

M E M O

TO: Board of Directors

FROM: Environmental Analyst

SUBJECT: EDUCATION GRANT PROGRAM FINAL PROJECT REPORT;
“INVASIVE PLANT EDUCATION AND ERADICATION
IMPLEMENTATION IN THE SAN LORENZO RIVER WATERSHED”

DATE: September 28, 2007

RECOMMENDATION

It is recommended that the Board of Directors review this memo and accept the Education Grant Program Final Project Report for “Invasive Plant Education and Eradication Implementation in the San Lorenzo River Watershed.”

BACKGROUND:

At the March 3, 2005 Board of Directors Meeting, your Board awarded Education Grant Program funds in the sum of \$2,475.66 to Jen Stern, Santa Cruz County Resource Conservation District for a project entitled “Invasive Plant Education and Eradication Implementation in the San Lorenzo River Watershed.” The first goal of the project was to remove invasive giant reed (*Arundo donax*) and acacia trees from a private property in Ben Lomond, in partnership with the landowner, the Valley Women’s Club, the Wildlands Restoration Team, the USDA Natural Resources Conservation Service, and community volunteers. The second goal of the project was to educate the community about the threats of these exotic species and appropriate means of controlling their spread.

Due to the unforeseen sale of the original project site property, the District granted two project timeline extensions, approved a new project location in the watershed, and approved additional changes to the project allowing French broom (*Genista monspessulana*) to be substituted as the target exotic plant species for removal. These changes did not alter the original project goals.

On September 19, 2007 the District received Ms. Stern’s Final Project Report (Attachment 1). It is recommended that your Board receive and accept the Final Project Report for “Invasive Plant Education and Eradication Implementation in the San Lorenzo River Watershed.”

Betsy Herbert, Ph.D.
Environmental Analyst

San Lorenzo Valley Water District
FINAL REPORT NARRATIVE
Invasive Plant Education and Eradication Implementation
in the San Lorenzo River Watershed

This grant funded French broom removal in a three acre area off East Zayante Road and an educational presentation on the threats of French broom to the Fern Ridge community. The original grant request was for a different project, which was unable to be completed because the landowner unfortunately had to sell their home due to financial obligations and were no longer able to implement the project. The original grant request was for removal of *Arundo donax* and *Acacia* trees from a property in Ben Lomond along Highway 9 and an educational volunteer day at the site. This new project meets the same goals of the original project and the landowner was ready to implement. **The project change to the French broom removal project at the East Zayante Road location was approved in writing by the District Manager on April 4, 2007. The approval letter is attached.**

The goal of the French broom removal was to remove French broom from approximately three acres off of East Zayante Road in order to decrease fire danger, and protect native plants and trees in the area that are vital for ecosystem balance, wildlife habitat and fuel load reduction. French broom is highly flammable and spreads very rapidly, increasing dry season fuel load exponentially. Broom also has extraordinarily efficient tap roots, draining soil moisture, and choking off native, fire-resistant vegetation. French broom was choking off Douglas Fir and Redwood seedlings vying for survival in nearly 90% of the project area before removal.

After the removal there only remains some small patches of French broom; about 70% of the French broom has been removed from this three acre area. This project involved the removal of French broom “Forests” from an area covering approximately three acres. The property consists largely of City of Santa Cruz watershed land off East Zayante Road/Fern Ridge Road, and adjoining private plots sharing common invasions of the noxious weed. City of Santa Cruz Water Department officials, and adjoining property owners, currently expend considerable effort and resources in “taming” invasive species, yet certain areas of the watershed and adjoining properties suffer from such serious infestations that current resources are not sufficient to turn the “green” tide.

Removal

The removal of French broom was done by Mike Clark and some members of the Fern Ridge Road Association. Large stands and small remote patches of French broom (and Star Thistle when encountered) were removed from private and City of Santa Cruz Watershed lands off Fern Ridge Road in Felton. French broom was physically removed by hand in concentric circles, attacking infestations from the outside in order to prevent further spreading. French broom infestation in this area is extraordinarily pernicious and tenacious and will require more follow up removal and maintenance in the future.

Education

At the Fern Ridge Road Association Annual Meeting, a presentation was made by Mike Clark on the threats of French broom. He handed out an article from Cal EPPC news and encouraged his neighbors to join him in the removal of French broom. See attached article. In attendance were about 45 road association members.

Goals

The overall goal of this project is to provide education and information to the local community about the threats of French broom in the San Lorenzo River watershed and what can be done to control the spread of French broom.

