

Controlling *Cortaderia Sp.* with a volunteer hand removal program.

Hand removal of *Cortaderia* can be an effective control strategy if done using the right techniques and proper tools. One person using a correctly sharpened Pulaski with the proper technique can remove a plant of about 12" basal diameter in about 5 to 8 minutes, in average (non-rocky) soil and site conditions. In the period from October 1992 thru March 1993 we have removed many thousands of *Cortaderia* of all sizes and in all types of habitat and slope conditions on state park lands here in the Santa Cruz mountains using volunteers working for the most part only on our regularly scheduled Saturday projects.

Removing large plants: If over about 24" basal diameter, hand removal time goes up by roughly the square of the basal diameter. Plants of this size are most effectively removed by first cutting off the top of the plant with a chainsaw as close as possible to the ground. This gets the above ground, dense and sharp edged leaf mass out of the way, which greatly facilitates safe and efficient access to the root crown. The crown is then chopped out using both edges of the Pulaski alternately, cutting the root crown into small squares, about 3" in size. Each piece is then easily removed with the "adze" edge. The entire root crown must be removed, but you need not take the time to get out each small "rootlet" at the extremities. These will not produce a new plant.

-On steep hillsides, undercutting the root crown from above with a sharpened "sharpshooter" shovel while another person pulls the top of the plant downhill can be very effective.

-Once a root crown is removed, it should be shaken to remove soil, turned upside down, and placed back in the hole just dug on top of leaves and any other nearby mulch. This ensures the kill of the root crown, and at the same time prevents sunlight from reaching the newly disturbed soil, where it can be assumed *Cortaderia* seeds are already present, waiting for just the conditions you have now created to germinate: disturbed soil, sunlight, and no competing nearby plants.

In areas too large to remove in one season: Cutting large plants to the ground will soon show what part of the plant is still living, and in very large plants it will probably be much less than it would appear. *Cortaderia* typically lives 10 to 15 years. The resulting large amount of decaying biomass acts as a germinating medium for seeds falling within, and these plants are typically small, with their roots above ground level. Cutting the plant close to the ground will sometimes remove these "second growth" plants completely. If not, you will soon know, as new shoots will emerge. These can then be "surgically" removed with little effort with the Pulaski. This prevents wasting a lot of energy digging up a huge root system which in many cases is mostly dead.

If an area is too large to cut the plants to the ground, you must shift your immediate attention to the prevention of seed production. Starting about July, monitor the area frequently, and as soon as seed plume stalks begin to emerge, cut them off as low as possible. Many times, bending the stalk sharply will cause it to break at a node, and it can then be pulled out without cutting. The area must be rechecked frequently for new seed stalks, about every 3 weeks, as *Cortaderia* will try again and again to produce seed plumes. In our area, this can occur into October.

If access and scale permit, bag and safely dispose of all seed plumes. If not, jam the seed plume shaft firmly and deeply into the dense biomass at the base of the plant, using the stalk like a spear.

Some notes on working with volunteers. Volunteers can be recruited in sufficient numbers if all channels for "getting the word out" are utilized. Many people are eager to help save our environment; the problem is mostly in reaching them. Newspapers, radio and TV stations have public service programs which will permit you to list your events, usually at no charge. Volunteer exchanges are also good free sources. High schools, colleges, and corporations, and philanthropic organizations are all good sources for whole groups of volunteers.

In addition to accomplishing your restoration goal, working with volunteers will simultaneously increase public awareness not just of the problems of invasive exotics, but of other ecological issues and the personal satisfaction that comes with hands-on help to save our planet. We have an open discussion at lunch which has proven to be an effective means of increasing awareness and knowledge of environmental issues. In the long run, I believe increased awareness will best help us to accomplish our goal of controlling exotics as well as helping people to better understand our planet and our own role in ensuring its continued vitality.

BATTLING THE KUDZU OF THE WEST

Controlling Cape Ivy (formerly “German Ivy”) by Hand Removal

-by Ken Moore, Wildlands Restoration Team

A creeping blanket of vegetation smothering everything in its path is a daunting sight indeed. Unfortunately, it is becoming an increasingly common one as cape ivy drops its green curtain over coastal canyons and streamsides throughout much of California. Cape ivy, *Delaireia odorata*, was until recently called Germany ivy, *Senecio mikanioides*. Capable of growth rates which easily outstrip native species, and possessing twining, easily broken stems able to resprout from any piece containing a single node, this plant combines the worst habits of the notorious kudzu vine and the mythical hydra. These characteristics make the prospect of controlling even small infestations of cape ivy by hand removal seem bleak indeed. - Or so I thought when our volunteer program, the Wildlands Restoration Team, first started doing battle with this scourge from South Africa in the fall of 1993.

