

**MAUI INVASIVE SPECIES COMMITTEE**  
**Meeting Minutes**  
**Friday, December 9, 2011**

ATTENDANCE: Pat Bily, Bob Hobdy, Fern Duvall, Stuart Funke-d'Egnuff, Elizabeth Speith, Kim Starr, Forest Starr, Jeremy Gooding, Chuck Chimera, James Leary, Steve Anderson, Jasper Brown (Kihei Charter School), Brooke Mahnken, Teya Penniman, Lissa Fox Strohecker, Mike Ade, Elizabeth Anderson, Stephanie (Mapu) Kowalski, & Quigley

ATTENDING VIA TELECOM: Danielle Frohlich, Josh Fisher

- The meeting was called to order by Pat Bily (TNC/MISC Chair) at 9:07am
- Introductions were made around the table.
- Minutes from the 10/28/11 meeting were approved. They will be posted on the website.

ANNOUNCEMENTS

- Chuck: Carl Martin has been clearing out some inventory for Hoolawa Farms. We have planted as much as we can here in our garden. There is a bench next to the yurt with a bunch of native plants - they are up for grabs and are looking for good homes.
- James: the Hawaii Department of Health is still establishing the permitting process for aquatic pesticide applications where the pesticide will enter the water. Applicators will be required to submit a notice of intent and obtain a permit. The process is still under review. No aquatic application is being allowed until that process is in place. Teya: Mark Fox is trying to meet with DOH to push things along. Rob has asked whether we want to use coqui and citric as an example of why we need it pushed through. I am not convinced that it applies to coqui. James: there is a lot of gray area as to what constitutes an aquatic application. We don't apply directly to the water. Citric doesn't have any residual activity and it is a food grade item, but it is still a pesticide.
- Stuart: we received a grant for \$25,000 for a tractor for the coqui project. Teya: Adam took the lead in pulling together the proposal after determining that the coqui project could really use a tractor with associated implements. Adam researched sources and sent a proposal to Hawaii Community Foundation (HCF). HCF found a donor for us. We are very excited about that. We will be using some of the FWS funds too and have a proposal out to Atherton Foundation as well.
- Fern: everybody has probably heard the reports regarding the reptiles turned in on Oahu. There were five snakes and they were all over a meter long - two pythons and three boas. The boas are endangered on an island off South America. There were also two blue-tongued skinks and one other lizard. They were all turned in under the amnesty program. They were left in a carton at the Humane Society. While I was on Oahu, I got to see the Christmas tree shaking to detect hitchhikers. There was a live salamander found from Oregon. It is an endangered species.
- James: the fireweed program is in full swing. This is the last year being sponsored by the County. We can prescribe herbicide treatment for any ranchers that have a need. They can call James.
- Josh: the Packard Foundation added two years more funding for Lindsey for monitoring of predators at Kaena on Oahu, which now has a predator proof fence. Fern: there are 56 albatross nests already underway. She is marking them all.
- James: in January we are planning to have a journal club meeting on miconia. We have 10-15 current relevant articles on miconia. We will start with one article and look through it and have an open discussion and use the information for our own systems. We want to keep the sessions to 1.5 hour brown bag lunches with a lot of discussion. Teya: I'd also like to do something like this with the articles that are coming out questioning the work we do on invasive species.

- Fern: DLNR has lost rapid response funding for snakes. MISC is well set up to deal with snake reports. The other ISCs might want to do snake training and we could have field trials here. Not everyone can go to Guam. There is real interest in setting something up.

## SPECIES ASSESSMENTS

### **Background: Statewide Process**

- Teya: we certainly have our hands full with our existing targets. The Committee has agreed that we still want to do rapid response and early detection. Rachel from OISC got us some statewide funding for this and Elizabeth S. had some funds from the National Park Service (NPS). We've also had early detection funding from the Fish and Wildlife Service (FWS). We will start by talking about goals and objectives for the various funding sources and then run through a list of 77 species and decide which ones should have more work done.

