Ecological Restoration on the Modoc National Forest

Overview

This chapter describes the landscape-level restoration strategy for the ecosystems on and adjacent to the Modoc National Forest. Nestled in northeastern California, the Modoc National Forest is a land of ecological contrasts, including vast stands of sage steppe intermixed with coniferous forests, ephemeral wetlands, lava flows, and high-desert plateaus. Consequently, it contains a variety of habitats for unique plants, wildlife, and fish. Geologically, the Modoc NF is unique in the world for its obsidian sources, which have added to the rich prehistoric and settlement history. The vastness and remoteness of the Modoc and expansive adjacent private lands create a penetrating solitude that is valued by both locals and visitors, while continuing the cultural heritage of this place.

The objective of the restoration on the forest is to treat landscapes in a holistic fashion regardless of ownership. Accordingly, the forest has engaged many partners in all phases of planning, implementation, and monitoring. Due to its location outside of the political forefront, the forest and its partners recognize the need to work together to stretch the money they receive both from internal budgets and grants.

Modoc County is consistently in the lowest 20 percent of California counties, based on various economic metrics (e.g., per capita income). The grazing industry is a key component of the county economy. Although Modoc County is poorly located to compete for the relocation of existing and expanding businesses, a stable biomass industry would enable the creation of jobs, while providing a key driver in the forest's ability to proceed with large-scale restoration. The estimated economic benefits of restoration efforts on the Modoc could range from $606 to $1,402 plus per acre, based on an Oregon study; the same study found two to three indirect jobs created for each direct job created. For this reason the Modoc NF believes the county would receive a great economic boon from implementation of planned restoration activities.

Past Projects

Turner Creek

Watershed restoration has been a key focus on the forest, especially given the number special-status fish species. Turner Creek on the Devil's Garden Ranger District was selected as a focus area for long-term restoration, due to condition of the habitat and the restricted range of the endangered Modoc Sucker (*Catostomus microps*). This area is key to maintaining the population as a whole. Although the project began with in-stream improvements, it expanded into the uplands to achieve habitat improvement goals for the Modoc sucker and other wildlife species.

Work began in the Turner Creek area in 1985 and expanded recently with a series of grants from United States Fish and Wildlife Service (USFWS)—Klamath Falls Office, Modoc County Resource Advisory Committee, and Rocky Mountain Elk Foundation. The current Turner Creek Project sought to enhance vegetation condition using the following: (1) a 200-acre riparian exclosure, which will receive long-term light grazing in a rest-rotation system; (2) a 2,900-acre riparian pasture system with early season, limited grazing; (3) installation of a cattle guard and stock tanks to redistribute livestock across the allotment; (4) maintenance of an existing fish barrier to decrease the presence of competing exotic fish species; (5) construction of a fish barrier to prevent movement of exotic fish species; and (6) thinning of 132 acres of junipers in the floodplain and encroaching conifers in an adjacent aspen stand to enhance riparian plant species abundance. The forest staff members expect an increase in riparian and upland plants, which not only improve riparian function and creek shading for the Modoc sucker, but in turn provide food and cover for elk, deer, antelope, and a variety of land birds. The pictures below show before (L) and after (R) the restoration.

Sage Steppe Restoration

The 785,000-acre sage steppe landscape has been altered significantly in the past 150 years. Historic landscape vegetation patterns in the sage steppe consisted of a mosaic of big and low sagebrush, grasslands, and western juniper. Fire controlled these landscape patterns. Factors such as past livestock grazing, introduction of nonnative invasive species, and fire suppression have altered plant community composition. The changes in plant composition have had wide-ranging effects: (1) increased juniper density causing a reduction in ground cover with corresponding increases in erosion; (2) a decrease in greater sage-grouse and antelope populations due to the decrease in sagebrush and other native plants; and (3) a decrease in livestock forage. A decrease in the forage base coupled with the potential listing of the greater sage-grouse, makes implementation of sage steppe restoration projects critical from a social, economic, and ecological standpoint.

Turner Creek before restoration.

Turner Creek after restoration.

