Final Report for Post-Fire Coastal Sage and Cactus Scrub Restoration Projects

Associated with the San Diego Foundation's After the Fires Fund 2007.

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SUMMARY

The After the Fires Funds 2007 were utilized to provide immediate benefits to wildlife by expanding habitat adjacent to areas that did not burn and contained one or both of the restoration project's **species of focus**; California Gnatcatcher (*Polioptila californica*)and Coastal Cactus Wren (*Campylorhynchus brunneicapillus sandiegensis).* Work on this project was guided by the goal of providing immediate benefits to these birds because the fate of the San Dieguito River Park's ("Park") populations will have regionwide implications.

The southern slopes of Bernardo Mountain were chosen as the primary restoration area because of:

- Amount of wildlife in the area before the fires.
- Large number of documented occurrences of the species of focus.
- Relatively large amount of un-burned habitat occupied by the species of focus.
- Park's previously successful restoration projects in the area.

In addition, a site in San Pasqual Valley was chosen for similar reasons. Unburned habitat existed along with previous records of the presence of the species of focus.

Through extensive weed control efforts, seeding, and the installation of container plants the restoration project provided benefits to wildlife within the first year. Weed suppression allowed for natural fire recovery to occur without competition from invasive plants. Timely plant installation resulted in areas that were utilized for foraging and shelter.

The fire and subsequent invasion of non-native annual weeds has most likely permanently altered the coastal sage scrub communities near Lake Hodges and in the San Pasqual Valley. Some areas may return to scrub habitat but it will take decades. Weeds have now occupied space and have changed the composition of plant species. The conversion back to native habitat is slow and there are many other variables that will affect that process. This approximately 90-acre restoration project has provided the native vegetation an upper hand. The end result was of great benefit to the wildlife that survived the 2007 fires and also the people who utilize the trails that pass through the site.

BERNARDO MOUNTAIN

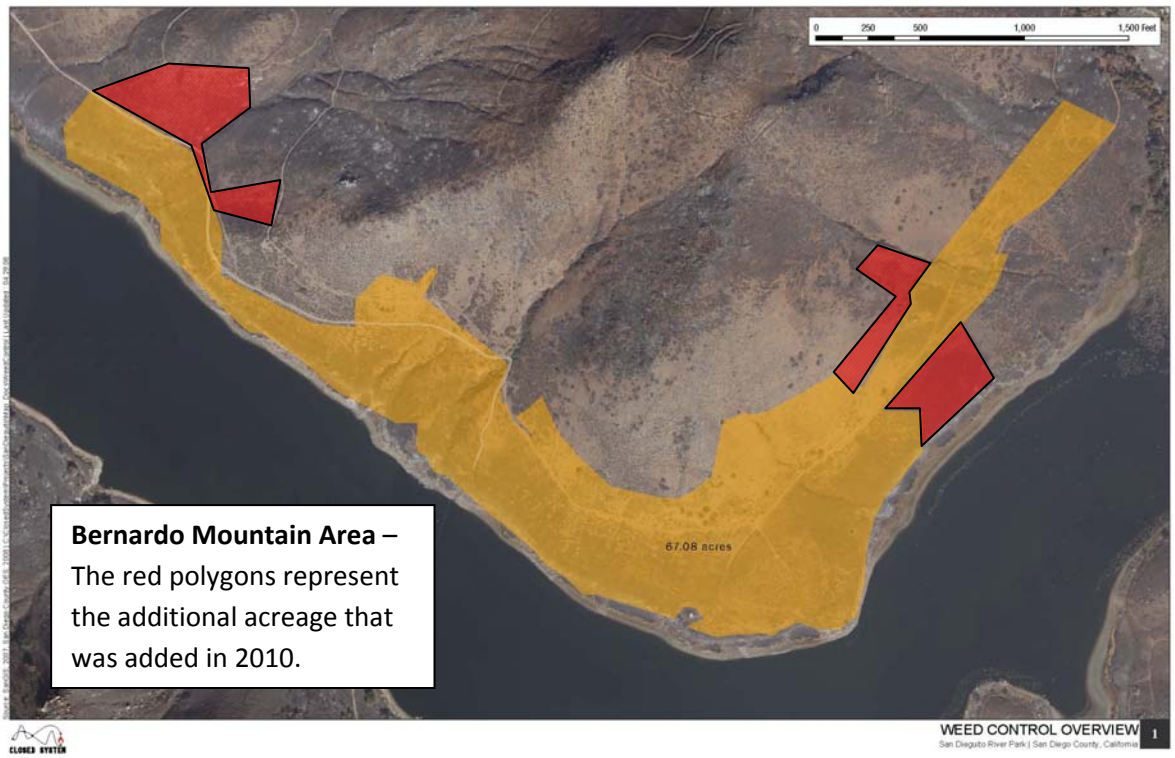
In 2008 and 2009, the Park teamed up with Urban Corps of San Diego to thoroughly prepare the restoration areas for planting, seeding, and weed control. The Park also relied upon Cal-Fire work crews and volunteers. In anticipation of the planting, seed was collected in 2008 and plants were grown in a local nursery. Five areas were chosen for active restoration. Each site contained features that would help the Park meet the goals of the project. The sites were linked together by created habitat, recovering habitat, or unburned habitat. Over 6,900 container plants were installed and 548 pounds of

