%)	18,300 ac (0.3%)	286,688 ac (4.6%)
Juab (2,179,726 ac)	7,973 ac (0.4%)	51,393 ac (2.4%)	4,736 ac (0.2%)	64,102 ac (2.9%)
Millard (4,375,734 ac)	2,012 ac (0.05%)	83,568 ac (1.9%)	2,002 ac (0.05%)	87,581 ac (2.0%)
Piute (489,666 ac)	5,873 ac (1.2%)	120,948 ac (24.7%)	16,590 ac (3.4%)	143,411 ac (29.3%)
Sanpete (1,024,857 ac)	29,501 ac (2.9%)	221,768 ac (21.6%)	4,836 ac (0.5%)	256,105 ac (25.0%)
Sevier (1,227,070 ac)	42,281 ac (3.4%)	308,143 ac (25.1%)	3,794 ac (0.3%)	354,218 ac (28.9%)
Wayne (1,577,442 ac)	918 ac (0.1%)	123,318 ac (7.8%)	5,865 ac (0.4%)	130,101 ac (8.2%)
Central Area (10,874,495 ac)	88,558 ac (0.8%)	909,138 ac (8.4%)	37,823 ac (0.3%)	1,035,518 ac (9.5%)
Daggett (462,205 ac)	4,312 ac (0.9%)	133,067 ac (28.8%)	4,459 ac (1.0%)	141,837 ac (30.7%)
Duchesne (2,077,036 ac)	46,866 ac (2.3%)	457,632 ac (22.0%)	8,346 ac (0.4%)	512,844 ac (24.7%)
Summit (1,202,677 ac)	140,860 ac (11.7%)	425,453 ac (35.4%)	3,275 ac (0.3%)	569,588 ac (47.4%)
Uintah (2,882,381 ac)	8,075 ac (0.3%)	228,619 ac (7.9%)	4,833 ac (0.2%)	241,527 ac (8.4%)
Wasatch (773,282 ac)	82,735 ac (10.7%)	257,451 ac (33.3%)	16,748 ac (2.2%)	356,934 ac (46.2%)
Northeastern Area (7,397,581 ac)	282,848 ac (3.8%)	1,502,222 ac (20.3%)	37,661 ac (0.5%)	1,822,731 ac (24.6%)

County and Multi-County Planning Area (County/Area Acreage)	Private Forest Acreage	Public/Federal Forest Acreage	Public/State Forest Acreage	Forest Acreage Totals
Carbon (949,948 ac)	122,877 ac (12.9%)	84,942 ac (8.9%)	15,787 ac (1.7%)	223,606 ac (23.5%)
Emery (2,853,097 ac)	14,621 ac (0.5%)	108,604 ac (3.8%)	5,186 ac (0.2%)	128,411 ac (4.5%)
Grand (2,363,668 ac)	7,610 ac (0.3%)	71,207 ac (3.0%)	21,900 ac (0.9%)	100,717 ac (4.3%)
San Juan (5,075,109 ac)	13,322 ac (0.3%)	92,496 ac (1.8%)	8,859 ac (0.2%)	114,677 ac (2.3%)
Southeastern Area (11,241,822 ac)	158,430 ac (1.4%)	357,249 ac (3.2%)	51,732 ac (0.5%)	567,411 ac (5.0%)
Beaver (1,654,445 ac)	2,781 ac (0.2%)	105,686 ac (6.4%)	5,184 ac (0.3%)	113,651 ac (6.9%)
Garfield (3,330,992 ac)	12,122 ac (0.4%)	533,950 ac (16.0%)	4,735 ac (0.1%)	550,807 ac (16.5%)
Iron (2,113,373 ac)	37,000 ac (1.8%)	118,248 ac (5.6%)	5,910 ac (0.3%)	161,157 ac (7.6%)
Kane (2,627,394 ac)	17,937 ac (0.7%)	66,195 ac (2.5%)	675 ac (0.03%)	84,807 ac (3.2%)
Washington (1,556,197 ac)	6,921 ac (0.4%)	29,571 ac (1.9%)	258 ac (0.02%)	36,750 ac (2.4%)
Southwestern Area (11,282,401 ac)	76,761 ac (0.7%)	853,650 ac (7.6%)	16,762 ac (0.1%)	947,173 ac (8.4%)
Davis (406,287 ac)	2,443 ac (0.6%)	10,854 ac (2.7%)	---	13,297 ac (3.3%)
Morgan (390,669 ac)	56,745 ac (14.5%)	5,587 ac (1.4%)	1,608 ac (0.4%)	63,940 ac (16.4%)
Salt Lake (515,409 ac)	19,448 ac (3.8%)	49,501 ac (9.6%)	605 ac (0.1%)	69,554 ac (13.5%)
Tooele (4,663,097 ac)	15,775 ac (0.3%)	36,623 ac (0.8%)	2,628 ac (0.1%)	55,026 ac (1.2%)
Utah (1,369,998 ac)	30,848 ac (2.3%)	186,833 ac (13.6%)	11,039 ac (0.8%)	228,719 ac (16.7%)
Wasatch Front Area (7,345,460 ac)	125,259 ac (1.7%)	289,398 ac (3.9%)	15,880 ac (0.2%)	430,536 ac (5.9%)
State Totals (54,323,019 ac)	833,092 ac (1.5%)	4,078,808 ac (7.5%)	178,158 ac (0.3%)	5,090,057 ac (9.4%)

Garfield County contains the most federal commercial forest land with nearly 534 thousand acres or 13% of the state's total. Wasatch County, however, has the largest proportion of its land area in federal forest at one third. As with private forest, the Northeastern Area contains the most federal forest acreage at 1.5 million acres and 20% of its land area. Nearly half, 48% or 85 thousand acres, of state-owned forest land is found in Grand, Wasatch, Piute, Carbon, and Cache counties. The Southeastern Area contains the most state-owned forest at 52 thousand acres, mainly due to the large acreages in Grand and Carbon counties.

Acreage and Location of Private Forests by Forest Type

Ten Gap forest types were used to represent commercial forest (the term “forest” is used in the following discussions and on the maps to denote these ten types; other types will be referred to as “woodlands”). These types were dominated by the following commercially important tree species: aspen, lodgepole and ponderosa pines, subalpine and white firs, and Engelmann and blue spruces. The ten forest types used were:

- Aspen--Deciduous forest dominated by quaking aspen with associated conifer species spruce, fir, Douglas-fir, and pine and shrub species snowberry and serviceberry.
- Aspen/Conifer--Deciduous forest with principally quaking aspen dominant or co-dominant with conifers.
- Lodgepole--Conifer forest dominated by lodgepole pine with associated species Engelmann spruce and subalpine fir.
- Lodgepole/Aspen--Conifer-deciduous forest with lodgepole pine dominant or co-dominant with aspen.
- Mountain Fir--Conifer forest dominated by white fir and Douglas-fir with associated species ponderosa pine, pinyon, Engelmann and blue spruce, and subalpine fir.
- Mountain Fir/Mountain Shrub--Conifer forest or woodland with mountain fir dominant/associated or co-dominant with mountain shrubs.
- Ponderosa Pine--Conifer forest dominated by ponderosa pine with associated species pinyon, juniper, white fir, and Douglas-fir.
- Ponderosa Pine/Mountain Shrub--Conifer forest or woodland with ponderosa pine dominant/associated or co-dominant with mountain shrubs.
- Spruce-Fir--Conifer forest dominated by Engelmann and blue spruce and subalpine fir with associated species lodgepole pine, white fir, Douglas-fir, limber pine, and bristlecone pine.
- Spruce-Fir/Mountain Shrub--Conifer forest or woodland with spruce-fir dominant/associated or co-dominant with mountain shrubs.