The primary objectives of this project included the successful removal of large stands and small infestations of French broom from a three acre area off East Zayante Road, a presentation to the Fern Ridge community about the threats of French broom and how to control it, and volunteer involvement in the removal of the French broom.

The achievement of our first objective was demonstrated through the removal of French broom from this three acre area. One landowner in particular has committed to monitor and maintain the removal in order to prevent re-establishment of French broom. He is looking for additional grant resources to fund his time to remove additional French broom in the area.

The achievement of our second objective to provide educational information to the community about French broom removal was demonstrated through the presentation made by Mike Clark to the Fern Ridge community about the threats of French broom and how to control this invasive plant. This objective was also met by the hands on experience some of the neighbors had removing French broom.

The achievement of our stated goal (to educate the local community about the threats of French broom in the San Lorenzo River watershed and what can be done to control the spread of French broom) was demonstrated by a community educational workday where we provide valuable information and experience to the attendees.

The removal of French broom from this very large area with help from the Fern Ridge community supports the Education Program Mission Statement by being an invasive removal, habitat restoration, and fuel load reduction project that not only aided in the restoration of the site but also provided the Fern Ridge community with an educational event. The presentation to the Fern Ridge Road Association and associated French broom removal provided the community an opportunity to learn about the threats of French broom and how to control French broom on their own property.

Appendix A: General map of area

Appendix B: Before and after pictures of French broom removal

Appendix C: French broom Educational material (CalEPPC News article)

Budget

Project Costs	Amount Expended	Amount of Cost Share	Project Total
PERSONNEL COSTS			
Watershed Coordinator 40 hours @ \$35.48	\$447.00	\$972.20	\$1,419.20
TOTAL PERSONNEL COSTS	\$447.00	\$972.20	\$1,419.20
CONSULTANTS			
French Broom Removal (120 hours @\$19.74)	\$1,803.60	\$592.20	\$2395.80
City of Santa Cruz land manager (5 hours @ \$80.00)		\$400.00	\$400.00
NRCS consultation (2 hours @ \$89.70)		\$179.40	\$179.40
TOTAL CONSULTANT COSTS	\$1,803.60	\$1171.60	\$2,975.20
SUBTOTAL	\$2,225.60	\$2,143.80	\$4,394.40
ADMINISTRATIVE OVERHEAD @ 10%	\$225.06		\$225.06
GRAND TOTAL	\$2,475.66	\$2,143.80	\$4,619.46

Cost - Share: 46%

* Source of Cost-Share: Property owner, Ca Department of Fish and Game, USDA Natural Resources Conservation Service, City of Santa Cruz and volunteer labor.

**SAN LORENZO VALLEY WATER DISTRICT**

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April 4, 2007

Jennifer Stern
Watershed Coordinator
Santa Cruz County Resource Conservation District
820 Bay Avenue, Suite 128
Capitola, CA 95010

**SUBJECT: San Lorenzo River Watershed Invasives Education and Eradication
Implementation**

Dear Ms. Stern:

The purpose of this correspondence is to confirm San Lorenzo Valley Water District approval to transfer funding for the subject project to the alternative location (East Zayante Road/Fern Ridge Road) as described in your March 15, 2007 letter. All other terms and conditions of the original grant project shall remain in effect and force.

If you have any questions or need additional information regarding this matter please feel free to contact me directly at (831) 430-4636.

Sincerely,

James A. Mueller
District Manager

JAM/bsb

cc: B. Herbert

Appendix B

Invasive Plant Education and Eradication Implementation in the San Lorenzo Watershed Before and After Pictures



Before





Before





After





CalEPPC News

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Habitat Restoration Team volunteers
bashing broom at Dipsea Knoll by Stinson
Beach. Photo by Maria Alvarez.

A French Broom Control Method

Greg Archbald, Golden Gate National Parks Association

Some twenty years ago I met French broom. It was crowding around the house where I lived in Mill Valley, California, and I was worried about the fire hazard. Ecological concerns came later. My early attempts at control were primitive. Since then, I've tried many things, have worked and talked with many people, and have come up with a favorite mechanical control method I would like to share here.

I am grateful for the shared experience of others, on which this method is based, and particularly to Dr. Carla Bossard whose landmark studies of Scotch broom provided the basis for the timing and cutting elements of this method. It is quite encouraging that more scientists, land managers and homeowners than ever before are out there gaining experience, experimenting and sharing what they learn, and that we have CalEPPC to spread the word. There is hope.

In addition to insights from the studies of Dr. Bossard, my method comes out of my experience with the Habitat Restoration Team in the Golden Gate National Recreation Area and, most specifically, from volunteer work I have done on a Marin County Open Space District preserve called Alto Bowl behind my present home. Over the past three years I have developed and refined this method to clear large patches of broom in my spare time after work and on weekends, usually on my own but sometimes organizing neighbors to help out.

