

SAN BRUNO MOUNTAIN HABITAT CONSERVATION PLAN



Year 2008 Vegetation Management Activities Report
For Endangered Species Permit PRT-2-9818

Submitted to
United States Fish and Wildlife Service

by
San Mateo County Parks Department
January 2009



TABLE OF CONTENTS

VEGETATION MANAGEMENT

A.	Invasive Species Control.....	1
1.	2008 HCP Invasive Plant Treatment Summary.....	2
2.	HCP Oxalis Control Project.....	4
3.	Owl and Buckeye Canyons Wildland Burn Site June 2008.....	6
B.	Invasive Species Control Work (not funded by the HCP).....	6
1.	Saddle Gorse Control Project.....	7
2.	Terra Bay Master Homeowners Association Invasives Control Project.....	8
3.	City of Brisbane Oxalis Control Project.....	9
4.	City of South San Francisco Exotics Control Plan.....	9
5.	Myers Peninsula Partners, Inc., Dedication Parcels Exotics Plan.....	9
6.	San Bruno Mountain Watch Exotics Control and Restoration Plan.....	10
C.	Restoration of Habitat	10
1.	Restoration Guidelines for Mission Blue and Callippe Silverspot Butterflies.....	11
2.	HCP Habitat Islands.....	12
3.	The Watershed Project / Heart of the Mountain.....	12
4.	Habitat Restoration Work on Development Slopes.....	12
D.	Grazing and Burning.....	13
E.	References.....	13

Report Prepared by:

West Coast
Wildlands PO Box
1057
Pacifica, CA 94044
(650) 355-3589

Cover photos:

Top photo: View of Wax Myrtle Ravine, Dairy Ravine and Summit of San Bruno Mountain.
Left to Right: Callippe silverspot butterfly, Mission blue butterfly and San Bruno elfin butterfly.
Photos by: Patrick Kobernus, Coast Range Ecology.

VEGETATION MANAGEMENT AND RESTORATION

A. Invasive Species Control

The primary focus of habitat management activities on San Bruno Mountain since the inception of the San Bruno Mountain HCP in 1982 has been the control of invasive species infestations through hand removal, mechanical removal, and herbicide treatment. The methods and scale of activities have shifted over time, however the overarching goal of protecting and enhancing as much endangered species habitat as possible with available resources has remained unchanged. Habitat management activities conducted on San Bruno Mountain in 2008 were conducted in accordance with the goals, objectives and success criteria established in the San Bruno Mountain Habitat Management Plan 2008 (San Mateo County 2008). Priority areas for management of invasive species are delineated in the San Bruno Mountain HMP.

The majority of the habitat management activities conducted on San Bruno Mountain are performed by West Coast Wildlands (WCW) under contact to the Habitat Manager, San Mateo County Parks Department. In addition, other contractors such as Shelterbelt Builders and Restoration Resources, and numerous volunteers working for San Bruno Mountain Watch and CNPS Heart of the Mountain, conducted invasive species control in 2008.

Due to the large area of the Mountain that is subject to invasive species control work (approximately 2,800 acres), and the expanding number of invasive species that require treatment, infestations must be prioritized as follows, based on their threat to sensitive habitat areas:

- Priority 1: Small patches of invasive species within native habitat
- Priority 2: Small patches of invasive species at the periphery of native habitat
- Priority 3: Edges of large invasive species infestations
- Priority 4: Large invasive species infestations

Herbicide treatment has consisted of spraying targeted species with an herbicide solution containing either Garlon 4 Ultra® (triclopyr ester) or Aquamaster® (glyphosate). These herbicides are used due to their high effectiveness, low toxicity rating and short half-life in the soil. Garlon 4Ultra® herbicide is the preferred chemical since it does not harm monocots (grasses). Herbicide is applied one to four times per year in suitable weather (low wind, low humidity) for maximum plant uptake. The plants are left to decay in place, a process that takes from one to five years depending upon the size of the plants. In sensitive areas (near butterfly habitat and within 150 feet of private property) mature stands of invasive plants are removed by hand control, chainsaw or mowing followed by stump herbicide treatment.

1. 2008 HCP Invasive Plant Treatment Summary

The primary focus of non-native species control is on invasive shrubs and herbaceous species that pose the greatest threat of displacing butterfly habitat and other native habitats. Invasive plants that were treated aggressively in 2008 include gorse (*Ulex europaeus*), French broom (*Genista monspessulana*), Portuguese broom (*Cytisus striatus*), cotoneaster (*Cotoneaster ssp.*), eucalyptus (*Eucalyptus globulus*), fennel (*Foeniculum vulgare*), radish (*Raphanus ssp.*), field mustard (*Hirschfeldia incana*), Himalayan blackberry (*Rubus armeniacus*), jubata grass (*Cortaderia jubata*) and Oxalis (*Oxalis pes-caprae*). A growing amount of attention is also being paid to weeds that are not as pervasive as those listed above, but that are capable of altering community composition through competition within their microhabitat. These include species such as red valerian (*Centranthus ruber*), panic veldtgrass (*Ehrharta erecta*), and pin-cushion plant (*Scabiosa atropurpurea*).

