



United States Department of Agriculture  
Forest Service

PACIFIC SOUTHWEST REGION

*Restoring, Enhancing, and Sustaining Forests in California, Hawaii & the Pacific Islands*

# Storrie Fire Restoration: FY 2012 Annual Report

November, 2012



High School students brush & repair trails



*This report documents the accomplishments the Plumas National Forest either completed or initiated in the last fiscal year.*

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# PLUMAS NATIONAL FOREST FISCAL YEAR 2012 ACCOMPLISHMENTS

## INTRODUCTION

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### **Background:**

In August, 2000, the Storrie Fire burned 52,000 acres of National Forest System lands on the Mt. Hough Ranger District of the Plumas National Forest, and the Almanor Ranger District of the Lassen National Forest (Figure 1, Pg. 22). The Plumas and Lassen National Forests received approximately \$80 million from a lawsuit settlement to restore the damage done on National Forest System lands during the fire. The settlement funding will support restoration of the landscape and the ecological balance on these lands so that the public can again experience the full enjoyment and benefit of our resources. A 10-Year Storrie Fire Restoration Plan was approved in 2008 to address the majority of these restoration needs.

The Storrie Fire Restoration Team was formed in 2010 to coordinate the restoration efforts for the PNF. The team consists of natural resource specialists who work collaboratively with multiple partners, including the US Forest Service Pacific Southwest Research groups, Plumas County, Plumas County Fire Safe Council, Plumas Unified School District, California Department of Fish and Game, Pacific Gas and Electric, California State University-Humboldt, University of California, Sierra Buttes Trail Stewardship, Pacific Crest Trail Association, and Pt. Reyes Bird Observatory.

### **Our Mission:**

The mission of the Storrie Fire Restoration Project is to work collaboratively to restore publicly valued resources affected by the Storrie Fire while partnering with, educating, and maintaining transparency with our local communities.

### **Our Vision:**

Our vision is to work with stakeholders to develop and implement strategies that integrate and coordinate restoration, protection, and evaluation measures to achieve restoration objectives for the Storrie Fire area.

## Key Accomplishments

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FY12 accomplishments included doing on-the-ground restoration work such as noxious weed treatment, trails improvement, tree planting, and certifying natural regeneration. Planning progressed for future restoration projects: campground enhancements, Bucks Lake Wilderness Fire Plan, prescribed fire, fuels reduction, and reforestation. The unique partnership with Plumas Unified School District continues to successfully grow with more student participation in restoration efforts and fire restoration curriculum development.

### *Hydrology/Transportation:*

Project objectives are to stormproof and reduce the risk to water quality from increased runoff and debris flow from forest service roads that were damaged in the fire.

- ✓ Partnership efforts continue with PG&E for James Lee Campground fish spawning channel project: [conceptual drawing](#)

### *Minerals:*

Some or all of the vegetation surrounding mine adits were removed by the Storrie Fire. These open mine adits became more visible and more of a potential safety hazard to the public. This was specifically true for the Mosquito adit (in the Mosquito Creek drainage) where the fire burned at a high intensity. In addition, some supporting timbers have burned, and trees above the adits have fallen or been weakened and other vegetative root systems have died. The loss of timbers and root structures have weakened these adits and made them more susceptible to collapse. Therefore, it is essential to close these adits as soon as possible to provide for public safety.

- ✓ Identified locations of two additional mines within the Storrie Fire area, four adits at Shenandoah and two adits at Roadside.
- ✓ Completed reconnaissance of three mine sites (six adits) to determine bat survey needs (Shenandoah and Roadside adits).
- ✓ Completed inspection of the Yellow Creek closure and reassessed needs for flying out remaining trash post-Chips Fire.
- ✓ Initiated NEPA for Roadside and Mosquito adits closures.
- ✓ Identified a possible closure of Crablouse Ravine adit.

## *Noxious Weed Management :*

Noxious weeds such as Yellow star-thistle and Canadian thistle are found within and directly adjacent to the Storrie Fire area. Weeds are brought in and spread during fire suppression efforts when engines and dozers pull off of roads and during ground-disturbance while firefighting. The weed management strategy is focused on keeping weeds from spreading, those that occurred during fire depression and those discovered after the fire.