Woodland types used for the private forests and woodlands map included:

- Juniper--Conifer forest dominated by Rocky Mountain, Utah, and one-seed junipers with associates pinyon and mountain-mahogany and shrubs sagebrush and blackbrush.
- Lowland Riparian--Riparian areas generally lower than 5500 feet; principal woody species include Fremont cottonwood, saltcedar, netleaf hackberry, velvet ash, desertwillow, sandbar willow, and squawbush.
- Mountain Riparian--Riparian areas generally above 5500 feet; principal woody species include willow, narrowleaf cottonwood, thinleaf alder, water birch, black hawthorn, Rocky Mountain maple, red-osier dogwood, and wild rose.
- Pinyon--Conifer forest dominated by pinyon with associates juniper, ponderosa pine, white

fir, Douglas-fir, and shrub species Gambel oak and sagebrush.
Pinyon-Juniper--Conifer forest co-dominated by pinyon and juniper with associated trees species mountain-mahogany and shrub species sagebrush.

A map titled “Utah’s Private Forests” was compiled (and is available from the authors) that shows acreages and locations for ten Gap forest types. Aspen is by far the dominant type, comprising 62% of Utah’s private forests (includes both aspen dominated types), followed by much smaller acreages of mountain fir (19%), ponderosa pine (10%), spruce-fir (7%), and lodgepole pine (2%). Most of these types are distributed throughout the state in proportion to the presence of private forest land in a given area, though ponderosa pine is absent from northern Utah and lodgepole pine is absent from southern Utah.

Elevation of Utah’s Private Forests

Water availability is the primary determining factor affecting Utah forests. However, reliable precipitation data was not available at the scale needed for our GIS analysis. Elevation data was available, and since higher elevation generally means higher precipitation and cooler temperatures, we mapped private forest land by elevation (see map titled “Utah’s Private Forests by Elevation”). Half of Utah’s private forests are found between 7,500 and 8,500 feet, and nearly a third between 8,500 and 9,500 feet. Very little occurs below 6,500 feet and only 6% occurs above 9,500 feet. The highest elevation forests are found mostly in the Uintas and the La Sals, the Fish Lake and Monroe Mountain areas south and east of Richfield, and east of Price.

Utah’s Private Forest Land Uses

Timber Harvest Wood from Utah’s private and public forests has been extensively harvested since European settlement in the mid-1800's. Harvest may have declined in the mid-1900's (data are unavailable), but it appears that private timber harvest now may be increasing due to recent high prices and supply tightening in the Pacific Northwest and throughout the West. The proportion of the state’s total timber harvest coming from private lands rose from 6% in 1966 to 12% in 1970 and 17% in 1992 (Setzer and Wilson 1970, Green and Setzer 1974, Keegan *et al.* 1995). This 1992 harvest amounted to about 10.7 million board feet of timber (not including fuelwood)(Keegan *et al.* 1995).

Though they likely are harvesting more timber than in the past, Utah’s private forest

landowners are not timber oriented overall. A recent survey of these landowners in Utah showed that 5% of respondents had harvested timber from their land (Brunson *et al.* 1996). Though Gap data were not useful for determining levels of private timber harvest, we were able to obtain private timber harvest figures from the 1991-95 Forest Service inventory which is summarized in Table 4. In this inventory an area was determined to have been harvested by observation of a plot by the inventory crew. The time of the last timber harvest on the plot was estimated and coded as within the past year, 1-3 years, 3-10 years, or beyond 10 years. Since these measurements took place over a four year interval, some of the cutting time categories in Table 4 overlap.

Private timber harvest statewide is 135,500 acres, or 15% of the private timberland available (Table 4). Most of this timber (75%), however, was harvested prior to 1985, and only 7% was harvested in 1992-93. The most active area in terms of total timberland harvested, with 49,700 acres, was the Northeastern Area, but no plots showed harvest activity after about 1983. The Southeastern Area had the largest proportion of timberland harvested, at 42%, and had evidence of the most recent harvesting, with 37% occurring in 1992-93.

Twenty percent of the state's private woodland showed some indication of harvest, with the Central Area showing the greatest proportion harvested at 33%. Care must be taken in interpreting any of these data below the state level, however, since smaller areas represent relatively few sample plots and therefore can have a large sampling error. For example, the table shows no timberland harvest since 1983 in the Northeastern Area, yet it seems certain that harvesting has occurred.

Table 4. Private timberland and woodland acreage harvested and timberland harvest timing by Utah Multi-County Planning Area. Percentages in parentheses are the proportion of an area's total timberland or woodland that has been harvested. Source is Forest Service Intermountain Station inventory data collected between 1991 and 1995. Data are preliminary and acreages are rounded to the nearest 100 acres.

Multi-County Planning Area and Counties Included	Timberland Harvest ^{1,2}	Timberland Harvest Timing	Woodland Harvest ^{1,3}
Bear River Area (Box Elder, Cache, Rich, Weber Counties)	23,000 ac (18%)	53% harvested before 1981, 47% 1981-88	55,700 ac (24%)
Central Area (Juab, Millard, Piute, Sanpete, Sevier, Wayne Counties)	8,200 ac (28%)	100% harvested 1985-92	57,200 ac (33%)
Northeastern Area (Daggett, Duchesne, Summit, Uintah, Wasatch Counties)	49,700 ac (12%)	100% harvested before 1983	49,100 ac (16%)
Southeastern Area (Carbon, Emery, Grand, San Juan Counties)	24,500 ac (42%)	63% harvested before 1983, 37% 1992-93	14,600 ac (16%)
Southwestern Area (Beaver, Garfield, Iron, Kane, Washington Counties)	25,300 ac (22%)	79% harvested before 1985, 21% 1985-92	34,800 ac (19%)
Wasatch Front Area (Davis, Morgan, Salt Lake, Tooele, Utah Counties)	4,800 ac (3%)	100% harvested before 1981	55,100 ac (17%)
State Totals	135,500 ac (15%)	75% harvested before 1985, 8% 1981-88, 10% 1985-92, 7% 1992-93	266,500 ac (20%)

¹ Care must be taken in interpreting data below the state level. Smaller areas represent relatively few sample plots and therefore can have a large sampling error.

² Timberland as defined by the Forest Service is land producing or capable of producing crops of timber species. Mixed stands of timber species and woodland trees are classified as timberland if timber species have 5% or more crown cover.

³ Woodland is forest land with 10% or more crown cover, but less than 5% crown cover in timber species.

Non-timber Land Uses Important non-timber private forest uses in Utah include grazing, firewood gathering for personal use, and personal and fee hunting (Brunson and Kuhns 1995). Recreation, however, is by far the number one use of forest land in Utah, both public and private. The Wasatch-Cache National Forest that abuts most of the Wasatch Front accounted for 6.7 million recreation visitor-days in 1980, making it the busiest national forest in the country in terms of recreation (Van Hooser and Green 1983). And Brunson and Kuhns (1995) found that various recreational uses were the most common benefits received by Utah forest landowners from their land, and were the main reasons they owned forest land.