### **Grant Objectives**

- Teya: the Forest Service grant for each ISC is for surveys at nurseries and botanical gardens and for some delimitation surveys. After that there is an assessment of which species are really the bad actors and then further delimitation surveys. Forest and Kim have completed nursery and botanical garden surveys and some delimitation surveys. They have combined this information with the list of species from the roadside surveys and then examined them based on Weed Risk Assessment and Global Compendium of Weeds information. Our deliverable for this is an assessment on 100 species. We need to add some from Molokai and Lanai for completion. We want to focus on which species we should do further assessments on and which should be priorities - weeds that pose the greatest risk to our watersheds.
- Elizabeth S.: for the past year a coworker and I have been working for the NPS Inventory & Monitoring program. We were hired to help with the early detection protocol that will be applied to all the parks. We are coming up with lists based on the ISC early detection process and hotspot and roadside survey data. This information will be taken to the parks. We want to see if the island-wide lists can help with the early detection process in the parks. The process is called a post-border assessment. In addition to the lists, we are creating a number of outreach products including field guides. We will be doing corridor and road surveys in all the parks. There has been discussion with all of the ISCs. Teya: there was a meeting in March with an objective of coming up with a unified statewide approach for assessment of species. The OISC early detection team had already taken the process pretty far and we took advantage of what they had done. We are all trying it out now. We need to look at the process, make sure it makes sense for us, and tweak it if we need to. This should be happening on all the islands and then we should get back together. Fern: will this tie into the Micronesian biosecurity plan? They are all working on security plans for their islands and they may want to integrate that into their process.
- Elizabeth S.: we want to report to all of the different parks and feed back into that with the experience of the ISCs. Josh: having read through some of the biosecurity material, it is a little more Guam-centric than it was supposed to be. Fern: this might be a vehicle for making it less Guam-centric. Elizabeth S.: we will have all this work completed in July. James: does troop deployment to Australia have any bearing? Fern: Australia itself is really aggressive with its biosecurity. It is a concern though. Elizabeth S.: Alex and Danielle did an assessment with this protocol for Oahu and Kauai and I went through the process with the BIISC early detection folks already. The prioritization protocol is a post-border assessment – i.e., a species is here and we may need to act on it. WRA is before something gets here.

### **Assessment Protocols**

- Elizabeth S.: step 1 is the initial assessment. The protocol looks at distribution across the islands based on surveys and then looks at existing data and information to decide if there is additional assessment needed. There is a list of questions in the initial assessment. You may come up with a species that can't be removed, but could be put on a "do not plant" list. Some species may require more information and others may need action. Any encountered species must go thru the WRA. This is the best guess as to whether the species will be invasive in Hawaii. In addition to the WRA, we want to look at invasiveness and practicality of control on a local scale. Practicality of control is based on the capacity of the group that is doing the assessment, number of landowners, etc. If there are too many landowners, they throw it out.