Fennel is treated as one of the highest priority weeds on the Mountain and populations have been significantly decreased in some locations, such as on the slope above Hillside School. However, a high level of follow-up maintenance is required for management of fennel. Stands may require several treatments a year for many years before the plant is eradicated. Hence, significant resources are required for continued treatment of a site, thus limiting the total area that can be adequately treated.

In 2008, 628 acres of invasive plants were treated by hand or with herbicides (Figure 1). Many of these acres were treated 2 to 4 times for repeat control of various species. West Coast Wildlands maintains daily record sheets for all invasive species work conducted on the Mountain. This included a 300 acre wildland burn occurred on San Bruno Mountain in June of 2008 that covered Owl and Buckeye Canyons as well as part of the East Ridge Trail. The Owl and Buckeye Cyn burned mostly coastal scrub and the coastal grassland burn was south of the Ridge Trail East. These areas are considered prime habitat for the Mission Blue and Callippe Silverspot Butterflies.

In 2008, the greatest efforts went into treating invasive species within key butterfly habitat areas on the Southslope, Northeast Ridge, Owl and Buckeye Canyons, the Saddle, Juncus Ravine, the Ridge Trail, Pointe Pacific, the Hill West of Quarry, West Peak, and Wax Myrtle Ravine. In addition, roadside and trailside areas along Radio Road, Old Ranch Road and Guadalupe Canyon Parkway were treated due to the high rate of recurring weed invasions of these disturbed areas (Figure 1). Two new sites were added to this years scope that included Ice House Hill (Callippe Silverspot habitat) and Preservation Parcel (Ohlone Indian archeological site and wetland habitat) both located at the eastern section of the Park.

The following invasive plant species were treated in 2008:

Table 1. Invasive Species treated on San Bruno Mountain by West Coast Wildlands in 2008.

<i>Acacia</i> sp. (acacia)	<i>Euphorbia lathyris</i> (Caper spurge)
<i>Carduus pycnocephalus</i> (Italian thistle)	<i>Foeniculum vulgare</i> (fennel)
<i>Carpobrotus edulis</i> (hottentot fig, iceplant)	<i>Genista monspessulana</i> (French broom)
<i>Centaurea melitensis</i> (Napa thistle)	<i>Hirschfeldia incana</i> (mustard)
<i>Conium maculatum</i> (poison hemlock)	<i>Lactuca virosa</i> (wild lettuce)
<i>Cortaderia jubata</i> (pampas grass)	<i>Leucanthemum vulgare</i> (ox-eye daisy)
<i>Cotoneaster</i> sp. (cotoneaster)	<i>Oxalis pes-caprae</i> (Bermuda buttercup)
<i>Cupressus macrocarpa</i> (Monterey cypress)	<i>Pinus radiata</i> (Monterey pine)
<i>Cytisus scoparius</i> (Scotch Broom)	<i>Picris echioides</i> (bristly ox-tongue)
<i>Cytisus striatus</i> (Portuguese broom)	<i>Raphanus</i> ssp. (radish)
<i>Delairea odorata</i> (Cape ivy)	<i>Rubus armeniacus</i> (Himalayan blackberry)
<i>Echium candicans</i> (Pride of Madera)	<i>Silybum marianum</i> (milk thistle)
<i>Eucalyptus globulus</i> (blue gum tree)	<i>Ulex europaeus</i> (gorse)

Figure 1:

San Bruno Mountain Hand & Herbicide Control Work '2008

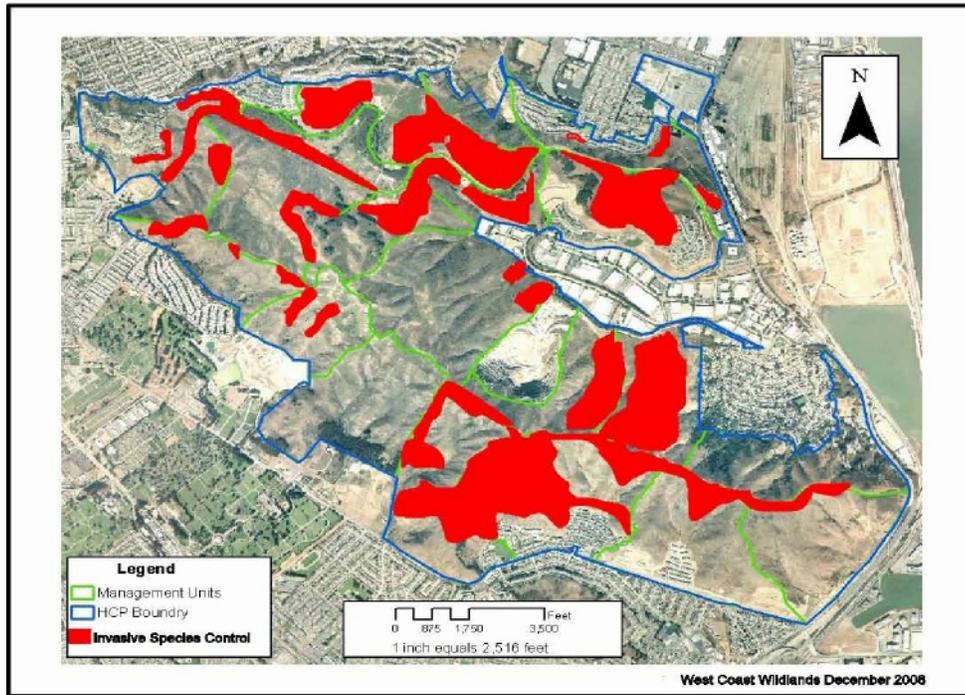


Table 1 includes species that were recorded on WCW daily record sheets. However, additional species that were not the focus of a particular day’s control effort are occasionally treated by WCW and are not recorded. This is especially true when only a few individuals or a small patch are hand removed this minor amount of work doesn’t warrant creating an additional data sheet. Additional invasive species are occasionally targeted by Shelterbelt Builders during habitat