seed were spread within the restoration area. Most of the container plants were installed in the predetermined sites. Each site had areas that were:

- Irrigated by gravity fed systems,
- Hand watered and mulched Plants
- Cactus
- Rock was also distributed throughout the site and provided shade and structure.

In the fall of 2009 and through 2010, an estimated 8 acres was added to the previous estimated total of 82 acres (Bernardo Mountain and San Pasqual Valley). This includes three additional active restoration sites. The Park installed 4,725 nursery grown container plants and an additional 250 plants grown at Park offices. 426 pounds of seed were collected and distributed.

The total number of plants installed is 11,625. This does not include cactus planted from pads, which are estimated to be an additional 600 plantings. The timing of the installation took advantage of winter rains. The first year of the project benefited from extensive hand work and monitoring and maintenance by Park Staff. The second year of the project benefited from ideal timing and normal, or above normal, rain fall. The survival rate is unknown and some plant mortality is to be expected. To compensate for this factor, plants were installed densely. The total number of pounds of seed is 974. Seed was distributed in areas that burned, is recovering well, lacks seedlings and contains few or no weeds; also in areas that did not burn and the weeds are under control and there are not many existing seedlings.



Bernardo Mountain Area – The red polygons represent the additional acreage that was added in 2010.

The picture to the left is of healthy *Coastal Sage Scrub* within the project site that burned in 2007. This composition of plants was used as the model for the type of habitat created as part of the *After the Fires Fund 2007* restoration projects. SDRP had conducted several acres of restoration in this area prior to the wildfires. Knowledge gained from these experiences helped shape the San Diego Foundation project and insured its success.

Original SDRP restoration site June 2010

Elderberry Site: Approximately 7 acres of active restoration. Mulched container plants in the foreground and irrigated plants in back. Adjacent to the site is occupied California gnatcatcher and coastal cactus wren habitat. Looking east.

Elderberry site one year after the 2007 fire and before restoration. Annual weed species have taken over the site. Red arrow indicated reference point for comparison with the picture above. In the back ground, de-thatching had started. Looking west.

Part of the 2010 expansion of the Elderberry site.

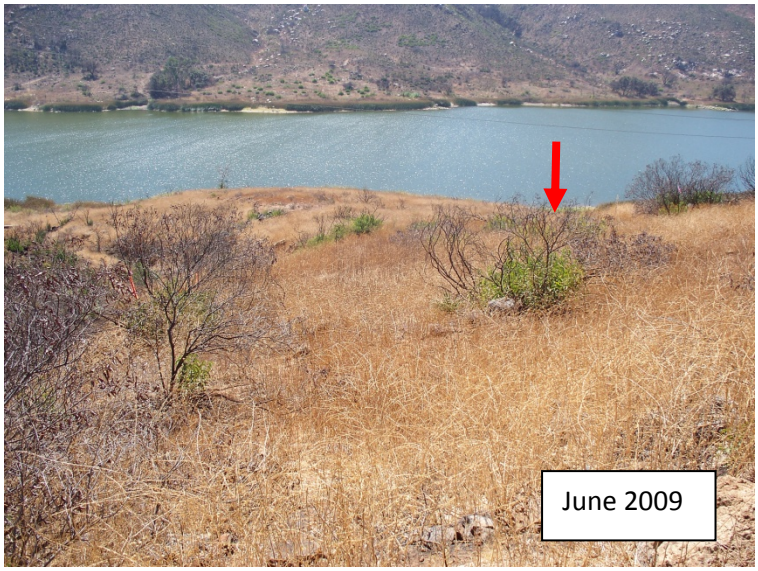
Seed success: seeding combined with weed suppression.

The restoration of this area, pictured to the left, was important in order to discourage trail users from mistakenly using the SDGE road which dead ends in California gnatcatcher and coastal cactus wren occupied habitat.

