

MAUI INVASIVE SPECIES COMMITTEE
MEETING MINUTES
Friday, April 20, 2012

ATTENDANCE: Pat Bily, Lloyd Loope, Bob Hobdy, Forest Starr, Kim Starr, James Leary, Fern Duvall, Adam Radford, Chuck Chimera, Lissa Fox Strohecker, Mike Ade, Teya Penniman, Stephanie Miller, Jeremy Gooding, Randy Bartlett, Elizabeth Anderson

ATTENDING VIA WEBEX: Josh Atwood, Josh Fisher

- The meeting was called to order by Pat Bily, TNC/MISC Chair at 9:10am.
- Introductions were made around the table.
- Minutes from the February 17, 2012 meeting were approved.

ANNOUNCEMENTS

- Chuck: on Hawaii Public Radio this morning there was a story on the use of invasive species for value added products and how that could solve the invasive species problem in Hawaii.
- Lloyd: there was an article in today's Science about the Asian citrus psyllid. The insect is established here on Maui, but not the disease. The psyllid is all over Florida and the disease is spreading there now. There is not much commerce in citrus in Hawaii. HDOA inspectors are going to be briefed. A role for MISC would be to be knowledgeable while out and about. This would be a good thing for a Maui News column. I doubt that Hawaii would take strict measures, but education is important. It is transmitted when people bring back citrus cuttings and graft onto their own stock.
- James: there was a meeting this week with Darcy on Maui to update ranchers on the fireweed biocontrol. It looks fairly certain that there will be a release within the year. Mach and Darcy and I will try to communicate more. We need to look at what we need to do to maximize the value of that release and what we should we be doing to prepare. Forest: it should be released in areas where there is year round foliage. James: there are some areas where it isn't around all year.
- Teya: miconia on Maui was featured in a recent video by Cal Hirai. Segments were in the "Rain Follows the Forest" video and the material aired on OC 16 on March 26. It is posted on YouTube now. We will show the video at lunch.
- Teya: we had our first visioning meeting for the conservation campus on April 9. We will have a follow-up meeting on April 30 [note: date changed to May 11].

BENCHMARKS FOR PROGRESS ON TARGET SPECIES

Overview

- Teya: MISC has been going since 1999 and pampas grass was an early initial target. At the time we didn't know how widespread it was and the issues we would bump up against. I don't think anyone has ever questioned pampas as a target. Over the years we have adapted our procedures and developed a fairly sophisticated strategy. We do regular reporting and analyses of the data and different aspects of the program. It is important that we are able to demonstrate that we are making progress. As a management team, we continue to look at the work we do and we want more solid and measureable benchmarks. We need to look at our goals for this year and for the future. We want to develop clearer standards for all of our species. We started by refining what we have for pampas and then we will export the template to other species. This will give us a master plan that can be updated, used to evaluate if we met our goals, and help us set strategies for the future.

- Bob: I have a comment on adapting to situations - pampas has been adapting to the environment here and has been establishing in areas we never expected. Lloyd: pampas to me is sort of the reason that MISC was established. Miconia was a no brainer, but pampas really is what pushed things forward. Teya: the timing is appropriate because we are just beginning our pampas season for this year. James: we are seeing good results from efforts last year.
- Brooke: the idea for other species would be to go back and replace the distances, time period, etc. to make them applicable. We would like to complete this process for all of our target species. Teya: we picked one of the most complex species to do first. Adam: I think the metrics will hold true across the other species.
- The following draft action plan was reviewed by the Committee at the meeting. Comments on the individual sections appear bulleted and in italics within the text.

Pampas Grass (*Cortaderia jubata* and *Cortaderia selloana*)

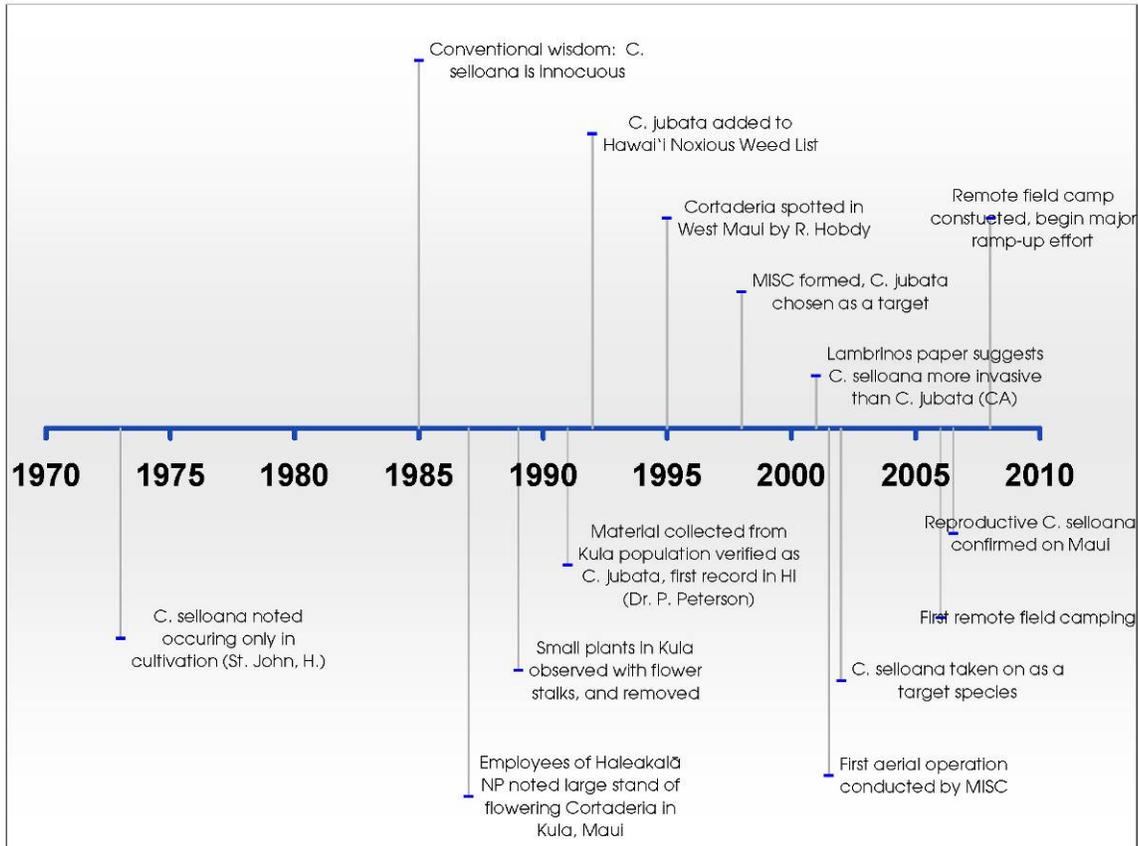
Action Plan

Date reviewed (review annually): 4/20/2012

- *Adam: This is a draft that still requires work. It is a living document that will require at a minimum an annual review. What we are striving to do is have the benchmarks and standards be relevant to what is happening in the field. We plan to do this for every species. The metrics should carry across the board. The document will be a great training tool for giving new staff background and information. There are two types of metrics – bigger picture management and more on the ground things like acres covered. The on the ground metrics should be a good motivator for field staff. Brooke: we need to add incentives for when the metrics are met. Pat: when this target was first selected, I was not in favor of it. I thought it was an impossible task. The big difference now is that we are so confident in our ability to capture spatial data. Forest: I think the short-lived seed bank is one of the reasons we have been able to make progress. Teya: it would be great to have a summary of our collective knowledge and wisdom and the history of the different populations and efforts. We will send out Brooke's timeline and everyone can add to it.*