island maintenance (Section B below) and by volunteer groups during volunteer weeding days. These species are shown in Table 2.

Table 2. Additional Invasive Species treated on San Bruno Mountain in 2008 by Shelterbelt Builders and volunteer groups.

<i>Avena</i> spp. (wild oat)	<i>Hypochaeris radicata</i> (hairy cat's ear)
<i>Briza maxima</i> (quaking grass)	<i>Lactuca serriola</i> (prickly lettuce)
<i>Bromus hordeaceus</i> (soft chess)	<i>Lobularia maritima</i> (Lobularia)
<i>Centaurea calcitrapa</i> (purple star thistle)	<i>Lolium multiflorum</i> (Italian wild rye)
<i>Centranthus ruber</i> (red valerian)	<i>Lythrum salicaria</i> (purple loosestrife)
<i>Chenopodium album</i> (lamb's quarter)	<i>Myoporum laetum</i> (Myoporum)
<i>Cirsium vulgare</i> (bull thistle)	<i>Phalaris stenoptera</i> (harding grass)
<i>Digitalis</i> sp. (fox-glove)	<i>Plantago lanceolata</i> (plantain)
<i>Ehrharta erecta</i> (panic veldtgrass)	<i>Pyrocantha crenato-serrata</i> (pyrocantha)
<i>Erechtites arguta</i> (New Zealand fireweed)	<i>Rumex crispus</i> (curly dock)
<i>Erodium cicutarium</i> (filaree)	<i>Rubus armeniacus</i> (Himalaya blackberry)
<i>Hedera helix</i> (English ivy)	<i>Rumex acetosella</i> (sheep sorrel)
<i>Helichrysum petiolare</i> (licorice plant)	<i>Scabiosa atropurpurea</i> (pin-cushion plant)
<i>Holcus lanatus</i> (velvet grass)	<i>Solanum</i> ssp. (nightshade)

The new weed species found of yellow star thistle (YST) on the Mountain (*Centaurea solstitialis*) along Radio Road in 2007, and gopher spurge (*Euphorbia lathyris*) in Pointe Pacific were treated and only the spurge is still emerging from seeds. The gopher spurge covered an area of approximately 1000 sq. ft (at approximately 1 % density) and was treated twice with 2% Garlon in the spring of 2008. Follow up treatments for both species are scheduled for 2009. The YST has not returned.

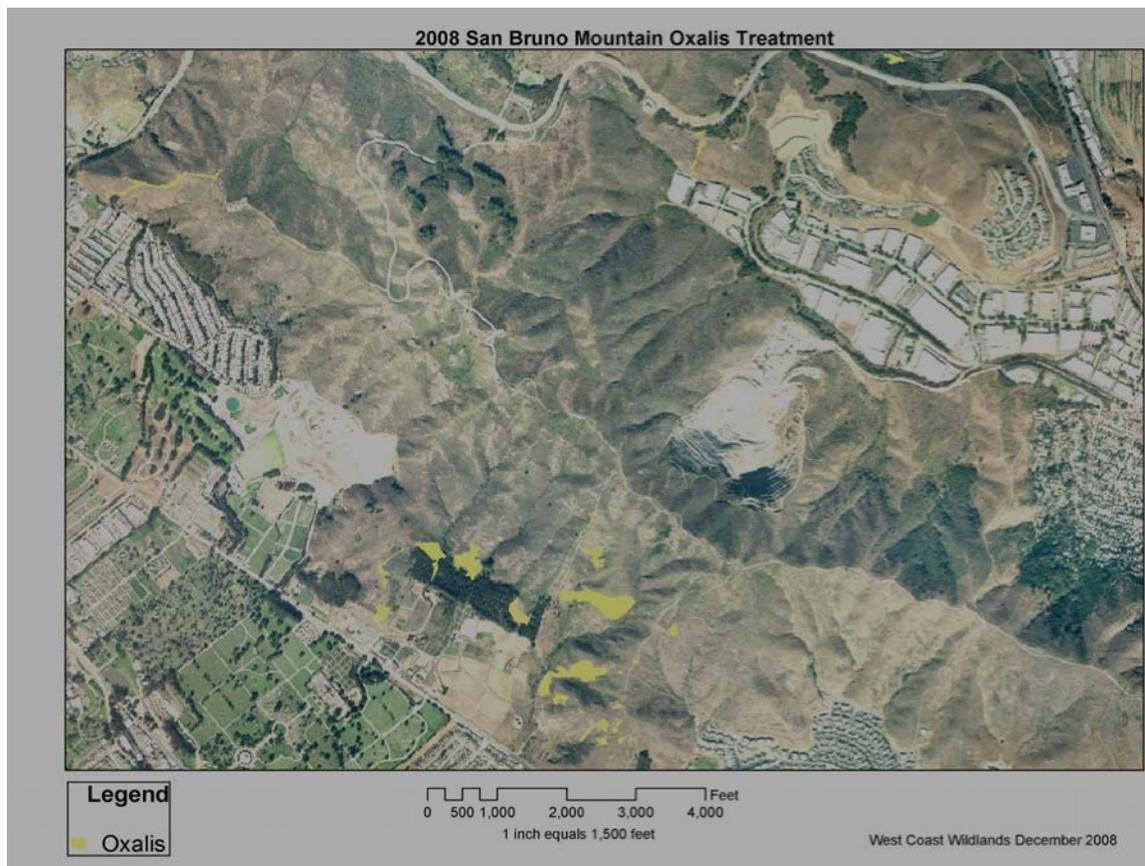
In 2008, emphasis will continue to be placed on those areas and weeds that pose the greatest threat to grassland butterfly habitat, and in areas that have been receiving previous efforts. Only with continued follow-up treatment and maintenance can an invasive infestation be managed. However, when small populations or individuals of particular concern are discovered in an area where they had not previously been seen or treated, it is noted and either WCW diverts funds to treat these if possible, or the plants are monitored and identified for control in the following year's budget. In addition, recommendations made by the newly established Technical Advisory Committee that meets quarterly (section IV. B below) will help guide weed control efforts. Preventing the establishment of new highly invasive weeds such as YST on the Mountain should be the highest priority.

