

State Natural Resource Strategy



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Nevada Natural Resource Strategy

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Background

Statewide Natural Resource Strategy Requirements

Nevada’s State Natural Resource Assessment provides the focus for this State Natural Resource Strategy which explains how the Nevada Division of Forestry (NDF) will address identified threats to important natural resources within priority forest landscapes. This Strategy provides a long-term, comprehensive, coordinated plan for investing state, federal, and leveraged partner resources to address the management and landscape priorities identified in Nevada’s Assessment. The Strategy provides the basis for future program, agency, and partner coordination. The requirement for the Strategy and accompanying direction is provided in the 2008 Farm Bill, which states:

“SEC. 2A. STATEWIDE ASSESSMENT AND STRATEGIES FOR FOREST RESOURCES.
“(a) ASSESSMENT AND STRATEGIES FOR FOREST RESOURCES.— For a State to be eligible to receive funds under the authorities of this Act, the State forester of that State or equivalent State official shall develop and submit to the Secretary, not later than two years after the date of enactment of the Food, Conservation, and Energy Act of 2008, the following:

- (1) A State-wide assessment of forest resource conditions, including
 - the conditions and trends of forest resources in that State
 - the threats to forest lands and resources in that State consistent with the national priorities specified in section 2(c)
 - any areas or regions of that State that are a priority
 - any multi-State areas that are a regional priority
- (2) A long-term State-wide forest resource strategy, including
 - strategies for addressing threats to forest resources in the State outlined in the assessment required by paragraph
 - a description of the resources necessary for the State forester or equivalent State official from all sources to address the State-wide strategy.

Addressing Priority Landscapes and National Objectives

Assessment data layers were developed to address the 11 national objectives which tier to the three national themes of Conserve Working Forest Lands, Protect Forests from Harm, and Enhance Public Benefits from Trees. These three themes are the basis for the State and Private Forestry (S&PF) redesign. In addition to the geospatial analysis (GIS), the Assessment incorporated information from agency reports and plans that directly related to the three themes and their associated objectives. The result of the Assessment is a listing of significant threats to the state’s natural resources and delineation of priority landscapes where NDF will focus effort. The Strategy provides a long-term plan for how NDF will address the identified threats.

The high priority landscapes are just that – landscapes. Based on the landscape scale size of the

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areas, there are no identifiable boundaries depicting where a landscape begins and ends. Rather, the landscapes are generalized areas where our analyses showed it was important to focus resources. The areas have many of the same issues, threats or resource values leading to their designation; however, any project specific planning will require a more detailed analysis of the actual resource issues and concerns.

Incorporating the Forest Legacy Program's Assessment of Need

The Nevada Forest Legacy Program completed a Legacy Assessment of Need (AON) in 2005 and updated it in 2009. The AON, a requirement for states participating in the Forest Legacy Program, is a detailed analysis of the issues pertinent to the Legacy program and helps prioritize locations in the state for Legacy project proposals. It includes input from many organizations, agencies, and individuals as well as contributions from a public comment period.

The Statewide Forestry Resource Strategy (SFRS) does not replace the AON, rather it informs and complements it. Overlapping areas of high priority within both plans identify where special emphasis will be made for FLP projects. However, the SFRS also identifies areas where the procurement of conservation easements and fee simple title is a key strategy, but may not be designated as a high priority within the AON. These areas are nonetheless important. Many agencies, land trusts, or other organizations may have an interest in protecting these areas for a variety of purposes. The strategies identified within the SFRS are intended to guide and support these efforts in addition to those in which the FLP participates. The Nevada Forest Legacy AON is an integral component of this strategy and is incorporated herein by reference.

Priority Landscapes

Nevada Division of Forestry has delineated 17 priority landscapes through out the state. These landscapes are derived from a subset of the GIS layers used in the state assessment and only relate to private lands. They are:

- Lake Tahoe Basin
- Sierra Front
- Virginia Range
- Pine Nut Range
- Middle Walker River Basin
- Paradise Valley
- Jarbidge
- Humboldt River Basin-Elko segment
- Spring Creek Area
- Ruby Mountain-Valley Area
- Northern Pequop Range
- East Humboldt Range
- Egan/Cherry Creek Ranges
- Schell Creek Range

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- Wilson Creek Range
- Virgin/Muddy River Basin
- Spring Mountain Range

These landscape areas all have issues that area addressed in the state wide threats, but NDF wanted to address more specific strategies and resources in these areas. It should be noted that most of these areas also fall into Nevada’s Forest Legacy areas. Several of these area have the potential to tie into multi-state projects with neighboring states. The statewide CWPP data for risk was extracted for the priority landscapes. Only those that ranked from moderate to extreme are mentioned.

The more specific issues have been derived from the 11 different layers that were used on this analysis. When five or more layers were identified, it created the priority landscape areas. A GIS function combined all the layers, which helped determine what layers contributed to the high value. The layers used in this analysis were made up of land attributes like ownership status and planning activities, as well as actual issues or threats such as wildfire hazards, and impaired wa-tersheds or annual grass presence.

All communities in the state have been designated as priority landscapes. The important role urban and community forests play in resident’s and visitor’s quality of life, as well as their ecological benefits in otherwise impaired environments leads to this designation.



Volunteers planting trees to help their parks and communities

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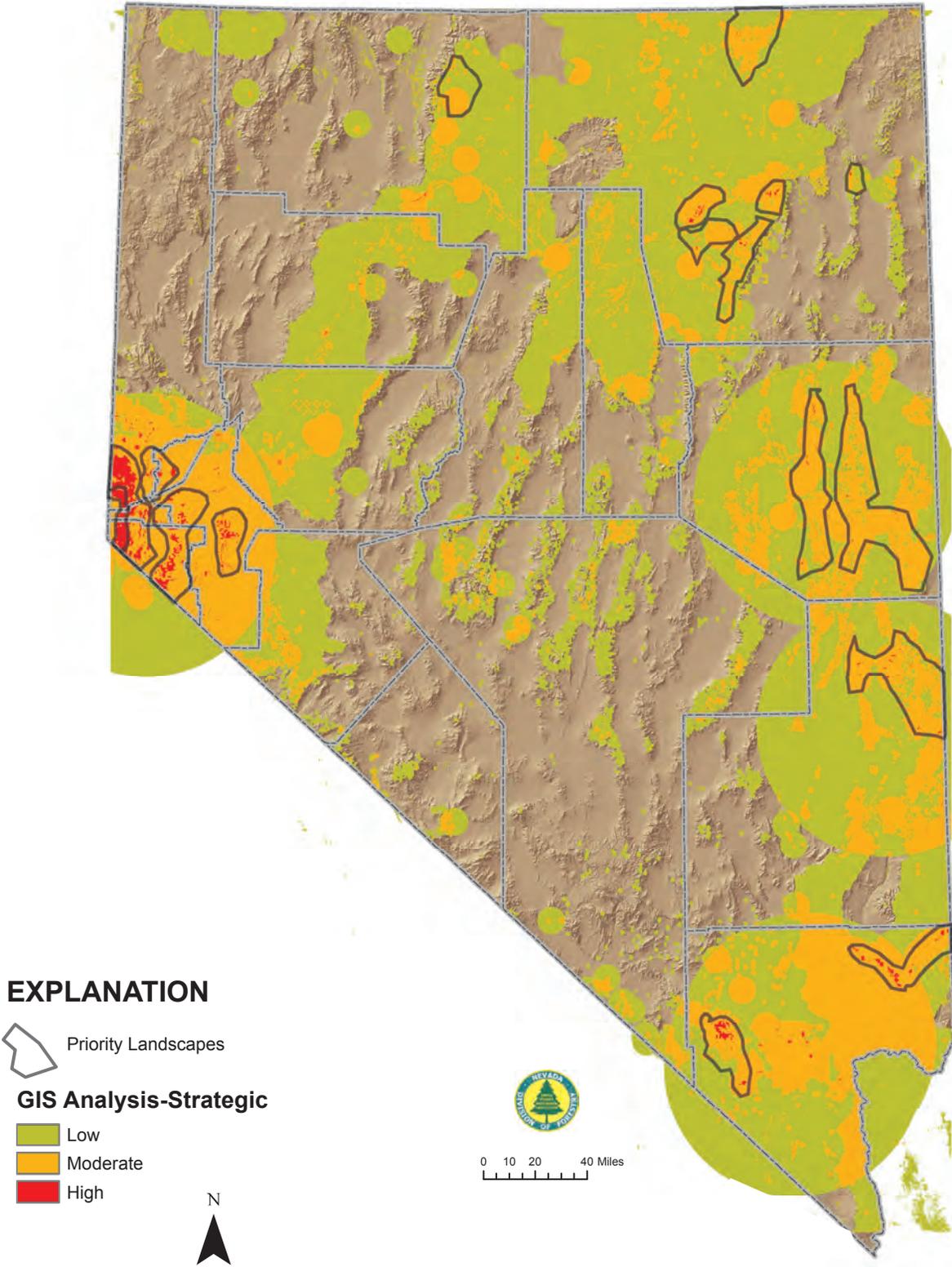