- ✓ Environmental analysis for a Storrie-Rich Fire Integrated Weed Management project is proceeding:
  - An 80-page weed management strategy was completed in FY11 outlining known weed issues that were exacerbated by the Rich and Storrie Fires during suppression efforts. The document provides recommendations for weed management within and adjacent to these fire footprints.
  - The Proposed Action covering ~90,000 acres was reviewed by the IDT and presented to the Plumas National Forest Supervisor's Office on 09/15/11. The Proposed Action was out for public comment with pending Decision Memo.
- ✓ Completed 30 acres of weed treatment (Yellow star thistle and Canadian thistle) in conjunction with Pacific Gas & Electric Co. (PG&E) Federal Energy Regulatory Commission (FERC) compliance.

## *Recreation :*

Efforts for restoration of recreation opportunities continue, as identified in the R5 approved Storrie Fire Restoration Strategy. Recreation areas such as campgrounds, trails, the Pacific Crest Trail (PCT), and the Bucks Lake Wilderness Area were directly affected by the Storrie Fire. Improvements have been made to provide added value to the recreation opportunities within and adjacent to the fire area. Planning and restoration efforts utilize partnership opportunities as much as possible.

- ✓ Recreation improvements to enhance/improve recreation opportunities within the Storrie Fire area:
  - Campground host site improvements at Gansner Bar Campground – spur leveling and cedar fencing.
  - Implementation of hazard tree felling contract to restore Pacific Crest Trail – Belden South (contract on hold due to Chips Fire).
  - Planting of approximately 200 trees along Pacific Crest Trail – Belden North ([Plumas Unified School District students](#))

- Approximately 25 miles of trail maintenance and restoration on wilderness trails, PCT, & Feather River Canyon trails through the efforts of partners: [SBTS/Storrie High School Trail Crew 2012](#) and [PUSD/Storrie Trails Day](#)
  - Coordinated cost share agreement with Sierra Buttes Trail Stewardship (SBTS) to create, recruit, hire, and train a high school trail crew (see SBTS\_HSTrailCrewSuccessShowShine.pdf above), [http://www.sierratrails.org/content/sbts\\_storrie\\_student\\_trail\\_crew](http://www.sierratrails.org/content/sbts_storrie_student_trail_crew).
  - Engineering survey work at three Caribou campgrounds (Gansner Bar, Queen Lily, and North Fork) in preparation for campground restoration over the next three years.
  - NEPA completed for installation of electric utility lines at North Fork & Caribou Campgrounds.
  - Blackberry picking sites identified on Caribou Rd. and documented in GIS.
  - Preliminary planning for James Lee Campground rehabilitation: group campsites, boundary surveying, and outdoor education/interpretive pavilion (old James Lee School site).
- ✓ 10-Year Wilderness Stewardship Challenge (10 YWSC) progress to help improve management of the wilderness. Twenty-five percent of the wilderness was affected by the StorrieFire. Stewardship Challenge score was improved by 20 points through:
- Completion of Bucks Lake Wilderness Education Plan
  - Implementation of Wilderness Education Plan. A SCA wilderness intern was hired for wilderness patrols and education.
  - Completion of Bucks Lake Wilderness Noxious Weed Plan.
  - Progress in wilderness inventory and monitoring elements.
  - Progress towards fire planning element.
  - \$20,000 in WO grant funding for 10-year Wilderness Stewardship Challenge (10 YWSC); \$20,000 in Storrie Fire funds were used as matching funds.
- ✓ Developed the Bucks Lake Wilderness Inventory and Monitoring Plan, which included protocols to inventory and monitor visitor use and ecological resources within the Bucks Lake Wilderness.

## *Fire and Fuels :*

Fuels treatments are done to reduce the amount of fuels created by the Storrie Fire and to prevent future fires on the forest and near adjacent private land in the Wildland Urban Interface (WUI).

- ✓ Drafted the Bucks Lake Wilderness Fire Management Plan which will help manage natural fire in the wilderness:
  - Contains review of National and Regional fire management policy and Land and Resource Management Plan guidance.
  - Detailed descriptions of the physical, safety, biological, resource, fire behavior, and weather characteristics of the wilderness.
  - Provides information on wilderness-specific fire management considerations: including a list of wilderness qualified Resource Advisors or Technical Specialists and process for assignment, locally specific wilderness Minimum Impact Suppression Tactics (MIST), processes to assess the need and request approval for motorized equipment, wilderness suppression and restoration guidelines, and wilderness-specific BAER techniques.
- ✓ Developed a Project Initiation Notice (PIN) for the Indian Springs Prescribed Fire and Reforestation Project covering 1,964 acres within the Storrie Fire perimeter.
- ✓ Developed a Project Initiation Notice (PIN) for the Border Fuels Reduction and Forest Restoration Project covering 1,122 acres within the Storrie Fire perimeter.
- ✓ Certified natural regeneration of 226 acres within the Storrie Fire area.