Private Forests by Watershed Management Unit



One major concern about timber harvest activities on forest lands is their effect on water quality. We therefore used Gap to analyze the location and timber types of private, public federal, and public state lands for ten watershed management units that correspond to hydrologic basins defined by the Utah Division of Water Resources for the State Water Plan (Figure 1). For more information on these units contact the division. A web page describing these units is located at URL:

<http://www.eq.state.ut.us/eqwq/shed.htm>

Table 5 shows the commercial forest acreage (includes the ten Gap types mentioned previously) in each watershed management unit broken down by private, public/federal owned, or public/state owned. A map titled “Utah’s Private and State Forests by Watershed” also shows forest distribution by watershed. The Uinta Unit has the most forest in all ownerships with nearly 1.5 million acres and 21.2% of its land area, followed by the Sevier River Unit at just over one million acres, but only 15.3% of its area. The Lower Colorado Unit has the least forest area at 72 thousand acres.

Table 5. Private, public/federal, and public/state commercial forest acreage (ten Gap timber types) by watershed management units. Percentages in parentheses indicate the proportion of a unit’s acreage in a particular ownership. Discrepancies in sums and percentages may occur due to rounding errors. Source Utah Gap.

Unit Name and Total Land Area in Acres	Private Forest Acreage	Public/Federal Forest Acreage	Public/State Forest Acreage	Unit Forest Acreage Totals
Bear River Unit (2,049,634 ac)	82,365 ac (4.0%)	227,379 ac (11.1%)	16,493 ac (0.8%)	326,237 ac (15.9%)
Cedar/Beaver Unit (3,643,580 ac)	29,569 ac (0.8%)	160,597 ac (4.4%)	9,630 ac (0.3%)	199,796 ac (5.5%)
GSL Desert/Columbia Unit (11,824,762 ac)	24,754 ac (0.2%)	68,711 ac (0.6%)	7,752 ac (0.1%)	101,217 ac (0.9%)
Jordan River Unit (2,478,572 ac)	80,676 ac (3.3%)	369,346 ac (14.9%)	16,786 ac (0.7%)	466,808 ac (18.8%)
Lower Colorado Unit (2,224,030 ac)	27,199 ac (1.2%)	44,148 ac (2.0%)	790 ac (0.04%)	72,137 ac (3.2%)

Unit Name and Total Land Area in Acres	Private Forest Acreage	Public/Federal Forest Acreage	Public/State Forest Acreage	Unit Forest Acreage Totals
Sevier River Unit (6,727,606 ac)	88,881 ac (1.3%)	914,058 ac (13.6%)	26,341 ac (0.4%)	1,029,280 ac (15.3%)
Southeast Colorado Unit (6,932,478 ac)	20,688 ac (0.3%)	130,531 ac (1.9%)	17,270 ac (0.2%)	168,488 ac (2.4%)
Uinta Unit (6,945,637 ac)	144,982 ac (2.1%)	1,276,801 ac (18.4%)	52,198 ac (0.8%)	1,473,982 ac (21.2%)
Weber River Unit (1,566,905 ac)	201,960 ac (12.9%)	140,854 ac (9.0%)	5,428 ac (0.3%)	348,242 ac (22.2%)
West Colorado Unit (9,888,433 ac)	131,735 ac (1.3%)	746,195 ac (7.5%)	25,415 ac (0.3%)	903,345 ac (9.1%)
State Totals (% of Row Total)	832,809 ac (16.4%)	4,078,620 ac (80.1%)	178,103 ac (3.5%)	5,089,533 ac

Private forest is most abundant in the Weber River Unit, at over 200 thousand acres and 12.9% of the unit's total land area. The Weber River Unit has the highest proportion of forest coverage at 22.2%. The Uinta and West Colorado Units each have over 100 thousand acres of private forest, but these are much larger watersheds than the Weber River, and private forest as a proportion of their total land area is only 2.1% and 1.3% respectively. The Bear River and Jordan River Units are next to the Weber River Unit in private forest land acreage as a proportion of their total area at 4.0% and 3.3% respectively. The Southeast Colorado and GSL Desert/Columbia Units have the lowest amounts and proportions of private forest land.

Silvicultural Limitations and Concerns by Forest Type

Each forest type found in Utah has its own ecological characteristics and responds to natural and human caused disturbances in specific ways. Timber harvest and harvest-related disturbances like road building, skidding, and slash treatment are especially important and pertinent to this report. The following is a summary of silvicultural and other concerns for aspen, lodgepole pine, Douglas-fir (roughly equivalent to mountain fir), ponderosa pine, and spruce-fir forest types. Silviculture refers to the science and practice of producing and caring for a forest. The basis of good silviculture is the regeneration of a desirable forest after harvesting or other stand-replacing disturbances. See Long (1995) for a more in-depth discussion of the silviculture of the following types, and see Burns and Honkala (1990) for descriptions of the silvics of each species involved.

Aspen

· Important for wildlife habitat, grazing, biodiversity, and as a visual resource; becoming more important for its wood fiber value as markets have developed in Utah.

- Easily regenerates after clearcutting or burning by producing numerous root sprouts; rarely reproduces from seed in the West.
- Extensive root damage on skid trails and landings can reduce sprouting.
- Initially out-competes associated conifers in a clearcut or fire because of sprouting from an established root system, forming large, genetically identical clones.
- Shade intolerant and short-lived, so lack of disturbance eventually leads to replacement by more shade tolerant conifers like spruce and fir; this is common in Utah due to fire suppression.
- Non-aspen sites can be slowly colonized by root system ingrowth and sprouting from neighboring clones.
- Replacement of an aspen stand by existing conifers can be encouraged by cutting or girdling aspen while leaving the conifers alone.
- Clearcutting of a mixed aspen-conifer stand is likely to lead to replacement with pure aspen.

Lodgepole Pine

- Important for its wood and for wildlife habitat.
- Shade intolerant and tends to occur in fairly pure stands; typically regenerates well after a fire or clearcut.
- May release seed from serotinous cones (closed cones that store viable seed for many years), though cone serotiny is highly variable from stand to stand; serotiny generally greater with younger, more frequently disturbed stands.
- Slash with serotinous cones can be lopped and scattered to distribute seeds and should not be piled until late summer (air temperatures must exceed 85°F for seed release).
- Over-dense regeneration with high cone serotiny can be avoided by minimizing soil disturbance and less site preparation.
- Stands with low or absent cone serotiny should be harvested in small clearcuts so seeds can be wind-disseminated from adjacent lodgepole stands.
- Mountain pine beetle and dwarf mistletoe are serious pests, especially on older and otherwise unhealthy or damaged trees.
- Mistletoe controlled by clearcutting with site preparation to destroy infected advanced regeneration; clearcuts large to minimize disease spread from edges.
- Mountain pine beetle controlled by conversion to non-host species, thinning to maintain vigor, and increased age-class diversity.