The area pictured to the right is within the project boundary. Here the native habitat did not completely burn and was very healthy before the 2007 fires. SDRP staff and contractors conducted extensive weed control in this area and other similar areas. Seed was scattered on soil that did not show initial recovery. Burned cactus patches were seeded. The soil under the burned cactus seemed to be more resistant to weed infestation than adjacent soil and was of a richer color.

Two Trails Site: pictured above is the "after" view from June 2010 and to the left is the before picture. Extensive cacti was installed below and above the irrigated area.

Big Drain Site June 2010



June 2009

Big Drain Site: Combined with the adjacent **Dust Devil Site** and **Power Pole Site,** there are approximately 8 acres of active restoration. The entire area was dethatched and area where natural fire recovery was occurring was marked off and isolated from any restoration activities other than weed control. Container plants were installed along with cactus cuttings. One area was irrigated, cacti was mulched with rock, and organic mulch was used for the sage scrub plants. Erosion control measures were installed.

Big Drain Site: Between occupied habitat and this site are the **Dust Devil Site** and **Two Trails Site**. The restoration sites link the occupied habitat with habitat recovering naturally and unburned coastal sage and cactus scrub. Beyond the occupied habitat is the **Elderberry Site**.

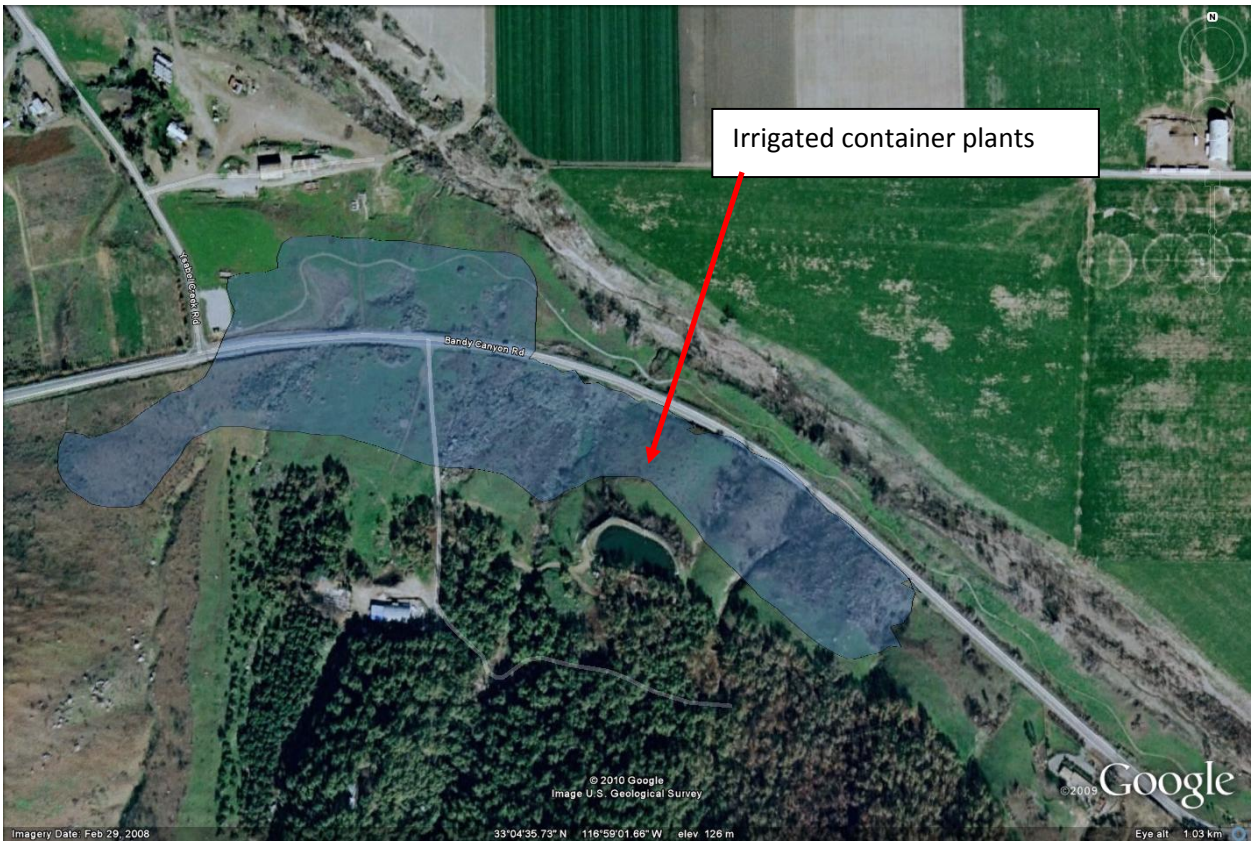
Dust Devil Site – March 2010

Dust Devil Site: Named after the Park's specialized volunteers, this site was set aside for this skilled group of people. Dust Devils average about 8 hours per week/per person. Dust Devils grew most of the plants, prepared the site, installed the vegetation, added mulch, and maintained the site. Although it was envisioned that the Dust Devils would be working independently on this site while Park Rangers supervised work crews elsewhere, inevitably the volunteers were also needed at other sites.

Bernardo Mountain Point Site: Park Rangers installed a gravity fed irrigation system with twice the capacity of the other sites. Approximately 8 acres were actively restored and all techniques were utilized. A significant archeological site occurred within the restoration area. A fence was installed to protect the archeological site and restoration areas.

Bernardo Mountain Point Site: The site was divided into upper and lower point and the two areas were connected by restoration activities. The **Point Site** is connected to the other sites by habitat recovering naturally and occupied unburned coastal sage and cactus scrub. In 2009/2010 approximately 3 acres of active restoration were added to the overall project and the site is North/East of the Point.

Point Site: pictured above is non-irrigated active restoration. Coastal sage scrub species were installed and organic mulch was utilized. The cacti were mulched with rock. The rock also provided structure to the site and encouraged use by reptiles and invertebrates. Pictured to the left is cactus that was planted densely to create a natural barrier between recreation and wildlife habitat.