Sage steppe restoration on the Modoc National Forest is focused on the restoration of ecosystem processes and vegetation conditions that resemble historic mosaics, so that fire can be re-introduced; the forest is trying to use biomass as the vehicle for implementing national renewable-energy direction where appropriate. Although sage steppe restoration began on the Modoc National Forest on a small scale back with projects like the 350 acre chaining to decrease juniper cover in 1969, the multi-agency Sage Steppe Ecosystem Restoration Strategy Final Environmental Impact Statement and companion Record of Decision have allowed for a large-scale approach to managing sage steppe habitats across various ownerships. Many partners have supported the sage steppe restoration, including the Devil's Garden/Clear Lake Sage-Grouse Working Group; the Natural Resource Conservation Service (NRCS)—Tulelake District and Alturas District Offices; USFWS—Klamath Falls Office and the Klamath Basin National Wildlife Refuge Complex; Modoc County Resource Advisory Committee; Lava Beds—Butte Valley Resource Conservation District (RCD); Bureau of Land Management (BLM)—Alturas Field Office.

The NRCS Sage-Grouse Initiative has been instrumental in jump-starting large-scale treatments. The Sage-Grouse Initiative is the culmination of work by the NRCS to find a way to proactively manage greater sage-grouse so there is no need to federally list the species. If the greater sage-grouse were listed as a threatened or endangered species, this event would likely have a dramatic impact on livestock ranching and other industries in northeastern California and Modoc County.

Monitoring to measure project success consists of measuring the following: noxious weed presence, old-growth juniper retention, point line intercept data (to determine understory grass and forb response to treatments), and dense juniper retention. This data is housed in a database cooperatively developed by the BLM—Alturas Field Office, the United States Geological Survey (USGS)—Bend Office, the Modoc National Forest, and others.

The forest has been active in getting the restoration message out to the public. A series of ADA-compliant interpretative panels was placed in Howard's Gulch, highlighting long-term watershed and sage steppe restoration efforts. The Modoc NF submitted a release to the Region 9 Success Story Reporting Web site telling about this project. Also, the Doublehead Ranger District was recently featured on a field trip sponsored by Oregon State University. The following photo shows an interpretive panel placed next to California Highway 139, explaining the restoration work done on Howard's Gulch.

An interpretive panel placed next to California Highway 139, explaining the restoration work done on Howard's Gulch.

With respect to 2011 project implementation, the Carr Juniper Project and Mowitz Pasture Juniper Treatment Project are two of the project-level accomplishments for sage steppe management. The Carr project treated 100 of the 1,000 planned acres; the junipers removed from the treatment area will be used as sawlogs and sold to REACH, Inc. in Klamath Falls, Oregon. REACH, Inc., a non-profit organization, promotes equality and acceptance of people with disabilities;

they produce juniper wood products such as decking, landscape bark, flooring, square posts, peeled poles, paneling, and lumber. The partnership that REACH has built with the community is aimed at encouraging the growth and development of these relationships. There were 700 acres of juniper treatment in the Mowitz area, which is key late brood rearing and fall habitat for greater sage-grouse. The following picture shows the Carr Juniper project area with treated and untreated areas in the photo. The area in the background left is private land where most of the juniper trees have been cut down. The remaining junipers are within the Carr Juniper ARRA Project area. Most of these trees will be mechanically removed, which will complement efforts made by the private land owner, the USFWS, and the NRCS.

The Carr Juniper project area showing treated and untreated areas.

Crowder Elk

The Crowder Elk Project is an 11,000-acre series of prescribed burns to revitalize understory grasses, forbs, and shrubs in east-side pine stands on the Devil's Garden Ranger District. Specifically, pine stands that had been thinned receive prescribed fire, which stimulates species such as snowbrush and chokecherry. The combination of the thinning and fire open overstory stands to permit more light and decrease competition for understory grasses and forbs. In 2011 the forest treated 867 acres within the Crowder project area.

