

Colma Creek Headwaters Restoration Project, San Bruno Mountain State and County Park Final Report

Prepared for: San Mateo County Parks and Recreation Dept

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Figure #1: Colma Creek Headwaters: San Bruno Mountain State and County Park

This project would not have been possible without the cooperation of many agencies, groups and individuals working together to make this project happen. The following should be commended for their efforts:

San Mateo County Parks Department – Dave Holland, Dave Moore, Gary Lockman, Sam Herzberg, Pam Noyer, Al Zuker, Nick Ramirez, and Cecily Harris

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California Native Plant Society – Mary, Petrelli, Pete Holloran, Jake Sigg

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West Coast Wildlands – Mike Forbert

Shelterbelt Associates – Mark Heath

CA Department of Forestry and Fire Protection – Angela Peterson

San Mateo County Fire Safe Crews

Watershed Project

Sierra Club

National Charity League

Peninsula Sinai Congregation

Jefferson High School

San Francisco State University

City College

Harvard Club

Google

Community Volunteers

Project Summary

The Heart of the Mountain Program was initiated 2001 by the California Native Plant Society (CNPS) and was funded up to 2004 by numerous grants from foundations and individuals. This stewardship program was created to build a community stewardship program on San Bruno Mountain and to restore the native plant communities of the Colma Creek and the Bog Trail areas.

In 2003, San Mateo County Parks applied for and was awarded \$140,000 in Proposition 12 funds, under a category for local agencies managing State Park lands, to support the continuing efforts started by CNPS, to restore this important wetland area on San Bruno Mountain. The Watershed Project, which became a financial sponsor for the Heart of the Mountain Program, was hired by the County to facilitate and coordinate volunteers in clearing invasive weeds, grow and plant the native plants, assist with securing permits, and implementing permit requirements (see Appendix A for plan details). During the past three years the Heart of the Mountain effort has also applied for and secured three San Mateo Parks Department grants worth \$2,500 to purchase tools and gloves. It was determined early on that one of the main focuses of this grant project would be to continue and expand volunteer efforts as a site stewardship project.

Over the last four years the headwaters area of Colma Creek was cleared of invasive weeds such as the removal of 50 large and 100 small eucalyptus and cypress trees and the removal of the associated invasive species like English and Cape ivy, and Himalayan blackberry. Erosion control was installed along 500 feet of the creek channel and 4-6 inches of mulch was spread across most of the site (Figures #8 & #9). The seed of 46 species of native riparian, coastal scrub and grassland plant communities was locally collected (Figure#10) from San Bruno Mountain and 10,250 native plants of were propagated at the Watershed Project native plant nursery (Figures # 11 & #12) and 2,500 plants were grown at the Fort Funston Nursery. The propagation at both of these nurseries was done primarily with the help of volunteers. Volunteers helped to plant all of the native plants (Figures #13-#17) and have weeded the site (Figures #2-#5) during the last two seasons of establishment. This effort involved 127

community restoration workdays, 1,903 volunteer visits totaling more than 5,751 volunteer hours.

Project Details by Year

Project Summary 2005

In the first year of the project, Himalayan blackberry, cape ivy and English ivy were the prevalent invasive plant species removed among numerous less common weeds across the project site. Also during the first year we gathered the seeds of native scrub, grassland and wetland plant (Figure #10) from areas adjacent to the site, processed and weight them to prepare them for planting at the native plant nursery. Approximately, 2,500 native plants were grown and planted in an area that would not be disturbed by eucalyptus removal.

Over the entire project seed gathering, planting, and invasive plant species control within the restoration areas was accomplished with the assistance of community volunteers during regularly scheduled volunteer workdays and occasional group workdays. These volunteers consist of students from local elementary, high school and college classes as well as community, religious and corporate groups. During 2005, 268 volunteers worked over 922 hours planting, weeding, and seed gathering. It was also during this first year that the Federal and State permits to work in and around Colma Creek were applied for, and secured.

Project Summary 2006

During year 2, approximately 10,250 native plants were grown at the Watershed Project's native plant nursery in Richmond, California in the East bay using mostly volunteers as part of their larger restoration program. San Mateo County Fire Safe crews were hired to assist with invasive clearance in the eucalyptus understory continued through the spring and summer in preparation for eucalyptus tree removal in the fall, so the heavy equipment could gain access to the site.

During the fall of 2006, San Mateo County Fire Safe Crews helped remove thick invasive vegetation and a large amount of buried trash from the steep banks along the creek in preparation for tree removal. In September the tree removal contractor (Reliable Tree Experts) removed 50 large eucalyptus trees and 100 small eucalyptus trees. 90% of the Eucalyptus trees were chipped, and 10% were hauled to dump. The chips were spread across the site for erosion control and weed suppression. The Fire Safe Crews were also used to spread and move mulch in preparation for winter planting.

In October 2006, extensive erosion control including rice straw wattles, jute erosion blankets and rice straw check dams were installed prior to the winter rains in accordance with the Regional Water Quality Control Board permit and County Watershed Protection standard requirements. As a result, no significant erosion or sedimentation was observed during the winter rains that followed tree and vegetation removal during revegetation and subsequent vegetation establishment.