- Danielle: the problem we were running into initially, before Chuck and Patti, was that the score was not reflecting things we wanted to draw attention to. For example, there were a lot of plants that didn't have much background information. We knew things about a species because we had seen it in person. We wanted to draw attention to the things we knew about the different species. That factor comes into the "effect on system" score. Elizabeth S.: we based the effect on system score on work in New Zealand with a little modification. During the initial assessment, you broadly categorize the species and then you go through a more rigorous prioritization process where you add the WRA score plus the effect on system. You end up with a weediness group score. We had to tweak the score a little to get it to work for the Big Island. The weediness group is based on biology and then assessed for practicality of control and you end up with a priority ranking.
- Josh: so this is a management prioritization tool. Danielle: the effect on system score is a way to collect your thoughts about a species. It is a summary about the species. Elizabeth S.: Danielle is the author of the protocol. James: are the scores weighted or do we add all the scores together? Teya: we will get into that with the work Forest and Kim have done. Pat: I am wondering if the negative data from surveys could be included. How much value does the area you can't/don't survey have in the score? How do you not get ahead of yourself? Something could have been in cultivation for a lot of years. How does the negative data weigh in? Danielle: we have a good example on Oahu. There is a population of *Chromolaena odorata*, which is a bad weed. We thought it was a small population based on roadside surveys. We have done delimiting surveys now and have found that it has spread and formed a thick monoculture. It is becoming obvious that it is much more widespread than we thought. We need to be able to go back in to the practicality of control score. We are still very concerned about the species, but practicality has become an issue. Fortunately, all the land where it has been found so far is Army. So it is still high on our priority list. This is a tool for helping you think about the plant. James: it would be good to include some probability of detection factor - what is our level of confidence? Forest: we use 200 meter buffers in concentric circles out from the spot. Teya: it would be interesting to have a MISC meeting focused on survey techniques and the probability of detection. There is a lot of literature on the topic.
- Elizabeth S.: the BIISC surveys were different than the other ISCs. They came up with over 100 new detections. The plants on the list they started with were all too widespread. They ended up with almost 20 species that were in the A list – high priority, kill list. Teya: why do you think you had to adjust the scores for the Big Island? Danielle: the effect on system score should be able to be applied across islands. Here on Oahu we used Forest and Kim's list of Maui species to do our surveys. We found that their species of concern turned out to be an issue here as well. Elizabeth S.: we need to create a shared information source so everyone can see what each other said about the effect on system. The effect on system is somewhat qualitative. Danielle: you had to lower the range for each weediness group for BIISC. If you look at the action to be taken for each weediness group, even if it is in the C group for weediness, if a plant gets a 9 or 10, it is still a possibility for control. Elizabeth S.: they changed the numbers because they weren't getting high scores on anything.

### Species Review

- Forest: we have individual maps for all the species we did roadside surveys for. There are certain places we really want to protect - the watershed is a priority. MISC was created essentially to protect Haleakala National Park. We want to find things in the lag phase and eradicate or contain them if possible. The cycle we use is survey, assess, act, survey (in a circle). Nurseries are distribution centers that put the plants out there. Botanical gardens are a little different in general. We have driven all the roads on Maui twice. We took all the surveys and the data we had and tossed it into a weed list. With limited resources, how do we decide what is the highest priority? I found that you can skip the effect on system score and use an algorithm. Elizabeth S: on the existing targets how did you deal with distribution? The idea that the Hawaii Weed Risk Assessment (WRA) score can be used for ranking is an assumption - we really don't know if that is true. Forest: *Erica*, *Silybum*, and fountain grass came out as the highest priority for control of the few we did the analysis on. The HWRA scores can change over time based on information availability.