This project is part of an overall reintroduction of fire into fire-adapted ecosystems. Data indicates that this area has the largest concentration of elk on the Devil's Garden Plateau. As part of a larger habitat restoration effort for elk on the Devil's Garden Plateau, the Rocky Mountain Elk Foundation has also provided funding for the installation of guzzlers, as well as treatment to remove juniper to enhance sage steppe stands.

Monitoring consists of a series of photo points to determine understory plant response.

Future Restoration Projects

Ambrose-Ash Watershed Enhancement Project

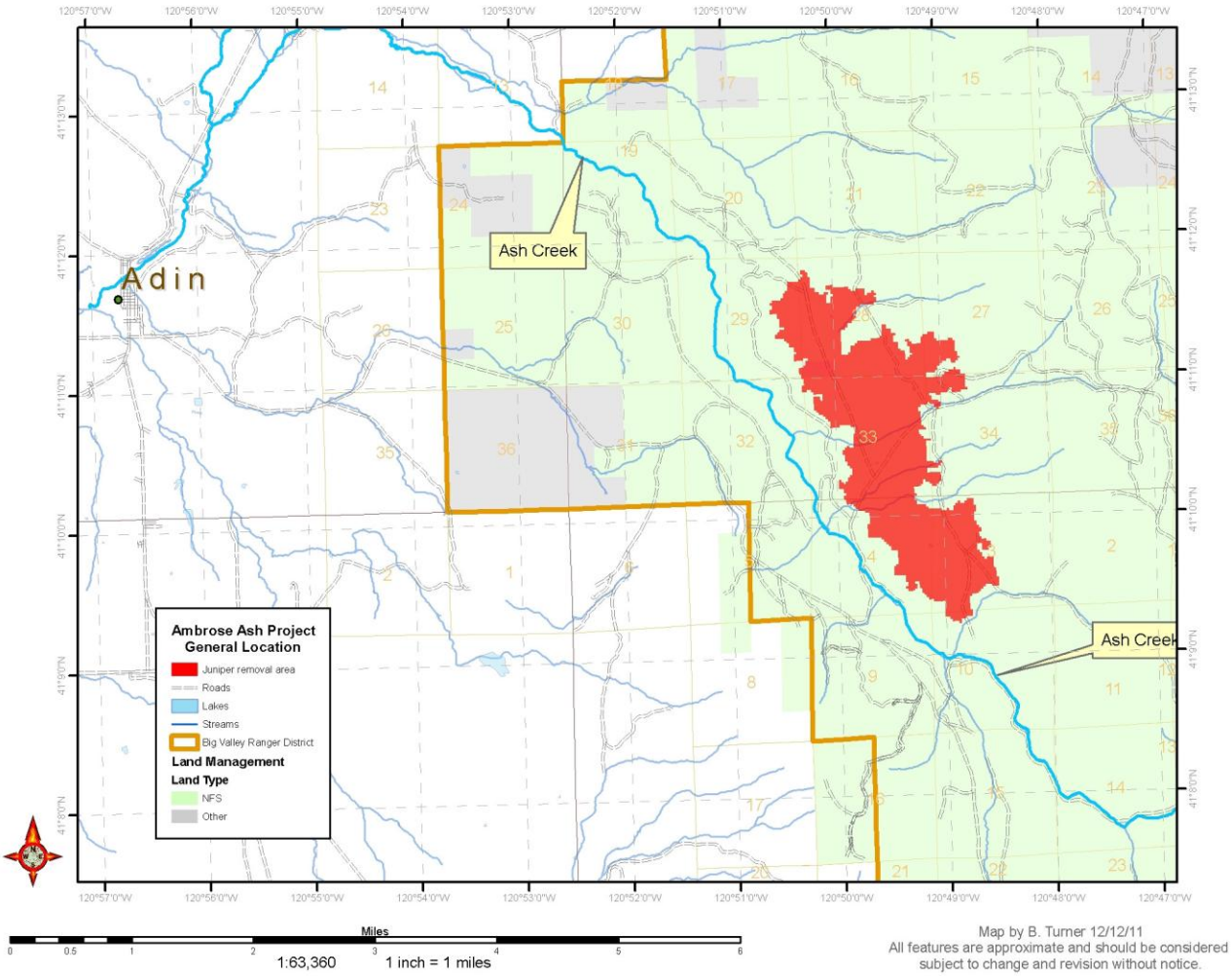
The Ambrose-Ash Watershed Enhancement Project covers about 3,150 acres in the southwest corner of the forest. (See map on the next page.) The project aims to remove invasive junipers to increase forage and water yields, reduce stream-zone fire hazards while improving timber growth potential, and restore oak-pine woodland habitat through under-burning.