This method is most applicable to disturbed, open grasslands (with mostly exotic annual grasses) where French broom can be at its most aggressive. In my work at Alto Bowl, the main site is a south-facing slope several acres in size with scattered groves of coast live oak and some coyote brush. Soil is heavy clay to somewhat loamy, with little rocky material. Annual rainfall is usually over 20" and there are few hard, dry places. The French broom itself has ranged from stands of young plants with small diameter stems to horrible tangles of old or dead broom. Changes in these factors at your own site, of course, would have a bearing on how well this method will work for you.

In a Nutshell

Here are the key steps:

- Cut broom at or below ground level, in late July or August, *after broom has gone to seed and soil moisture is at a seasonal low.*
- Then, *remove the cut broom from the infested site* taking the following steps (or the alternatives noted):

(a) Arrange cut broom with stems parallel, in bundles that can be carried. (Alternatively, rake cut broom into small piles using a manure fork or potato rake.)



Photo: Maria Alvarez

(b) Make large compact brush piles

with bundles of cut broom. Locate brush piles on the site in locations that minimize visual impact and fire hazard. (Alternatively, place raked piles of broom on tarps and carry broom to a debris box, or make loose brush piles in appropriate places on site for spring burning after broom is well cured.)¹

- *Next summer, after grasses are dry and have dispersed their seed, destroy new French broom seedlings by mowing as described below. Repeat in following seasons until seed bank is exhausted.*

Comments

The point of cutting in late July or August (or as late as September or early October) is to deprive broom plants of their ability to synthesize nutrients at a time when stored energy reserves in the root system are at their lowest. For broom with stem diameters up to 1" (2.5 cm) I use a heavy-duty gasoline-powered brushcutter with a *four-pointed* metal blade, getting the blade right

down on the soil, or even slightly into the soil.ⁱⁱ This is hell on blades but worth the price in high mortality of broom. (I keep over a half dozen blades on hand, continuously sharpening them over the season using a bench grinder and hand files.) If broom stems are greater than 1" in diameter, it is best to use an 80-tooth blade or forest clearing blade on the brushcutter.

Experienced broom bashers will cringe, as I first did, at the thought of letting the broom go to seed before dealing with it. My advice is to force yourself. You want those plants to deplete their energy reserves before you cut them. After all, the seed bank will be depleted just one year later than if you had not allowed that first year's seed to fall. If you absolutely cannot allow first year seed to fall, I recommend that you cut the broom when you can, regardless of season, making certain to remove the cut broom from the infested site by one of the methods mentioned above. More broom will resprout from the cut stumps, but the resprouts can either be cut back during late summer using a brushcutter with four-pointed blade or by spraying with spot applications of an herbicide like Roundup® or Garlon™ using a backpack sprayer.

The reason for removing the initially cut mature broom from the infested site is to clear the way for exhausting the seed bank. Getting the broom out of the way is the critical step that makes it easy to control the massive flush of broom seedlings that often emerges after mature broom is cut.

By summer, following your initial removal of mature broom, many seedlings will be up to 6" tall with very slender stems. They are quite vulnerable at this stage. I have caused near 100% mortality of seedlings by mowing them (along with dried grass) with my brushcutter blade in summer following mature broom removal. To make sure the broom plants will die, I put the blade right onto the ground and wiggle the blade back and forth to slash through the seedling stems at or below the root crown level. Seedlings and resprouts are small and can be left where cut. To eliminate the seed bank completely, annual follow-up is absolutely essential. I have found that using a *three*-pointed metal

blade on the brushcutter is best for this follow-up mowing. It does the mowing job quite well and is more quickly sharpened than a four-pointed blade.

If stacking cut broom in compact piles on your site is possible, it solves the broom disposal problem in a simple, cost-effective way with minimal impact to the site. Cut broom decomposes fairly rapidly when stacked in this manner, the pile growing smaller each year. If you choose to make and leave compact broom piles, you will find that making composting piles is something of an art form. In general, take care to lay all stems down parallel, snap or lop curving branches to create more straight pieces, and keep walking over the pile to compress it down. I usually tuck such a pile in a low spot in the terrain or out of sight behind a tree, shrub line, or other visual barrier. Visitors usually accept this well.