Species Description

Pampas grass is a large, tussock-forming grass native to South America. Each plant can produce thousands of seeds that are wind-dispersed. It typically flowers in the summer and fall. Seed longevity in Hawai'i is thought to be at least three years. Both species (*C. jubata* and *C. selloana*) have proven to be aggressive invaders in natural areas of California, New Zealand, and South Africa. *C. jubata* was discovered invading natural areas on Maui in 1989 and was added to the Hawai'i Noxious Weed List in 1993. *C. jubata* has only pistillate parts, that is, all individuals are female. It reproduces by apomixis, in which embryos develop without fertilization. Until recently, *C. selloana* was thought to be non-invasive because it was lacking a reproductive counterpart. New evidence suggests *C. selloana* has hermaphroditic (predominantly staminate) and pistillate plants in close proximity and is setting seeds. *C. selloana* is considered extremely invasive and Noxious Weed status is being sought for this species. Distribution data shows that pampas grass has invaded numerous rain forest areas as well as bogs on East and West Maui. It has been detected and controlled in Haleakalā National Park and the surrounding shrublands. It is also found in residential upcountry areas.

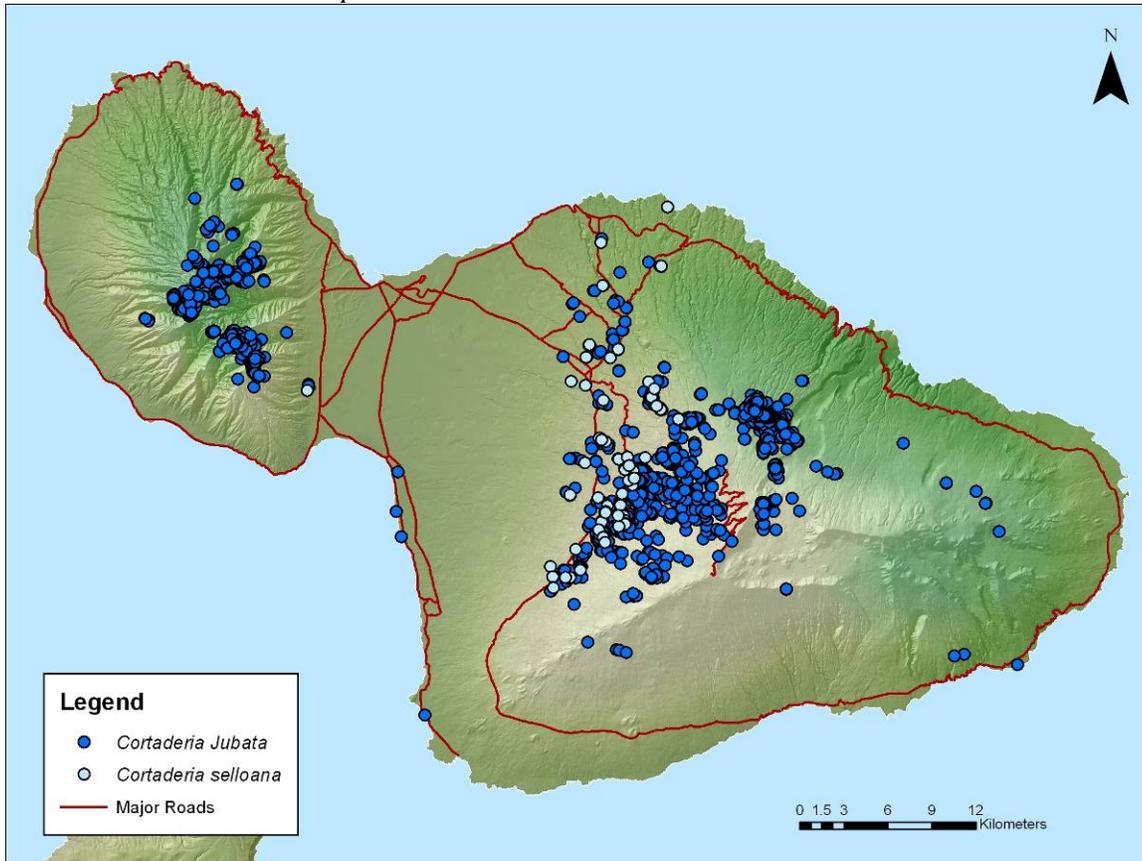


Management Objective (control or eradicate): Island-wide eradication
 Management Area: Maui
 Priority Ranking (from Prioritization for Control document): NEED TO DO

- *Forest: because this one is on private property some of which are recalcitrant, pampas is really widespread. These two factors would bump it out of the existing eradication ranking system. Adam: we haven't gone through the process yet. It would be interesting to look at our targets and go through the process to come up with a priority ranking within our targets. I view the committee's take on a target as a separate decision. It would be good information in case we ever need to drop a target. James: there is a paper out of Australia that talks about those switching points and how to make a decision when you reach that point.*

Current Status (delimit / exploratory, contain, eradicate): Containing known infested areas and continuing early detection efforts in remote areas, moving towards eradication from rural-residential areas, and the number of mature plants continues to decline island-wide.

Current Distribution: *See map below*



Summary of near-term (seasonal) goals

- Treat all known plants each year.
- Sweep all survey areas that are accessible (plant point plus buffer) each year.
- Visit all outlier populations on the ground where feasible. Visit all others from the air.
- If a permission issue arises and can not be resolved the recalcitrant process will be initiated.
- No mature plants found at existing sites we have regularly surveyed.
- New discoveries in residential areas will be removed and / or replaced.
- Disseminate the location of all known plant locations to partners each spring and highlight what we would like them to survey.

James: another way to look at the data is per unit effort.

Summary of long-term (5 years plus) goals

- Delimit the current extent of the known infestations.
- Time spent at all sites / survey areas declines.
- Acres surveyed per person hour increases.
- Number of mature plants declines.
- Number of sites declines.
- Acres to survey declines.

Some Definitions

Eradication: Eradication is defined as no sign of reproduction for twice as long as the known reproductive capacity of the species¹. Generally, pampas grass seed viability is considered to be six months. Due to anecdotal reports in Hawai'i of seeds germinating after two years, we consider three years from the date the last plant (mature or immature) was found to be the minimum benchmark for eradication. In order for a species to be declared officially eradicated by MISC a document detailing the work that has gone into managing that species, the research supporting the estimated reproductive capacity of the species, and other pertinent information should be approved by the MISC committee. Eradication can either be island-wide – meaning that there is no sign of the species across the entire island or site-specific – meaning eradicated from one particular place.