- Forest: of the 3,330 plant species encountered, 309 have a high risk based on HWRA and 84 of these are not widespread. Fern: how do you define widespread? Elizabeth S.: it is defined by the capacity of the agency. Forest: I used the criteria - could we control it in one year? We want to look at species that have a high risk for the watershed, the national park, and other high value natural areas. We want to select for large potential distribution and small current distribution.
- *Acacia auriculiformis* – Forest: this tree was planted experimentally at NIFTAL and Piiholo. Large biomass and potential seedbank were hurdles in the past. Elizabeth S: on Oahu it is spreading. Danielle: we have deemed it too widespread to control on Oahu. Fern: it is widespread on Guam. Mike: it can be controlled by mowing, but under the canopy there is a big seedbank. Fern: if you removed deer from this site you would see a different response. Pat: what is vectoring it? Do the pods flow on the wind or it is a localized spread? Danielle: the population on H3 was planted and is spreading along the highway. Rats or mowers may be contributing to the spread. Teya: after we have our visioning meeting for the property, it might be a good time to take it on. Forest: the Olowalu one is gone and the West Maui one is eradicated. The remaining trees are highly accessible.
- *Acacia mangium* – Forest: I would guess this one has a 50 year seedbank, which factors into the practicality of control. Any *Acacia* you will have a long seed life. Kim: biomass and seedbank are limiting factors on this one. James: *Acacia* can harbor disease that could go to koa (i.e. koa wilt). Fern: I think they may be using this one for shade at the bamboo farm in Kipahulu. It may be fire stimulated. It is wetter where it is found on Guam.
- *Acacia podalyriifolia* – Mike: the Iao Valley one is dead. The Waipoli one is complicated. The landowner won't let us control the adult, but we can pull keiki. The adult is producing seedlings. Forest: the one at Bob's died from old age and I haven't seen any seedlings. We saw keiki in another spot. Teya: should this be considered for more surveys? Forest: it is not moving fast, but it has a history of invasiveness.
- *Acacia retinodes* – Mike: this is found on one property and the person gives permission for control. The seedbank continues to pop up. Kim: this one has more seedlings than some of the others. It was considered eradicated, but no acacia has ever been eradicated according to the Australia folks. The seedbank is continuing to sprout. None of the acacias are adjacent to natural areas. Pat: I would rule out considering it as a disease vector because of the large number of other acacia already on the island.
- *Adenantha pavonina* – Forest: this is a giant tree. It is invasive in Samoa and reproducing in Nahiku where there are keiki coming up. We are not seeing real spread, but it has a history of invasiveness elsewhere. It is found at 15 locations on Maui. It is a beautiful landscaping tree. We haven't seen it in nurseries. It is a lei material. Danielle: we have a ton on Oahu because it is a lei species.
- *Arctotheca calendula* – Forest: this species is found in the Enchanting Floral Gardens of Kula. It ranks really high in the Global Compendium of Weeds. There is a sterile and non-sterile form. When we did the road surveys upcountry, it was all over – it is too far gone. Elizabeth S.: it spreads along roadsides but will jump into gulches.
- *Arundo donax* – Forest: this plant is super invasive in California. There is quite a bit in gulches where we can't kill it. Mike: we still do control on a few coastal sites. We aren't trying to control it in upcountry gulches. At Hookipa the Surfer's Society controlled it, in Spreckelsville there is one plant that keeps coming back, and the one at Kahului Harbor moves around. Teya: there is a biocontrol in the works for arundo. Mike: we are using Aquamaster. James: there may be some better control methods.
- *Agonis flexuosa* – Forest: this is found in the Kula Botanical Garden. It is high risk. The garden is pretty cooperative. We haven't seen any reproduction. It is a giant specimen tree. We could add it to road surveys and learn more about the biology.

- *Anigozanthos flavidus* – Forest: we never see it producing seeds. It is widespread in cultivation. Pat: they spread in the 1980s and 90s quite a bit.
- *Banksia spinulosa* – Forest: this one is at the Kula Experiment Station. CTAHR has given us a list of plants they have trialed, which was included in this analysis, and resulted in species like *B. spinulosa* being flagged as potentially invasive.
- *Caesalpinia decapetala* – Mike: someone just called from Haiku and has more. It is probably being spread by heavy machinery. Teya: MoMISC works on this species. Pat: it is super persistent because it is a legume. It spreads vegetatively and does layer. Teya: it would be interesting to know what the full extent in the Kapipi area is. The Cattleman's Association has asked about it. Fern: it seems we have incomplete knowledge. It is potentially very widespread in Guam.
- *Calotropis spp.* – Elizabeth S.: this is a West Hawaii target. Forest: it does well in low hot areas. It is naturalizing on Kahoolawe. The seeds are wind dispersed. It is too widespread. Danielle: there is a variable with species like this that are popular lei plans. We have a check box for cultural significant species and so we just dismissed it.
- *Centranthus ruber* – Pat: the plant is wimpy; I don't see it out-competing the surrounding species that aren't even weedy.
- *Cestrum elegans* – Forest: a high risk. The landowner will control it.
- *Cinchona pubescens* – Forest: this is a forestry tree. This species has a huge biomass and papery seeds. Pat I first came across it in Makawao Forest Reserve. I have never seen it spread. I don't think it does that well with canopy. Teya: there may be an Ulumalu location.
- *Cinnamomum verum* – Forest: this one has bird dispersed fruits. Fern: this is a hard plant to kill. I planted it in my yard and it took me six years to kill it. Forest: there is a plant at Kula San and probably in other places. We need to look at it more.
- *Cissus nodosa* – Forest: this is in a botanical garden and found in Lahaina and likely elsewhere. It has bird dispersed fruit. Elizabeth S.: it is on the KISC list.
- *Cissus rotundifolia* – Elizabeth S.: this one is on the BIISC list. Pat: it is cultivated. Fern: what about the *Opuntia fulgida* that is on Lanai?
- *Clerodendrum quadriloculare* – Forest: we know this is on the side of the road in Wailua. People think it is miconia. Mike: it is naturalizing in Lahaina. Fern: it is also in gulches in Piipholo.
- *Cnidioscolus aconitifolius* – Forest: this plant has been widely planted as a vegetable.
- *Coccinia grandis* – Forest: a legacy species.
- *Coprosma repens* – Pat: I used to grow it from cuttings.
- *Crassula multicava* – Forest: the threat is low.
- *Cryptostegia grandiflora* – Forest: it was in a lot of places historically. Mike: we have killed most of them. Teya: it would be good to do further surveys in the old areas.
- *Cupaniopsis anacardioides* – Forest: this has been planted. It is spreading at MCC. It is really outrageous in Florida. It is probably more widespread than we realize.