One possible drawback of removing mature broom from where it was cut is exposure of the site to erosion, particularly in cases where a long-standing broom monoculture has eliminated most grasses and forbs. Leaving cut broom scattered on site as mulch may reduce erosion, but it will also make it very difficult to reduce the seed bank in subsequent seasons. You lose the advantage of easy seedling control using a brushcutter and are forced into some other method of dealing with continued generation of new broom from the seed bank.

“Experienced broom bashers will cringe at the thought of letting the broom go to seed before dealing with it.”

If you want to retain the advantage of the French broom control method suggested here, select an erosion control technique that, (1) leaves the seed bank free to proliferate, and (2) either leaves the surface free of obstacles in discrete sections or can be easily cleared for brushcutter work on seedlings. One erosion control technique meeting both of these conditions, for example, has been used successfully in the Golden Gate National Recreation Area. Pulled (or cut) French broom of medium size is tied into small bundles and staked along contour lines at intervals as brush bars. Erosion is reduced and clear areas between brush bar lines afford the opportunity of easy follow-up.

Finally, you will of course want to take special care if you have native plants on site that need protection. I go

Continued on next page

A French Broom Control Method (Cont'd)

slowly with my brushcutter, stopping when I see a young coyote brush plant or an oak seedling. It's pretty easy to notice them in late summer since nearly everything else except the broom seedlings and a few other perennial species has dried out and gone to seed. I leave small islands of uncut broom around the plants I want to save. Then I come back in winter when the ground is soft and pull the broom by hand or with a Weed Wrench™ tool. I also mark tree seedlings and small forbs with field flags to help me see and avoid them when I am mowing.

Conclusion

The mechanical control method described here is the best I have found to date. It offers an efficient way to remove mature French broom populations, and a very easy way to exhaust the seed bank in successive seasons. I hope you will experiment with it, argue with it or even ignore it if you have a better method. But whatever you do, share your thoughts and methods with the rest of us through the CalEPPC newsletter. Keep progress (and hope) alive.

Notes

ⁱ An alternative for broom disposal is burning cut broom in place as part of a controlled burn. State Park Resource Ecologist David Boyd has used this method to good effect at Mt. Tamalpais State Park in Marin County. Controlled burning, if done right, can also have the advantage of killing some broom seeds and/or stimulating a large flush of seedlings after the burn, thus helping to reduce the seed bank more quickly. Chipping cut broom is also a possible disposal alternative, but great care should be taken to avoid re-infesting your site or another with chipped material that includes broom seed. If you use chipping as a disposal method, cut the broom and chip it *before* it has viable seeds. The safest use of chipped material containing viable seed is disposal in a land fill.

ⁱⁱ The four-pointed blade, in my experience, does a better job of cutting thick broom than a three-pointed blade. It is important to do this at high RPMs and with a sharp blade to reduce the likelihood of damage to the brushcutter gear head. I turn the blade over after running just one tank of gas in the brushcutter, never using the blade for more than one tank per side. This keeps the blade from getting too dull. It is much easier to sharpen and will last longer. Another reason for using the four-pointed blade to cut mature broom is that it seems to eject fewer cut pieces back and upward at the operator than the three-pointed blade. I use chainsaw chaps and gloves, helmet with ear and eye protection, and a kerchief around my neck to protect myself from flying cut pieces, rocks and noise.

1996 CalEPPC Election Results

Mike Kelly, Secretary

We have the results of two elections to report. First, in our annual balloting the membership voted into office the following officers whose terms begin January 1, 1997:

President	Ann Howald
Vice-president	Mike Kelly
Secretary	John Randall
Treasurer	Mike Pitcairn

There was actually a contested race for the first time in several years for the Board of Directors. Greg Archbald, Carl Bell, and Steve Harris were elected to two-year terms beginning January 1, 1997. Greg and Steve are veterans of the board, while Carl will be serving his first term.

The CalEPPC Bylaws were amended by a vote of the membership at the October 4 - 6th annual meeting in held in San Diego to expand the Board of Directors from 6 members to 10 members. Under the bylaws, half the director seats are up for election in alternating years. Elected to the board to serve an initial two-year term were Joe Balciunas and Joe DiTomaso.

Elected to serve an initial one-year term were Jo Kitz and Stella Humphries. Rumors that future candidates are changing their first names to Jo(e) are probably unfounded. In the future, five members at-large will be elected in even-numbered years and five members at-large will be elected in odd-numbered years.

At-large board members whose terms expire Dec. 31, 1997:

Sally Davis
Stella Humphries
Nelroy Jackson
Jo Kitz
Jeffrey Lovich

At-large board members whose terms expire Dec. 31, 1998:

Greg Archbald
Joe Balciunas
Carl Bell
Joe DiTomaso
Steve Harris