In total during 2006 there were 448 volunteers who put in 1,278 hours of restoration work. During the winter over 8,700 native plants were planted from November 2006 through March 2007 onto the recently cleared areas adjacent to the Colma Creek headwaters. The following groups volunteered their time during 2006: Peninsula Sinai Congregation from Foster City, GAP, Girl Scouts, CNPS, Sierra Club, Genentech, students from Jefferson High, students from San Francisco State University, students from City College Biology 40, 20, 23, and Botany 10 Spring and Fall semesters most of whom visited twice during the semester and formed a core of regular Heart of the Mountain community volunteers.

Project Summary 2007

During 2007 1,300 we weeded among the native plantings giving them the ability to establish and to prevent invasive plant species from going to seed. This has been

accomplished as with the other project activities through the two community volunteer workdays a month as well as ongoing weeding by the Volunteer Coordinator.

The volunteer totals for 2007 were 538 volunteer visits putting in 1,601 hours of work. 1,200 plants that were not planted winter 06/07 were planted this winter into several areas on the edge and within of the original project footprint. The following groups volunteered their time on the project during 2007: Sierra Club, National Charity League, Peninsula Sinai Congregation from Foster City, Students from Jefferson High School, Students from San Francisco State University, City College students from Biology 40, 20, 23, 41L Spring and Fall semesters most of whom visited twice during the semester, and a core of regular Heart of the Mountain community volunteers.

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 Congregation from Foster City for Tu B' Shvat, 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, 41L Spring and Fall semesters most of whom visited twice during the semester, also the mother and daughter teams from the National Charity League, Google, San Bruno Mountain Watch, Friends of San Bruno Mountain with Jefferson High School biology students, and a core of regular Heart of the Mountain community volunteers.

Conclusions and Recommendations

Recommendations - Lessons Learned

Mulching

The project involved the removal, chipping and mulching of 50 large and 100 small eucalyptus trees. Disposal of all of the biomass generated by the eucalyptus removal by being sent to a dump would have been significantly more expensive, so the majority of the material was chipped and spread across the site for erosion control and weed suppression. This choice turned out to be one of the best actions taken. The presence of a 4-6" layer of wood chips was completely invaluable to suppress the non-native seed bank which was extensive across the site. In a few areas where there was no mulch spread the sprouting of invasive weeds was extensive and without great efforts to control would have quickly out competed the newly planted natives. Given the size of the site and the limited resources we would not have been able to control the weeds across the site in the absence of the mulch.

In addition the presence of the mulch prolonged the period that the soils remained moist well past the end of the rainy season in May. Both winter 06/07 and last winter 07/08 were drier than normal rainy seasons and the presence of the mulch was important to hold enough moisture to allow for the establishment of the planted native species.

Often it is believed that the allopathic chemicals in Eucalyptus trees would affect plant growth when used as mulch, but this was not the case. Most of the material in the mulch was stem and wood and the allopathic chemicals come primarily from the leafy material. It has been shown that most of these chemical breaks down or leach away within three months. Also the primary effect of these allopathic chemicals is to reduce germination and seedling establishment, so this would have little effect on planted perennial native plants.

Mulch Depth and Coverage

One of the biggest mistakes was not creating a visual method to assist the contractor in identifying the depth of the mulch he was spreading. The method for chipping the trees was a full tree chipper (Figure #). This meant that the recently cut trees were feed by tractor arm into a very large chipper capable of grinding all but the very largest trees. This also meant that getting a predictable depth of mulch spread across the site was difficult. The results were some areas had the proper depth of 4-6 inches but many other areas had far more (1-4 feet). At depths deeper than 6-8 inches it was impossible to plant down through to the soil. Respreading the mulch to other areas proved to be quite a bit of difficult and extensive hand labor.

For future projects that use the mulch generated on site what is recommended is that stout markers (1 foot lengths of rebar) capable of withstanding the blast of mulch out of this large chipper need to be placed sticking up across the site to the desire depth so when they were no longer visible the chipper would aim the chipped out flow in a new direction before a large amount of mulch accumulated. This will also need to be incorporated into the contract requirements so there is clear incentive for the contractor to take the extra time and effort to properly spread the mulch.

Initial use of Herbicides

Another key lesson learned was the under use of herbicides as part of the site preparation. Himalayan blackberry (*Rubus discolor*) in particular is very near impossible to fully remove by hand alone. There are numerous Himalayan blackberry roots that have consistently resprouted following numerous multi-year removal attempts. Other invasives such as Cape (*Delairea odorata*) and English (*Hedera helix*) ivy can be worn down by repeated removal but require significant effort over any large area treated. The resprouting of these invasive species in particular have consumed the majority of site maintenance time and represent the biggest treat to long-term restoration success.

The most effective action would have been to first brush cut all of the invasive non-native eucalyptus understory species to open access to the area and to reduce the plant surface area needed to be sprayed. Next would be to let the main root stocks resprout

enough vegetation surface area to absorb the herbicide and transport down to the roots to kill the plants, and then repeating this two-three months later to treat any invasives missed or surviving of the first attempt. Once all of the perennial invasives were gone then tree removal could take place unimpeded by the understory vegetation and when the site is mulched following tree removal there would be no invasives resprouting up through the mulch from established root stocks.

Recommendations - Ongoing Maintenance

The site is fully restored with a diverse native plant community, but there are still several invasive species within and adjacent to the site that will require on-going maintenance of the project area as resources are available. Sizable populations of several important invasive species currently border the site and represent an on-going threat of reinvasion to the site.