- *Chuck: Steph and I designed an experiment to evaluate seed viability in a wet Makawao forest and a dry environment on the Ranch. Steph collected seeds from several locations and we mixed them all together and put them in specially designed tubes. Nothing germinated. We learned that different plants have variability in parental stock. One plant Steph tested had zero viability and others were off the chart. We wanted to test the field observation where mature plants were controlled and seedlings found 2-3 years later. Teya: is the viability longer than what has been recorded or have seeds blown in? Steph: there is one location in a dry area where there are no other plants close by - reintroduction is not a possibility. Chuck: in a cold dry environment the seeds may be preserved until a rain event and may last a lot longer than in a wet environment. Pat: there could be an inherent tendency to dormancy. Teya: you could have a different standard for different climates. Adam: for our consideration any place with mature or immature plants needs follow-up. We are going with a conservative approach. Teya: you could say a population is eradicated after three years, but you should maybe still check again in 2-3 years and not just drop it off the radar.*
- *Teya: as we go through this process today we should identify information gaps. They should fall out on a "to do" list. We should try the research that Steph and Chuck did again. Fern: it might be good to look at data from other grasses. Adam: we may not have all the information, but we can make an informed decision. Brooke: we can look at our data by analyzing individual sites - when they were controlled and when something else popped up. Fern: for the very isolated plant that Steph brought up, if you get new plants there you know it really is regrowth. I would put my effort into looking at sites where you know reintroduction isn't happening. Step: there are 100,000 seeds per inflorescence.*
- *Pat: relative to this modeling, the Committee may want to consider trying to do some detective work on the history of these plants. What were the sources? The information could help us find trends. It is reasonable for pampas to blow up into the park from Kula, but how did it get into Honomanu. Mike: when we first were looking at selloana vs. jubata we sent samples from very different sites (east, west, etc.) to UC Davis. The results came back that they all had the same parent. James: do we have information on wind patterns, drainages, etc.? Mike: we have looked at that already. Forest: stochastic events can really change the results of models like that. Teya: the problem that we face is how long to keep going back to a site. Revisits take time and you can't get to other things. Adam: we came up with this suggestion based on what we know today. A stand-alone plant is a priority. We will adapt based on what we learn. This is only one aspect of the program. Jeremy: what you have is a good common sense approach and you can refine as you go.*

¹ Woldendorp, G. and Bomford, M. (2004) Weed Eradication: Strategies, timeframes and costs. Commonwealth of Australia. Date accessed 10 October 2009. <<http://adl.brs.gov.au/brsShop/data/PC12782.pdf>>.

Buffer: The area that should be surveyed based on the known species locations and dispersal ability of the species. Each species has its own buffer and all buffers are recorded in MISC's geographic database. In instances where the dispersal ability of the species is unknown or would result in an island-wide survey area buffers are determined by available resources, highest probability areas (e.g., streams), and input from local experts. Buffers for pampas grass are created and survey areas are swept immediately following new mature plant finds and subsequently once per year. Immature plants are buffered and surveyed annually.

Delimitation survey: A survey conducted to assess the population size and location of a particular species. After delimitation surveys, species may prove to not be an appropriate target for MISC. When setting benchmarks you need a baseline for statistical measures of performance. This baseline is defined during delimitation surveys (e.g., extent of infestation, density, etc.).

Initial control: Clearing all species within the known population for the first time. This term is easiest to define with very small populations (less than 1 contiguous acre). Initial suppression also provides a baseline for future benchmark setting.

Survey areas & sites: The survey area is determined by buffering all plant (*mature and immature*) points less than three years old. The buffer used for residential, rural-ranch, and aerial work is 200 meters. In residential settings the entire TMK should be surveyed if it is less than five acres. If the buffer includes or intersects neighboring TMKs they should be completely surveyed if less than five acres or only the buffer portion if more than five acres. Survey areas should be covered as completely as vegetation and terrain allow with a focus on gulches and other ideal habitat (e.g., recently disturbed areas, ridge tops, etc.).

Although the natural dispersal capability of pampas grass is much greater than 200 meters, 200 meters was chosen because seeds typically travel in bunches, it appears that most seeds fall within this buffer, and reconnaissance efforts will likely detect anomalies outside the buffer. See below for an example of our residential buffering strategy.

Adam: if we went with what we know about pampas and buffered accordingly, the buffer would be all of Maui. We need to be realistic. Brooke: 90% of the keiki will be close to the plant. If you get permission for a TMK that is five acres or less, the entire property should be surveyed. If the TMK is larger than five acres, just survey the buffer. Adam: when crew go to a site, they should approach through the highest probability route (for example, up a drainage). Steph: recon includes high probability areas even if they are not in the buffer.



In remote areas all plant points are buffered 20 meters to determine the survey area for ground crews. Twenty meters was chosen because of incredibly difficult terrain, the very wet environment, observations of most seedlings falling within that buffer, and that typically a three person crew works in the area with each person's trail extended five meters wide to reflect area surveyed. Therefore, a 20 meter buffer is easily covered in two passes by a three person crew. Also, because all plant points are buffered there is significant overlap of buffers in infested areas.

For data collection purposes a "site" is essentially an area where one person or entity gives permission for control efforts and is ultimately one location ID in the database. Sites that are outdated (>3 years since any plants were found) need to be removed from the active sites list at the beginning of each pampas season (January – February) unless they are buffer sites. Sites that have not been surveyed carry over to the next year. They are not removed from the active sites list until a survey occurs with no pampas found.

Methods of Detection & Control

Survey & control: Our goal is to delimit the current extent of known infestations, interrupt the reproductive cycle of the species, and prevent the establishment of satellite populations. MISC will continue to survey areas near known infestations and work to secure permission of landowners to control all discovered plants. MISC will also continue to look in likely places (i.e., reconnaissance). Plants may be removed by digging them out or herbicide application (see the MISC Field Guide for approved removal methods). We work to eradicate or contain infestations by using the most effective and efficient practices while minimizing non-target impacts.

Ground & air efforts: MISC will continue to explore suspect areas for previously undetected plants and will stop the spread of pampas grass through aerial spot spraying and ground efforts (where possible). Treatment of all known populations is the priority. Aerial reconnaissance will occur over inaccessible watershed areas and portions of upcountry ranch lands as resources permit.

GPS / GIS: All known populations in both residential and wildland areas will be mapped and treated and potential habitats will be systematically surveyed by ground and air. GPS tracking and integrated GIS database-generated maps will guide all aerial and ground strategy, survey, and control work. We will record and analyze geospatial attributes of invasions to guide field work. This will include the establishment of buffer zones based on known vectors, biology of species, and resource availability.

Re-assessment: Annual evaluations of strategy and cost estimates will accurately reflect all current data and pampas grass biology. Analyses will consider current resource and what is achievable as well as gaps between resource availability and management objectives.

Cooperative approach: MISC will work closely with the National Park Service, East Maui Watershed Partnership, West Maui Mountains Watershed Partnership, The Nature Conservancy, and other private and public agencies on Maui. Collaborative activities will include joint ground and aerial surveys, ongoing communication about operations, and data sharing. Data sharing will include dissemination of known plant locations to partners each year.

Measures to prevent seed dispersal by pampas grass workers: Whenever pampas grass control is undertaken all staff are responsible for gear decontamination. When pampas grass work requires remote camping workers will use separate dedicated and conspicuously marked gear for East and West Maui Mountains to prevent movement of weeds from one side of the island to the other (see the Honomanu SOP for general decontamination / remote work expectations).