## *Wildlife :*

Wildlife restoration projects are coordinated with research to answer key uncertainties about restoration and to ensure appropriate restoration techniques are utilized.

- ✓ PUSD students helped with a [wildlife research project](#) to help determine protein content of plants for deer forage along fire boundaries (wildlife corridors). This helps us to better understand the benefits of providing and improving wildlife habitat. The project was coordinated by the Lassen NF, Almanor Ranger District.



## *Heritage:*

Archeologists provided Rich Fire Restoration project assistance to help protect cultural and historical resources impacted by the fire:

- ✓ Storrie-Rich Fires Invasive Plant Treatment Project.
- ✓ Queen Lily & N. Fork Campgrounds Electrical Line Installation.
- ✓ Pacific Crest Trail Belden North Re-planting Project.
- ✓ 26N26 Medusahead Flaming Treatment Project.
- ✓ Section 110 James Lee School Site and Campground Recording: recorded school and campground as an archaeological site.
- ✓ OHV Route 6M40 Invasive Weed Treatment Project: new survey and 2 new sites recorded.
- ✓ Section 110 meeting with local Maidu regarding proposal for interpretation of James Lee School site and campground.
- ✓ Caribou Road Maintenance Weed Treatment.
- ✓ James Lee Campground/Granite Creek Restoration Project.

## *PSW Research/Administrative Studies: Sierra Cascade Province Ecology Program*

### ✓ Development of restoration projects and strategies:

- Developed short summaries of Storrie fire research in the form of web-based research briefs. These highlight the main research findings and provide the link, wherever possible, for how these findings can be used in future planning efforts, management activities, and restoration projects. For example, see [LiDAR Brief](#)
- Identified and developed two research-generated restoration projects that focused on:
  - a) improving remnant conifer stands for late-seral bird species in the Storrie Fire
  - b) enhancing habitat for and experimentally reintroducing a rare sensitive plant species to sites within and adjacent to the Rich fire

Both of these projects are currently on hold due to the Chips fire.

- Developed a template for post-fire restoration strategies across Region 5.
  - Worked with district, forest, and regional staff to develop a rationale for using a compensatory, or habitat equivalency approach, for restoration projects for the Storrie Fire.
  - Participated in the initial stages of development of the Storrie Fire restoration strategy.
  - Developed a method for post-fire assessments of natural regeneration by analyzing Storrie Fire stand exams to identify areas of natural regeneration.
  - Assisted in the development of an experimental monitoring design for the rare species, *Clarkia mildrediae* var. *mildrediae*.
- ### ✓ Coordinated with researchers:
- Provided project management for a Humboldt State University project investigating the use of LiDAR to map serpentine soils within the Storrie fire area. Reviewed reports, provided logistical support for field work, and approved invoices.
  - The researchers from Humboldt State University used a combination of multispectral imagery and LiDAR data in their effort to improve their model of serpentine soils in the Storrie Fire area. Accurate delineation of serpentine soils will assist in the long-term management and restoration of unique plant communities within serpentine soil areas following wildfires. The integrated approach produced significantly higher accuracy (69% compared to 57%) than their previous efforts. They also pursued additional grants that will allow them

to collect ground-based hyperspectral data to uniquely identify serpentine soils in terms of their ultramafic rock associations and mineral compositions. The serpentine soils models will help identify areas with potential for Naturally Occurring Asbestos (NOA) that may pose a risk to recreational users or forest service employees conducting work in the Storrie Fire area. The models will also assist in identification of areas with increased vulnerability to erosion.

- Collaborated with the Remote Sensing Laboratory to develop a method for using LiDAR and remote-sensing data to model long-term patterns of forest succession. Identification of natural regeneration patterns will assist in future restoration planning efforts and certification of natural regeneration in areas that are either inaccessible or too steep for safe field surveys.
- Compiled and scanned inventory and monitoring data forms, conducted data analyses, and entered data into an Access geodatabase.
- Completed a [conservation assessment of sensitive plant species](#) *Mondardella stebbinsii* in conjunction with San Jose State University
- Assisted with field operations and coordination of San Jose State University graduate [student master thesis](#) on six rare plants of the Plumas NF.