On approximately 1,000 acres in Ambrose Valley, invasive junipers will be removed to improve growing conditions for grasses, forbs, shrubs, and especially sagebrush. Other features in this restoration project are removal of junipers (except old growth) by hand thinning, and piling and burning of slash piles. As a result, moisture within spring-fed soils in Ambrose valley is expected to increase from reduction in transpiration by junipers. Cost is about $425,000.

On about 130 additional acres, removing the coniferous fuel ladder will improve the streamside management zone. Estimated cost is $78,000. On another 20 acres, thinning the conifers from below in the outer half of the RCA and removing the fuel ladder within the inner half will improve the riparian conservation area (RCA) at an estimated cost of $15,000.

We also plan to thin and under-burn on pine and oak stands near Ash Creek at a cost of $300,000 for 2,000 acres. Benefits will be restored grazing and water yields, fire resiliency in the stream side and thinned pine stands, and oak-pine habitat enhancement through under-burning. The following photo shows the oak-pine forest in the Ash Creek area; a map of the Ambrose-Ash area follows.

The Carr Juniper project area showing treated and untreated areas.



Sage Steppe Restoration

Given the tremendous financial resources provided by the Sage-Grouse Initiative, sage steppe restoration will continue to be a forefront of Modoc NF restoration efforts in the next 2 to 5 years. Working with the livestock permittees and other partners, there are plans to treat 18,350 acres of juniper as well as install 17 water developments and 25 miles of wildlife-friendly fences. Total amount of grant money under the various initiatives to accomplish the work is $2.5 million dollars for projects occurring on forest system lands. The Modoc NF projects are part of the larger restoration efforts on USFWS, BLM, and private lands enabling large-scale habitat improvements, which should benefit plant and animal species as well as watershed function at multiple levels.

One of the greatest challenges to the forest sage steppe restoration program is the cost of surveys to prepare environmental documentation. Although many organizations willingly provide implementation funding, they are not willing to provide funding for planning. The Modoc County Resource Advisory Committee and the USFWS have been very generous in offering funding for archeological and botanical surveys; however, the Modoc NF is currently in need of additional funds to accomplish restoration efforts.

Lassen Creek

The Lassen 13 Restoration Project, located in the northern Warner Mountain RD, is approximately 25,000 acres in size; plans are to begin restoration in 2014. The project area consists of ponderosa and Jeffrey pine dominated stands, many of which were planted after a stand-replacing fire impacted the area in the early 1940s. White fir and lodgepole pine pockets, small natural meadows, and grasslands are scattered throughout the project area.

The overall objectives of the project are to create stands more resilient to fire, insect, and disease by reducing stocking levels while providing sustainable economic and social benefits to the surrounding communities. Focus areas are riparian area enhancement; timber stand improvement; range and big game habitat regeneration; and recreation

management. Prescribed fire will be used to reduce fuel loading remaining after harvest treatments, to rejuvenate stagnating grasslands and sage steppe habitat, and to regenerate aspen stands. Adaptive grazing management will be used to enhance aspen stands and riparian system function. The key components of adaptive grazing are production monitoring, the development of exclosures, and rotational grazing. Decommissioning of identified campgrounds is also proposed to reduce impacts to associated riparian areas as well as preserving the condition of areas that may have historically been used by Native Americans.