2. HCP Oxalis Control Project

As part of the 2005/2006 HCP fiscal year budget, special funding was approved for aggressive control of Oxalis (*Oxalis pes-caprae*). Oxalis has been proliferating on the Mountain and is of concern as it can form dense mats and out compete

native plant species for light and space. Oxalis has also been found to inhibit the germination of some native plants (Brooks 2001). On San Bruno Mountain, the greatest concentration of Oxalis is found in the Poison Oak Ravine and Hillside management areas (which includes the Tank Ravine management area). Oxalis is also found along the Ridge Trail growing under scrub vegetation, and along a ridge trail from the Ranger's Station to nearby the terminus of Hoffman Street (Daly City). Other, smaller infestations (Dairy Ravine, Radio Road, and below Brisbane Water Tank) are already treated as part of the general budget and work plan.

Figure 2:



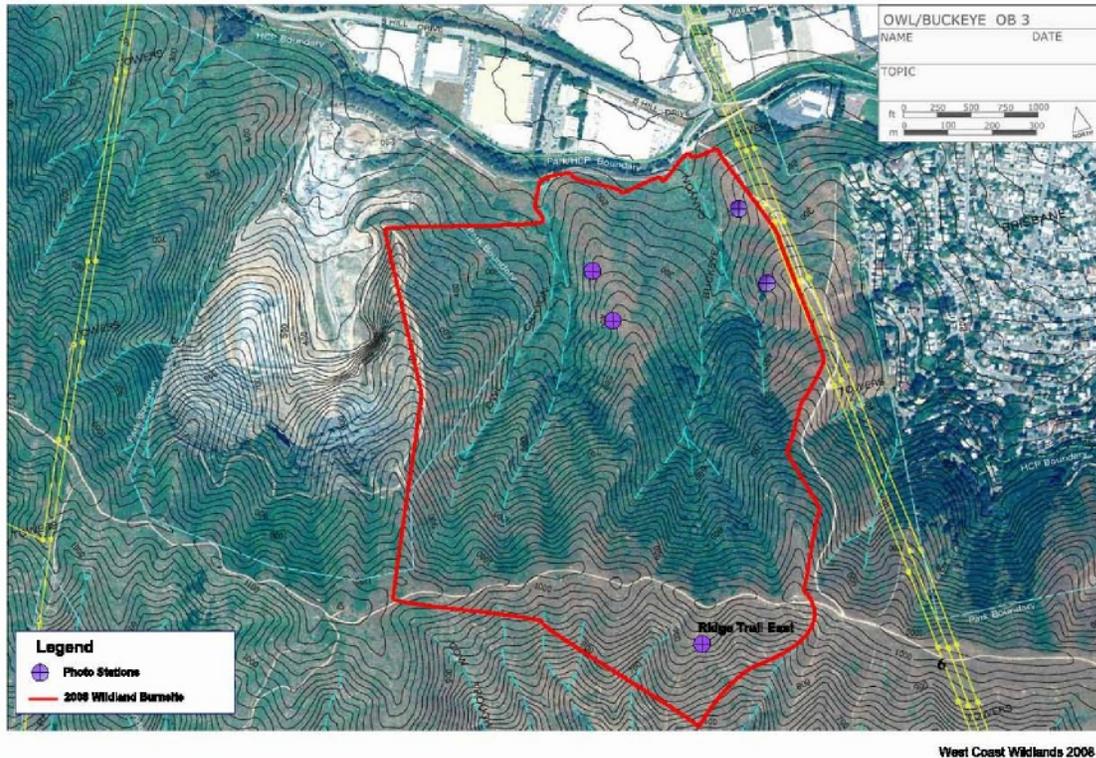
The funding for Oxalis control was extended through 2008/2009, and the remaining one-third of this budget was used in 2008 for follow-up treatment of the original control sites with some expansion of the mapped infestation (Figure 2). A total of approximately 47 acres have been treated thus far since inception of the project in 2005. An assessment made by WCW in early 2008 detected a kill rate ranging from 75 to 90%. Some of the areas that have been controlled of Oxalis have been colonized by coyote brush and wild oat.