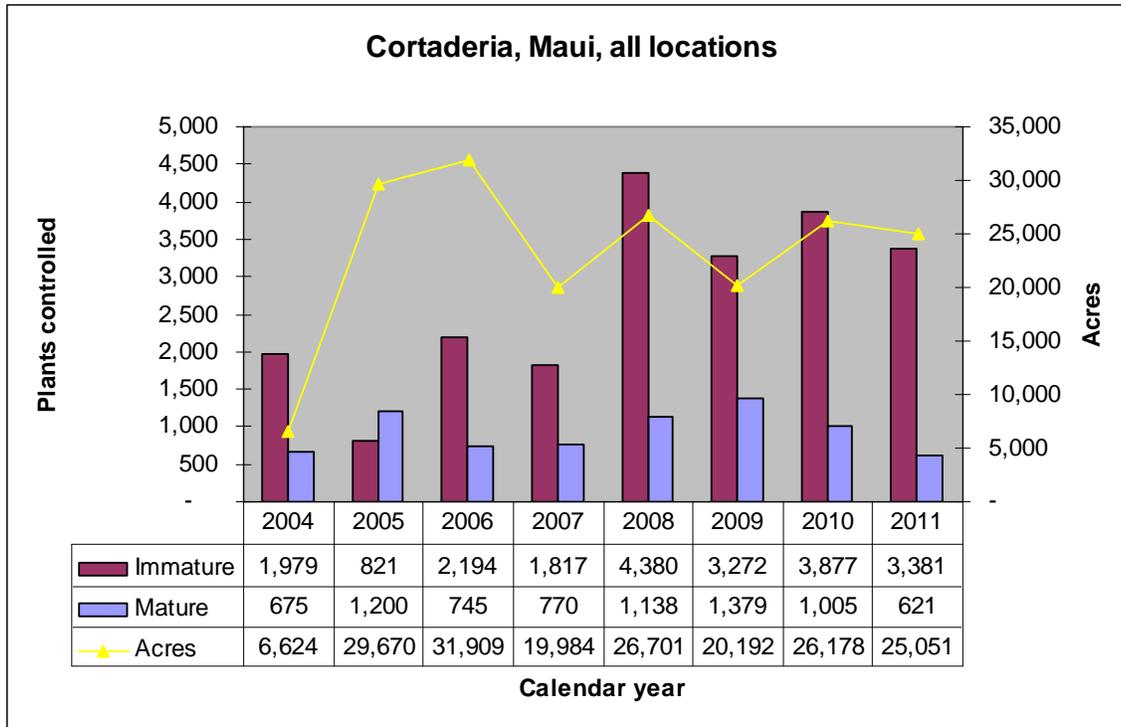
Planning Assumptions / Limitations

- There are unknown biological characteristics in Hawai'i (i.e., seed viability).
- Remote portions of East and West Maui have not had adequate reconnaissance.
- Permission issues in residential areas will hinder our efforts.
- Anomalous finds / events may result in deviations from this plan.
- Any mature plant finds will require an immediate buffer and subsequent survey of the area. Immature finds will be buffered and surveyed the next season.
- Data gaps will require additional follow-up.

General Overview of Work

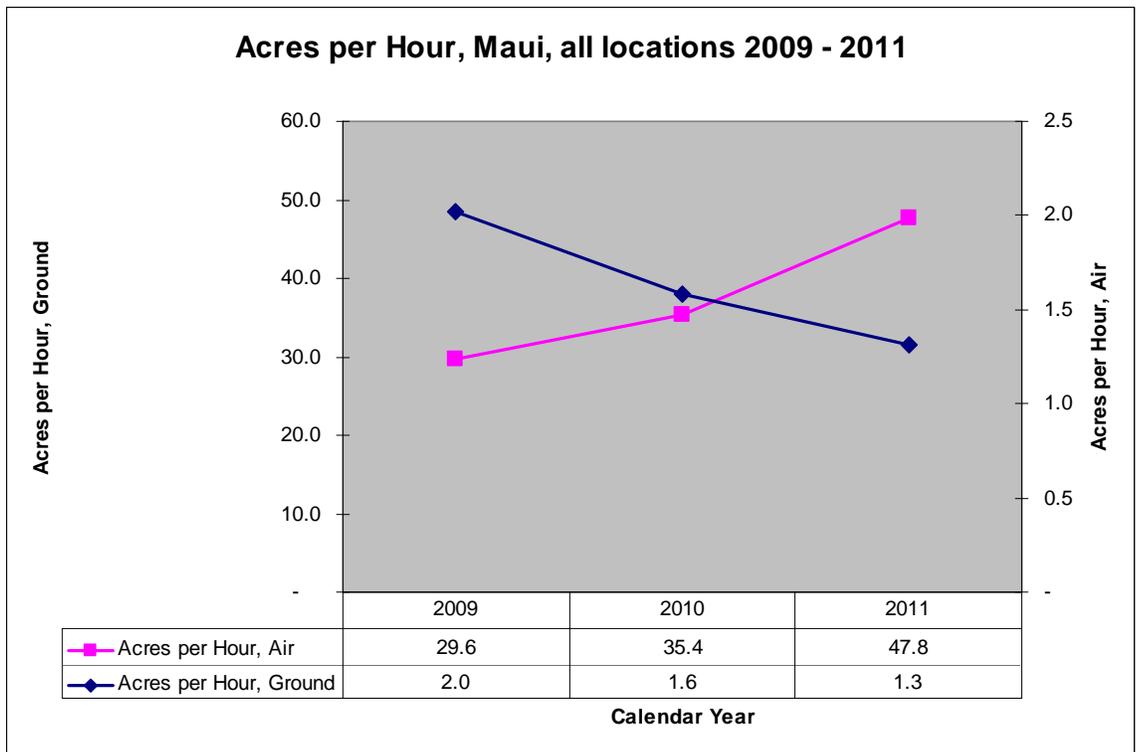
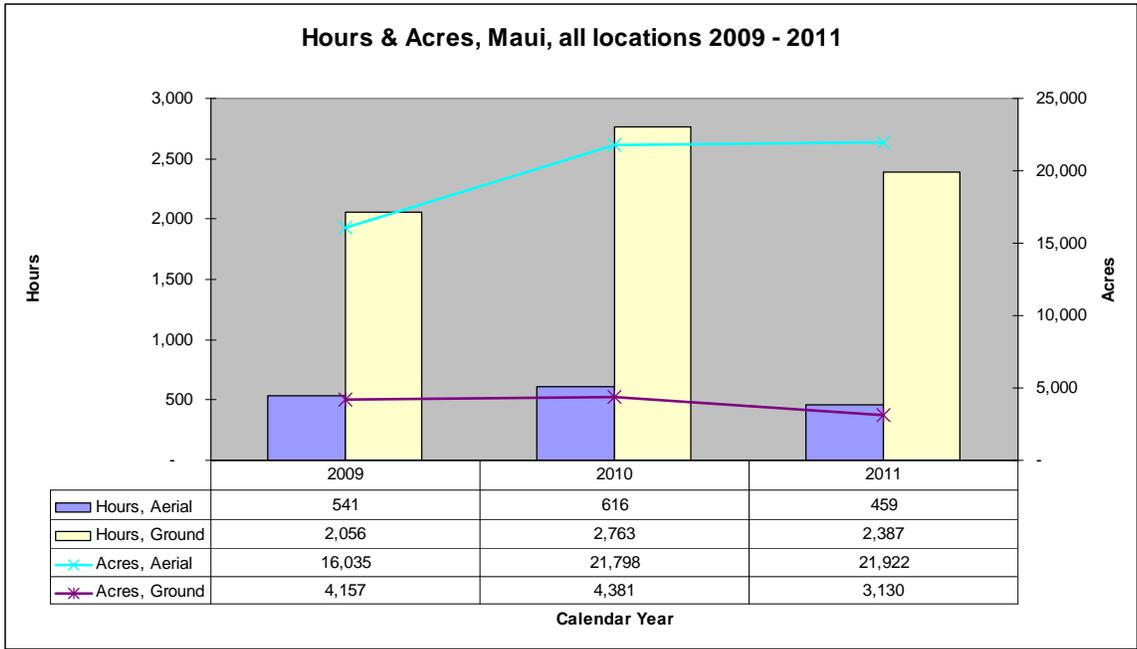
MISC crews work to control pampas grass from the ground and air in a wide range of settings. For planning purposes these areas and methods fall into one of four categories: residential, rural-ranch (frontcountry), remote (backcountry), and air. Although there is overlap among the methods and area covered they are considered individually to assist with planning. The following is a brief overview of island-wide efforts and considerations for conducting the work with benchmarks.