Figure 1. Priority Landscapes

Lake Tahoe Basin

Located in western Nevada and encompassing Washoe County, Carson City and Douglas County, this priority landscape is 108 square miles consisting of the following landownership acres:

U.S. Forest Service	37,965 acres
State and County Lands	9,397 acres
Private Lands	16,235 acres

In this landscape, using several remote sensing vegetative mapping data sets, there are:

Riparian Forests	173 acres
Conifer Forests	50,455 acres

The threats identified in the analysis for this landscape are:

- Forest Health
- Forest Fragmentation
- Impaired Watershed
- Sensitive/Threatened Species

In this priority landscape, there are two Community Wildfire Protection Plans (CWPPs) with the following communities and associated risk levels: Incline Village and Crystal Bay rank as extreme, Glenbrook, Logan Shoals, Cave Rock/Skyland, Kingsbury, Elk Point/Zephyr Heights/ Round Hill rank as a high, and Stateline ranks as moderate.



Lake Tahoe Basin

Sierra Front

Located in western Nevada and encompasses Washoe County, Carson City and Douglas County, this priority landscape is 401 square miles consisting of the following landownership acres:

Bureau of Indian Affairs	3,820 acres
Bureau of Land Management	10,068 acres
Bureau of Reclamation	19 acres
U.S. Forest Service	100,286 acres
State and County Lands	7,848 acres
Private Lands	128,695 acres

In this landscape, using several remote sensing vegetative mapping data sets, there are:

Riparian Forests	6,254 acres
Aspen/Deciduous Forests	289 acres
Conifer Forests	91,577 acres

The threats identified in the analysis for this landscape are:

- Invasive grasses
- Forest Health
- Forest Fragmentation
- Impaired Watershed
- Sensitive/Threatened Species
- Population Change

In this priority landscape, there are three CWPPs identifying the following communities and associated risk levels: Western Washoe Valley, Clear Creek, Genoa, and Sheridan Acres with a high rank, and Washoe City, Verdi, Carson City, Alpine View, Jacks Valley/Indian Hills, Johnson Lane, and Ruhenstroth with a moderate rank.



UNR Whittel Research Forest located along the Sierra Front

Virginia Range

Located in Storey and Washoe Counties, this priority landscape is 189 square miles consisting of the following landownership acres:

Bureau of Land Management	35,691 acres
Bureau of Reclamation	80 acres
U.S. Forest Service	642 acres
County Lands	515 acres
Private Lands	83,824 acres

In this landscape, using several remote sensing vegetative mapping data sets, there are:

Riparian Forests	219 acres
Conifer Forests	53,997 acres

The threats identified in the analysis for this landscape are:

- Invasive grasses
- Forest Health
- Forest Fragmentation
- Impaired Watershed
- Sensitive/Threatened Species
- Population Change

In this priority landscape, there are two CWPPs with the following communities and associated risk levels: Virginia Highlands ranks as extreme, Virginia City, Gold Hill and Silver City rank as high, and Moundhouse, Eastern Washoe Valley, Pleasant Valley and Steamboat rank as moderate.



Virginia Range. Photo taken on a potential Forest Legacy Project

Pine Nut Range

Located in Douglas, Lyon and Storey Counties, this priority landscape is 523 square miles consisting of the following landownership acres

Bureau of Land Management	219,294 acres
U.S. Forest Service	6,120 acres
Private Lands	106,723 acres

In this landscape, using several remote sensing vegetative mapping data sets, there are:

Riparian Forests	2,971 acres
Aspen/Deciduous Forests	7 acres
Conifer Forests	201,375 acres

The threats identified in the analysis for this landscape are:

- Forest Health
- Forest Fragmentation
- Impaired Watershed
- Sensitive/Threatened Species

In this priority landscape, there are three CWPPs with the following communities and associated risk levels: Bodie Flats ranks as extreme, Topaz Ranch Estates, Spring Valley/Double Springs and Holbrook Junction rank as high and Dayton and Topaz Lake rank as moderate.



Pine Nut Range

Middle Walker River

Located in Lyon County, this priority landscape is 238 square miles consisting of the following landownership acres:

Bureau of Indian Affairs	4,652 acres
Bureau of Land Management	51,167 acres
U.S. Forest Service	1,000 acres
State Lands	8,900 acres
Private Lands	86,429 acres

In this landscape, using several remote sensing vegetative mapping data sets, there are:
Riparian Forests 8,182 acres

The threats identified in the analysis for this landscape are:

- Invasive grasses
- Forest Health
- Forest Fragmentation
- Impaired Watershed
- Sensitive/Threatened Species
- Population Change

In this priority landscape, there is one CWPP with following communities and associated risk level: Mason Valley (includes Yerington), Weed Heights and Wabuska rank as moderate.



Middle Walker River. Photo taken during the Miller Fire 2009

Paradise Valley

Located in northeast Humboldt County, this priority landscape is 235 square miles consisting of the following landownership acres:

Bureau of Land Management	43,719 acres
U.S. Forest Service	59,843 acres
Private Lands	47,239 acres

In this landscape, using several remote sensing vegetative mapping data sets, there are:

Riparian Forests	2,373 acres
Aspen/Deciduous Forests	6,861 acres
Conifer Forests	1,896 acres

The threats identified in the analysis for this landscape are:

- Invasive grasses
- Forest Health
- Forest Fragmentation
- Impaired Watershed
- Sensitive/Threatened Species
- Population Change

In this priority landscape, there is one Community Wildfire protection plan for Paradise Valley with a risk level of moderate.



Paradise Valley

Jarbidge

Located in northern Elko County, this priority landscape is 430 square miles consisting of the following landownership acres:

Bureau of Land Management	35,481 acres
U.S. Forest Service	211,226 acres
Private Lands	22,528 acres

In this landscape, using several remote sensing vegetative mapping data sets, there are:

Riparian Forests	917 acres
Aspen/Deciduous Forests	46,827 acres
Conifer Forests	22,903 acres

The threats identified in the analysis for this landscape are:

- Invasive grasses
- Forest Health
- Forest Fragmentation
- Impaired Watershed
- Sensitive/Threatened Species
- Population Change

In this priority landscape, there is one Community Wildfire protection plan for Jarbidge with an associated risk level of extreme.