The project area is in Santa Cruz County, along lower Waddell Creek in Big Basin State Park. For record-keeping purposes, the area was described as 19 separate sites ranging in size from about 200 sq. ft. up to about 15,000 sq. ft. A “site” is here used to mean a single area of contiguous infestation. The total area of the 19 sites is about 146,600 sq. ft., or about 3 1/3 acres. The sites were mapped and named, and detailed records of dates and hours worked and the removal method used for each site have been logged in a database since the start of the project. This has made it possible to quantify and compare the effectiveness of each removal method used.

We started out using our tried-and-true method of controlling an invasive species, which calls for targeted removal of the exotic species by hand while leaving the native flora and the site as intact and undisturbed as possible. The cape ivy was stacked on site in tall piles to minimize ground contact area. The team put in a total of 1,130 person-hours using this method; the result was nearly complete failure. Return visits to most sites two to three months later found them reinfested almost as badly as before we started. Careful inspection of the sites confirmed my suspicions: the rampant and impenetrable mess of hostile vegetation in these lush riparian zones was keeping the team from *seeing* and *getting* to the cape ivy. Places where native vegetation was initially sparse showed very little cape ivy regrowth, whereas in areas of dense native vegetation, especially stinging nettles and blackberry, the cape ivy came back immediately. Repeated attempts to rid these sites of cape ivy for the next year with our selective removal method affirmed what I already feared: This wasn't going to work.

Clearly, a new game plan was in order. When we returned to Waddell Creek to do battle in late fall of 1995, I directed a very reluctant team to completely clear the sites of anything that was keeping them from getting to the cape ivy—alive or not, native or not. Telling a bunch of experienced restoration volunteers to clear a site of all vegetation went over almost as well as if I had told them to plant yellow star thistle on our hard-won former French broom sites. In addition to being counter-intuitive, it was one heck of a lot of work. We used Pulaskis, Mcleods, bank blades, shovels, and chain saws to clear the site of all hindering vegetation. We stacked everything, piling the cape ivy separately from all other plant materials. We cut up and moved large logs which had been deposited by the high winter flows, as cape ivy loves to hide under them. Using the sharpened “hoe”, or straight edge of the Macleod, we scraped the soil clean of all duff to get rid of the nodes and roots I knew were still there. A total of 1,016 person-hours were put in to accomplish complete clearing of the 19 sites. I coined the name “scorched earth” to describe this extremely unpopular method, and I knew I stood to lose some loyal volunteers if it didn't work.

But by the end of 1996, I could see that it was working. Very little Cape ivy was in evidence on any of the sites, and most of what did come back was from previously pulled plants still hanging on to life in the piles themselves, or from areas around the perimeter of the site that had not been cleared back far enough to see those last few smaller plants lurking there. We reworked all the sites again in the spring of 1997, and this time we were able to repull the remaining cape ivy on all of them in just one team day: 238 person-hours! Our hard work had paid off, as now it was easy to see and remove any new growth on the clean sites. The people who had worked these sites previously were elated. It seemed I would not be burned on a nearby pyre of previously pulled broom after all!

On sites subjected to “scorched earth,” the regrowth of natives was strong and fast, and inspiring to behold: A testimony to the vitality of these nutrient rich riparian habitats. Ironically, this vigorous native regrowth is fast becoming our biggest problem, as it makes it difficult for us to see any new cape ivy regrowth. It requires very diligent combing through the dense new growth by experienced people to find those few newly emerging plants, but so far this seems to be working, and many of our sites are showing no ivy regrowth at all this year. The old piles of cape ivy can still harbor live plants, but turning the piles over and extracting the live material once or twice has eliminated this problem on most of the sites. If the site has good sunlight availability, we spread the pile out in a 4 to 5 inch thick layer on top of 10 mil plastic. This greatly speeds up the dessication and death of any plants which are still viable.

CONCLUSION: It is possible to control cape ivy using hand removal methods. But it takes a concerted effort to accomplish, and we now know that anything short of that will meet with sure failure. Continued monitoring will be needed, as well as some repulling, depending on how thorough a job was done initially: A poor first pull will result in a site looking like it was never worked at all in a very short time! And even if nearly all of the cape ivy was removed the first time, just the small amount that is invariably missed can reestablish itself with alarming rapidity. Also, if there is a cape ivy source upstream, high water flows in the winter can be expected to transport pieces of plants downstream which can reinfest old work sites and begin new colonies. So, if you are considering tackling a cape ivy project, be sure you will be able to see it to completion before starting in. The prodigious growth rate of this green menace will quickly and dramatically advertise a failed effort, and this could handicap your ability to mobilize help for future restoration.