The following graph shows the number of mature and immature plants controlled by year. Our goal is to see this trend continue and achieve a 25 % reduction in mature plants this year.



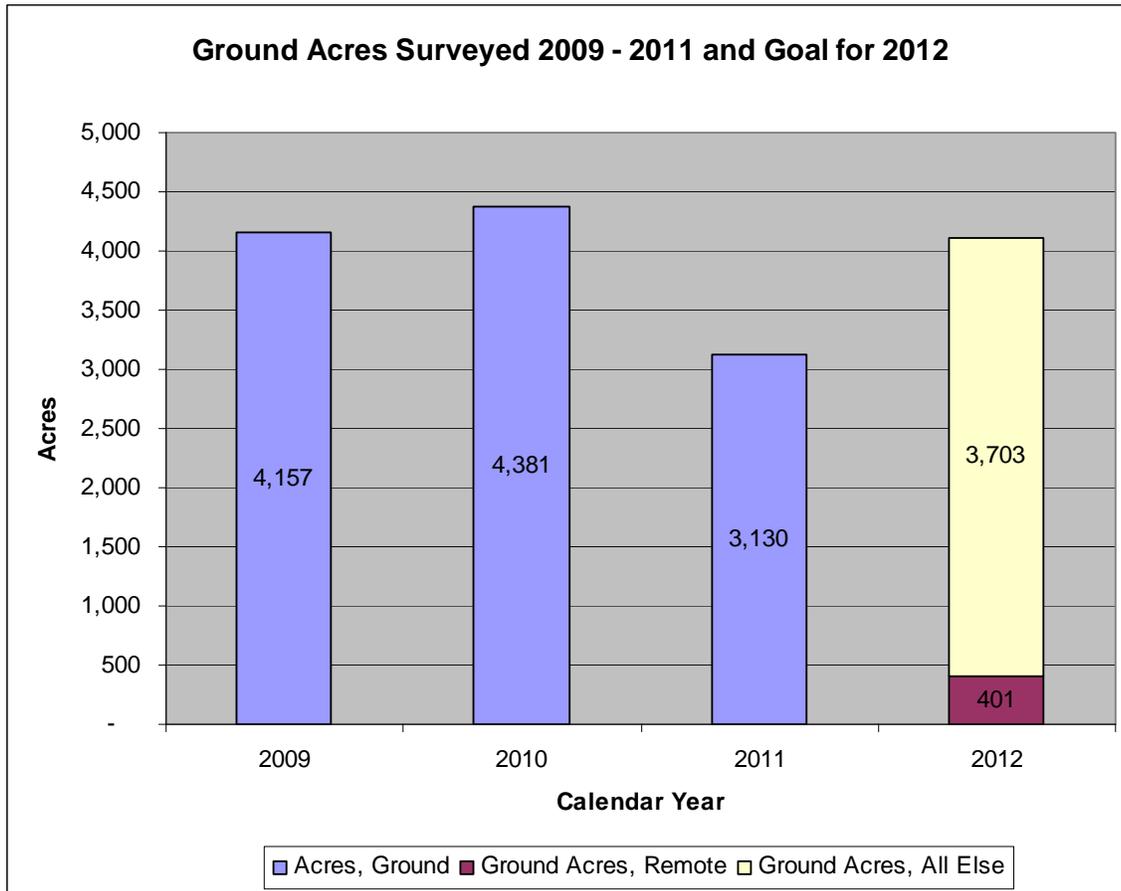
Adam: for bigger picture goals, we think the best indicator is the number of mature plants. We want to see a specific percent decrease over time. Teya: looking at this you have to ask if there is a clear trend. The last three years look like a downward trend. Since ~2007 our acres covered have been pretty consistent. This is lumped data. When you look at specific geographic locations, you really see the trend. Brooke: I am confident that we really are seeing a reduction. In 2011 we covered a lot of acreage and saw a lower number of mature plants. James: a coverage rating will clue you in to overlap of effort. That parameter can tell you about population dynamics related to management. Adam: we are covering more acres with fewer plants to treat – this is where we want to go.

The following graphs shows how many person hours have gone into pampas work each year for the last three years and how many acres per hour the crew can cover (broken out by ground and air). Our goal is to cover more acreage in less time each year.