Project collaboration among Forest Service and outside partners will be essential. Potential external partners are the Modoc County Cattleman's Association, Rocky Mountain Elk Foundation, Pit River Tribe, Modoc/Washoe Experimental Stewardship Program, and grazing permittees. The District Ranger has begun consultation with the Modoc County Cattleman's Association, Modoc/Washoe Experimental Stewardship Program, and grazing permittees for this effort.

Homestead

The Homestead Forest Health Project proposes to treat approximately 1,500 acres of mixed conifer forests at the southern end of the Warner Mountains that are being threatened by both mountain pine beetle and fir-engraver beetle. The primary goal of the project is to restore the forests to a mixture of species and stand structures that better resemble the historic norm before wildfire was excluded from the area. To accomplish this goal, stands will be thinned to reduce the percentage of both lodgepole pine and white fir, and promote the successful regeneration of Washoe and ponderosa pine. Thinning treatments will be followed by prescribed fire. The resulting stands should be more resilient to fire, drought, insects, and disease. A secondary goal of the project is to experimentally test treatments to establish whitebark pine.

Medicine Lake Highlands

The Medicine Lake wildland-urban interface (WUI) is a highly valued recreational area threatened by a mountain pine beetle infestation. Left unchecked, this infestation could substantially reduce tree diversity, reducing future timber yields, degrading wildlife habitat, watershed health, and aesthetic values of the Medicine Lake recreational area. The infestation could also affect tribal spiritual and cultural interests.

The planning area is 13,000 acres within the Medicine Lake watershed, including about 5,400 acres of lodgepole pine. The forest proposes (a) green-tree thinning to reduce tree density and increase the health and vigor of residual trees; (b) removal of green, dead and dying insect infested trees to reduce the insect population; and (c) use of Verbenone pouches (an anti-aggregation pheromone) and carbaryl insecticide.

The forest also proposes fuel treatments to reduce fire behavior effects within the Medicine Lake WUI: placing fuel breaks along established roads, whole-tree removal, slash piling and burning, mastication, pruning, chipping, and under-burning.

The following picture shows lodgepole pines in the Medicine Lake area with dead and dying limbs from beetle infestation.