Jarbidge. Photo taken at Pole Creek

Humboldt River Basin-Elko Segment

Located in Elko County, this priority landscape is 178 square miles consisting of the following landownership acres:

Bureau of Indian Affairs	160 acres
Bureau of Land Management	46,033 acres
State Lands	3,570 acres
Private Lands	64,457 acres

In this landscape, using several remote sensing vegetative mapping data sets, there are:

Riparian Forests	3,883 acres
Conifer Forests	2,714 acres

The threats identified in the analysis for this landscape are:

- Invasive grasses
- Forest Health
- Forest Fragmentation
- Impaired Watershed
- Sensitive/Threatened Species
- Population Change

In this priority landscape, there is one CWPP with the following communities and associated risk levels: Osino and Adobe Heights rank as a high, Elko and Ryndon rank as moderate.



Humboldt River Basin. Photo taken at an NDF prescribed burn project

Spring Creek Area

Located in northeast Elko County, this priority landscape is 181 square miles consisting of the following landownership acres:

Bureau of Indian Affairs	2,664 acres
Bureau of Land Management	46,569 acres
State Lands	2,254 acres
Private Lands	64,932 acres

In this landscape, using several remote sensing vegetative mapping data sets, there are:

Riparian Forests	1,897 acres
Aspen/Deciduous Forests	2 acres
Conifer Forests	5,314 acres

The threats identified in the analysis for this landscape are:

- Invasive grasses
- Forest Health
- Forest Fragmentation
- Impaired Watershed
- Sensitive/Threatened Species
- Population Change

In this priority landscape, there is one CWPP with following communities and associated risk levels: Lamoille, Ten Mile and Lucky Nugget I and II rank as high, Spring Creek rank as moderate.



Spring Creek Area

Ruby Mountains-Valley

Located in Elko County, this priority landscape is 277 square miles consisting of the following landownership acres:

Bureau of Land Management	53 acres
U.S. Forest Service	159,532 acres
Private Lands	17,804 acres

In this landscape, using several remote sensing vegetative mapping data sets, there are:

Riparian Forests	1,078 acres
Aspen/Deciduous Forests	51,854 acres
Conifer Forests	33,294 acres

The threats identified in the analysis for this landscape are:

- Invasive grasses
- Forest Health
- Forest Fragmentation
- Impaired Watershed
- Sensitive/Threatened Species
- Population Change

In this priority landscape, there is one CWPP with the following communities and associated risk levels: Jiggs/Smith Creek rank as extreme, Lamoille and Ruby Valley rank as a high, and Spring Creek ranks as moderate.



Ruby Mountains and Valley

East Humboldt Range

Located in Elko County, this priority landscape is 105 square miles consisting of the following landownership acres:

U.S. Forest Service	23,452 acres
Private Lands	43,493 acres

In this landscape, using several remote sensing vegetative mapping data sets, there are:

Riparian Forests	414 acres
Aspen/Deciduous Forests	16,883 acres
Conifer Forests	10,980 acres

The threats identified in the analysis for this landscape are:

- Invasive grasses
- Forest Health
- Forest Fragmentation
- Impaired Watershed
- Sensitive/Threatened Species
- Population Change

In this priority landscape, there is one Community Wildfire protection plan for the Starr Valley and Death areas. These communities have a high risk level.



East Humboldt Range

Northern Pequop Range

Located in northeast Elko, this priority landscape is 63 square miles consisting of the following landownership acres:

Bureau of Land Management	35,497 acres
Private Lands	4,825 acres

In this landscape, using several remote sensing vegetative mapping data sets, there are:

Riparian Forests	2 acres
Conifer Forests	31,685 acres

The threats identified in the analysis for this landscape are:

- Invasive grasses
- Forest Health
- Forest Fragmentation
- Impaired Watershed
- Sensitive/Threatened Species
- Population Change

In this priority landscape, there are no CWPPs.



Northern Pequop Range

Egan/Cherry Creek Range

Located in northeast Elko and White Pine County, this priority landscape is 640 square miles consisting of the following landownership acres:

Bureau of Indian Affairs	1469 acres
Bureau of Land Management	318,450 acres
Department of Defense	8 acres
U.S. Forest Service	38,364 acres
State and County Lands	1,819 acres
Private Lands	49,668 acres

In this landscape, using several remote sensing vegetative mapping data sets, there are:

Riparian Forests	1,697 acres
Aspen/Deciduous Forests	107 acres
Conifer Forests	239,612 acres

The threats identified in the analysis for this landscape are:

- Invasive grasses
- Forest Health
- Forest Fragmentation
- Impaired Watershed
- Sensitive/Threatened Species
- Population Change

In this priority landscape, there are two CWPPs with the following communities and associated risk levels: Ely, Ruth, Preston and Lund rank as moderate.



Egan/Cherry Creek Ranges

Schell Creek Range

Located in White Pine County, this priority landscape is 1,112 square miles consisting of the following landownership acres

Bureau of Land Management	331,284 acres
National Park Service	77,047 acres
U.S. Forest Service	272,021 acres
State and County Lands	4,129 acres
Private Lands	27,242 acres

In this landscape, using several remote sensing vegetative mapping data sets, there are:

Riparian Forests	562 acres
Aspen/Deciduous Forests	6,517 acres
Conifer Forests	477,301 acres

The threats identified in the analysis for this landscape are:

- Invasive grasses
- Forest Health
- Forest Fragmentation
- Impaired Watershed
- Sensitive/Threatened Species
- Population Change

In this priority landscape, there is one CWPP with the following communities and associated risk levels: McGill and Baker rank as moderate.



Schell Creek Range

Wilson Creek Range

Located in White Pine and Lincoln Counties, this priority landscape is 783 square miles consisting of the following landownership acres

Bureau of Land Management	478,389 acres
State and County Lands	1,151 acres
Private Lands	17,777 acres

In this landscape, using several remote sensing vegetative mapping data sets, there are:

Riparian Forests	407 acres
Aspen/Deciduous Forests	1,206 acres
Conifer Forests	430,899 acres

The threats identified in the analysis for this landscape are:

- Invasive grasses
- Forest Health
- Forest Fragmentation
- Impaired Watershed
- Sensitive/Threatened Species
- Population Change

In this priority landscape, there are two CWPPs with the following communities and associated risk levels: Mt. Wilson ranks as extreme and Eagle Valley/Ursine rank as a high.



Fuelbreak in the Wilson Creek Range

Virgin and Muddy River

Located in Lincoln and Clark Counties, this priority landscape is 368 square miles consisting of the following landownership acres

Bureau of Indian Affairs	5,384 acres
Bureau of Land Management	155,452 acres
Bureau of Reclamation	16,708 acres
U.S. Fish and Wildlife	110 acres
National Park Serve	8,763 acres
State Lands	2,156 acres
Private Lands	46,542 acres

In this landscape, using several remote sensing vegetative mapping data sets, there are:

Riparian Forests	11,017 acres
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The threats identified in the analysis for this landscape are:

- Invasive grasses
- Forest Health
- Forest Fragmentation
- Impaired Watershed
- Sensitive/Threatened Species
- Population Change

In this priority landscape, there is one CWPP with Moapa ranked as moderate risk.



Virgin-Muddy River

Spring Mountains

Located in Clark County, this priority landscape is 338 square miles consisting of the following landownership acres

Bureau of Land Management	41,840 acres
U.S. Forest Service	169,648 acres
State Lands	256 acres
Private Lands	4,856 acres

In this landscape, using several remote sensing vegetative mapping data sets, there are:

Riparian Forests	214 acres
Conifer Forests	130,197 acres

The threats identified in the analysis for this landscape are:

- Invasive grasses
- Forest Health
- Forest Fragmentation
- Impaired Watershed
- Sensitive/Threatened Species
- Population Change

In this priority landscape, there is one CWPP with the following communities and associated risk levels: Kyle Canyon, Lee Canyon, Trout Canyon and Mt. Springs rank as extreme and Torino Ranch rank as a high.