Himalayan blackberry represents the largest invasive threat to the site from both resprouting individuals within the project area as well as canes growing into the site from adjacent Eucalyptus forest understory. This will need to be addressed by both ongoing hand and herbicide control.

Cape and English ivy populations also surround most of the site, although most of the populations within the site have been eradicated.

Eucalyptus trees border over 50% of the project area and drop seed and leaves across about half of the area. Eucalyptus, although not excessive, do germinate and establish within the project area and will need to be pulled out as they appear.

The trail switch-back area outside of the tree removal portion of the site has an ongoing seed bank of non-native invasive Rip-gut Brome (*Bromus diandrus*). This area was never originally mulched and repeated attempts to eradicate it have met with limited success. As with the other areas of the site, mulching and planting would be the best long term solution to controlling this annual species and repressing its seed bank.

The maintenance needed just to maintain the work accomplished thus far within the project footprint would require at least one community stewardship workday per month

as well as annual herbicide spraying of the encroaching invaders such as English and Cape ivies and Himalayan blackberry.

Recommendations - Next Steps:

While the Proposition 12 grant expired December 2008 the Heart of the Mountain Program and its dedicated community volunteers plan to continue working with County Parks to maintain the work implemented by the previous efforts, and if future funding can be secured to continue to expand the area of restoration. If additional funding can be secured additional restoration actions would include the restoration of the Bog Trail area, removal of the eucalyptus stands surrounding the Colma Creek headwaters area, and restoration of the other main arm of Colma Creek across the saddle known as April Brook.

Bog Trail Area Restoration

The wetlands of the Bog Trail area of San Bruno Mountain lie between two of the headwater tributaries of Colma Creek are known regionally for their high diversity of rushes, sedges and other wetland plants. This seasonally wet meadow is the last known plant community of its kind left on the San Francisco peninsula. Due to its unique plant community this area is a high priority area needing invasive species control and restoration. Appendix A is a Restoration Plan and details the actions and budget needed for restoration provided additional funding can be procured.

Eucalyptus Stands Surrounding the Colma Creek Headwaters Area

There are three significant eucalyptus stands currently surrounding the Colma Creek headwaters area that were not part of the designated area covered by this project, yet will need to be removed and restored provided additional funding can be procured. These stands shade a portion of the site as well as drop significant amounts of litter along the edges of the site. Additionally these stands support healthy populations of invasive English and Cape ivies as well as Himalayan blackberry which will continuously require maintenance to prevent their reinvasion of the restoration site. Because two of

the stands are surrounded by grasslands and the third is bordered by the Old Guadeloupe Road, the removal and restoration of these stands of eucalyptus and their associated invasive understory plants will create continuous habitat and eliminate most of the need for ongoing maintenance of this site.

April Brook Restoration

The southern tributary of Colma Creek, April Brook which is across Guadalupe Parkway from the current site is also an important future restoration project provided additional funding can be procured. This site is similar to the current project in that it is a spring feed headwaters area heavily invaded by eucalyptus and ivy understory. The current project removal and restoration of the eucalyptus stands would both increase the amount of water downstream particularly during the dry season as well provide for the expansion of the willow riparian community, which provides high wildlife value.

Eucalyptus Control Mountain-wide

Additionally there are numerous stands of invasive Eucalyptus across San Bruno Mountain. Given the extensive amount of work that it took to fully restore this one section of Colma Creek that had been dominated by eucalyptus, preventing the continued spread of other eucalyptus stands across San Bruno Mountain would be extremely costly. Given the number and extent of current patches of Eucalyptus the full removal and restoration of these stands is currently financially unfeasible, but a program of cut and stump spray of the small outlying seedlings and saplings would be both feasible and cost effective. This is the only way of stemming the ongoing loss of native habitat to this large aggressive invasive weed.

APPENDICES:

A: Colma Creek Restoration Plan, 2005

B: Bog Trail Plan

C: Project Sign

D: Figures

E: Photo Points

Appendix B

Bog Trail Wetland Restoration Project

Background

For the past seven years the “Heart of the Mountain” stewardship project has been restoring the native plant communities of the Colma Creek headwaters and the Bog trail area. This effort was initiated by the Yerba Buena chapter of the California Native Plant Society (CNPS) and was created “to serve as a model stewardship program for parks in San Mateo County” and “to build community stewardship into restoring the native plant communities of the Colma Creek headwaters” It has been successful in involving numerous community members, school groups, community organizations and corporations in the restoration of San Bruno Mountain’s important wetland areas.

The California Native Plant Society initiated the project in 2001 with money from numerous small grants as well as through individual donors, and continued until 1995. In 1995 San Mateo County Parks received Proposition 12 funds to continue restoration efforts. This phase of the program included the restoration of five acres of creek, wet meadow and coastal scrub habitat in the headwaters area of Colma Creek. This County Park initiated project was implemented involving community members, school groups, community organizations, and corporations in the implementation of restoration activities through volunteer workdays. The stewardship program under the Prop 12 State Park grant was implemented by the nonprofit organization “The Watershed Project”.

Project Description

The wetlands of the Bog Trail of San Bruno Mountain are known regionally for their high diversity of rushes, sedges and other wetland plants. This seasonally wet meadow lies between two of the headwater creeks of Colma Creek and is the last known plant community of its kind left on the San Francisco peninsula.