The Oxalis control project was renewed for the 2008/2009 fiscal year by the HCP Trustees and treatment was scheduled for all previously treated sites, as well as new sites observed downslope of the Ridge Trail east of Juncus Ravine, Hillside, Upper Tank Ravine and above Pacifica Nursery located on Hillside Dr, Daly City.

3. Owl and Buckeye Canyons Wildland Burn Site June 2008

West Coast Wildlands, Inc. placed 5 photo stations (Figure 3) within the burn site to monitor the regeneration of native and non-native plants. Each monitoring station is visited every 6-8 weeks. There are two Buckeye Canyon photo stations along west of Army Road, facing west, two photo stations overlooking Owl Canyon and one along Ridge Trail East.

Figure 3 Owl & Buckeye Canyon Burn site June 2008



West Coast Wildlands, Inc., has added additional efforts to the 2008 HCP Exotics Control budget to reduce the Coyote brush (*B. pilularis*) that has been gradually displacing the native perennial grassland habitat along Owl and Buckeye Canyons. Two methods are used to reduce the brush; 1) Cut stump treatment at the base of the larger (> 2 in DBH) brush removed by chainsaws (Photo 1) and 2) Foliar application to secondary growth on smaller plants (<2 in. DBH). This is a group effort between the HCP Maintenance program working the upper one-third of the ridge lines where the butterfly habitat is prevalent and San Bruno Mountain Watch (SBMW), a non-profit stewardship program, using hand tools to removing weedy plants in the burn zone.

Photo 1: Photo Station: OC_2 (Buckeye Canyon Management Unit)



Photo: August 2008 Alex McHuron, West Coast Wildlands, Inc.

B. Invasive Species Control Work (not funded by the HCP)

Several supplemental invasive species control projects are currently being implemented on San Bruno Mountain in addition to the work funded through the HCP. Some of these projects are very large in scope, and have resulted in a significant reduction in invasive weeds.