Spring Mountains/Mt. Charleston

THREATS AND OPPORTUNITIES

The Nevada Statewide Forest Resource Assessment describes specific threats to the state's natural resources. Included in the Assessment is a detailed map depicting priority areas throughout the state. Forest management should generally focus on the priority areas while recognizing that similar issues will occur outside of priority areas and those other areas may also require attention.

The design of the Strategy will allow state, federal, and other entities the flexibility to manage the resources in ways that best suit budget and staff limitations while still effectively addressing the threats and opportunities described below. The strategies do not pinpoint specific locations throughout the state, but rather focus on trends and issues common to certain regions or vegetation types.

Each of the threats described in this document are intertwined to some degree, but several of the threats are so intertwined that the strategies to address them are best presented together. After analysis, NDF decided to address Threats 1, 2, 3 and 4 together. Although threats 4 and 5 both relate to wildfire, 4 was grouped with 1-3 due to natural resource focus, while 5, threat in the Wildland Urban Interface (WUI), was addressed separately due to its personal property and safety emphasis.

Threat 1: Much of Nevada’s forestland is affected by serious forest health related issues.

Many of the issues can be tied to lumbering history in the forests along with current management practices including custodial care and fire suppression. High stand density, “off site” species, excessive fuel accumulations and high levels of pathogens are all a result of past and current management combined with climatic conditions like drought and possible climate change. In many areas, age class diversity is lacking, leaving large parts of forests susceptible to a specific damaging agent at the same time.

Threat 2: Aspen stands are showing significant decline across Nevada.

Although aspen is relatively minor forest cover in Nevada, it’s ecological and social importance overshadows it’s limited occurrence. Several factors have been identified as contributors to this decline: diminished reproduction, succession to conifers, disease outbreaks, and browsing pressure from ungulate populations and domestic livestock. Aspen is a disturbance dependent species and the policy of fire suppression has contributed significantly to the decline of aspen populations. Most of these stands have become so conifer encroached that the fuel loading has become very high.

Threat 3: Wildfires in Nevada are increasing in size and frequency.

Fires no longer occur with the same frequency, at the same intensities, or of the same size as they historically did in Nevada. There are several fire regimes associated with the varied vegetation and land forms across the state. The areas that historically had the most frequent fires have departed further from their historic fire regime than those with longer fire return intervals. In the absence of fire, live and dead fuel accumulates to levels that make the inevitable fire burn hotter and faster than they have historically resulting in associated damage to the vegetation community and associated ecological components.

Threat 4: Increasing fuel accumulation and tree densities predisposes important watersheds to more destructive wildfires which could have significant temporary impacts on municipal water supplies and on in-stream flow values.

STRATEGIES

Implement forest management plans that improve forest conditions across landscapes

- Conduct timber stand improvement to regulate stocking levels appropriate for site carrying capacities.
- Use timber stand improvement to increase structural, age class and species diversity where

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appropriate.

- Access federal cost-share programs administered by Natural Resource Conservation Service (NRCS)-Environmental Quality Incentives Program (EQIP) to encourage landowner implementation of management plans.
- Implement management activities that promote establishment and maintenance of aspen.
- Implement insect and disease control projects when appropriate.
- Maintain desired conditions using prescribed fire.
- Integrate the use of Forest Stewardship, Forest Health and Biomass Utilization Programs to achieve comprehensive, multi-disciplinary solutions.
- Pursue opportunities for collaborative planning and project implementation on landscape scale with federal, state and local government land managers and private landowners.
- Work towards developing long term, sustainable wood supplies to support new business development.
- Promote new and continued biomass utilization opportunities/businesses to facilitate land management.

Implement fuel reduction projects that reduce high intensity wildfires

- Consider and use all appropriate tactics for fuel reduction projects – hand cutting, machine mastication, fire, etc.
- Maintain fuel levels with prescribed burning.

Develop and Improve inventory data of forest conditions

- Fully Implement FIA program in Nevada to provide data for the entire state and across all capabilities
- Continue aerial detection surveys for insect and disease conditions.
- Increase forest stewardship planning.
- Conduct surveys of conditions in aspen stands.

Increase agency expertise and capacity in prescribed fire

Continue landowner information and education (I&E) programs

RESOURCES

In addition to the partners listed at the end of this section, the following are the primary resources involved in guiding the management of Nevada's natural resources.

Nevada Division of Forestry

(NDF) staff in the resources, fire and conservation camp programs work cooperatively to plan and complete projects.

State agencies

Working for the conservation and development of the state's natural resources and implementing projects are the Nevada Department of Wildlife (NDOW), Nevada Department of Environmental Protection (NDEP) and the Nevada Division of State Lands (NDSL) and other Divisions within

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the Department of Conservation. The University of Nevada Cooperative Extension (UNRCE) is instrumental in public education and awareness and also successful in project implementation. The Nevada Division of Conservation Districts (Districts) works locally with counties and private landowners coordinating technical, financial and educational resources to meet the needs of land users. The Districts are also mapping local resources. The Nevada Tahoe Resource Team (NTRT) utilizes federal and state funds for forest restoration and fuel reduction management and planning on State park lands in the Tahoe Basin.

Federal land-use agencies

Agencies that oversee federal lands or provide assistance on other public or private lands include U.S. Forest Service (USFS), Bureau of Land Management (BLM), NRCS, Farm Services Agencies (FSA), Resource Conservation and Development Councils (RC&D).

Tribes

Nevada has 26 sovereign tribes all with various land management issues from forestland, woodlands and range land issues to riparian and lakes.

Private sector

Entrepreneurs in wood harvesting and utilization.

Regulatory Agencies

Tahoe Regional Planning Agency (TRPA)

Long-term Land Management Plans guide fuel reduction and other resource projects

Multi-jurisdictional Fuel Reduction and Wildfire Prevention Strategies for the Carson Range and Lake Tahoe Basin and similar plans throughout the state for forest land, woodlands and riparian areas identify and prioritize landscape level fuel treatments.

NEEDS

Forest Inventory and Assessment Data.

The last Forest Inventory and Assessment (FIA) report for Nevada's forest resources was published in 1992. The data in that report was based on a very small sample size compared to other states inventoried by the FIA programs and was subject to very large errors. Implementation of complete FIA coverage in Nevada is important for long range forest planning.

NDF access to federal cost share funds.

- Congress abolished the Forest Landowner Enhancement Program and allocated all cost-share funding for private forest landowners to the NRCS' EQIP program. NDF has not established an adequate mechanism to access those cost share funds for encouraging private landowner stewardship activities.

Full benefit/cost analysis of biomass utilization.

- Greater utilization of forest biomass is necessary for cost effective implementation of many

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forest resource management projects in Nevada. The inability to accurately value the more abstract benefits deriving from biomass utilization hinders support for increased utilization.

Funding for state forestry programs.

- Greater financial support for NDF would foster greater outreach to private landowners with the likelihood of increased conservation on private forestlands. Increased staffing is needed in order to develop the landscape level project plans that lead to better conservation of the state's natural resources.

PARTNERS

State/Federal/Local government agencies
Native American Tribes
Forest Products Industry
Fire Management Organizations
Non-governmental Organizations (NGO's)
Private Businesses
Private Landowners

Threat 5: Development in the wildland/urban interface is growing at a very rapid pace leading to significant losses of property.

Starting in 1987, and for all but one of the next 20 years, Nevada was the fastest growing state in the union with population increases of 66.3 percent from 1990 to 2000 and 74.6 percent from 2000 to 2009. Much of this growth was located in new subdivisions built adjacent to wildland vegetation as communities expanded. WUI fires pose great challenges to the fire service.

STRATEGIES

Implement the Wildland Fire Risk Assessments and Community Wildfire Protection Plans

- Continue working with Nevada Firesafe Council (NVFSC) and local chapters to implement CWPPs.
- Develop grant proposals and provide funding for local fuel reduction projects.
- Add a maintenance requirement for fuel management projects.
- Coordinate fuel management projects with local fire departments to broaden treated areas for enhanced effectiveness.
- Provide fuel management plans for subdivisions in NDF fire protection districts and encourage/assist with similar planning in subdivisions outside NDFs FPDs.