The loop of the Bog Trail was built for the public to enjoy this rare wetland community and includes three bridges. Also a portion of the trail is ADA wheel chair accessible. The Bog trail is also a favorite destination for local bird watches due to the large number of birds which use the wet meadows and creeks and their riparian vegetation as an important feeding stop along their spring and fall migrations.

Unfortunately, this trail has also acted as the corridor for dispersal of a non-native invasive perennial velvet grass (*Holcus lanatus*). This grass is known for its ability to invade and dominate seasonal wetlands significantly reducing their biodiversity.

Should funding be secured the next three year goal would be to remove invasives including Velvet grass, Poison hemlock, Curly dock and Himalayan blackberry that have

invaded the wetlands of the bog trail area and restore the cleared areas with native rushes, sedges and a mix of other native wetlands species.

As has been done over the last six years, this restoration project should be accomplished with the support of community volunteer workdays both as a way to accomplish the restoration goals as well as to act as a hands-on environmental education opportunity. Ongoing outreach to the community will continue to educate local residents and school children about this important natural resource in their back yard.

The project goals are to enhance the native plant communities within the Colma Creek headwaters and Bog Trail areas by removing and controlling invasive non-native plants and revegetation of those areas with native plants, and to actively involve the community in the stewardship of this area through restoration workdays, and education programs in invasive plant removal, seed gathering, propagation and planting.

Project Specifications

Invasive Non-Native Plant Control

Over the three years of the project with the assistance of community volunteers we will remove invasive species that have invaded the Bog trail wetlands and adjacent creek areas. This will involve various removal methods (listed by species below) of weed removal based on the individual invasive species biology. Several years of on-going control of these populations will be required over the three years of the project as well as occasional follow-up in the future as part of the overall ongoing restoration effort in this area.

Invasive Species That Require Control

Purple velvet grass (*Holcus lanatus*) is distributed throughout the site, particularly in the wet meadow areas along either side of the lower Bog trail. This species has established a large patch (~ 1.2 acres) away from the trail that will also require removal and restoration. The best control method for this perennial grass is hand removal of the whole plant including roots, ideally before seed set in early summer. If seeds are present, removed grasses should be bagged to prevent further seed dispersal. Repeated removal for a number of years is required because the seed bank is believed to remain viable for several years. In addition to hand removal of smaller areas with mixed native cover, we will do a cut and cover treatment in the larger areas where there is a monoculture of velvet grass. This will involve initial removal by brush cutters and cover with landscape fabric for a year before revegetation.

Poison hemlock (*Conium maculatum*) is present in several dense stands across the larger bog trail site. All populations will require at least an additional two years of follow-up.

Hand pulling of poison hemlock is effective, especially prior to seed set, and easiest when the soil is wet. Because of the biennial nature of the plant, the primary tap root system needs to be pulled or it will resprout. Its seeds are viable for over three years so

pulling before seed set is important and elimination from an area will require at least a four year commitment.

Poison hemlock is a highly toxic plant and gloves need to be worn when working with it. Hands should be washed after removal and before eating any foods.

Himalayan blackberry (*Rubus discolor*) is present in patches throughout both the overall site, as well as the upper creek restoration area. These Himalayan blackberry infestations will be removed, including the main tap root by the hand tools, ideally leaving only new seedlings to be controlled in coming years.

Mechanical removal may be the most effective ways of removing the upper portions of mature plants. Most mechanical control techniques, such as cutting or using a weed wrench, are suitable for Himalayan blackberry. Care should be taken to prevent vegetative reproduction from cuttings.

Removing rootstocks by hand digging is a slow but effective way of destroying Himalayan blackberry, which resprouts from roots. The work must be thorough to be effective because every piece of root that breaks off and remains in the soil may produce a new plant. Perennial weeds such as Himalayan blackberry usually require several cuttings before underground plant parts exhaust their reserve food supply. If only a single cutting can be made, the best time is when plants begin to flower. At this stage the reserve food supply in the roots has been nearly exhausted, and new seeds have not yet been produced.

English ivy (*Hedera helix*) is the dominant invasive species in the understory of the eucalyptus and Monterey cypress stands. It is located throughout the project area and will need to be removed prior to any native plant revegetation. Hand removal of the above-ground portion followed by removal of the main roots with pulaskis or pick-mattocks. Follow-up removal of resprouts will be conducted as needed. Seedlings from bird dispersed seed will also be removed.

Cape ivy (*Delairea odorata*) is a highly invasive South African vine that has colonized over a third of the site. This species is very difficult to control or eliminate because it can spread through stolons. It can reproduce a new population from just one node dropped or left behind, so complete removal including all of the roots and shoot material is necessary. Although complete eradication of this plant may be difficult to impossible from the site due to its current establishment among dense native scrub and willow riparian stands, the goal is to eradicate it from the restoration area. This effort would be coordinated with the complete removal of all other non-native understory vegetation which will allow follow up removal of any resprouts. Removal of Cape ivy requires careful hand removal. Repeat follow up removal of all of the roots and stems is required every couple of months for a year to assure complete eradication. All plant and root material of cape ivy needs to be composted in the adjacent eucalyptus forest where Cape ivy is already present.

Propagule Collection Site Selection

All of the seeds collected for revegetation and direct seeding should come from San Bruno Mountain to assure that all plants are locally adapted. Most of the native seed has been and will be collected from within the watershed of Colma Creek with the majority coming from the adjacent slopes and bog trail area.