Wild Horses

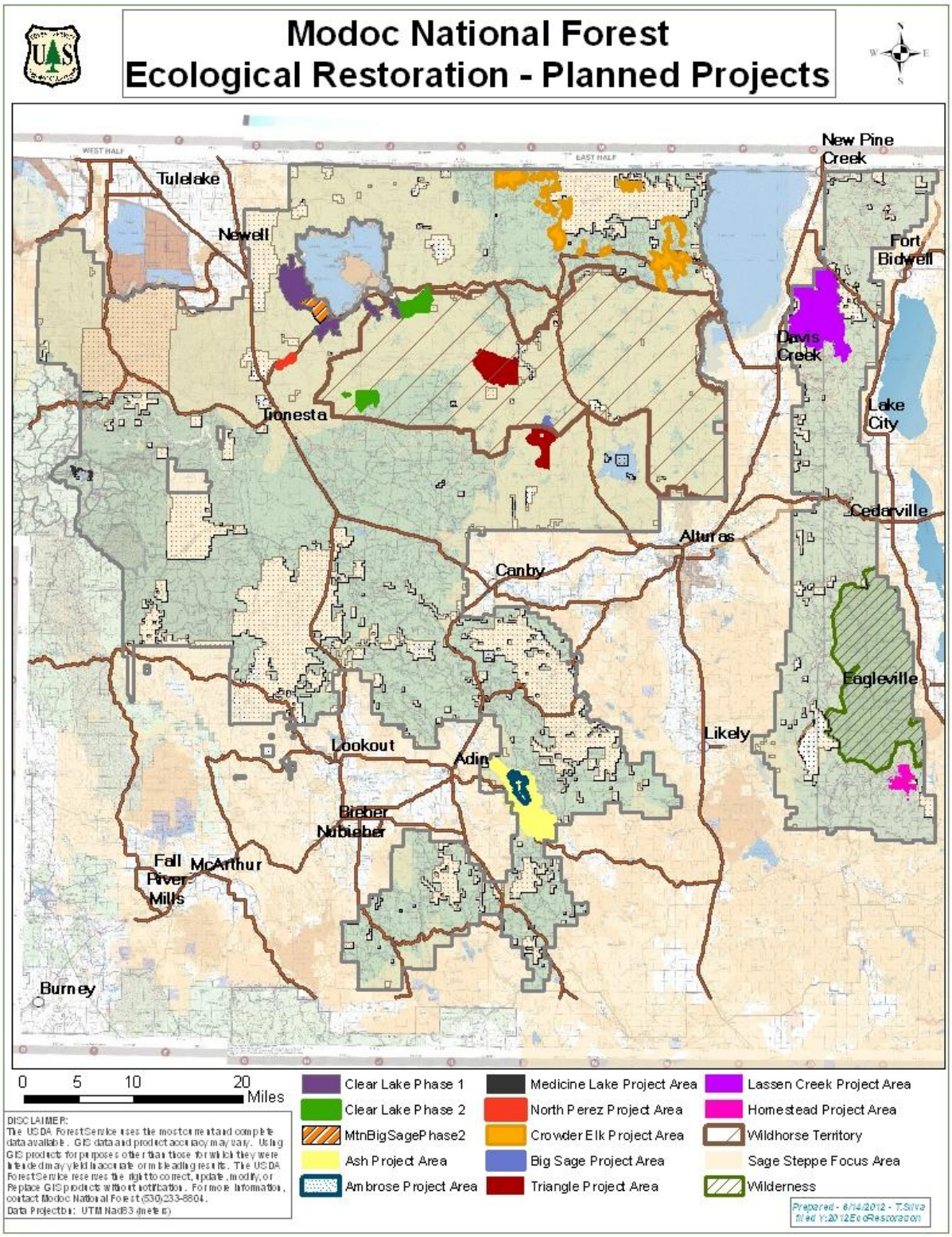
The Devils Garden Plateau Wild Horse Territory consists of about 268,750 acres on the Devils Garden and Doublehead Ranger Districts, and 8,500 acres on BLM land administered by the Alturas Field Office. The Modoc NF manages the animals under authority of a 1979 memorandum of understanding with the BLM. The Modoc Forest Plan (1991) has set the appropriate management level (AML) at 275 to 335 head.

The territory contains western juniper and east-side pine. They provide adequate cover to protect animals from inclement weather, except for very cold winters. Forage consists of sagebrushes, bitterbrush, Idaho fescue, blue grasses, clovers, and mule's ear. There is sufficient forage to maintain the wild horses when their populations are at or near AML in all but the most severe winters.

Permitted livestock grazing occurs across the territory. There is evidence of overuse by horses in some of the limited riparian areas. Besides deer and antelope, there is also a growing elk herd of over 600 head.

Since the passage of the Wild and Free-Roaming Horse and Burro Act in 1971, wild horses in the territory have been managed as an integral part of their habitat. Excess wild horses have been periodically removed to achieve population levels in balance with the habitat. The BLM's Eagle Lake Field Office works cooperatively with the forest to capture, care for and hold, and offer for adoption excess animals removed from the forest.

Lodgepole pines in the Medicine Lake area with dead and dying limbs from beetle infestation.


Modoc National Forest
Ecological Restoration - Planned Projects
Tulelake
Newell
Tionesta
New Pine Creek
Fort Bidwell
Davis Creek
Lake City
Cedarville
Alturas
Canby
Eagleville
Likely
Lookout
Adin
Breber
Nubieber
Fall River Mills
McArthur
Burney
0 5 10 20 Miles
Clear Lake Phase 1
Clear Lake Phase 2
MtnBigSagePhase2
Ash Project Area
Ambrose Project Area
Medicine Lake Project Area
North Perez Project Area
Crowder Elk Project Area
Big Sage Project Area
Triangle Project Area
Lassen Creek Project Area
Homestead Project Area
Wildhorse Territory
Sage Steppe Focus Area
Wilderness
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Data Projection: UTM Nad83 (meters)
Prepared - 8/14/2012 - T.Silva
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