Increase public awareness of fire safety

- Continue prevention education programs (Smokey Bear, FIREWISE, Get Defensive, etc.).
- Continue collaboration on education with agency partners (local fire protection districts, USFS, BLM, etc).

RESOURCES

In addition to the partners listed at the end of this section, the following are the primary leaders and resources for Wildland/Urban Interface fire protection and prevention in Nevada.

Nevada Division of Forestry

NDF's Fire Management Officers, battalion chiefs, captains, career and seasonal firefighters, aviation program and conservation camp and natural resource staff are actively engaged in providing fire prevention and suppression services to the state's citizens.

Local Fire Protection Districts (FPDs)

Local Fire Protection Districts (FPDs) work closely with NDF to plan and implement fuel reduction projects on private, local and state government-owned lands for enhanced fire protection. NDF works closely with FPDs across the state in fire prevention education.

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Nevada Fire Safe Council

Nevada Fire Safe Council is an important resource, providing wildfire protection for Nevada's communities through their implementation of the CWPPs statewide, and their educational efforts.

Federal land-use agencies

Federal agency staff (USFS, BLM) are important resources in prevention education and suppression programs.

Community Wildfire Protection Plans (CWPPs).

Nevada was the first state to have CWPP's completed for all of our communities at risk in the country. The CWPP's serve as the implementation road map for fuels reduction projects in the WUI areas across the state. The plans require collaboration among landowners and federal, state and local officials.

Multi-jurisdictional Fuel Reduction and Wildfire Prevention Strategies

Multi-jurisdictional Fuel Reduction and Wildfire Prevention Strategies for the Carson Range and Lake Tahoe Basin and similar plans throughout the state for forest land, woodlands and riparian areas identify and prioritize landscape level fuel treatments.

NEEDS

Increased emphasis on working across boundaries/ownerships

- In order to achieve more effective fuel management treatments, it is important to ensure that all properties, regardless of ownership and that contribute to a fire hazard are treated.

Funding for fire prevention, fuel reduction and suppression

- Funding for fire prevention, fuel reduction as well as suppression equipment is critical to continue an effective WUI fire protection program.

Increased collaboration

- Increased collaboration on prevention education and multi-jurisdictional fuel reduction projects.

PARTNERS/STAKEHOLDERS

Federal Agencies

County and local fire entities/Emergency Management Agencies

Private Businesses

Private Landowners

NGO's

State agencies such as Department of Wildlife (NDOW), State Parks, State Fire Marshal's Office, and Division of Environmental Protection (NDEP).

Nevada State residents

Threat 6: Nevada's low elevation riparian forests are declining or have been completely replaced by exotic, invasive species.

Upstream water use has reduced flows necessary for successful regeneration of aging riparian tree populations. Salt cedar (tamarisk) and other invasive plant species have completely taken over large stretches of Nevada's rivers and riparian areas. Not only do these invasive plants replace native species and reduce the quality of wildlife habitat, they present significant wildfire hazards.

STRATEGIES

Invasive species control and riparian restoration projects

- Control and reduce salt cedar, Russian olive and other invasive or noxious species along water courses.
- Reintroduce native vegetation or introduce desired non-native species for riparian rehabilitation.
- Emphasize and fund riparian restoration and improvement of riparian habitats.
- Promote partnerships with coordinated weed management areas, research (U.S. Fish and Wildlife Service (U.S. FWS), UNR, chemical companies), sportsman's groups, NGO's, natural resource agencies, communities, private landowners.
- Conduct bioengineering projects to stabilize streambanks.

Research & Monitoring

- Conduct research to determine the best techniques to control invasive plants and regenerate native riparian forests.
- Monitor and re-treat/re-seed/re-plant treated areas as needed.

Education

- Increase the public understanding of the decline in our low elevation riparian forests and why it's important.
- Conduct demonstration projects to provide examples and evaluate results of different restoration tactics.
- Form a statewide committee to devise a promotional/educational campaign.
- Create a clearinghouse (website) for all projects, research, and contacts statewide.

RESOURCES

In addition to the partners listed at the end of this section, the following are the primary leaders and resources for riparian restoration efforts in Nevada.

Nevada Division of Forestry

NDF's natural resource management staff and conservation camp personnel have actively worked on controlling invasive plants along the state's riparian areas. Projects have included cutting, burning, spraying, pole planting, willow wattling and other bioengineering practices. NDF conservation plant materials program produces wetland sod, cottonwood and willow poles

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and wattles for restoration projects.

Nevada Department of Agriculture

Nevada Department of Agriculture is an important resource in riparian restoration efforts. Their staff have been leaders in research into biological control practices for tamarisk. Additionally, they provide expertise and regulatory oversight of herbicide use in riparian restoration work.

UNR Cooperative Extension

UNR Cooperative Extension is the primary education and outreach entity in the area of invasive and noxious weed control. Their programs provide science-based education materials written for non-scientific readers and users.

Cooperative Weed Management Groups/Areas

Cooperative Weed Management Groups/Areas form the local units of “place based” concern and efforts to control invasive weed problems.

Conservation Districts and RC&Ds

Conservation Districts and RC&Ds work in concert with weed groups and other land owners on invasive weed control projects.

NEEDS

Increased collaboration

- Greater coordination between state and federal agencies, private landowners, and other concerned entities to comprehensively treat significant stretches of riparian habitat.

Funding

- Increased funding for riparian restoration projects, research, and public education programs. Funding for a statewide coordinator of riparian restoration and invasive weed control.

PARTNERS/STAKEHOLDERS

NRCS Plant Materials Centers
Conservation Districts
UNR Cooperative Extension
Weed and other Civic Groups
NGO's
State and Federal Agencies
Private landowners

Threat 7: Nevada's urban forests are threatened with decline resulting from changes in state demographics, the economy and water conservation programs.

Many threats to Nevada's urban forests, which are primarily landscaped and irrigated trees on both public and private lands, are a result of interacting factors starting with 20 years of rapid population growth and building and changing demographics, followed by a declining economy, unemployment, housing foreclosures, vacancies and rentals, increased water costs and water conservation programs.

STRATEGIES

Increase and improve resources and partnerships to meet the growing need for technical assistance, education and outreach

- Seek ways to strengthen and expand existing partnerships.
- Develop new partnerships with volunteer groups, communities, public agencies, nurseries, arboretums.
- Build partnerships with non-traditional entities such as homeowner associations, developers, property managers, realtors, casinos and businesses to supplement existing funding or expand outreach and educational efforts.
- Integrate NDF programs and projects.

Education and Outreach

- Utilize resources, partners and funding and provide technical assistance for tree care education on arborist techniques, tree care, tree selection and the benefits of the trees to the public and public agencies to improve tree care and urban forest health. Training for the green industry helps both private and public trees since some cities contract with the private sector for some of their tree care needs.
- Support professional development opportunities e.g. International Society of Arboriculture, Arborist certification training, testing, continuing education units, urban forestry management and planning to improve tree care and the health of the urban forests.
- Utilize media such as websites, newsletters, newspaper Public Service Announcements, Nevada Shade Tree Council speakers bureau, trade shows and exhibit booths to disseminate tree care information.
- Provide funding support for Hispanic Green Industry training in both Northern and Southern Nevada. Elevate safety issues and practices.
- Integrate delivery of the UF message with other NDF programs and activities.

Community UF Program Development and Management

- Utilize partners, or provide funding and expertise to implement or update tree inventories and canopy studies, tree benefits analyses, tree species guides, tree ordinances and policies and community forestry management plans.
- Promote region wide tree ordinances. Both Truckee Meadows Community Forestry Coalition (TMCFC) and the Southern Nevada Regional Planning Coalition (SNRPC) Tree Working Group envision this as a long term outcome in their respective geographical areas.