Native seed has been collected by the “Heart of the Mountain” volunteers. Seeds have been and will be collected by hand in paper envelopes or grocery bags. To protect propagule resources, no more than 10% of the seeds from any 1 population or individual plant will be collected throughout the season. Seeds will need to be collected from each species throughout its ripening season in order to include a diverse range of flowering times in the collection pool. Divisions should be extracted using flat-bladed shovels leaving the majority of the parent plant and root stock to assure regrowth.

Propagation

Native plants will be grown at a native plant nursery currently under construction on San Bruno Mountain by the San Bruno Mountain Conservancy. The costs per plant are \$1.50 for 4 inch pots, \$1.25 for 2 inch pots, and \$1.00 for grasses in leach tubes. Table 1 below shows the cost for revegetation on 3 foot planting centers. Planting individual native plants on three foot planting centers is ideal to establish a dense enough native plant cover to compete with non-native plant species and prevent reinvasion.

Table 1: Costs for propagating native plants on 3 foot planting centers.

pot size	cost per plant	# of plants on 3 ft. centers	cost \$
4 inch pots	\$1.50	2600	\$3,900.00
2 inch pots	\$1.25	4800	\$6,000.00
grasses in leach tubes	\$1.00	2600	\$2,600.00
totals		10,000	\$12,500.00

Species Selection

Species proposed for revegetation were generated from native plants listed for the “Saddle Area” from “A Flora of San Bruno Mountain”. (Mc Clintock et. al., 1990) This

plant community surrounds the site and will be effective once established at discouraging reinvasion of the area by non-native invasive plant species.

Table 2: Native species list for creek and wet meadow revegetation.

Botanical Name	Common Name	creek	wet meadow
Agrostis exarata	spike bent grass		x
Artemisia douglasiana	Mugwort	X	
Carex barbarae	Santa Barbara sedge	X	x
Carex brevicaulis	Short-stemmed Sedge	X	x
Carex densa	dense sedge	X	x
Carex harfordii	Harford's sedge	X	x
Carex obnuta	Slough sedge	X	x
Carex subbracteata	Carex	X	x
Carex tumulicola	foothill sedge	X	x
Cornus sericea ssp. Sericea	Creek Dogwood	X	
Cyperus eragrostis	Nut sedge		
Danthonia californica	California oat grass		x
Deschampia cespitosa	Tufted hairgrass		x
Eleocharis palustris	Creeping spike rush		
Equisetum arvense	Field Horsetail	X	x
Equisetum telmateia ssp. Braunii	Horsetail fern	X	x
Heracleum lanatum	Cow Parsnip	X	x
Heteromeles arbutifolia	Toyon, Christmas Berry	X	
Hordeum brachyantherum	Meadow barley	X	x
Horkelia californica	California Horkelia	X	

Juncus balticus	Rush	X	x
Juncus effusus var. brunneus	Bog Rush	X	x
Juncus effusus var. pacificus	Pacific Bog Rush	X	x
Juncus lesueurii	Rush		x
Juncus mexicanus	Rush		x
Juncus occidentalis	Rush	X	x
Juncus patens	Spreading Rush		x
Juncus phaeocephalus	Rush	X	x
Juncus xiphioides	Iris leaved Rush	X	
Lonicera involucrate	Coast Twinberry	X	
Luzula comosa	wood rush		x
Marah fabaceus	Manroot	X	
Marah oreganus	Wild Cucumber, Man-root	X	
Mimulus guttatus	Common Monkey Flower	X	x
Myrica californica	California Wax Myrtle	X	
Oemleria cerasiformis	Oso Berry	X	
Potentilla anserine	Potentilla	X	x
Rosa gymnocarpa	Wood Rose	X	
Salix lasiolepis	Arroyo Willow	X	
Sambucus racemosa var. racemosa	Red elderberry	X	
Scirpus californicus	California bulrush	X	
Scirpus cernuus	low club rush	X	x
Scirpus microcarpus	Bullrush	X	
Scrophularia californica	Bee Plant	X	
Sisyrinchium californicum	Golden-eyed grass		x

Stachys ajugoides var. rigida	Hedge Nettle	X	x
Trifolium wormskioldii	Cow Clover, Coast Clover		x
Urtica dioica ssp. Holosericea	Coast Nettle	X	
Vicia gigantean	giant vicia	X	

Planting

Planting on three foot centers is ideal to establish full native plant cover within several years of revegetation and prevent the reinvasion of aggressive non-natives.

All planting will be accomplished through community volunteer workdays and will take place between November following the first rains and finish by the end of January to assure newly planted plants can become established before the on set of the dry season in late April to mid May. Because of this need to plant during the first half of the rainy season, any invasive tree or vegetation removal will need to be finished by mid November or revegetation of that area will need to be postponed to the following November. Several native annual species will be directly seeded on the site following planting of the perennial natives.

Stewardship

Seed gathering, planting, and ongoing invasive plant species control within the restoration areas should be accomplished with the assistance of community volunteers during regularly scheduled volunteer workdays. Volunteer recruitment and management should be the job of a Stewardship Coordinator.

Literature Cited

Exotic Pest Plants of Greatest Ecological Concern in California, California Exotic Pest Plant Council, 1999

A Flora Of the San Bruno Mountains, McClintock, E., P. Reeburg, W. Knight. 1990. Published by California Native Plant Society.