Douglas-fir/Mountain Fir

- Important timber and recreation resource and provides critical wildlife habitat.
- Refers to sites where Douglas-fir could dominate climax stands, but several other species may be present, including true firs, spruces, and lodgepole and ponderosa pines.
- Intermediate in shade tolerance, so undisturbed Douglas-fir stand can be replaced by more shade tolerant subalpine fir or Engelmann spruce; fairly common in Utah due to fire suppression.
- Group selection or shelterwood necessary for reproduction since most associated species need some protection to regenerate naturally or as planted seedlings.
- Clearcutting if aspen or lodgepole pine is present will likely regenerate the stand to those species.

- Careful overstory removal can regenerate a stand where adequate advanced regeneration is present.
- Clearcutting or overstory removal without adequate advanced regeneration will lead to conversion to shade intolerant species or to a poorly stocked stand of a shade tolerant species such as subalpine fir.
- Important pests are western spruce budworm, various bark beetles, and dwarf mistletoes; control by improving stand vigor, increasing species and age-class diversity, and using even-aged systems where appropriate.

Ponderosa Pine

- Limited to southern portion of Utah, but important where present for wood, wildlife (northern goshawk and others), grazing, and recreation.
- Shade intolerant; fire suppression on higher sites favors replacement by more shade tolerant associates; overstory removal of ponderosa pine can increase this trend.
- Withstands moderate intensity ground fires when older because of thick bark.
- Well adapted to fairly warm, dry sites; grows in fairly pure stands at lower elevations and in more mixed stands on higher, cooler, and moister sites.
- On dry sites group selection or shelterwood methods can provide a seed source and seedling protection; small clearcuts or light shelterwoods can be used on moister sites.
- Good site preparation and protection from livestock are important for natural regeneration.
- Seedling planting is sometimes used for regeneration.
- Mountain pine beetle is a serious pest encouraged by old, low vigor stands with large trees; ips beetles attack stressed trees and can reproduce in slash and other downed material, so slash treatment is essential.

Spruce-Fir

- Important for wood fiber, though spruce is worth considerably more than fir; wildlife habitat, recreation, and watershed values also important.
- Highest elevation type; dominated by subalpine fir, which is very shade tolerant, and Engelmann spruce, which is slightly less tolerant, often present as codominants in climax stands.
- Other associated species are lodgepole and limber pines, Douglas-fir, and aspen.
- Regeneration after harvest is difficult; group selection and shelterwood methods can be used; protection is needed for seedling survival; planting and protection of advanced regeneration help.
- Stands can be very complex in structure and age distribution; group shelterwood can be used in more uneven-aged stands; openings should be less than two times tree height for good protection but more than one tree height to favor spruce.
- Fires are infrequent but important in dry years; windthrow is an important disturbance factor.
- Root diseases, bark beetles, and the western spruce budworm are important pests; control spruce bark beetles by removing attacked or susceptible trees and treating slash.

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APPENDIX B

COMMON UTAH FOREST SPECIES

Tree Species

Aspen
Bigtooth maple
Blue spruce
Bristlecone pine
Common pinyon
Curleaf mountain mahogany
Douglas-fir
Engelmann spruce
Gambel oak
Limber pine
Lodgepole pine
Other poplar
Ponderosa pine
Rocky Mountain juniper
Rocky Mountain maple
Singleleaf pinyon
Subalpine fir
True Mountain mahogany
Utah juniper
White fir

Shrub Species

Antelope bitterbrush
Big sagebrush
Black sagebrush
Boxleaf myrtle
Common chokecherry
Common juniper
Curleaf mountain mahogany
Gooseberry currant
Green rabbitbrush
Grouse whortleberry
Kinnikinnick
Low sagebrush
Mallow ninebark
Mountain snowberry
Oregon grape
Shrub Species, cont'd.

Plains prickly-pear
Saskatoon serviceberry
True mountain mahogany
Utah serviceberry

Forb Species

Arrowleaf balsamroot
Common yarrow
Fendler's meadowrue
Heartleaf arnica
Mountain sweetcicely
Smalleaf pussytoes
Twolobe speedwell
Weedy milkvetch
Western coneflower

Grass Species

Blue wildrye
Bluebunch wehatgrass
Bulbous bluegrass
California brome
cheatgrass
Crested wheatgrass
Elk sedge
Idaho fescue
Indian riscegrass
kentucky bluegrass
Mountain brome
Ross sedge
Sandberg bluegrass
Slender wheatgrass

APPENDIX C

Utah Forest Landowner Survey: Summary of Preliminary Findings

An essential element in any analysis of issues surrounding timber harvest on private property is to learn how the situation is assessed by the landowners themselves. Accordingly a survey of Utah's private forest owners was begun in July 1996. A survey was seen as the most effective way to quickly gather information about the extent of timber harvesting on Utah's private forest lands and about the circumstances surrounding timber harvests. The study sought to obtain the following information:

- the extent of harvesting that has occurred, including proportions of owners who are harvesting, species harvested, and average acreage harvested
- characteristics of forest lands most likely to be harvested
- characteristics of owners most likely to harvest timber
- the use of professional forestry assistance by landowners who harvest timber
- landowner satisfaction/dissatisfaction with their timber harvesting experiences.

The findings reported here are preliminary. A complete final report will be made in Fall 1996 after appropriate follow-up has been made with landowners who did not return their surveys in the first wave of responses.

Survey design and administration

Surveys were mailed to 1,490 persons or corporations selected from a list of forest landowners supplied by the Utah Division of Forestry, Fire, and State Lands (hereafter known as the Division). The list had been compiled by comparing tax records in each of Utah's 29 counties with maps depicting the extent of forested land in each county, and classifying each identified forest tract as predominantly conifer/aspen, oak/maple, or pinyon/juniper. A sample for the present study was prepared by first removing all incomplete addresses, duplicate names (owners of tracts in more than one forest type), and names of owners who could not be located in a previous landowner survey (Brunson et al., 1996). The resulting list contained 2,569 addresses including 1,941 in Utah, or 75.6% of the total (33% in Wasatch Front communities and 42.6% elsewhere in the state). Most of the remaining owners are in California (8.5%) or states bordering Utah (10.2%).

Because we expected most timber harvesting to occur in the conifer/aspen zone, surveys were mailed to all 1,190 landowners identified as having property in that zone. An additional 300 surveys were sent to addresses chosen at random from the lists of oak/maple and pinyon/juniper owners. The surveys were mailed July 16, 1996. A postcard was mailed July 29 as a thank-you to those who had returned their surveys and a reminder to those who had not. A copy of the survey instrument and cover letter are included in this report.

This report describes results of surveys received before Aug. 12, four weeks after the initial mailing. As of that date, 464 completed surveys had been received and 230 others had been returned as undeliverable. Most of the undeliverable surveys had been sent to persons whose forwarding address had

expired or to corporations that were not known at the address listed. The 15% undeliverable rate is relatively high, but not unexpected due to the five-year gap since the list was compiled and the fact that some counties have not kept their tax rolls entirely up-to-date (Dave Schen, Division of Forestry, Fire and State Lands, pers. comm.).

In a typical mail survey, at least 20% of recipients will not respond even if they have been contacted earlier about participating. Response rates for "blind" surveys rarely exceed 65% under the best of circumstances, but researchers strive to achieve response rates above 50% in order to feel confident that the responses represent the survey population. Because this preliminary report describes findings from 36.8% of the delivered surveys, the mailing records were examined for indicators of non-response bias. Response rates exceeded 37% among Utah residents and individual citizens, and were lower among out-of-state and corporate owners. Landowners may have been less likely to respond if: (1) they felt the survey did not pertain to them (e.g., they own fairly small tracts of unmanaged, undeveloped land); (2) they no longer own forest land in Utah but did not return the survey to tell us so; or (3) they preferred not to tell a researcher about their forest activities.