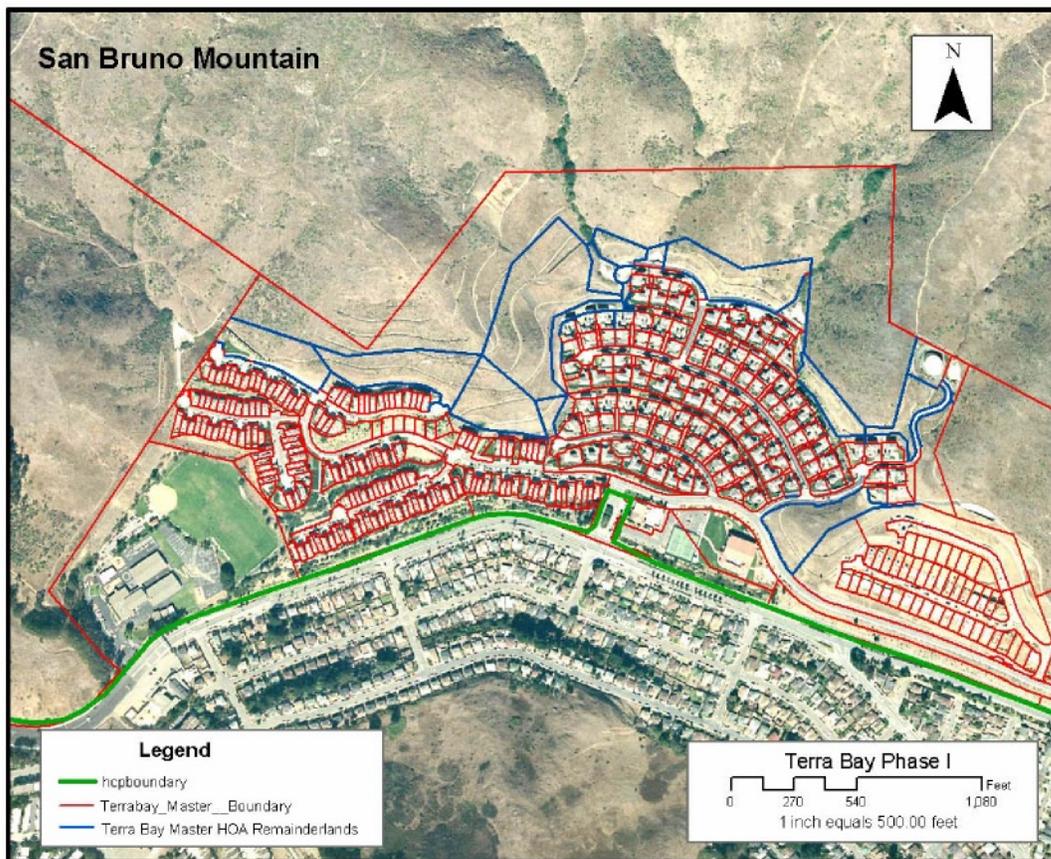
1. Saddle Gorse Control Project

Through a California State Parks Grant, a four-year project was initiated in 2004 to control gorse in the Saddle. The lead consultant for this work is Shelterbelt Builders, with May and Associates, Restoration Resources and West Coast Wildlands contributing as subconsultants. The overall objective of the project is to reduce gorse and Himalayan blackberry cover within treatment areas to 5% or less by the end of the project, such that only minimal maintenance will be required to keep these species from returning to the project area. In 2008, West Coast Wildlands treated 27 acres of gorse regrowth and seedlings with a single herbicide application. The remaining schedule of efforts went to the contractor, Shelterbelt Builders, Inc., and completed their required efforts in November 2008.

2. Terra Bay Master Homeowners Association Invasives Control Project

The Terra Bay Master Homeowners Association (TBMHOA) was deeded the Remainder lands in 2006 (Figure 4: Terra_Bay_Master) and are within the HCP boundary. There are 11 parcels totaling approximately 25 acres bordering the TBMHOA property, with San Bruno Mountain parkland located on the western, southern and eastern boundaries. The TBMHOA accepted an Exotics Control Plan by West Coast Wildlands to treat invasive weed species for a period of three and one-half years beginning in the fall of 2008 and ending in the Spring 2010. The listed weed species are Bristly Ox-tongue (*Picris echinoides*), Fennel (*Foeniculum vulgare*), F. Broom (*Genista monspessulana*), Mustard (*Hirschfeldia incana*), Bermuda buttercup (*Oxalis pes-caprae*), Jubata grass (*Cortaderia jubata*) and radish (*Raphanus ssp.*).

Fig. 4. Terrabay Village & Park Master HOA Parcel Map



West Coast Wildlands - December 2007

The 11 parcels were mowed during a three-week period in the Spring and Fall 2008 removing dead material to expose weedy root stems and initiate secondary growth for herbicide treatment. Weed species within 24 inches of mission blue and/or Callippe silverspot host and nectar plants were removed using hand tools with little disturbance to the soil. The Jubata grass was treated with 2% Aquamaster herbicide. The Winter mow of annual and perennial weed species are treated with herbicides in early spring to late Summer 2008. There was a 95% reduction of mature Fennel and 100% reduction of mature Jubata grass.

3. City of Brisbane Eucalyptus Control Project

The City of Brisbane contracted West Coast Wildlands to treat cut stumps on two City-owned parcels (parcel 62 and parcel 78). Parcel 62 had approximately twenty blue gum eucalyptus trees and Parcel 78 had approximately ten trees. Both sites were treated twice in 2008 with some secondary growth emerging below the soil surface.

4. City of South San Francisco Exotics Control Project

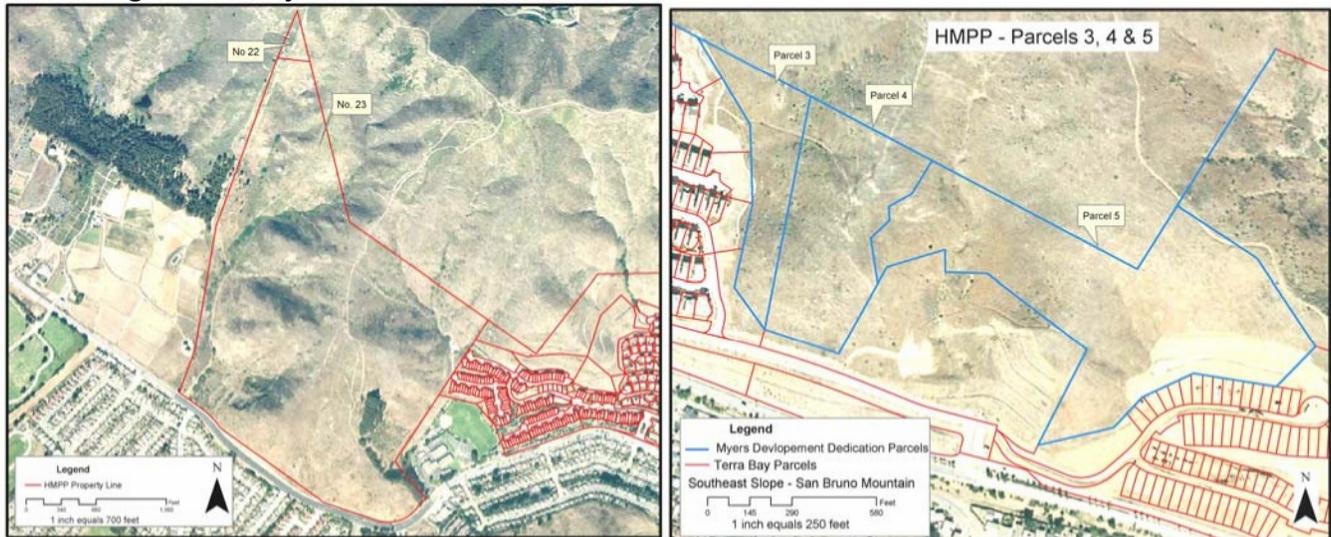
In October 2008, Myers Development Company, Inc. contracted West Coast Wildlands, Inc., to treat primary weed species on Recreation Parcel dedicated to the City of So. San Francisco in 2007. Myers Development Company, Inc were the previous owners of the parcel located on the S. Slope of San Bruno Mountain State and County Park. A 6 month treatment was approved to control or remove Fennel, F. broom and Jubata grass . The site is critical habitat for the Callippe Silverspot butterflies and host plant, *V. pedunculata*, that is monitored on an annual basis. The site was mapped in 2001 and 2005 using GPS and those plants susceptible to disturbance had a wire fence constructed while a sedimentation basin was repaired. The fence line barrier still exists.