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- Promote Greenprint, a step by step model developed and implemented by the Sacramento Tree Foundation using the benefits of trees to guide cities and counties to collaborate in the development of regional UF initiatives and the creation of urban forestry programs and educational campaigns. The TMCFC and the SNRPC Tree Working Group and the Carson City Shade Tree Council are interested in bringing Greenprint training to their prospective areas.
- Encourage qualifying incorporated communities and counties to become Tree City USA (TCUSA).
- Develop outreach and training programs based on the results of the inventories, canopy studies and benefit analyses to teach communities the value of trees. Show the economic and social benefits of building with trees.

Funding

- As funding level permits, provide pass-through funding to communities for tree management planning, capacity building, tree inventory and assessments, educational activities and tree planting.
- Make applications for Western Competitive Redesign Grants for urban forestry projects.
- Pursue other sources of grant funding.
- Encourage communities to increase their funding sources for UF and think of creative ways to fund UF projects.

Tree Planting

- Encourage right tree right place planting and projects such as Arbor Day, Nevada Shade Tree Week.
- Use the results of tree benefits analysis to encourage planting trees to mitigate the effects of growth, stormwater runoff, air quality and energy conservation, and for increasing and maintaining the urban tree canopy.
- Promote the setting of canopy goals and tree planting initiatives with completed canopy and tree inventory assessments.

Reduce runoff from urban areas into watersheds.

- Educate community leaders about the benefits of trees for reducing stormwater runoff.
- Encourage communities to view trees as capital assets.
- Encourage tree plantings to break-up non pervious surfaces such as in medians, parking lots and along streets.

Utilize aerial photography to evaluate community tree canopies to determine where tree plantings should be focused.

Track on the ground management activities, insect and disease outbreaks, and wildfires as they occur.

RESOURCES

In addition to the partners listed at the end of this section, the following are the primary leaders and resources for UF in Nevada.

Nevada Division of Forestry

NDF has a state Urban and Community Forestry Program Coordinator in the state office. Additional assistance to the program or for special project activities is through contracts through an employment agency. The program receives assistance from the three regional resource management officers. NDF has two state tree nurseries that grow trees and shrubs adapted to Nevada's harsh climate and provide outreach and education on tree care and growing trees for conservation purposes.

Nevada Shade Tree Council

Nevada Shade Tree Council (NSTC) serves as the advisory board for the NDF Urban and Community Forestry Program. The Council's mission is to offer assistance and promote the awareness of proper tree care and to provide leadership, development, and support in community forestry programs across the state. The council is a 501 (c)3 nonprofit organization with representation from municipal parks, tree advocacy groups, Nevada Cooperative Extension, arboreta, arborists and citizen volunteers. The U.S. Forest Service and Resource Conservation and Development Agency (RC&D) and NDF also participate in Council activities as ex-officio members.

The Council supports 2-4 annual arborist training sessions and provides funding for community Arbor Day and Nevada Shade Tree Week tree plantings. Since 2000, the Governor has proclaimed the last week of October, from 'Make a Difference Day' through Nevada Day, as Nevada Shade Tree Week. The proclamation recognizes the accomplishments of NSTC and promotes tree planting in all Nevada Communities.

Truckee Meadows Community Forestry Coalition

Truckee Meadows Community Forestry Coalition (TMCFC) was formed in the spring of 2008 by the Truckee Meadows Water Authority (TMWA). Anticipating the loss of trees and landscapes, and already seeing the effects on trees as tenants reduced watering and eliminated landscapes, TMWA formed a working group under a Memorandum of Agreement to address how to mitigate the issue. The Coalition's goal is to enhance the protection and preservation of the public and private community forest through education, conservation, research and collaborative policy development. The coalition hosts tree care workshops, tree walks and a website on all aspects of tree care in the Truckee Meadows, a service area that includes the cities of Sparks and Reno and the urban areas of Washoe County.

Southern Nevada Regional Urban Forestry Working Group

Southern Nevada Regional Urban Forestry Working Group (SNRPC Tree Working Group) is a recently formed (2009) working group of the Southern Nevada Regional Planning Commission with a goal to enhance tree resources and education and to implement urban forestry best management practices in southern Nevada. Members are from the Las Vegas Valley and area municipalities; Boulder City, Las Vegas, North Las Vegas, Henderson, Clark County. Outside agencies participating in this group are NDF, High Desert RC&D, Southern Nevada Water Authority, University of Nevada Las Vegas and Clark County School District.

Other organizations

Other organizations and groups that provide tree care outreach and workshops in Nevada are the Reno Urban Forestry Commission, Carson City Shade Tree Council, Nevada Cooperative Extension, Desert Green, Southwest Trees and Turf, Desert Green, the Southern Nevada Arborist Group, RC&Ds and Western Chapter International Society of Arboriculture.

Best Management Practices

Best Management Practices guide for Urban Trees in Southern Nevada, “Cleaner Air, Tree by Tree” (Guide) was developed by a working group of municipal planners, air quality specialists, parks and recreation and NDF and funded by the USFS. The guide provides information on how trees improve communities and their environment, and guidelines and standards to use when planning for trees. The Guide has been favorably received and direct results have been funding for and implementation of an inventory in Las Vegas and a Las Vegas Tree Initiative. The project also gained interest from the other Vegas Valley municipalities and lead to the formation of the regional tree working group, (NRUFWG).

Assessments and Inventories

Planned for tree canopy assessments and inventories, and existing inventories will help develop a clear picture of the diversity, age and condition of community forests in Nevada and provide tools to communities for better UF planning and management.

Western Competitive Redesign Grants

NDF UCF has had success in its applications for USFS Redesign grants for both UCF funded projects and other S&PF program funds. These grants can be for up to \$300,000 and will fund larger, region wide projects. UCF will apply annually for funding.

ARRA Grants

UCF received two 2009 ARRA Grants. The Washoe County ARRA will fund a canopy study in the Truckee Meadows, Hispanic Green Industry tree care training in Spanish, and professional forestry assistance to Washoe County and the City of Sparks. The Clark County ARRA will fund county wide ordinances, Hispanic Green Industry tree care training in Spanish provide free plants to the urban areas of Clark County, and provide funding to retain NDF nursery staff and contract for two years of UF assistance.

NEEDS

NDF Staffing and funding

Increased federal funding or the allocation of state funding would allow for permanent UF staffing in the regional offices and reinstate a competitive grant program to pass through funding to communities for tree planting and the creation of sustainable UF programs. Federal funding declines starting in 2006 resulted in the elimination of NDF community tree planting subgrants and was the beginning of a decline in UF staffing levels. Although tree survival on funded projects in small communities was as low as 50% after many years, the subgrant program created an opportunity to provide grant writing training, meet and enlist local tree advocates, community leaders and volunteers, learn about local issues and needs, and provide professional forestry services

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to the community. The State provided funding for UCF in 2007 as a result of a proposal from NSTC. It is however, with state agency budget cutbacks as high as 25 percent, unlikely that UCF will receive any state funding in the foreseeable future.

Community needs

There is a need in many Nevada communities and counties for tree inventories, tree management plans, ordinances, professional arborist trained staffing and education on the benefits of trees and community specific UF benefits derived from inventory and canopy assessments.

Education and outreach

There is a need for increased outreach and education on the benefits of community forests and on tree care to the public, the green industry and communities.