K EAST Site: Located in the San Pasqual Valley, this site contained coastal cactus wren and California gnatcatcher prior to the 2007 fires. The restoration site contained an irrigated area, non-irrigated container plants, fencing, and bi-annual weed control and seeding. The non-irrigated container plants were installed in order to connect the existing habitat patches in the area and create a continuous corridor. West of the site historically contained cactus patches but were lost in a previous fire. Although, cactus wren prefers south facing slopes, this area was chosen because of past records and the presence of habitat that did not burn. In addition, the Park has several volunteer restoration projects in the area. The avocado grower agreed to allow the Park to use water from an irrigation pond in order to water the young container plants. This was accomplished through a long standing cooperative relationship between the farmer and the River Park. The project goal of providing immediate benefits to the species of focus was achieved. The wildlife, using the small amount of remaining habitat, benefited from the increase in foraging areas in year 1 and an increase in habitat in subsequent years.

WEED CONTROL AND SEEDING

Some areas of the restoration site contained healthy stands of native vegetation. Weed control and seeding was the method used in these areas. Without the weed control effort, most of these areas would have been overtaken by invasive plants. From past experiences with seeding in this area, it was determined that seed would be dispersed only in areas that had some level of weed suppression. That suppression was in the form of active weed control or healthy natural fire recovery. Shown above is burned cactus lying on the ground, treated weeds (grey sticks), and healthy native seedlings (green vegetation).

Weed control occurred over the entire site twice in 2008/2009 and twice in 2009/2010. Follow-up weed control would be beneficial. SDRP will continue weed control activities on portions of the restoration site. There is overlap with this restoration site and the Bernardo Mountain Preserve, which has a small amount of funding for weed control. In addition, the Park may use other funds earmarked for weed control projects in the San Dieguito River Park.

EXPECTATIONS

The restoration associated with *San Diego Foundation's After the Fires Fund 2007* will benefit the coastal sage scrub (CSS) communities near Bernardo Mountain and in the San Pasqual Valley for many years. The benefits to the project's species of focus, California Gnatcatcher (*Polioptila californica*)and Coastal Cactus Wren **(***Campylorhynchus brunneicapillus sandiegensis),* could be quantified in the near future by conducting surveys that would compare the surveys conducted before the 2007 Fire and immediately after. Other wildlife species associated with CSS will also benefit from the increased habitat acreage. Before the fire, the area contained many acres of CSS habitat and was considered to be a critical preserve for many species. The Lake Hodges/Bernardo Mountain/San Pasqual Valley area represents one of the largest continuous blocks of habitat in the MSCP area and provides habitat for 27 MSCP target species, including 1 federally and state-endangered species, 1 federally–threatened species, 2 state-endangered species, and 2 state-rare species, as well as several endemic plant species. The Park was able to combine the San Diego Foundation's funding with other resources in order to restore a larger amount of land. Portions of the project will be maintained for many years or until stable wildlife habitat exists.