The third type of non-response is of chief concern for this study, since one objective was to assess the extent of harvesting that occurred. Logging could be under-reported if it is especially common on corporate lands, or if landowners who harvest prefer not to describe their experiences (e.g., if they felt that doing so could prompt state officials to investigate them for tax or regulatory purposes, or if they were embarrassed by poor harvesting results that made them feel "taken" by the harvester). The first issue was addressed

somewhat by the cover letter accompanying the survey, which assured respondents that state officials would never see their individual questionnaires.

Results

A summary of all results is provided in Table 1. Although we expected responses from conifer/aspen owners to differ from those of other landowners, especially on questions about timber harvest activity, comparison of response patterns showed this was not the case. Landowners identified as conifer/aspen owners were no more likely to harvest timber than other landowners, and differed from other respondents in only a few categories: they own land in different counties; are more likely to have certain species of trees on their properties; are slightly more likely to have lived within 20 miles of their land; and are slightly less likely to graze their own livestock on their properties. Because there were so few differences across forest types, the entire sample was analyzed as a single group. Excluded from further analysis were surveys received from 50 respondents (13.2% of the total) who indicated that they no longer own wooded land in Utah or have never done so.

Characteristics of forest lands and landowners. Average tract size among respondents was 1,700 acres (**Question #3**), including 770 acres that are wooded (**Q4**). Thus the total acreage controlled by the survey respondents was 668,061 ac., including 288,914 wooded acres. Though based on respondents' estimates and therefore less accurate than the total acreage figure, it does suggest that the survey reached a substantial proportion of the

state's largest forest landowners. Even so, nearly half of the respondents (41.7%) own fewer than

TABLE 1:
Preliminary Results: Utah Forest Landowner Survey

1. Do you **currently** own wooded land in Utah? (N=458)

86.8%¹ Yes I currently own wooded land in Utah

10.3% I no longer own wooded land in Utah

2.9% I have never owned wooded land in Utah

2. As the person filling out this survey, are you ... (N=394)

94.4% The owner/co-owner of the land

3.3% A friend or family member who manages or helps manage the land

2.3% Someone **hired** to manage the land

3. How many **acres** of land do you own in Utah? (N=393)

Average = 1,700 ac

Range = 1-99,000 ac

Total = 668,061 ac

¹Underlined numbers are percentages of the total number of valid responses (N) that were given for each possible response. Asterisk (*) indicates questions for which more than one response was possible. The wording of some questions was shortened for presentation.

16.5% 1-20 ac. 25.2% 21-99 ac. 34.9% 100-999 ac.
 19.6% 1,000-10,000 ac. 3.8% > 10,000 ac.

4. About how many acres of your Utah land is **wooded**? (*N*=375)

Average = 770 ac Range = 0-40,000 ac Total = 288,914 ac

26.1% 1-20 ac. 27.0% 21-99 ac. 32.2% 100-999 ac.
13.9% 1,000-10,000 ac. 0.8% > 10,000 ac.

*5. In what **Utah counties** do you own wooded land? (*N*=390)

Box Elder 10 (2.6%)	Iron 40 (10.3)	Sevier 42 (10.8)
Beaver 2 (0.5)	Juab 6 (1.5)	Summit 24 (6.2)
Cache 20 (5.1)	Kane 21 (5.4)	Tooele 3 (0.8)
Carbon 31 (7.9)	Millard 8 (2.1)	Uintah 3 (0.8)
Daggett 2 (0.5)	Morgan 12 (3.1)	Utah 16 (4.1)
Davis 0 (--)	Piute 2 (0.5)	Wasatch 11 (2.8)
Duchesne 59 (15.1)	Rich 6 (1.5)	Washington 13 (3.3)
Emery 14 (3.6)	San Juan 18 (4.6)	Wayne 5 (1.3)
Garfield 8 (2.1)	Salt Lake 15 (3.8)	Weber 6 (1.5)
Grand 2 (0.5)	Sanpete 43 (11.0)	

6. **How long** have you owned your wooded Utah land? (*N*=388)

Average = 27.8 yrs Range = 1-149 yrs

18.0% 1-10 yrs. 35.9 11-20 yrs. 19.6% 21-30 yrs.
14.9% 31-50 yrs. 11.6% More than 50 yrs.

TABLE 1 (cont'd):
Preliminary Results: Utah Forest Landowner Survey

7. Is the land owned by a ... (*N*=394)

- 49.2% private individual
- 47.2% family (including trusts or partnerships)
- 8.1% corporation
- 0.8% non-profit organization

8. Which of the following best describes how your wooded land is **managed**? (*N*=394)

- 58.6% I manage the land myself
- 8.1% A family member manages the land for me
- 2.8% An employee of our company manages the land
- 1.3% We have hired an independent management firm to manage the land
- 29.2% The land is not actively managed

*9. How did you **acquire** your wooded Utah land? (*N*=389)

- 30.3% The land was part of an inheritance.
- 15.4% The land was split off from a larger family property and sold or given to me.
- 4.9% We purchased the land for use as a permanent home site.
- 35.7% We purchased the land for use as a vacation/recreation site.
- 28.5% We purchased the land for ranch or farm use.
- 2.3% We purchased the land for its timber products.
- 3.3% We purchased the land for other commercial use.
- 17.0% We purchased the land as an investment for eventual resale.

10. Do you **currently live** on your wooded Utah land? (*N*=389)

9.8% Yes 90.2% No

11. Have you **ever lived** within 20 miles of your wooded Utah land? (*N*=386)

43.5% Yes 56.5% No

12. Have **other members of your family** owned property within 20 miles of where your wooded land is located? (*N*=380)

47.9% Yes 52.1% No

13. If your answer to #10 was no, how often do you **visit** your wooded Utah land? (*N*=347)

8.9% Several times/week 22.2% Several times/month

43.5% Several times a year 21.9% Once a year or less 3.5% [original information lost]

14. What is your primary source of **income**? (*N*=358)

13.7% Farming or ranching

6.1% Government employee

0.6% Forest products industry

3.6% School or university

3.1% Real estate development

37.2% Retirement pension or other payment

34.4% Other private business

1.4% Non-profit organization

*15. What **kinds of trees** are growing on your forest land in Utah? (*N*=370)

13.0% Not Sure 43.0% Spruce 75.9% Aspen

23.2% Ponderosa pine 35.9% Fir 20.3 Maple

13.0% Lodgepole pine 27.6% Douglas-fir 36.2% Oak

40.0% Pinyon pine 44.1% Juniper 13.5% Cottonwood

16. What is the **ZIP code** of the town where you currently live? (N=370)

<u>83.2%</u> Utah	<u>5.7%</u> California
<u>7.6%</u> Bordering states	<u>3.5%</u> Other U.S.