PARTNERS

Nevada Division of Forestry Programs: fire, resources, conservation camp and nursery
Nevada Non-profit Tree Advocacy Groups
 Desert Green Inc.
 Nevada Shade Tree Council (NSTC)
 Nevada Landscape Association
 Southern Nevada Arborists Group (SNAG)
Southwest Tree and Turf and Stone Peak Services
Local tree boards and beautification committees
 Ely Tree Board
 Carson City Shade Tree Council
 Reno Urban Forestry Commission
Tree Advocacy Working Groups
 Truckee Meadows Community Forestry Coalition (TMCFC)
Southern Nevada Regional Urban Forestry Working Group of the Southern Nevada Regional Planning Committee
City Foresters: Henderson and Reno
City and County Parks and Recreation Departments
Nevada Cooperative Extension
Nevada Cooperative Extension Master Gardener Program (Washoe County, Carson `City, Douglas County, Clark County)
Nevada Tahoe Conservation District
Southern Nevada Conservation Districts
Resources Conservation Service RC&Ds:
 High Desert RC&D
 Da Ka Doiyabe RC&D
Nurseries
National Arbor Day Foundation
USFS Urban Forestry Research
Western Chapter International Society of Arboriculture
Subgrantees

Threat 8: *Plant and animal habitats are under pressure in Nevada.*

Many resource demands have the potential to negatively impact plant and wildlife habitat. Most of the impacts to threatened and endangered plant populations are a result of human activities which can be categorized as agriculture, hydrology, recreation, natural resource extraction, development and military activities. The same general categories of impact source are applicable to Nevada's wildlife species as well. In addition, natural processes such as bark beetles and wild-fires can impact vegetation and wildlife habitat, either positively or negatively. Other forestry issues, such as aspen decline and riparian forest decline, can be detrimental to wildlife habitat.

STRATEGIES

Focus planning efforts at landscape level to maintain or enhance forest and woodland communities

- Seek opportunities to coordinate land management planning and project implementation with existing projects on federally managed lands.
- Foster the development of "land management coalitions" that involve local land owners and managers with common interests and goals.

Work to protect large acreages of forest and other habitats from development pressures

- Use Forest Legacy to pursue conservation easements and land purchases.
- Encourage the development of forest product companies/markets to improve incentive to keep forestlands in production.

Increase capacity for providing management information to landowners, resource managers and industry

- Increase collaboration and communication with Nevada Department of Wildlife (NDOW).
- Incorporate NDOW's "NDF Integrated Module of the Wildlife Action Plan" into Stewardship planning for private landowners.
- Include links to NDOW and other conservation agencies and organizations on NDFs website.

Integrate programs to provide holistic management tools to all landowners.

- Make greater use of cost share programs such as NRCS Wildlife Habitat Incentives Program (WHIP).
- Consult with NDOW staff when developing resource management plans.
- Incorporate NDOW's "NDF Integrated Module of the Wildlife Action Plan" into Stewardship planning for private landowners.

Increase the use of prescribed fire in management of vegetation types.

- Provide more support for staff interested in prescribed fire.
- Provide logistical and funding support of implementation of prescribe fires.

RESOURCES

In addition to the partners listed at the end of this section, the following are the primary leaders and resources for natural resource management and stewardship in Nevada.

Nevada Division of Forestry

NDF personnel provide stewardship planning for private landowners and state and local government land managers in the state. The state's forest legacy program seeks to conserve forest and other lands through promoting conservation easements and other natural resource protection measures. The State nurseries and seedbank produce and distribute plant materials for critical habitat restoration projects.

Nevada Department of Wildlife

Nevada Department of Wildlife is the primary state wildlife management agency. Their programs to conserve and enhance wildlife habitat and populations include all animal species in the state. They maintain a series of wildlife refuges across the state utilizing prescribed fire and other strategies.

Conservation Districts

Conservation District staff work with private landowners to promote natural resource conservation on managed lands.

Natural Resource Conservation Service

Natural Resource Conservation Service (NRCS) works with agricultural producers to promote sound land management and conservation. They oversee important landowner cost-share programs-WHIP and EQIP.

US Forest Service and Bureau of Land Management

US Forest Service and Bureau of Land Management staffs manage the largest portion of wildlife and plant habitats in the state. Their botanist and wildlife biologists are important collaborative partners.

State Wildlife Action Plan

NDOW produced an NDF Integrated Module of their Wildlife Action Plan targeted on the priority landscapes identified in NDFs Forest Resource Assessment.

NEEDS

Increased collaboration

- Streamlined process for working across boundaries/ownerships, particularly between federal and other land ownerships.
- Increase collaboration between natural resource agencies on educational and multi-jurisdictional projects.

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Funding

- NDF Access to federal EQIP and WHIP private landowner cost-share funds forest landowners

PARTNERS AND STAKEHOLDERS

Nevada Natural Heritage Program
Clark County Desert Conservation Program
Las Vegas Springs Preserve
U.S. Fish and Wildlife Service
Nevada Rare Plant Working Group
UNR
Conservation Districts/RCDs
NGOs and private conservation groups
Nevada state residents

Threat 9: *Fragmentation of land ownership is occurring in some areas of the state.*

The phenomenon is largely a result of economic pressures for development on lands that historically were used for production of natural resources. Where it occurs, or is likely to occur, there is potential for negative impacts on natural resource production and ecological services from affected lands. Production efficiencies decline with decreasing land parcel size. Additionally, comprehensive treatment of forest health issues becomes more difficult to address and fire management becomes more complex as fragmentation of ecosystems increases.

STRATEGIES

Minimize effects of fragmented ownership

- Encourage landowners to work together instead of working as single entities.
- Continue to provide subdivision level management planning (Holbrook Jct., Virginia Highlands, etc.) rather than for individual entities.
- Target homeowner associations, subdivisions and general improvement districts to conduct workshops and other informative events.

Provide incentives to conserve working forestlands

- Promote Forest Legacy program.
- Work with NGOs like Nevada Land Trust to promote conservation easements and acquisitions.
- Encourage the development of forest product companies/markets to improve incentive to keep forestlands in production.

RESOURCES

In addition to the partners listed at the end of this section, the following are the primary leaders and resources for natural resource management and stewardship in Nevada.

Nevada Division of Forestry

NDF's Forest Legacy Program has successfully facilitated a land purchase by Carson City that protects the Ash Canyon Gateway properties. The program is currently helping Washoe County acquire the Bower's Mansion properties. NDF's natural resource management personnel have engaged the "subdivisions" of Virginia Highlands, Holbrook Jct., Double Springs Flats and Topaz Ranch Estates in large scale vegetation management plans for the subdivisions. NDF's biomass utilization program continues to meet with entrepreneurs interested in developing businesses built around utilization of biomass produced from land management activities in Nevada.

Non Government Organizations

NGO's like Nevada Land Trust work with landowners and local governments to find solutions that protect and conserve large tracts of land from development pressures.

NEEDS

Increased collaboration

- Sustainable forest and agricultural product markets are necessary to provide incentives to maintain working forest lands.
- Long term guaranteed flow of raw material from federally managed lands to provide security for potential entrepreneurs.

Funding

- NDF access to federal EQIP and WHIP private landowner cost-share funds for forest landowners.

PARTNERS AND STAKEHOLDERS

Conservation Districts
NGO's
State, Local and Federal Agencies
Forest Products Industry
Private Landowners

Threat 10: *Nevada is considered highly sensitive to climate change due to several factors, including an already naturally dry climate and dependence on mountain snow for surface water.*

There may be impacts on the amount and timing of water runoff and on the length and severity of fire seasons. Under a long term reduced precipitation scenario, shifts in forest cover types is possible, along with difficulty in site rehabilitation following large scale disturbances like wild-fires. Additionally, increased insect activity on drought stressed trees would likely lead to adverse impacts on forests. Nevada will continue to evaluate its land management activities in light of possible long term climate change, and make appropriate adjustments where necessary.

STRATEGIES

Forest management under a changing climate

- Prioritize species and populations for vulnerability to climate change.
- Adjust seed source and species composition during planting following large scale disturbances.
- Mix seed provenances in reforestation.
- Identify and protect areas of high genetic diversity for future adaptive needs.
- Store seed from vulnerable plant populations.
- Focus on management for diverse forests which are naturally resilient to threats posed by climate change.
- Adjust residual stocking levels to promote healthy forest conditions.
- Adjust slash disposal requirements, utilization standards, and harvest design to accommodate developing biomass utilization opportunities.