5. Myers Peninsula Partners, Inc., Dedication Parcels Exotics Control Project

In June 2008, Myers Peninsula Partners, Inc., hired West Coast Wildlands, Inc. to write a 5 year Exotics Control Plan and a contract was approved with WCW in October 2008 to treat primary weed species on five parcels that potentially will be dedicated to San Mateo County Parks Department. The areas consist of 185 total acres (Figure 5: Parcels 3, 4, 5 22 & 23) and would be the largest dedication of land to the County Parks Department. These sites were previously treated for weeds on a regular basis from 2001-2005 by Myers Peninsula Partners, Inc.

The main weed species WCW treated are Fennel (*Foeniculum vulgare*), mustard (*Hirschfeldia incana*), W. radish (*Raphanus ssp*), F. broom (*Genista monspessulana*), P. grass (*Cortaderia jubata*) and Bermuda buttercup (*Oxalis pes-caprae*). The methods applied are hand control with Polsaski, Machette and brushcutters and herbicide control using basal bark, foliar and thin line. The current status of effort is a 65-90% reduction of the mature primary weed species. This initial treatment will continue through the Spring 2009.

Figure 5: Myers Peninsula Partners Inc., Dedication Parcels



Tank/Juncus Parcels 22 & 23 South Slope Parcels 3, 4, & 5

6. San Bruno Mountain Watch Exotics Control Project

SBMW volunteers put in 1005 hours doing stewardship on the mountain. 242 of those hours were on County Park property. The rest were in or around Buckeye and Owl, or in the Brisbane Acres. We concentrated on removing invasives, doing no planting. Species removed were primarily scabiosa, italian thistle, hemlock, broom, fennel, mustard, radish, bristly ox tongue, and velvet grass.

C. Restoration of Habitat

For purposes of clarity, the term “restoration” is used to refer to areas planted and/or reseeded with native plant species. Restoration sites also receive invasive species control through the use of herbicide, mowing, hand weeding and/or other tools to maintain the planted areas. As areas that are restored will generally require ongoing maintenance, “restored” is understood to mean that the goals and objectives of the restoration project were met, regardless if ongoing maintenance will be required. Restoration is a measurement used by the County of San Mateo for their Outcome Based Management.

Early attempts at large scale restoration on disturbed slopes on San Bruno Mountain were largely unsuccessful due to the difficulty in maintaining areas against a large influx of weeds. As a result, a strategy of creating small habitat islands (up to approximately 1/2 acre in size) was developed. Since 1997 this approach has been implemented in several areas of the Mountain and has proven to be successful in Eucalyptus cut areas, former gorse patches, and on graded slopes disturbed by development. Maintaining these sites over time requires ongoing management to control invasive species and brush succession.

The primary goal of the restoration work has been to establish habitat for the endangered mission blue (MB) and callippe silverspot (CS) butterflies.

It should be noted that the Mission blue's host plants (lupines) are often patchy in their distribution, and will colonize disturbed roadcuts, landslides, and trails. Mission blues utilize these patches, and can easily move between patches that are 100 meters apart (Arnold 1983), and have been recorded moving distances up to 0.25 miles (TRA 1981) between habitat patches. In contrast, CS utilize much larger areas of habitat due to their larger size and stronger flying ability. Callippes can move several hundred feet within less than a minute when traveling across terrain searching for *Viola* and appropriate hilltopping habitat (San Bruno Mountain Habitat Management Plan 2008), and can likely travel as far as 0.75 miles between habitat patches ((TRA, 1981). The CS host plant, *Viola pedunculata*, typically occurs in much larger, denser patches than lupines do, though *Viola* can also on occasion be found in small patches and in disturbed areas. Growing and establishing *Viola* within restoration sites has been largely unsuccessful to date, however experimentation has continued on a small scale. Because the Callippe's habitat is typically found in much larger patches, and it is these patches that support the population on San Bruno Mountain, it is more important at this time to direct efforts into protecting the conserved grassland habitat that contains *Viola* than to direct significant funds into replanting *Viola* within restoration areas.

Though restoration is important, the first priority should always be protecting the existing habitat, because that is the best use of funds for ensuring the long-term survival of both MB and CS on San Bruno Mountain (Biological Program, HCP Volume I, 1982). This management approach has been in use since the inception of the HCP and the effectiveness of this approach has been documented in previous annual reports and is demonstrated through the continued persistence of the endangered species on San Bruno Mountain. It is imperative that this approach be continued in the future to manage the endangered species effectively.