*17. In the **past 5 years**, have you done any of the following on your land?(N=350)

<u>9.7%</u> Harvested timber for sale livestock	<u>32.3%</u> Grazed your own
<u>6.0%</u> Harvested firewood for sale	<u>34.6%</u> Leased grazing rights
<u>44.6%</u> Cut firewood for personal use	<u>14.3%</u> Leased hunting rights
<u>8.6%</u> Harvested hay or other farm products	<u>44.9%</u> Hunted/fished as recreation
<u>6.9%</u> Harvested Christmas trees for sale	<u>60.9%</u> Camped one or more nights
<u>5.9%</u> Converted woodland to grazing land	<u>64.3%</u> Hiked, biked, rode horses or ORVs
<u>2.9%</u> Converted woodland to other uses	

*18. In the **next 5 years**, which of these do you **expect** to do on your land?(N=377)

<u>10.1%</u> Harvest timber for sale livestock	<u>31.6%</u> Graze your own
<u>5.3%</u> Harvest firewood for sale	<u>31.8%</u> Lease grazing rights
<u>34.7%</u> Cut firewood for personal use	<u>13.3%</u> Lease hunting rights
<u>8.0%</u> Harvest hay or other farm products	<u>41.4%</u> Hunt or fish as recreation
<u>5.8%</u> Harvest Christmas trees for sale	<u>57.3%</u> Camp one or more nights
<u>6.1%</u> Convert woodland to grazing land	<u>53.8%</u> Hike, bike, ride horses or ORVs
<u>3.4%</u> Convert woodland to other uses	<u>19.6%</u> Sell the land to someone else

19. In the years since you have owned your land, have you ever hired someone to harvest timber on your wooded Utah land? (N=388)

<u>9.5%</u> Yes	<u>90.5%</u> No
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*20. If so, in what **year(s)** did the timber harvesting occur? ($N=36$)

<u>13.9%</u> before 1959	<u>33.3%</u> 1980-89
<u>2.8%</u> 1960-1969	<u>80.6%</u> 1990-96
<u>27.8%</u> 1970-1979	

21. Has a logger or timber buyer ever **approached you** about selling timber from your land (whether or not you actually sold the timber)? ($N=379$)

32.2% Yes 67.8% No

NOTE: Questions 22-34 were answered only by respondents who had harvested timber in the past five years. They were asked to answer about their most recent harvest.

*22. Which of the following **tree species** were harvested? ($N=36$)

<u>36.1%</u> Ponderosa pine	<u>52.8%</u> Douglas-fir	<u>38.9%</u> Aspen
<u>13.9%</u> Lodgepole pine	<u>52.8%</u> Spruce	<u>8.3%</u> Not sure

23. About how many **acres were logged** in your most recent timber harvest? ($N=34$)

Average = <u>215 ac</u>	Range = <u>2-1,500 ac</u>	Total = <u>7,315 ac</u>
<u>17.6%</u> 10 ac. or less	<u>14.8%</u> 11-40 ac.	<u>11.7%</u> 40-99 ac.
<u>41.2%</u> 100-499 ac.	<u>14.7%</u> 500 acres or more	

24. Which of these statements describes the **type of logging** that took place? ($N=34$)

11.8% One or more tracts of land were clearcut, with all trees cut down
88.2% One or more tracts of land were selectively cut, with only some trees removed

25. Which statement best describes what made you **first consider harvesting**? (*N*=31)

-- % The land was acquired specifically for harvesting timber.

25.8% I heard about the opportunity to sell timber on land I have owned for some time, so I contacted a timber buyer in order to learn more.

74.2% A timber buyer contacted me and convinced me to harvest timber on my land

*26. Which of the following factors **influenced your decision** to harvest timber? (*N*=36)

38.9% I heard that the price of logs was good at the time

13.9% A neighbor, friend, or relative recently sold timber from his/her land

8.3% I needed cash to pay a tax (estate, capital gains) obligation 52.8 I wanted to improve the quality of the trees on my land

27.8% I wanted to improve the quality of the wildlife habitat on my land 36.1 I wanted to reduce the danger of wildfire on my land

50.0% I wanted to reduce the danger of disease or insect attack on my land

27.8% I wanted to convert the forest on my land to grazing or commercial uses.

*27. Before you harvested your land, did you contact any of the following agencies for advice about harvesting timber on your land? (*N*=36)

58.3% State forestry office 8.3% County Extension agent

25.0% U.S. Forest Service or BLM 13.9% Private consulting forester

27.8% Friends or relatives 2.8% USDA-NRCS

-- Farm Bureau 19.4% I did not contact anyone for advice

28. What was the source of the **contract** you had with the timber harvester and/or purchaser?
(N=35)

8.6% We used a contract that I drew up

48.6% We used a contract provided by the timber harvester and/or purchaser

11.4% We used a contract drawn up by an attorney (or other third party)

31.4% The harvest was done without any contract

*29. Did the contract you used include any of the following **provisions**? (N=35)

62.9% Provisions about construction of logging roads

40.0% Provisions about how logs would be moved from the stump to the loading area

28.6% Provisions about how nearby streams would be protected during logging

65.7% Provisions about disposal of logging debris

8.6% Provisions about replanting of new trees

30. What is the **current condition** of the land that was logged? (N=28)

10.7% The land currently has no trees

89.3% The land has trees that sprouted naturally after the harvest was completed

3.6% The land has trees that were planted after the harvest was completed

31. How **satisfied** are you with the condition of the land left behind after logging? (N=36)

30.6% Extremely satisfied

16.7% Somewhat dissatisfied

41.7% Somewhat satisfied

11.1% Extremely dissatisfied

32. If **not satisfied** with the condition of the land, what are you dissatisfied about? (N=17)

<u>11.8%</u> Condition of roads	<u>5.9%</u> Quality of water
<u>76.5%</u> Amount of logging debris	<u>5.9%</u> Quantity of water
<u>11.8%</u> Condition of streambeds	<u>17.6%</u> Regrowth of new trees

33. How satisfied are you with the **price** you received for your timber? (N=33)

<u>27.3%</u> Extremely satisfied	<u>18.2%</u> Somewhat dissatisfied
<u>45.5%</u> Somewhat satisfied	<u>9.1%</u> Extremely dissatisfied

NOTE: The remaining questions were for all Utah landowners who complete the survey.

35. Has timber harvest on a neighboring property ever had a negative effect on your own land?
(N=365)

<u>6.0%</u> Yes	<u>94.0%</u> No
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*36. For those who answered "yes" to #35, which of the following **harvesting impacts** affected your land?
(N=22)

<u>4.5%</u> Timber harvest on a neighboring property harmed water quality on my land
<u>-- %</u> Timber harvest on a neighboring property harmed water quantity on my land
<u>18.2%</u> Timber harvest on a neighboring property increased the fire hazard to my land
<u>45.5%</u> Timber harvest on a neighboring property affected wildlife use of my land
<u>40.9%</u> Timber harvest on a neighboring property harmed the view from my land
<u>59.1%</u> Other (responses described in narrative)

37. How important do you think it is for the **state of Utah** to take actions that could better protect Utah's private forest lands and forest landowners from the effects of improper timber harvesting practices? (*N*=360)

27.5% Not important, things are fine as they are

26.1% Slightly important, but there are more important issues facing Utah landowners

21.1% Moderately important, definitely an issue that state government should address

25.3% Very important, an issue that state government should address as soon as possible

other payment (Q14), while about half are in some form of private business including 13.7% who are farmers or ranchers. Relatively few respondents have earned income from their lands; of those who have, the predominant land use is livestock grazing (Q17), although respondents also reported earning income from the sale of firewood, Christmas trees, hay or other farm products, hunting rights, and timber harvest (*see next section*). Nearly half had harvested firewood from their wooded lands for their own use, and about two-thirds of respondents have used their lands for recreation in the past five years. We also asked respondents how they expected to use their lands in the *next* five years. Results were nearly identical for all items (Q18), and the vast majority of respondents anticipated using their lands the same way in the future as they had in the past. However, about 20% anticipate selling their properties in the next few years.