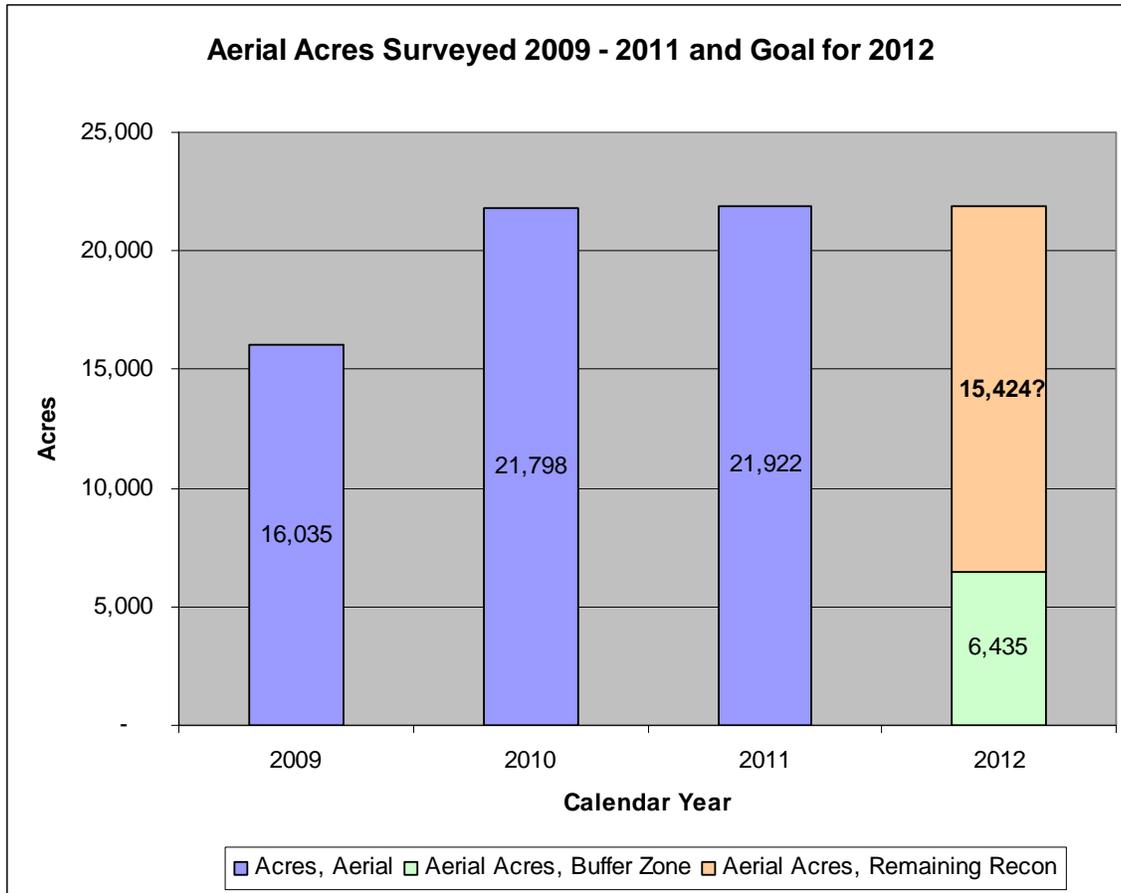


- Adam: if the benchmark is to cover more acres per hour, we are going to meet it with air operations, but not on the ground. This is because we are working more in really difficult, remote, boggy terrain. We haven't turned the corner yet. Brooke: we didn't do the interagency frontcountry sweeps this year, which adds a large acreage in a short period of time, which would explain why ground acres per hour were down in 2011.*

The following graphs show acres swept by year for the last three years and the stated goal for the year (total acres for all buffered areas). Our goal is to treat all known plants and sweep all accessible survey areas each year.

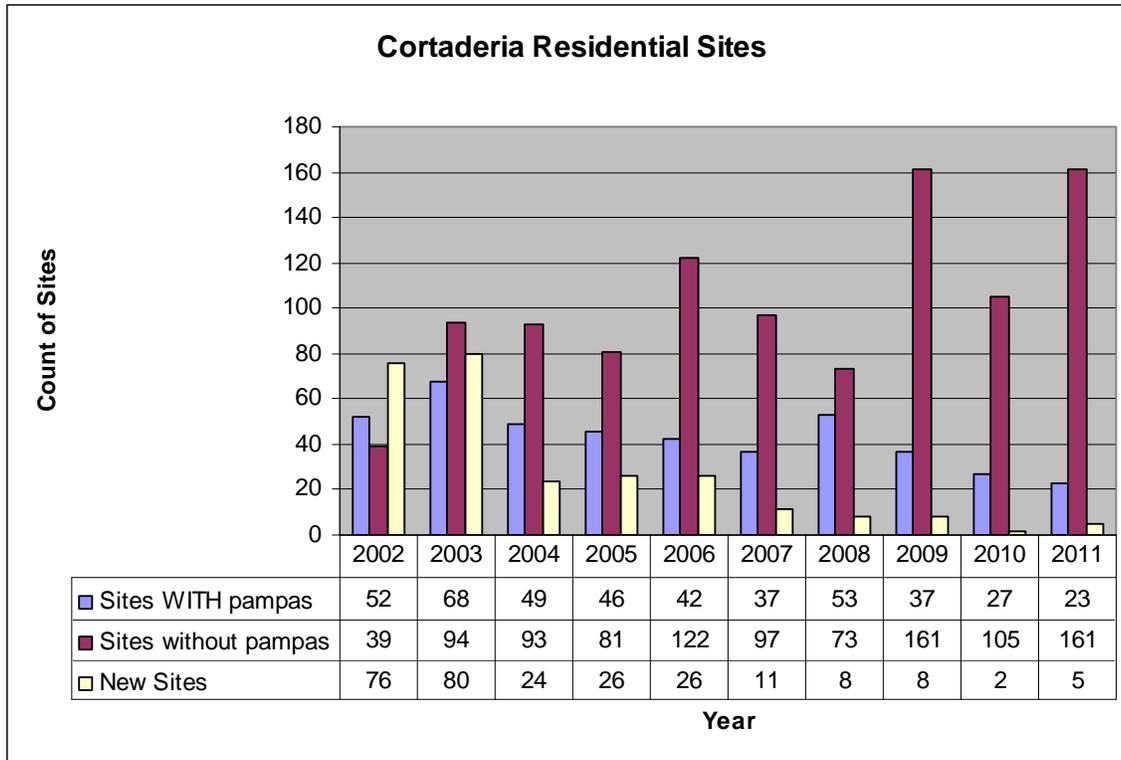


- *Brooke: for 2009-2011 these graphs show what we actually did. For 2012, the graph is based on buffers and what we hope to do. We won't meet the goal of 401 acres in remote areas. We can't cover some of the cliffs on West Maui. The number is based on buffers, but we know we can't meet the metric in all areas..*



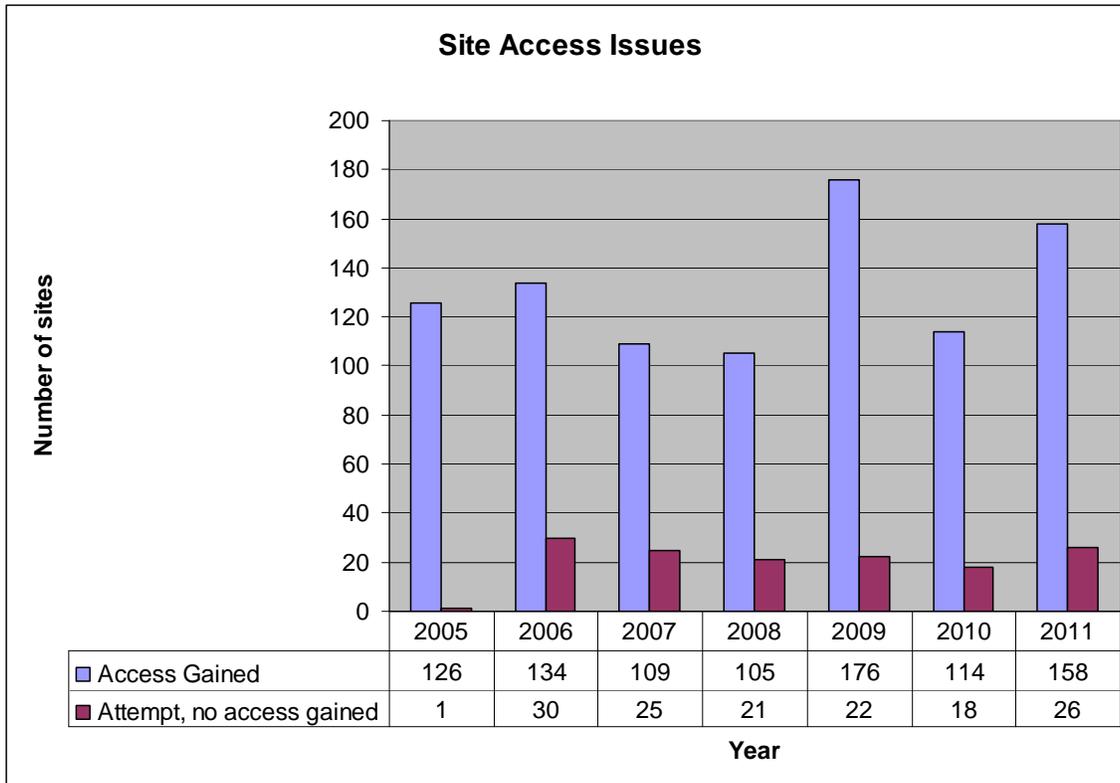
- *Brooke: we have a goal of surveying all points from the past three years buffered.*

Residential Work: Occurs in communities with many distinct properties. Crews often go door-to-door when surveying for pampas grass. This approach requires a high degree of interaction with the public and tact. Our goal is to visit all properties / suspect properties each year. The following graph shows the number of sites surveyed by year, the number of sites with pampas grass, and the number of new sites for the last three years.