COLMA CREEK HEADWATERS RESTORATION PROJECT

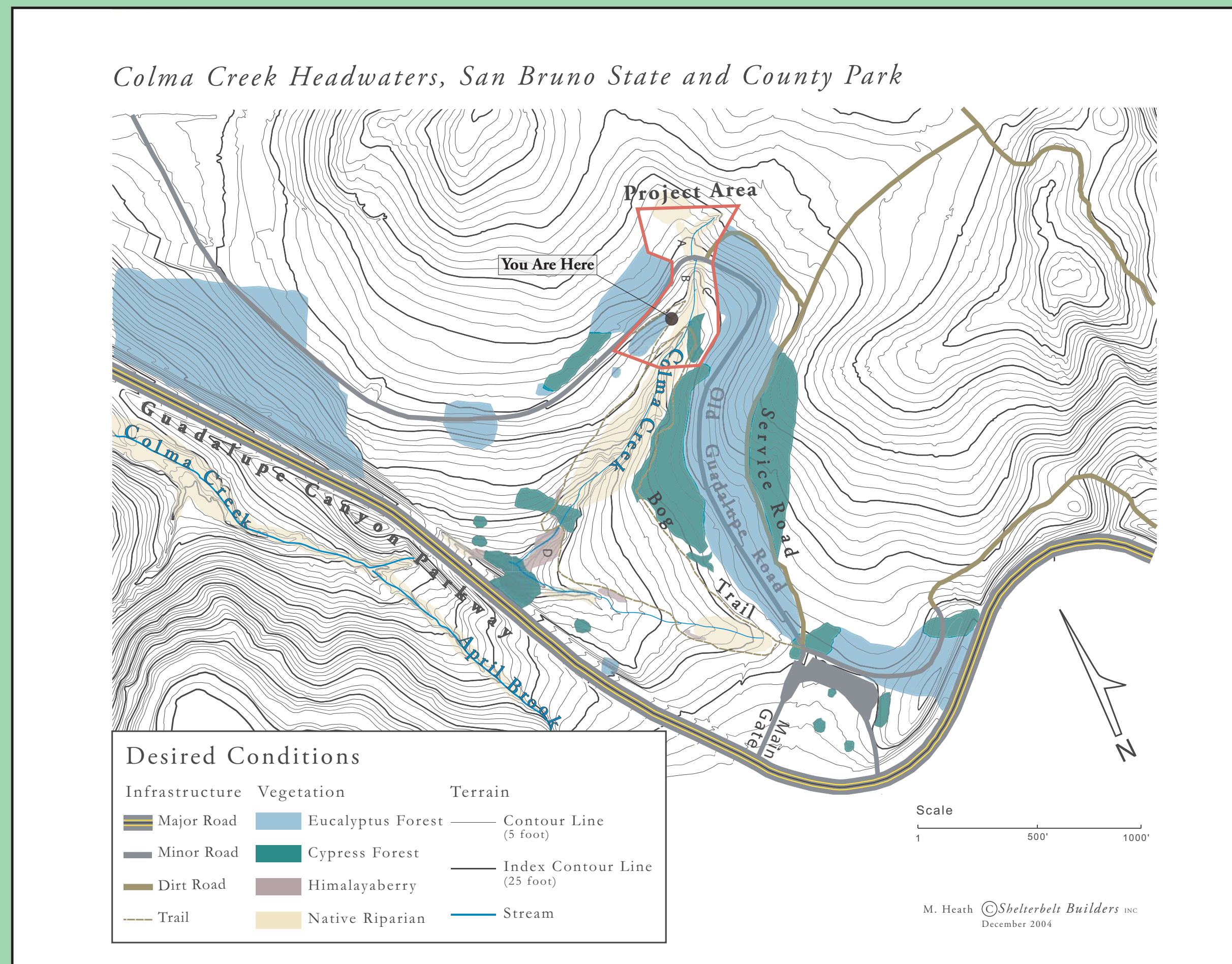
ABOUT THE BOG TRAIL AND COLMA CREEK RESTORATION

For the past four years the “Heart of the Mountain” stewardship project has been restoring the riparian and upland native plant communities of the Colma Creek headwaters and the areas adjacent to the Bog Trail. This project was initiated by the California Native Plant Society to build community stewardship to restore the native plant communities of the Colma Creek headwaters. In 2001, the San Mateo County Parks and Recreation Division committed Proposition 12 funds to support these restoration efforts.

Riparian habitat throughout the bay area, and particularly on the San Francisco peninsula, has been drastically reduced due to urbanization. This important plant community provides crucial habitat for migrating birds, in particular neo-tropical migrants moving up and down the Pacific flyway.

A non-native eucalyptus (*Eucalyptus globules*) overstory and an invasive ivy understory dominate a 300-foot section of the headwaters of the Colma Creek watershed. The goal is to restore the important natural resources by reconnecting the native riparian community corridor along Colma Creek to the creek’s headwaters area. This will be accomplished through tree removal, invasive plant control, and revegetation with native species.

The 1.5 acre project area begins at the headwaters of Colma Creek, and includes the wet meadow habitat west of where the Old Guadalupe Road intersects the Colma Creek drainage and continues east on both sides of Colma Creek until the pedestrian bridge crossing by the Bog Trail.