Taken together, these data suggest that the owners of Utah's wooded lands have some personal connection with the land they own, either because it is long-held family property or was purchased for their personal use rather than solely as an investment. Although they don't live on their wooded land, most live in Utah (Q16) or adjoining states, and they visit the land regularly. As a result, landowners are likely to want to see those properties managed properly and to protect the resources their lands can provide.

Timber harvest activity. Fewer than 10% of respondents reported harvesting timber from their Utah wooded lands in the past five years (Q17a), and about the same percentage reported harvesting timber from their property at any time since they acquired it. As noted previously, logging

could have been under-reported but it is unlikely that more than 20% of Utah landowners have harvested timber in recent years.

Most of the reported harvesting occurred during the 1990s (*see graph, p. 11*), especially 1994-96. While this seems to suggest a trend toward more frequent harvesting, this finding should be interpreted with caution because the survey did not reach owners who harvested in the past but have sold their harvested land since that time. Ten percent of respondents said they *anticipate* harvesting timber in the next five years (**Q18a**). Of those 38 respondents, 15 have harvested in the last five years and 23 have not yet done so. Thus the combined percentage of people who have or expect to harvest — and this should include any respondents whose timber is currently under contract but not yet logged — was 15.1%. Although reported timber harvest was less than 10%, nearly a third of respondents said they had been contacted by someone who wanted to buy timber from their properties.

The typical logging operation was a selective harvest (**Q24**) of spruce and Douglas-fir (**Q22**). Slightly more than one-third harvested aspen or ponderosa pine. The average area harvested was large (215 acres), and two-thirds reported logging activity covering more than 40 acres (**Q23**). Most of those who harvested had done so because they were contacted by a timber buyer who convinced them it would be a good idea (**Q25**). The price of logs was a primary reason for harvesting, but respondents also did so because they wanted to improve the quality of their timber stands and reduce the danger of insects or disease (**Q26**). Slightly more than 25% were converting their forest to other uses, mainly pasture or ski slopes.

Most respondents said that once they had decided to log their property they contacted a professional — usually from the Division — for advice about harvesting (Q27). However, that advice appears to be confined largely to the choice of trees to cut, as most respondents *did not* seek help in writing up a harvesting contract (Q28). About half used a contract provided by the purchaser, and 31% harvested without any contract at all. Contracts tended to have stipulations about road construction and disposal of debris, but fewer than one-third contained provisions which addressed environmental concerns such as protection of streams and riparian areas or replanting of new trees (Q29). It is not surprising, then, to find that only one respondent reported that the harvested land now has newly planted trees growing on it (Q30). Nearly all respondents reported some amount of natural regeneration.

Most landowners reported that they were "somewhat" or "extremely" satisfied with the condition of the land left behind after logging (Q31) and with the price they received for their logs (Q33). For those who were not completely satisfied with the condition of the logged area, most were unhappy about the amount of logging debris. One person was unhappy about the quality and quantity of water after harvest, and three people were not pleased with the regeneration of new trees after logging.

Table 2
Comparison of harvesting and non-harvesting landowners

<u>Land/landowner characteristic</u>	<i>(N=360)</i> <u>% not harvesting</u>	<i>(N=34)</i> <u>% harvesting</u>
% who inherited property	27.3	50.0
% who purchased as vacation site	36.8	8.8
% who purchased as farm/ranch	24.1	64.7
% who have lived within 20 mi. of land	40.3	66.7
% whose primary income source is farming/ranching	11.4	42.3
% who have sold firewood in past 5 years	3.0	29.4
% who have harvested Christmas trees in past 5 years	3.2	35.3
% who have grazed their own livestock in past 5 years		24.3
% who have leased hunting rights in past 5 years		10.5
average size of property (acres)	1,506	3,814
average extent of wooded land (acres) average	691	1,614
length of ownership (years)	26.8	38.1

NOTE: *all comparisons are statistically significant at .05 level*

Respondents also were asked whether they had been negatively affected by logging on *other people's properties*, since adjacent timber harvests (especially upstream) can have effects on a variety of land qualities. Only 22 people, or 6% of the total, reported any such

impacts (Q35). Of those who did, the most common reasons for concern were effects on wildlife use of their property and reductions in scenic quality (Q36). Other reported impacts of neighboring timber harvest include: increases in fire and insect hazard; reduced water quality; damage to access roads, fences and gates; enhanced public access which increased trespass problems; soil erosion; noxious weed invasion; damage to wetlands; and traffic hazards from unsafe truck travel during harvesting.

Characteristics of landowners who harvest. To better understand which landowners are most likely to harvest timber from wooded lands in Utah, frequency distributions were compared (χ^2 analysis) between those who harvest and those who do not (Table 2). Those who reported timber harvests tended to be people who have owned their properties for a long time and have been making a living from that land. For them, timber harvest is part of a suite of activities that also includes grazing, Christmas tree production, and leasing of hunting rights. Although some harvesters are converting their wooded land to other uses, most would like to see a new forest grow in the logged area but may not know much about how that can best be accomplished.

Logging activity is not distributed evenly across the state but is instead occurring in certain areas. We did not ask where respondents' harvested lands were located, but since most respondents only own land in one county we can get a good idea of where logging has occurred by identifying the locations of lands owned by persons who have logged. Those counties are: Kane, 7 respondents; Iron, 6; Carbon, Garfield, Sevier, 4; Emery, San Juan, 3; Cache, 2; Box Elder, Morgan, Piute, Rich, Sanpete, Utah, Wasatch, and Weber, 1. This list is quite different from the distribution of private forest tracts

statewide. Survey results suggest that Duchesne and Sanpete counties, which have the largest number of forest tracts, have seen little logging in the past five years while parts of southwestern and eastern Utah have seen heavier-than-average harvest activity.

Conclusions

The preliminary results presented here are based on responses from 464 individuals or corporations. These respondents represent about 18% of the forest landowners known to the state Division of Forestry, Fire and State Lands. Their responses suggest that timber harvest is occurring on a relatively small, but nonetheless significant proportion of Utah's private forest lands. There appears to be considerable pressure on Utah forest owners to harvest their trees, as nearly a third of all respondents had been contacted by a prospective timber buyer. The survey did not offer sufficient evidence to suggest any trend in harvest activity, but several respondents who have not yet harvested expect to do so in the future. Survey responses offer evidence of silvicultural problems as well as inadequate protection of landowners' rights during harvest. Because most harvestable lands have not yet been logged, there is still an opportunity for landowners to become educated about the pitfalls and potential benefits of logging.

The landowners who are most likely to harvest are those who make their living from the land, and see logging as one more way to manage their natural resources. Typically they live in Utah, visit their forested land fairly often (although they don't live there), and have had the property in their families for several decades. Again this should be encouraging to the state, because the landowners who are harvesting are people who have an

understanding of the land and are likely to be interested in proper stewardship of their forest resources.