### *Pt. Reyes Bird Observatory :*

PRBO's work accomplished with Storrie Fire Restoration funding included continued monitoring of the Storrie Fire area, analysis of the effects of fuels treatments on the avian community in the Plumas-Lassen Study Area, and dissemination of information through direct interactions with Forest Service staff, reports, manuscript, and presentations.

- ✓ [PRBO\\_StorrieFireAccomplishmentsFY12.pdf](#)
- ✓ [PRBO\\_ResearchBrief\\_2012.pdf](#)

### *Outreach :*

The goal of Storrie Fire Restoration outreach is to engage communities, schools, and the public in the Storrie Fire Restoration process. This encourages stewardship of NFS lands and resources within the Storrie Fire area, thereby protecting NFS lands from future catastrophic wildfire, and also promotes conservation and protection of natural resources. Additionally, outreach allows us to engage partnerships to expand restoration accomplishments and incorporate public learning about fire-dependent ecosystems where possible. FY12 projects included:

- ✓ On-going maintenance of the Storrie Fire Restoration website [www.fs.usda.gov/plumas](http://www.fs.usda.gov/plumas); go to “Features,” then “View more features,” then scroll to “Storrie Fire Restoration Project.”
- ✓ Development of Storrie Fire Restoration Success Stories to educate both internal and external audiences on Storrie Fire Restoration. See all under PUSD section below.
- ✓ Seven campfire programs were scheduled at the Feather River Canyon-Gansner Bar Campground Amphitheater. However, only three programs were presented due to the Chips Fire. Target audiences were families and canyon residents. Topics included fire ecology and other topics pertinent to the Storrie Fire area.
- ✓ Storrie Fire Restoration continues to be an important theme to interpret at the Plumas-Sierra County Fair. The venue provides the Plumas NF with the opportunity to educate our community and far beyond about fire effects and restoration. This year’s PNF booth theme was **“Storrie Birds: A story of fire adaptation.”** Over twelve thousand people attended the fair, many of whom stopped by our booth. Our partner, Pt. Reyes Bird Observatory provided employees to help at the fair and also collaborated on the fair display. Special thanks to Ryan Burnett for sharing [PRBO’s research on fire-adapted bird species](#), his review of the fair display, and for providing photos.



Visitors at the Plumas-Sierra Co. Fair learn about fire-adapted birds

- ✓ Plumas National Forest Storrie Fire Restoration project website is maintained with current information: <http://www.fs.usda.gov/detail/plumas/home/?cid=STELPRDB5299495>

- ✓ A presentation about the Storrie Fire/Plumas Unified School District Project was made at the National Association for Interpretation (NAI) Region 9's Spring Workshop at Yosemite National Park in March. The goal was to encourage attendees to consider partnerships with their local schools to achieve restoration objectives while tying in with the California State Curriculum content standards.

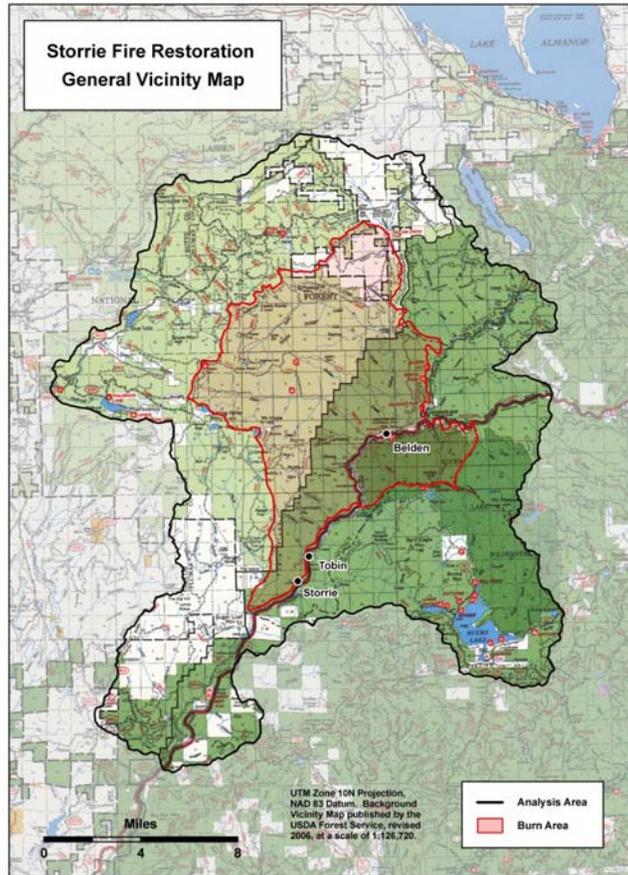
### *Plumas Unified School District (PUSD):*

