

## 2006 Bishop Field Office Botany Program Highlights



## Rare Plants

1,500 acres of rare plant surveys were conducted in June of this year in association with Partner's for Plants and California Native Plant Society volunteers. At least one rare Botrychium species; *B. lineare*, was documented at two sites in the Bodie Hills. New populations of an uncommon Asclepias (*Asclepias cryptoceras*) were also found. Annual population monitoring of the Fish Slough milk-vetch, Mono Phacelia and Bodie Hills Draba was also completed this year.



*Botrychium lineare*



*Asclepias cryptoceras*

A project to benefit critical habitat of the Federally Threatened Fish Slough milk-vetch (*Astragalus lentiginosus* var. *piscinensis*) was also implemented this year. This project occurred within the Fish Slough ACEC and involved removing an existing road that bisected a population of the milk-vetch and Inyo County mariposa lily. Out-planting of milk-vetch seedlings was completed as well. The second phase of the project involved armoring another route through critical habitat to arrest vehicular use of areas adjacent to the road.



Pre-road armoring (Note vehicular tracks throughout alkali meadow)



Post – road armoring



Scarification of removed road.

## General Wildflower Appreciation

Several wildflower hotspot handouts were developed and distributed to the local Chamber of Commerce as well as to interagency visitor centers. Monthly wildflower and fall color updates were also generated for our Field Office web site.

## Restoration

### Public Lands Day

In cooperation with the Wilderness Society (Friends of the Inyo) and 15 Environmental Education students from Whitman College a mile long hill climb hill-climb in the scenic Conway Summit area was rehabilitated using native plant materials. The hill climb was steep and work involved vertical mulching, rock bar construction and transplanting of native grasses. Seeding with site-specific natives, e.g. Mtn. sagebrush and sulphur buckwheat from our local seed bank occurred as well.



Environmental Education students from Whitman College working on rehabilitating hill-climb adjacent to the Conway Summit ACEC.

### Mule Deer Winter Range – Sherwin Slope

350 one year-old bitterbrush were planted in an area where no recruitment of younger-age bitterbrush is occurring. This project is designed to augment even-aged stands of this target species with younger age-class plants to improve stand vigor and forage quality for resident mule deer.



Sherwin planting site – foreground with new bitterbrush plantings and *Lessingia lemmonii* as the dominant understory species.

## Fire Rehabilitation Projects – Vittori and Dana Fires, Walker/Coleville

### Background

Two fires within and east of Slinkard Valley occurred in early late June and early July of 2004. The Dana Fire burned 1,360 acres of sagebrush steppe and pinyon within critical mule deer winter range and in proximity to Slinkard Creek which contains threatened Lahontan Cutthroat Trout. The Vittori Fire burned 933 acres that included a re-burn of acreage from a 1996 fire. This fire occurred in the vicinity of the Marine Housing development north of Coleville. In 2005 we implemented approximately 400 acres of contour felling, check-dam installation, and broadcast seeding of site-specific native species on the Dana fire and 15 acres of soil stabilization treatments on the Vittori Fire. Check-dam installation was extremely effective in capturing large quantities of sediment that would have impacted water quality and the Lahontan Cutthroat Trout that inhabit Slinkard Creek.

Fire rehabilitation projects on these fires were designed and implemented to address the following key issues:

- Threat to terrestrial ecosystem integrity due to increased risks of weed invasion
- Soil erosion risks and associated increased sediment loads into endangered Lahontan Cutthroat habitat
- Loss of critical mule deer winter range

In 2006 a weed treatment using early season sheep grazing was implemented on the Vittori fire to reduce tansy mustard and cheat grass cover. Because the Vittori fire was a re-burn of a very recent fire, weed proliferation especially at the lower elevation of the burn, exceeds 65% cover. We used a band of 500 sheep to move over approximately 100 acres of the most severely weed infested portion of the burn. We ensured treatment occurred prior to seed set for both species. Tansy mustard was in the rosette phase. The treatment was effective in reducing tansy mustard rosettes and trampling newly emerging cheat grass seedlings especially in the vicinity of the housing development. Less efficacy occurred on the upper portions of the site because the sheep were too dispersed. Treatment is planned for 07, but with more comprehensive coverage and better sheep herding to decrease herd fragmentation.



Image depicting post sheep trailing and grazing (left) and ungrazed (right).



Sheep use and cheat grass on Vittori site.

Recovery of native vegetation on the Dana Fire treatment areas is progressing well with more natives represented than non-natives. Seeded bitterbrush areas are responding as well with a mean density of 35 seedlings per 30 by 1 meter transects ( $n=20$ ). Re-sprouts averaged 15 per transect. Bitterbrush transplants planted in 2004 show an 85% survival rate. An additional 65 bitterbrush 1 year-old seedlings were planted this year. Check dams continue to hold sediment and are revegetating with native species such as Great Basin wild rye, Western needlegrass, mule's ears (*Wyethia mollis*) and rabbitbrush.



General overview of native species recovery.



View of check dam on 10/04



View of same site on 10/05

### Cannon and Slinkard Fires

2005 constituted the 4th year of treatment monitoring in cooperation with Claremont McKenna College for these fires that occurred in 2001-2002. Drill seeded sites continued to exhibit higher percentages of native plant establishment than broadcast seeded sites, but overall increases in native species especially squirreltail (*Elymus elymoides*) is also occurring in control plots of both drill and broadcast seeding treatments.