- *Brooke: the yellow bars are new sites that were first recorded during the year indicated. They are not exclusive of the other two data sets. There are 17 recalcitrants. We want to see the number of new sites decline.*

Access to properties with pampas grass is essential to successful eradication. Permission issues are the biggest stumbling block to this component of the project. The following graph shows the number of properties with pampas that we have not been able to access by year for the last three years.



- *Adam: these are sites that we know have or have had pampas. There was a history resulting in us wanting to visit the site.*

Additional Metrics:

- # of properties where pampas is discovered (new sites) declines by XXX each year.
- # of properties with pampas that we are unable to access declines by XXX each year.
- All other “access issue” sites have had the following process initiated.

If access is not easily achieved the following process should be initiated:

- a. How many attempts do we want the crew to make?
One personal interaction (phone or in person) or two not homes. If the residents cannot be contacted during the day, the vertebrate crew should attempt to make contact in the evening.
- b. How many attempts do we want a manager to make?
One personal interaction (in person) or two not homes.
- c. How many attempts should Lissa make? One
Next steps at one month intervals from date initiated:
 1. Certified letter from MISC
 2. Certified letter from MCA
 3. Certified letter / phone call from County (Rob)
 4. Certified letter / phone call from representative
 5. Next steps?

- *Adam: we need to update our outreach materials to include more up-to-date scientific information. Randy: you should work with Maui realtors on recalcitrant.*

Additional Considerations for Residential Work:

- All sites and survey areas should be swept once per year (typically March to April).
- The needs PR / recalcitrant list needs to be updated at the beginning of each pampas season with a note as to phase of recalcitrant process.

Rural-ranch Work (Frontcountry): Occurs in areas with a few very large properties. Crews often hike long distances to survey areas with known plant points and / or a high probability of finding. This approach requires stamina and strong navigation abilities.

Additional Considerations for Rural-ranch Work:

- All sites and survey areas should be swept once per year (typically April to October).
- Reconnaissance is done via helicopter, buffer surveys, and while hiking to / from sites. When hiking to survey areas crews should focus on high probability areas (e.g., gulches).
- The helicopter should be covering the wide open spaces on the ranch.
- Try to schedule ten hour days for this type of work as a cost saving measure.

Remote Work (Backcountry): The following describes the work in remote areas by repeatable reporting unit.

The Flume: Current phase: Initial suppression / delimitation.

First visited in 2007 crews have been working steadily mauka, makai and further east. By focusing on known plant points crews have complemented aerial efforts. In 2011 staff hiked from the end of the flume to Haipuaena camp and back in one day, highlighting the ability to cover a significant amount of area from the flume. For the 2012 season all known points were buffered using a 20 meter buffer and those polygons are to be swept.

Honomanu: Current phase: On track for eradication.

First visited on the ground in 2005. In 2007 the first overnight camping trips began and in 2009 the Honomanu Hilton was first used. During the 2010 season all management units were swept. During the 2011 season crews worked from point to point (a.k.a., the bumble bee method). For the 2012 season all known points were buffered using a 20 meter buffer and those polygons are to be swept.

Haipuaena: Current phase: Initial suppression / delimitation.

First visited on the ground in 2008, sporadic control excursions were conducted. In 2011 a field camp was established. During the 2011 season crews attempted to use the bumble bee method while also performing an initial assessment of the infestation. This was also the early strategy in Honomanu.

Outlier Sites: Current phase: Initial suppression / delimitation.

An infestation is considered an outlier if it is greater than one kilometer from any other infestation. All outliers should be visited during pampas season. Outlier sites should be visited on the ground if feasible. If all outliers can not be visited on the ground the priority goes to plant points that have never been visited. The others should be surveyed by air. Majority of these are on East Maui. There are 5 outlier sites that require day trips. There are another ten or so sites that are Honomanu / Haipuaena satellites.

West Maui: Current phase: On track for eradication.

Ground efforts in West Maui consist of two backcountry trips per year, one to Kauaula and one to Hanaula. There is also one trip per year to Kahakuloa. These will continue.

Additional Considerations for Remote Work:

- All sites and survey areas should be swept once per year (typically April to October).
- Reconnaissance is done via helicopter, buffer surveys, and while hiking to / from sites. When hiking to survey areas crews should focus on high probability areas (e.g., gulches). In areas where ground work is the focus aerial surveys / control work is done per the request of the ground crew and at the end of the pampas season to mop-up.
- Ideally one early trip to the outlier populations is done so if there is more than expected there is time to respond.
- An extra ½ hour per day in the field will be added for staff when they camp to account for preparation time.
- \$250 will be available for staff that are expected to camp a lot. This money may be used to buy rain gear and other necessary equipment. All equipment must be approved by Adam, Mike, Steph or Elizabeth prior to purchase.
- Try to schedule ten hour days for this type of work as a cost saving measure.

Aerial Work: Occurs in remote areas of both East and West Maui. Helicopters are used to detect and control plants that are inaccessible / hard to find from the ground. Remote camping trips / aerial efforts typically occur every other week during the summer. Weather dictates what can / should be done. However, the following is a general recommendation for prioritization and approach.