1. Restoration Guidelines for Mission Blue and Callippe Silverspot Butterflies

HCP funded restoration work in the form of weed control, erosion control and planting has been ongoing on the mountain since the mid-1980's. The primary goal of the restoration work is the establishment of high quality habitat for the MB and CS butterflies. Because the HCP does not specify what is required for successful restoration, (i.e. number of host plants established, percent cover of natives, etc.) *The Habitat Restoration Guidelines for MB and CS* (TRA, November 2000) provide guidelines for restoring suitable MB and CS butterfly habitat, and assist restoration professionals with accomplishing the habitat goals of the HCP. The guidelines include suggested methods on how to select appropriate restoration sites, recommendations on host plant densities to support the endangered butterflies, and host and nectar plant propagation methods. They are to be used in conjunction with the *Standards for Acceptance of any Dedicated Lands by the County of San Mateo in Accordance with the San Bruno Mountain Area Habitat Conservation Plan*, prepared by the San Mateo County Parks Department.

2. HCP Habitat Islands

Since 1995, several habitat restoration islands have been created and managed within former eucalyptus and gorse sites within the HCP conservation area by Shelterbelt Builders, Inc., is maintaining the exotics within these sites on an annual to bi-annual basis. Work conducted in 2008 on the habitat islands is being applied to those islands that have shown the best results in thriving and little maintenance required. The Planting islands are Colma Creek (CC1) dairy Ravine (D1 & D5), N.E. Ridge Burns Sites (NER1 & 2) and N.E. Ridge Planting island (NERPI 3-6, 7a & 7b).

3. The Watershed Project / Heart of the Mountain

Under a State Parks Grant managed by the County of San Mateo, the Watershed Project is carrying out “Heart of the Mountain” directed by Joe Canon. The goal of Heart of the Mountain is to restore the Colma Creek headwaters to a native riparian plant community. The Heart of the Mountain project leads volunteer groups in weed removal and native planting. Priority invasive plants for removal include Cape ivy (*Delairea oderata*), English ivy (*Hedera helix*), Himalayan blackberry, and eucalyptus.

Except From ‘Colma Creek Headwaters Restoration Project’* Project Summary for 2008:

The volunteer totals for 2008 were 649 volunteer visits and 1,950 volunteer hours. This consisted of 24 regularly scheduled community volunteer workdays, as well as six specially scheduled volunteer groups including two workdays with Peninsula Sinai from Foster City for Tu B'Shevat, two visits from the Harvard Club, and two workdays with the Restoration Field Studies class from City College of San Francisco. Groups that regularly joined the community workdays were ecology students from City College of San Francisco Biology 40, 20, 23, 41 L Spring and Fall semesters most of whom visited twice during the semester, also the mother and daughter teams from the National Charity League, Friends of San Bruno Mountain with Jefferson High School biology students and a core of regular Heart of the Mountain community volunteers.

4. Habitat Restoration Work on Development Slopes

Shelterbelt Builders and previous restoration contractors working on San Bruno Mountain have created habitat restoration sites on various private properties within the HCP. Habitat Restoration sites are located on Brookfield Homes property, San Francisco Water District property, Myers Development and property, Pointe Pacific HOA property, TBMHOA property, and Linda Vista (D.R. Horton) property.

*See: 1. References for ‘Heart of the Mountain; ‘Colma Creek Headwaters Project’

D. Grazing and Burning

No grazing or burning projects were conducted on San Bruno Mountain in 2008. Burning and grazing are identified as important habitat management tools in the San Bruno Mountain HCP and the San Bruno Mountain Habitat Management Plan, 2008. A grazing project is being formulated by the Habitat Manager and is proposed for implementation within the County Park in the near future.

1. References

- Brooks, K. 2001. Managing weeds in bushland: Soursob, fingerleaf & four o'clock. The Environmental Weeds Action Network (<http://members.iinet.net.au/~ewan/oxalis>. pdf). [Accessed: December 2005]
- County of San Mateo, 1982. San Bruno Mountain Habitat Conservation Plan, Volume I and II. Prepared by Thomas Reid Associates.
- San Mateo County Parks Department, 2008. San Bruno Mountain Habitat Management Plan 2008. Prepared by West coast Wildlands, Inc..
- San Mateo County Parks Department. Standards for Acceptance of any Dedicated Lands by the County of San Mateo in Accordance with the San Bruno Mountain Area Habitat Conservation Plan. Revised 2006.
- San Mateo County Parks Department. Habitat Restoration Guidelines for Mission Blue and Callippe Silverspot butterflies (revised November 2000). Prepared for the San Bruno Mountain Habitat Conservation Plan. Prepared by TRA Environmental Sciences.
- The Heart of the Mountain: December 2008. Colma Creek Headwaters Restoration Project, Prepared by Joe Cannon, Ecological Studies, San Francisco City College.
- Thomas Reid Associates. November, 1981. Endangered Species Survey: San Bruno Mountain Biological Study.
- All San Bruno Mountain HCP documents/ resources available on-line at <http://www.traenviro.com/sanbruno/> or from County of San Mateo Parks Department.*