- ✓ The unique partnership between the Plumas Unified School District (PUSD) and the Forest Service continues its success. Curriculum development, teacher workshops and support, science sections, and student fieldtrips help to restore and sustain natural and cultural resources of the Storrie Fire area while enhancing student learning and stewardship through effective collaboration. This partnership allows us to expand restoration accomplishments and incorporate public learning about fire-dependent ecosystems where possible. More participation from [student school restoration projects](#) are planned which will benefit NFS lands affected by the Storrie Fire.
- ✓ Success stories about all student restoration projects:  
[PUSD PCT Tree Planting](#), [Belden Quest](#), [Shrub Leaf Research](#), [PUSD Trails Day](#), [SBTS/Storrie High School Trail Crew](#)
- ✓ Permission to share partnership agreement quarterly reports has been granted by the PUSD/Storrie Fire Project Coordinator:  
[1Q12 Report](#), [2Q12 Report](#), [3Q12 Report](#), [4Q12 Report](#), and the [Partnership Agreement](#)
- ✓ The Storrie restoration team and other ranger district employees participated in PUSD's Learning Landscapes sessions. These sessions are intended to "teach the teachers" about fire ecology and other pertinent Storrie Fire topics. Two classroom sessions on fire ecology were presented (28 students in attendance).
- ✓ Initiated [teacher feedback/evaluation form](#) for all projects and fieldtrips to ensure links to CA State Content Curriculum Standards are met.
- ✓ A PUSD/Storrie Fire pilot teacher workshop was provided in August. The workshop highlighted topics on fire ecology, fire-adapted ecosystems, wildlife, botany, and scientific field journaling. These topics are incorporated into the 2012-2013 academic curricula.
- ✓ Pilot teachers completed pacing guides and have incorporated fire ecology into core curriculum.

## *Expenditures:*

Table 1. Expenditures for Fiscal Years 2008 through 2012

<b>Fiscal Year</b>	<b>Total</b>
<b>2008</b>	\$65,200
<b>2009</b>	\$2,913,000
<b>2010</b>	\$4,090,600
<b>2011</b>	\$2,051,236
<b>2012</b>	\$1,147,770 estimated
<b>Total (rounded)</b>	<b>\$10,267,806</b>



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Figure 1. Location map of the 2011 Storrie Fire Rapid Landscape Assessment area

## Future Directions

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Restoration efforts and plans were hampered by the Chips Fire, which began on July 29, 2012. The Chips Fire re-burned 24,289 acres within the Storrie Fire. A fire restoration strategy is being developed to include forest areas impacted by the Storrie and Rich Fires taking the Chips Fire into account. Vegetation restoration treatments such as forest stand structure restoration and fuels reduction have been a challenge, given the [steep slopes](#) (up to 89%) and rugged terrain within the Storrie Fire area. Evaluating vegetation restoration activities will be important in developing future productive and viable projects. The concept of “habitat equivalency damages” is discussed at length in the Storrie Fire Court Order. Equivalency damages were mainly focused on fuels reduction treatments, as they relate to providing protection for a wide variety of resources lost or damaged in the fire. The loss of forest resources within the Storrie Fire area necessitates the protection of forest communities that are currently intact, but at risk to loss from future fires.

The Storrie/Rich Fires Restoration Strategy Plan will be written per regional direction. The plan will create goals and direction for restoration activities for the next ten to fifteen years, as funding allows. It will prescribe management practices for specified times to meet the desired conditions, establish monitoring and evaluation requirements that measure implementation success, yield resource inventory data, and provide information for the development of programs and proposals. The Restoration Plan and the Rapid Landscape Assessment (RLA) established the management goals and directions as set forth in the Plumas National Forest Land Resource Management Plan for the Storrie Fire area. The Storrie Fire Restoration Team will also focus on completing natural resources inventories in the burn areas with the intention of modifying the Storrie Fire 10-year plan and refining expected restoration results.

The Storrie Fire Restoration Team is developing the NEPA strategies for larger identified restoration opportunities, as many of the projects falling under the Categorical Exclusion category are being implemented or nearing completion. The team is also investing efforts in the Rich Fire, Moonlight Fire, and Chips Fire Restoration endeavors, as appropriate.