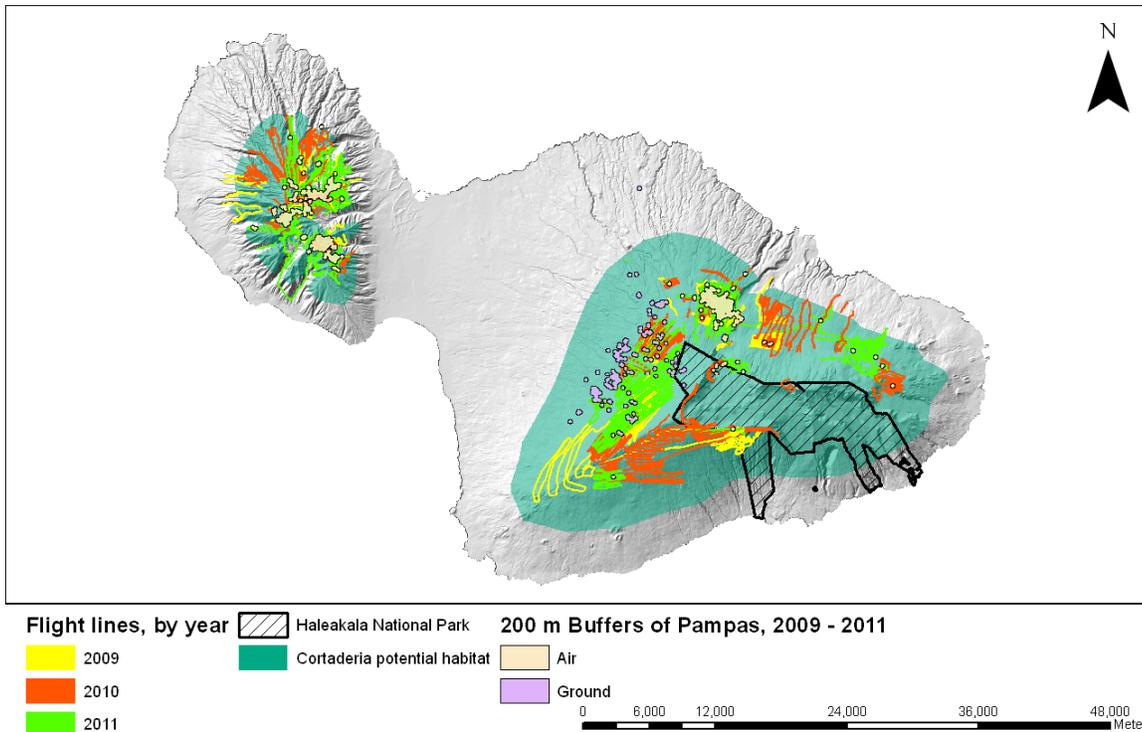
1. Start with treating needs TX points.
2. SprayCon. Look and spray at the same time. This opportunistic approach is used when heading to known plant points and works well with the dynamic weather of East and West Maui.
3. Recon the area derived from 200 meter buffer of plant points. These surveys should focus on outlier populations and the area remaining within the buffer not surveyed when treating needs treatment points or during SprayCon. A plant is considered an outlier if it is greater than one kilometer from any other plant.
4. Recon high probability locations (e.g., gulches, ridges and disturbed areas) starting near large populations and working out. These areas are not so much prioritized as access is dictated by weather and resource availability. Areas that are thoroughly surveyed on the ground do not need to be surveyed by air. However, areas that cannot be thoroughly surveyed on the ground (e.g., gaps in sweeps, steep walls, etc.) should be surveyed from the air.
5. All other likely habitat (e.g., wide open ranch spaces) that has not been surveyed should be.

Additional Metrics:

The following map shows the area we want to recon for pampas (i.e., high probability areas). It is derived by overlaying flight lines from the last three years on an ideal habitat layer. What has not been covered in the last three years is the total area we would like to recon. XXX acres of suitable habitat should be surveyed this year.

Additional Considerations for Aerial Work:

- All sites and survey areas should be swept once per year (typically April to October). Reconnaissance is done each year and is based on resource availability with the long term goal of surveying all high probability areas (e.g., gulches, ridges, areas of disturbance, etc.).
- Herbicide Ballistic Technology and the development of alternative methods for control would greatly behoove the project, particularly in West Maui.
- Spray operations and remote drops will occur on the same day when feasible as a cost saving measure.



- *Brooke: the green blob on this map is potential habitat for pampas - essentially everywhere above 2,000 feet elevation. We could optimize the map by adding rainfall and other parameters to have the map become ideal habitat rather than potential habitat. Teya: we might want to look at covering a third of the potential habitat each year.*
- *Adam: we did a heliops on West Maui yesterday with James to follow-up on what he did with HBT in Oct. Steph: we did HBT in the back of Waihee in October on two newly found populations. We treated one with HBT and one with the spray ball. When we went back yesterday, the spray ball area was all dead and in the HBT area the plants were mostly brown with some green material left. It may be taking longer because the treatment was done in the fall when the plants were less active. The HBT was imazapyr and the spray ball was glyphosate. The imazapyr takes time (at least 180 days) to act. We are at 200 days now. Yesterday we also went to areas that have not been accessible in the past and hit 140 plants with HBT. Brooke: it is important to note that our standard operation is to fly without the spray rig and then come back to treat any plants that are found. This doubles the helicopter hours. With HBT, as soon as you see the plant, you hit it. Steph: it is especially good with keiki. It is really hard to relocate them. HBT works well on steep cliffs that you can't get to with the ball. We also see fewer non-target effects. There is no drift. We can hit 60-70 plants per hour and it takes out the recon and then go back to spray overlap. Adam: glyphosate would be the ideal product. There is a problem with its formulation for HBT. James may try to do a mix of the two. This would require going through the permitting process again.*
- *Fern: you should see what time of year Google has done flights and use that as a way to get some information. Kim: it would be nice if we could get your list of recalcitrants so we know when we are out driving around. Josh F.: is there an outreach component in the plans? It would be good to highlight the outreach strategy for each species. Teya: yes it would be good to address species-specific issues in the plans. We have talked about doing one of these for each species.*
- *Teya: Would it be helpful to go through the plan for each species as a group like we did today? Forest: I would like to browse them at my own speed. It would be nice to have them in advance. Teya: maybe we will send out any we have done for review before the next meeting. We will focus on overall prioritization at the next meeting*

- *Fern: what is the target audience for these documents? Teya: I see the document as having different iterations including a template with more emphasis on the biology, background, etc. that doesn't need to be updated every year. Kim: for training staff it would be nice to have more site specific information. Forest: for the general template you should add a status of biocontrol section. It would also be good to have an unlimited resources scenario and a limited resources scenario. Brooke: you could address that without being too specific - reduce buffers, etc.*

UPDATES

Legislature

- Josh A.: most of the related bills are still really up in the air including the bag bill and the watershed initiative. There was a conference hearing this morning on the agriculture appropriation bill. They are reconvening on Monday. If HDOA gets the appropriation it asked for, the nine Kahului inspectors would be funded. The Emergency Environmental Workforce bill is still alive. There is a "nice" version where a council would be put together in an emergency and no funds would be raided. The original version, that raids funds, got moved to the watershed bill. There is a chance that the "Rain Follows the Forest" funding could be limited to infrastructure, like fencing, and not available for invasive species work.
- Josh F.: the Fish & Wildlife Service did approve the ISC funding at \$420,000 and there may be supplemental additional funds later. There is a request out for ISCs to refine their proposal. Teya: the ISC managers need to talk regarding how to allocate the funds between the different ISCs.

Funding

- Teya: we are still waiting for our FY12 County OED funding to move through the process. HISC funding is expected to be flat this next year. Josh A.: I have also heard that tax revenue is down and there may actually be less in the NARS fund. We should find out in about a month. Teya: flat is still a 60% reduction from before. The County budget process for FY13 is in process. I went to Hana on Monday night for a budget hearing. We are in the budget under OED for flat funding. DWS is a bit uncertain. Last year the watersheds and MISC got extra funding because the County didn't buy a fire truck. What went forward this year still includes those extra funds even though there isn't a truck they aren't buying this year.
- Teya: I had a call from Jay April at Akaku. They have put in a proposal to do some Smart Phone application developments - a way for people to report plants.

Outreach and Education

- Lissa: we are wrapping up the spring fair season with the Hana Taro Festival this Saturday. Our booths have been about LFA this round and we just had an LFA newsletter come out.
- Abe, Shannon, and Elizabeth will be filling in while Lissa is on maternity leave starting in late May.
- **Next Meeting:** June 22, 2012 10am-3pm: Priority Setting