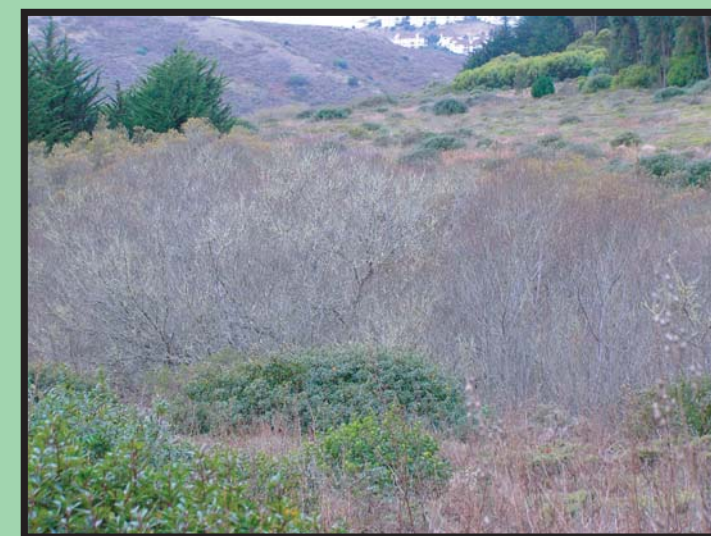
Volunteers of all ages at work restoring the Colma Creek Headwaters.



COLMA CREEK HEADWATERS WILDLIFE AND THEIR HABITATS



Townsend's Warbler (*Dendroica townsendi*)



Arroyo Willow (*Salix lasiolepis*) Grove



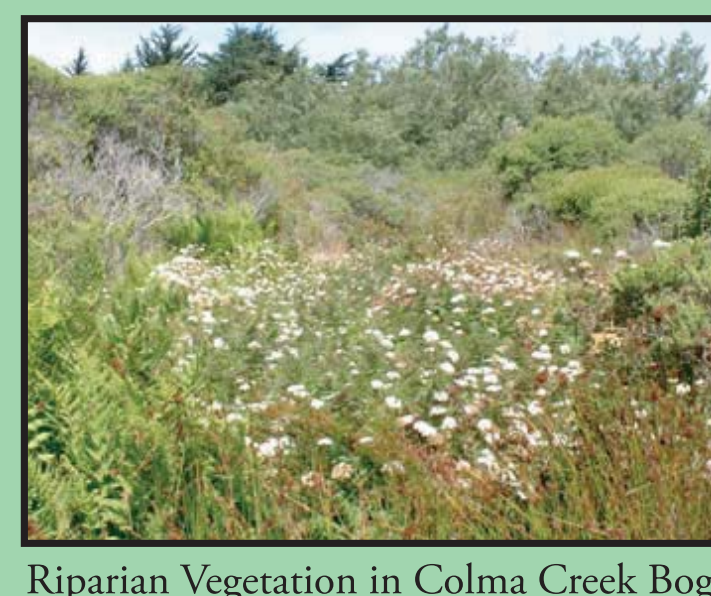
California Newt (*Taricha torosa*)



Rushes (*Juncus* spp.) and Riparian Vegetation

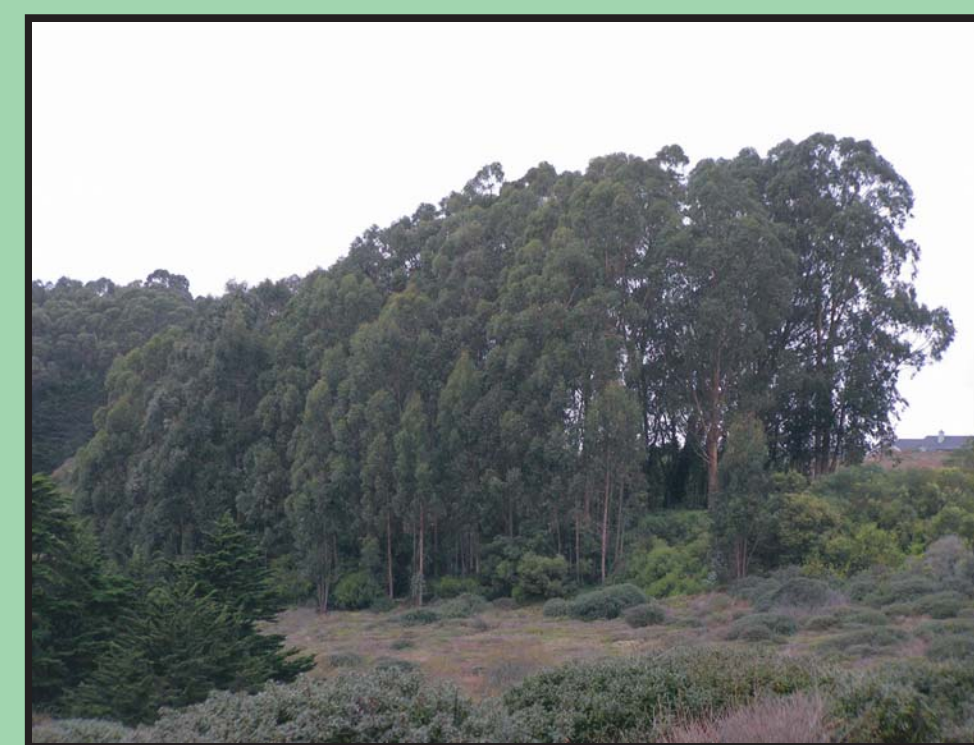


Pacific Chorus Frog (*Pseudacris regilla*)



Riparian Vegetation in Colma Creek Bog

INVASIVE BLUE GUM EUCALYPTUS (*Eucalyptus globulus*)



overstory



understory

EUCALYPTUS was imported from Australia and planted throughout California starting in 1853 for its fast growth and perceived potential for use as lumber. Although its value as a lumber source is minimal, it continued to be widely planted for use as a windbreak.