- *Delairea odorata* – Pat: I have a new GPS point for you on this. I found it while doing a ginger sweep and it wasn't on the trail. There are naturalized areas in Kula. Forest: I want to do this one on Lanai. Pat: this is a suggested one for biocontrol. It is too widespread. Fern: I think it is in Olowalu Valley.
- *Dalbergia sissoo* – Forest: there is one plant in Kahanu Gardens. It has a high risk score and should be assessed further. It is a noxious weed in Australia.
- *Elaeis guineensis* – Chuck: it is a biofuel plant and is at Maui Tropical Plantation. It should be investigated.
- *Erica lusitanica* – Forest: it is on Haleakala Ranch. The MISC crew found another site. I think this is a threat to the National Park and the pukiawe shrubland. We have done buffer surveys around all the known points. We need to do a detailed assessment on it. Steve: I imagine there is more of it. Fern: it is hard to tell it from pukiawe.
- *Euphorbia tirucalli* – Forest: widespread and planted all over.
- *Ficus religiosa* – Forest: bo tree is starting to spread sexually due to a new wasp. Teya: they are controlling it on Molokai. Forest: we probably don't want to go for it. It is culturally significant.
- *Flueggea virosa* – Forest: this is a famine food. It is thick where it is and spreading locally. We need to do delimiting surveys.
- *Hakea salicifolia* – Pat: this one may be on Waipoli Road.
- *Homolanthus populifolius* – Forest: it is spreading in Maliko Gulch. Fern: we should alert the coqui crew and ask them to pay attention and see what the distribution is.
- *Hypericum canariense* – Forest: it is too widespread. Pat: it is responsive to basal bark treatment. I am surprised it hasn't spread further.
- *Hypericum perforatum* – Forest: this is a noxious weed. We found it at Lowe's being sold from the Pukalani Plant Company. Bob Yonahara talked to them and they stopped selling it. Kula Hardware had seed packets and they were pulled. This species should be on a "do not plant list".
- Teya: since we are out of time, we should consider how to complete the rest of the list. Fern: it would be helpful if Forest & Kim could write up a little blurb for each species summarizing what is known and put that out to the Committee for added information. Teya: the summary could have a column that says "further assess, yes or no" and provide links to the maps. Elizabeth S.: I would like to facilitate this same thing for Molokai. Teya: you can work with Lori and Forest and Kim on that. Forest: we need local knowledge on Molokai. Teya: the big question will be – once we end up with a list, what do we do with it?

**Meeting Dates: 2012**

- February 17, 9am-12pm, Public Relations, input on what we should cover in Maui news topics, looking at our blog, etc.
- April 20, 10am-3pm, Benchmarks, best measures for the work we are doing, we will present proposed benchmarks for Committee input.
- June 22, 10am-3pm, Priority Setting, looking at our targets and resources.
- Sept 14, 9am-12pm, Vertebrates
- Dec 7, 9am-12pm, open for other topics, maybe survey techniques and other methods.