Explore the carbon sequestration potential of forests

- Explore possibility of financial gain from forest management strategies favored by carbon exchange markets.
- Educate and inform landowners of how they may benefit from the carbon exchange market.

RESOURCES

In addition to the partners listed at the end of this section, the following are the primary leaders and resources for natural resource management and stewardship in Nevada.

Nevada Division of Forestry

NDFs natural resource management staff write and oversee implementation of forest stewardship plans that include reforestation and restoration activities. Our plant materials program actively collects appropriate seed from identified sources to meet agency and landowner objectives.

NEEDS

Viabile carbon exchange market

Viabile carbon exchange market for landowners to participate in.

Research the effects of climate change on our forests and other environments

Specifically effect on:

- Forest structure
- Forest composition
- Forest growth
- Insect and disease susceptibility
- Invasive weeds

Strategies

Develop management strategies under changing climate scenarios.

Native Seed

Seed collections from identified sources important sources to mitigate climate change effects on plant communities.

PARTNERS AND STAKEHOLDERS

UNR Cooperative Extension
Cooperative Weed Management Groups/Areas
Civic Groups
NGOs
State & Federal Agencies
State residents

Threat 11: *Invasive weeds are a well documented problem in Nevada.*

Invasive weeds are highly competitive and aggressive, outcompeting and replacing native vegetation. They cause economic loss, environmental degradation and are often difficult to control. Additionally, they can increase the occurrence, size, frequency, and intensity of wildfires.

STRATEGIES

Monitor invasive plants within the state

- Coordinate monitoring with appropriate entities in adjacent states.
- Provide support for agency and weed group personnel on GPS training for weed mapping.
- Use GIS technology to track the detection and infestation of invasive species.
- Monitor long-term invasive species population trends and the effectiveness of treatments.

Increase knowledge of weeds and issues

- Support weed identification trainings for agency staff and public.
- Participate in and support weed cooperatives.

Develop rehabilitation and restoration strategies for using native or desired non-native species for restoration and rehabilitation

- Use state seedbank to stock and provide appropriate species for rehabilitation and restoration needs.
- Encourage forest and fire management techniques that do not promote the spread of invasive species such as cleaning forestry equipment prior to moving into new management areas.
- Careful prescribed fire planning to avoid increasing invasive species such as cheatgrass.
- Manage forests and rangelands to promote a healthy landscape more resistant to invasive populations.

RESOURCES

In addition to the partners listed at the end of this section, the following are the primary leaders and resources for natural resource management and stewardship in Nevada.

Nevada Division of Forestry

NDF staff identify invasive weeds and incorporate control strategies into their stewardship plans for landowners and managers. Our GIS specialist provides GPS/GIS training for in-house and outside agencies and group to facilitate their weed management programs. NDF's seedbank program provides seed for fire rehabilitation projects focused on invasive weed control.

Nevada Department of Agriculture Plant Industry Division

Nevada Department of Agriculture Plant Industry Division is an important resource for invasive and noxious weed control. Their staff effectively coordinates resources and efforts toward proactive prevention, control, and management of invasive weed species in Nevada to benefit all land users in the state.

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UNR Cooperative Extension

UNR Cooperative Extension is the primary education and outreach entity in the area of invasive and noxious weed control. Their programs provide science-based education materials written for non-scientific readers and users.

Cooperative Weed Management Groups/Areas

Cooperative Weed Management Groups/Areas form the local units of “place based” concern and efforts to control invasive weed problems.

Conservation Districts and RC&Ds

Conservation Districts and RC&Ds work in concert with weed groups and other land owners on invasive weed control projects.

Federal Agencies

Federal land management agencies are actively involved in identifying, mapping and controlling invasive weeds on their lands.

NEEDS

Improved GIS database of weed occurrence

- The NV Department of Agriculture is developing an electronic database of weed populations across the state.

Increased collaboration

- Improved capacity of federal and state agencies to identify and control invasive species .

Funding

- Funding for forest weed management efforts statewide.

PARTNERS AND STAKEHOLDERS

UNR Cooperative Extension/Master Gardeners
NV Department of Agriculture
Coordinated Weed Protection Groups/Areas
Civic Groups
State, local and federal agencies
State residents
Chemical companies
NRCS

RESOURCE INVESTMENT

NDF receives funding from the State general fund and from the US Forest Service S&PF for staffing and project implementation. The federal support for the state's natural resource and fire programs furthers the state's efforts at promoting sound natural resource management and protection of the state's natural resources. The elimination of federal cost-share programs for state forestry agencies and directing those funds to the Natural Resource Conservation Service has removed one of the primary incentives for private forest landowners to implement stewardship plans written by NDF staff. NDF will use state and outside funding to implement the strategies outlined in this document that target issues identified in the State Assessment. Funding received from the State will be used for staff salaries and equipment, and funding secured from outside sources will be used for both staff salaries and equipment, support, travel and project implementation.

It is important to note that although the intent of this document and the companion forest resource assessment is to be comprehensive, there will undoubtedly be unforeseen needs outside those identified that will require NDF's expenditure of resources.

INTERSTATE COLLABORATION

Nevada's neighboring states are faced with the same or similar issues identified in Nevada's assessment. Where the same issues cross state lines, states must work collaboratively to address similar issues across a broader landscape. Inter-state collaboration on addressing natural resource issues is occurring between Nevada and neighboring states.

The Lake Tahoe Basin is one priority landscape on the Nevada/California state line. The two states and the USFS-Lake Tahoe Basin Management Unit are currently working collaboratively on addressing wildfire hazard in the WUI through education and fuel reduction projects. Additionally, through regulation of forest practices the two states are ensuring that the water quality of Lake Tahoe is not impacted by non-point source pollution from forest management activities. A recent "all lands" proposal to address the increasing densification of pinyon/juniper woodlands in the tri-state area of Nevada/California/Oregon has been submitted to the USFS R-4. Nevada has collaborated with Utah on addressing tamarisk invasion in the states' low land riparian areas, and is pursuing similar collaborative effort with Arizona. Nevada will continue to work collaboratively with its five neighbor states to address shared threats.

MONITORING/REVISION

NDF currently monitors the impact of its natural resource programs through tracking the number of landowners and communities assisted, and acres of land that are improved or enhanced as a result of our efforts. Longer term monitoring is achieved through periodic inspections of a sample of our projects to ensure that conditions are maintained, or intended trajectories are occurring. Additionally, NDF has a set of performance indicators provided to the state legislature biannually. These will continue to be one internal measure of our agency's effectiveness at accomplish-

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ing our mission.

Many of the threats identified in our assessment are of a nature or scale that makes developing an effective and comprehensive monitoring protocol that measures the impact of our agency's individual or collaborative efforts a challenge. Land ownership patterns and differing land owner priorities or goals further complicates monitoring effectiveness. However, some of the issues identified, like the wildfire threat in the WUI, are more readily addressed and monitored on a shorter timeframe. CWPPs provide a baseline datum on which to measure change. A review of the progress in implementing recommendations contained in the CWPPs and evaluation of annual fire statistics will provide a meaningful assessment of collaborator effectiveness at reducing threats.

Given that there is no realistic finite end to addressing many of the identified threats/issues, monitoring our progress will be a continuous process. Collaboration with identified partners will be an important component of any monitoring effort.

Ongoing monitoring will provide the measuring stick for determining whether changes are needed in our approach to addressing identified threats/issues. Strategies that prove effective will continue and ones that are less effective will be evaluated for needed change. The strategies identified are part of a long term program which shall be updated and adapted as a result of effectiveness monitoring and changing natural resource conditions.