Soil stabilization treatments such as check dams, contour felling and straw wattle installation have secured slopes and native vegetation such as Indian rice grass

(*Achnatherum hymenoides*), squirrel tail (*Elymus elymoides*), rabbitbrush (*Chrysothamnus viscidiflorus*), and *Keckiella breviflora* continue to increase in cover around the wattles and contour felled logs.

A photographic flora of the Cannon and Slinkard Fires was also completed. This guide contains detailed photographs of 158 plant species from 42 genera that have been documented within the general study area and monitoring locations. Both this flora and the detailed 2002-2006 annual data report are available through Claremont McKenna College <http://www.roberts.cmc.edu>

Conway Summit Aspen Grove Restoration Projects

These projects are part of a series of Stewardship contracts which allow for the removal of Lodgepole pine (*Pinus contorta* ssp. *murrayana*) within aspen stands that have been identified as “at risk” with regard to conifer encroachment. Bartos and Campbell (1998), identified five risk factors that, when present, indicate an aspen clone is at risk. These factors are, 1) when conifer cover is >25% canopy, 2) aspen canopy cover is <40%, 3) dominant aspen trees are >100 years of age, 4) aspen regeneration 5-15 feet tall is <500 stems/acre, and 5) sagebrush cover is >10%. These projects meet factors 1, 2, 4 and 5 and meet Bishop RMP (1991) goals of meeting Desired Plant Community (DPC) goals within the Bridgeport and Bodie Hills Management Areas. Monitoring locations to measure post treatment aspen response as well as avian responses were established in 2004 and 2006 as part of the state wide Aspen Delineation Project using standardized methods to document aspen regeneration.

Three more additional sites have been treated since 2004 and include two more conifer removal sites on Conway Summit and a cattle grazing exclosure site in the Bodie Hills.



Pre-conifer removal treatment 7/05



Post-treatment 8/06 (Note height class shift of understory aspen).

## **Environmental Education**

Presented school program on the benefits of native plants and trained docents for the “Hands on the Land Program” at Fish Slough ACEC.

## **Weeds**

3,900 acres were surveyed for noxious weeds including 900 acres in Wilderness Areas (Inyo Mountains). Cheat grass and red brome cover is increasing throughout low and mid-elevation ranges of the eastern Sierra in both disturbed and undisturbed sagebrush-steppe and desert-scrub communities. Undisturbed Calcareous substrates with high cryptobiotic soil crust cover on the fans of the Inyo mountains appear to be at this time, more resilient to weed invasion.

35 acres of tamarisk were treated using the cut-stump/Garlon application method. And 5 previously treated sites were re-visited to check treatment efficacy. One site required follow-up applications of Garlon.



Garlon application to Tamarisk

## **On-Going Cooperative Studies**

### **USGS/California Dept. of Fish and Game – Slinkard Valley ACEC Cheat Grass Control Project**

This cooperative study was implemented to investigate methods to control cheat grass proliferation 3 years post-fire within an area formerly dominated by sagebrush-steppe vegetation. Control methods included applying the pre-emergent herbicide (Imazapic) – Plateau at two different rates; 5 and 10 ounces. USGS and BLM will be monitoring post-treatment vegetation response 2006-2007. Response variables will include species richness, plant density and biomass and seed bank density. USGS is currently working on the preliminary report for this project.

## USGS/BLM/Point Reyes Bird Observatory - Mono Basin Pinyon Project

This cooperative study is designed to examine the effects of different fuel treatments (pinyon thinning and mastication) on plant response and fuel structure within selected Pinyon/Juniper sites where trees are encroaching into sagebrush steppe habitats in the Mono Basin. Current tree densities present an increased wildland fire risk to adjacent communities as well as to sagebrush steppe habitat. This project is one of the very few vegetation/fuel projects that is a replicated, randomized experimental study with quantitative fuel-bed vegetation, and fire behavior response variables allowing for rigorous statistical evaluation of the effects of thinning treatments.

This year treatments were implemented and post-treatment data collection will begin in spring of 2007.



Pre treatment (9/05)



Post cut-limb pile (right) and mastication (left portion of hill-side) treatments (9/06)

### Additional Projects

- Completion of a Programmatic OHV Route Restoration Environmental Assessment analyzing restoration treatments applied across different plant community types that occur on Bishop Field Office administered Public Lands
- Development and submission of OHV grants to implement various restoration projects
- Finalization of a cooperative BLM/USFS/University of California native seedzone delineation project – paper being written for submission to Restoration Ecology.

### **Volunteer and Staff Support**

Special thanks to all the dedicated volunteers from Quail Unlimited, the California Deer Association, California Native Plant Society and Friends of the Inyo for all their great work! And of course thanks to Karen Ferrell-Ingram for all her plant propagation – without which many of our restoration projects would not be possible. Many thanks to John Willoughby for continued support and positive comments about our programs, Steve Nelson for his great ideas and suggestions, Rich Williams for sorting through the OHV grant paperwork, Scott Justham for always being willing to help with various restoration projects, Diana Pietrasanta and Joe Pollini for their work on the restoration EA, Dale Johnson for working closely with the contractors on the Mono Basin Pinyon Project, Field Office Manager Bill Dunkelberger for staying the course with the Mono Basin project despite its turbulent process, and Terry Russi for his steadfast support of our Biophysical program.

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