There is ample evidence that blue gum eucalyptus trees use significant amounts of both surface moisture and ground water. The presence of numerous eucalyptus trees in a watershed, particularly in or adjacent to a creek has significant negative impacts on that habitat due to this species’ size, speed of growth, and proven high water use. Eucalyptus groves are particularly damaging when they establish in small watersheds with naturally low flows.

In addition to reducing the amount of water in the creek available for native plants and wildlife, eucalyptus promotes the invasion of other non-native plant species such as English and Cape ivies, as well as Himalayan blackberry. English and Cape ivies support almost no native insects and therefore do not support the native birds, amphibians, and reptiles which feed on them.

Over the next three years, approximately 1.5 acres of eucalyptus and invasive ivies will be removed from either side of Colma Creek and the area will be restored with native plants reconnecting the down stream native riparian community to its headwaters springs.

HOW CAN YOU HELP?

- ~ Plant Native Plants.
- ~ Participate in Restoration Efforts on the Mountain.
- ~ Stay on Designated Trails to Prevent Transporting Weed Seeds into Native Habitat.
- ~ Volunteer Your Time.

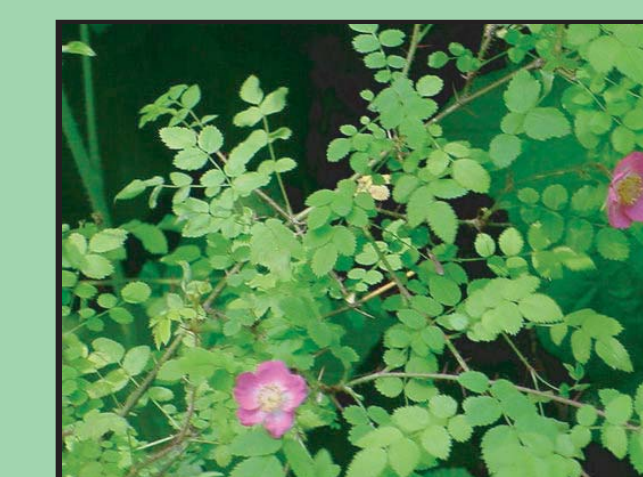
To Get Involved With What Is Going On In Your Neighborhood, Contact:

San Mateo County Park Volunteer Coordinator
Nick Ramirez (650) 599-1306
NRamirez@co.sanmateo.ca.us

Friends of San Bruno Mountain State and County Park
Doug Allhouse (415) 584-5114
Dougsr@earthlink.net

**The Heart of the Mountain:
San Bruno Mountain Stewardship Project**
Joe Cannon (650) 355-6653
www.HeartoftheMountain.com

San Bruno Mountain Watch
(415) 467-6631
mountainwatch@earthlink.net



wood rose
(*Rosa gymnocarpa*)



Douglas iris
(*Iris douglasiana*)



sticky monkey flower
(*Mimulus aurantiacus*)



ANOTHER PROJECT TO IMPROVE CALIFORNIA PARKS FUNDED BY THE 2000 PARKS BOND ACT. THE SAFE NEIGHBORHOOD PARKS, CLEAN WATER, CLEAN AIR, AND COASTAL PROTECTION BOND ACT OF 2000.

Ruth Coleman, Director, California Department of Parks and Recreation

Mike Chrisman, Secretary for Resources

Arnold Schwarzenegger, Governor

COUNTY OF SAN MATEO ENVIRONMENTAL SERVICES AGENCY - PARKS AND RECREATION DIVISION



Figures for Colma Creek Headwaters Restoration Project



Figure #2: Community volunteers removing invasive ivy understory



Figure #3: Community volunteers removing invasive ivy understory



Figure #4: Community volunteers removing invasive ivy understory



Figure #5: Community volunteers removing eucalyptus debris



Figure #6: Contractor cutting down eucalyptus trees



Figure #7: Contractor chipping full sized eucalyptus trees on site



9/21/06

Figure #8: Community volunteers
planting natives during the rainy
season



10/28/06

Figure #9: Erosion Control Installed



11/29/06

Figure # 10 Locally collected native seed



Figure # 11: The Watershed Project native plant nursery



Figure # 12:Volunteers propagating native plants at the Watershed Project nursery



Figure # 13: Community volunteers planting natives during the rainy season



Figure #14: Community volunteers planting natives during the rainy season



Figure #15: Community volunteers planting natives during the rainy season



Figure #16: Community volunteers planting natives during the rainy season



Figure #17: Community volunteers planting natives during the rainy season



Photo-Points for Colma Creek
Headwaters Restoration Project:



5/12/06



5/12/06



9/19/06



9/21/06



10/2/06



10/23/0



10/25/06





10/28/06





11/29/06



2/23/07



6/28/07



2/23/07



8/9/08



8/23/08



9/13/06



10/27/06



11/29/06



2/23/07



6/28/07



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9/19/06



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5/7/06



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5/3/06



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KNAACK

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5/12/06



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9/19/06



9/25/06



11/2/06



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6/28/07



8/23/08