One of the important questions to be considered in assessing the private land timber harvest issue is whether the landowners themselves consider this a problem and want the state to step in.

The last question on the survey

(Q37) asked "How important do you think it is for the **state of Utah** to take actions that could better protect Utah's private forest lands and forest landowners from the effects of improper timber harvesting practices?" Responses were evenly divided among the four choices — not important, slightly important, moderately important, and very important — with 72.5% indicating that the issue has at least some importance to the state.

Another indication that Utah landowners are divided on this issue comes from comments written in a space provided at the end of the survey. Although a detailed content analysis of these comments will not be done until later this year, a brief examination suggests that the most frequent comment came from those who felt the state should not restrict landowners' ability to harvest trees on their own lands (NOTE: the survey never suggested the state would do so.) However, many other commenters offered ideas on how the state *should* be involved, and still others offered detailed comments about problems they had encountered as a result of logging on their own or adjacent lands.

Clearly Utah landowners are not fully aware of the potential problems associated with poor forestry practices. Few people were dissatisfied with the price they had received for their timber, even though evidence from other sources suggests that large amounts of valuable timber are being left behind as

logging debris. Furthermore, few people were dissatisfied with the condition of their lands even though evidence — both from the survey and from other observations — suggests that regeneration of logged stands is poor at best, and that poor road construction poses a potential threat to water resources in some areas. It is likely that these landowners might be more concerned, and perhaps more supportive of protective measures, if they were more aware of the consequences of logging as it presently occurs on Utah's private forests.

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**Utah Forest Landowner Survey:
Summary of Preliminary Findings**

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APPENDIX D

UTAH'S ENDANGERED AND THREATENED WILDLIFE SPECIES

Mammals-endangered

Black-footed Ferret - Mustela nigripes

Wolf - Canis lupus

Mammals - threatened

Utah Prairie Dog - Cynomys parvidens

Birds - endangered

American Peregrine Falcon - Falco peregrinus anatum

Bald Eagle - Haliaeetus leucocephalus

Whooping Crane - Grus americana

Birds - threatened

Arctic Peregrine Falcon - Falco peregrinus tundrius

Fish - threatened

Bonytail Chub - Gila elegans

Colorado Squawfish - Ptychocheilus lucius

Humpback Chub - Gila cypha

Woundfin - Plegopterus argentissimus

June Sucker - Chasmistes liorus mictus

Fish - threatened

Lahontan Cutthroat Trout - Salmo clarki henshawi

Reptiles and Amphibians - endangered

Desert Tortoise - Gopherus agassizi

APPENDIX E

UTAH FOREST PRACTICES TASK FORCE

Summary of Key Points

At its 1996 session, the Utah Legislature identified the need to review state timber harvesting practices and to assess the need for programs to encourage economically efficient forest practices and assure the perpetuation of forests on nonfederal land. State Forester, Art DuFault, convened a task force in the spring of 1996 to investigate this issue. At their first meeting, Task Force members collectively developed the following statement to define their objective: develop an effective mechanism to encourage sound management to sustain forest lands in Utah, recognizing the interests of private landowners, industry, and the public.

Task Force Findings. Forested lands are an important natural resource in the state of Utah. Forests make a significant contribution to Utah's way of life and to its quality of life by providing jobs, products, recreational experiences, open space, wildlife habitat, critical watershed areas, and other social and economic benefits. Utah's generally high elevation forests are *the* principal source of water production in this arid state.

Timber harvesting on Utah's nonfederal forest lands has increased in recent years. The decline in timber harvesting on federal lands combined with favorable timber prices has increased pressures to log private and state lands throughout the United States. Utah's geographic proximity to the Pacific Northwest makes it particularly susceptible to these pressures.

Timber harvesting on nonfederal lands in Utah as currently practiced sometimes leads to degradation of the physical condition of the land, compromises the regenerative capacity of timber resources, and affects other resource values such as water quality, forest health, wildlife and fisheries, and beautiful scenery. The consequences of poor harvesting practices may not be confined to the land on which those activities occur. Neighboring landowners and nearby communities may be affected, particularly by poor harvesting practices that result in threats of increasing fire risks or degradation of culinary and irrigation water supplies. Poor harvesting practices can have a variety of implications for private landowners: waste of wood and lack of compensation for the full value of the timber removed; potential liabilities for off-site impacts resulting from poor harvesting; degradation of the physical condition of the land that may reduce its economic value; and the foreclosing of future options in terms of alternative uses of the land, its marketability, or its desirability as part of an inheritance.

Over the past 25 years, most states have implemented programs to manage and control logging on nonfederal land, making those few states without forest practices programs more desirable places for loggers to operate. Utah remains only one of four western states that do not regulate or monitor forest harvesting practices on nonfederal lands, leading to the concern that Utah has "put out the welcome mat for bad operators."

Recommendations. The Task Force concluded that the problems Utah confronts in terms of forest practices are urgent and require action. The Task Force recommends a general approach for dealing with forest practices which includes a combination of educational efforts, incentive programs, and

administrative procedures and oversight. Each of these elements is necessary in order for the overall approach to address the diverse interests and needs of forest landowners, the forest products industry, and the public. The analogy used by one of the Task Force members was of a three-legged stool that had to have three, equal-length legs in order to stand up and that would collapse with only one or two of the legs.

Educational Efforts. Task Force members prefer to rely on educational efforts as much as possible. They think this should be the primary approach used with forest landowners since they believe that most landowners are well intentioned and desire to manage their land responsibly. Educational efforts are key to enabling landowners to make informed choices and decisions regarding forest practices on their lands and to helping them optimize opportunities from harvest operations. In addition, educational efforts should be targeted at harvest operators. Educational efforts require voluntary response on the part of landowners and operators and should be considered a longer-term approach. Task Force members learned that educational efforts are necessary and good but can be insufficient because these efforts will not reach all landowners and operators and some of the information will be ignored.

Incentive Programs. The Task Force considered a variety of tax and fiscal incentives in their discussions of alternatives. Incentives are perceived to be acceptable and effective ways to encourage responsible management of forest resources. Landowners presently are not taking full advantage of various incentive programs that are already in place and it appears to Task Force members that promoting these programs is primarily an educational issue. New incentive programs to encourage forest stewardship can be created for both landowners and operators, such as expanded use of conservation easements or developing new markets for wood products certified as being produced sustainably. Participating in incentive programs is voluntary on the part of landowners and operators and should be considered a longer-term approach.

Administrative Oversight and Procedures. The Task Force thinks that the state should exercise some administrative oversight over harvesting practices on nonfederal land. This element of the approach is considered to be primarily a safety net for reaching those landowners and operators who have not responded to educational efforts and incentive programs. Several components of the oversight approach as laid out in this proposal provide critical points of contact necessary to make educational and incentive-based efforts more focused on the landowners with the greatest immediacy of harvesting potential. State oversight is considered necessary in order to address the hazards and risks posed to other resource values, to address the urgency of the situation, and to give the overall approach some "teeth." The approach has been designed in an effort to have these "teeth" impact those landowners and operators who need additional incentive to harvest land in a responsible manner while protecting those who generally have a history of conducting responsible harvesting practices. In addition, state oversight is the only element of the general approach that goes beyond elements that already are largely in place.

These recommendations are intended to encourage responsible stewardship of forested lands for continuous benefits for present and future generations of Utahans.