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Building a Successful Volunteer Program

Volunteers can be recruited in sufficient numbers if all available channels for getting the word out are utilized. Many people are frustrated about the escalating environmental degradation they read about and are eager to do something “real” to help. You must find ways to reach them. Newspapers, radio and TV stations will list your events, usually at no charge. Send them a press release listing all the particulars of your event. If you have an ongoing project, you may need to send it in regularly as they will often drop your listing if you don’t. Volunteer exchanges are excellent sources. Contacting high schools, colleges, corporations and philanthropic groups can get you a whole group of volunteers. And have patience. It takes time for a volunteer program to build momentum.

The single most important hurdle in tackling seemingly insurmountable projects with hand work is not so much the reality of the task. It is each new volunteer’s sense of being overwhelmed at the scale of the task that you are actually up against. People almost universally underestimate what they will accomplish in a day, let alone in a year! New volunteers often look a bit overwhelmed when first viewing a project, but then they see that the “old hands” are starting right in, not a bit impressed with it at all. At the end of the day, they’re amazed - and thoroughly charged - by how much they’ve gotten done! I think this is a pivotal factor in turning first-timers into believers. When people are empowered by a sense of accomplishment that exceeds their expectations, they will be back.

One way to minimize the problem of perceived “do-ability” is to pick a project that can be finished with the teampower you have that day. If this can’t be done, clearly define an identifiable goal that can be realized that day. People will stay with it if they sense completion within their reach, even if that means putting in a little “overtime,” as long as the goal you’ve set is attainable. If the goal is achieved early, I let them know I’m impressed. Early achievement of a goal can be empowering! It can even inspire a team to keep going on their own initiative. More than once I have found myself at the end of the day telling a still hard-working team that it’s time to start heading back. Now, *that* is satisfying!

People need to know how much time they’ll be asked to commit each day, but be ready to adjust this if conditions dictate. If people want to stay longer, be accommodating, if you can. (I’m a know pushover on this one!) If it’s a miserable day for any reason, be willing to call a halt early - really early, if you need to. The important issue here is not the completion of the day’s project, but that *people remember each day positively*. If they do, they’ll be back, and it’s the ones who keep coming back that are the life force of a program. Also, a high ratio of people who keep coming back is the best indication that you’re doing something right!

As a project leader, I think it’s of great value not to ask your volunteers to do anything you’re not doing yourself. If need be, see if you can find someone to supervise field work who can stay shoulder to shoulder with them out there. I’m often told that this has been a significant factor in keeping people in our program.

Delegating responsibility to experienced team members is an effective way to show your “core” people just how valuable they are. This will really cement their bond to the program, and relieve you of some of the load at the same time! We hold a regular monthly potluck which is an excellent way of building this feeling of belonging for all. It’s also a great way for the team to get to know each other in greater depth than occurs in the field. Sometimes, after a really good day, I’ll treat everybody to a long, cool one, and maybe something to eat. It’s another good way of letting your team know they’re special to you.

It is also important to provide inspiration in the form of stimulating discussion in which all are encouraged to participate on the value of nature, restoration, and, most importantly, what *this project* will mean to *this* ecosystem. We normally do this at lunch, but I will often call a temporary stop to the day’s work to point out something which presents itself at that moment and show them how nature will heal itself because of their efforts. This will make them feel personally connected to the land and to the value of their work. Encourage them to come back to the site in the future to witness the miracle of renewal each of them has helped to bring about.

In addition to accomplishing your restoration objectives, a volunteer program will help to increase public awareness not just of the problem of invasive exotics, but of other ecological issues, and provide the personal satisfaction that comes with hands-on helping. In the long run, I believe this will be our most effective tool to achieve our goal of restoring healthy, functioning ecosystems and simultaneously help people to understand their own role in ensuring our planet’s continued vitality.

AS I write this, we are deep in broom season, racing the clock to prevent seed set, with no time to think about other projects. But at lunch last Saturday, I asked everybody what their favorite projects were. About two thirds replied, “Pampasgrass.” This, in spite of the fact that nearly everyone who has ever worked with me, including this group, agrees that Pampasgrass eradication is the hardest thing we do. Might be a lesson here; sometimes adversity *can* work to your advantage.