Opening Remarks Presented to the Western Forest and Conservation Nursery Association Conference

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Aloha Kakahiaka, Buenos Dias, Guten Morgen or however you may say good morning. It's so wonderful to see so many of you, especially those that have traveled from foreign countries to be here to learn and share your experiences in the nursery area. On behalf of Mike Buck, Division of Forestry and Wildlife (DOFAW) Administrator, welcome to the Western Forest and Conservation Nursery Association meeting here in Kailua-Kona, Hawaii. My name is Carl Masaki, and I'm the forestry program manager for the Division of Forestry and Wildlife, Department of Land and Natural Resources, State of Hawaii. We thank you for coming to Hawaii to share your knowledge on nursery operations with us. Please enjoy the local culture. Today starts the formal part of the meeting, and I'm really impressed with the agenda the program committee has prepared for us. We have local, national, and international presenters. An additional conference benefit that I find extremely important is the networking with other participants. Take advantage of this opportunity to meet others and share information during the meeting as well as for future reference. Exchange business cards, phone numbers, and e-mail addresses.

The Kamuela Nursery

I have been asked to give an overview of the nursery priorities of the Hawaii DOFAW. Three areas will be covered: 1) nursery operations; 2) threatened and endangered species; and 3) noxious weeds. Let me start by giving you some background information on the Kamuela Central Tree Nursery facility. The Kamuela Nursery was established in 1962 to support the development of a commercial forest industry in Hawaii as well as provide an inexpensive source of windbreak seedlings for the agricultural community. Currently, tree seedlings are produced for DOFAW and public use. In the past, DOFAW use included economic development (trees for timber, chips, and so on), watershed and wildlife enhancement, soil protection, threatened and endangered species propagation, Arbor Day, and game habitat management. Public use included economic development (trees for timber, Christmas trees, chips, resale, and so on), windbreaks, and other similar uses as DOFAW.

During the earlier years, bareroot and bag/can stock was the normal method of producing trees. Around 1977, a system using containerized stock or dibble tubes was implemented to produce seedlings. This change was necessitated by the high mortality rate of bareroot stock as well as the very labor-intensive method of producing seedlings. If a landowner could not plant his seedlings due to the lack of rain, manpower, and so on, he would have had to heel his seedlings in. If the drought continued, his plants would eventually die. Dibble seedlings, being portable, had a much better chance of survival. Production

level for the past several years has been around 250,000 to 300,000 seedlings annually.

Various factors make Kamuela less than ideal for seedling production for the following reasons: 1) Strong winds and cool to cold temperatures; 2) lack of space to expand facilities; 3) lack of convenient air transportation service as compared to Hilo and Keahole airports; and 4) high rainfall. However, the site was selected due to the available land and its proximity to the Kamuela airport.

A reduction in force in 1995 caused the worker level to drop from eight to five people. The operating budget was also reduced and has been going down annually ever since.

When sufficient workers and operating funds are available, the Kamuela Nursery has the space and capacity to annually produce 1.44 million seedlings using its current greenhouse and infrastructure. If the seedlings are not germinated by watering (seeds are only placed in the dibble tubes) at the nursery, but expected to be grown at another nursery facility, annual production can go as high as 5 million seedlings. This would require an investment of material and supplies, which would be reused, at a cost of over $373,000 and the additional hiring of three general laborers and a clerk-typist.

Various threatened and endangered as well as common native species are grown for outplanting and public distribution.

In addition to the nursery at Kamuela, smaller district nurseries exist on all islands. Future direction for the Kamuela and district nurseries will be based on the following objectives:

- Optimize the public investments already made in nursery infrastructure,
- Continued development of the commercial forest industry,
- Support the State's needs for reforestation and restoration on its own lands,
- Encourage landscaping with native plants (Act 73),
- Maintain appropriate constituencies not served by the private sector, and
- Become more financially self-sufficient.

With the recent development of forest tree plantations along the Hamakua coast, and the establishment of private nurseries to produce seedlings for these plantations, the Kamuela Nursery will not process orders for more than 25,000 seedlings for any one entity per calendar year unless there is specific written notification that the existing private nurseries cannot or will not fill the order for trees. Due to its sophisticated equipment, the Kamuela Nursery offers a "sow and go" operation if requested. Here the seeds are sown in dibble tubes and the buyer picks up the trays and germinates the seeds at his nursery. We encourage this method for large orders as it takes up less personnel time and nursery space.

Threatened and Endangered Plant and Animal Species

Hawaii, often referred to as the endangered capital of the world, has 292 threatened and endangered (T&E) plants and 81 T&E animals (40 vertebrates and 41 invertebrates) for a total of 373 species. Even our State flower, the yellow hibiscus, is an endangered species (*Hibiscus brackenredgei*). Our former botanist told me that it would cost approximately a million dollars or more to work with each species. This calculates to $373 million; our total division budget is a little over $12 million for four program areas. These wildlife species are officially listed on the Federal Register and six are being proposed with an additional 121 candidate species just around the corner. Now what does all of this mean to us? A listed T&E species must be protected, including its habitat, and efforts taken to increase its numbers in hopes of delisting it. The dilemma we face here is the sheer number of T&E species and the lack of funding to protect its habitat, let alone trying to increase its numbers in the wild. To increase the number of T&E species, DOFAW amended its endangered plant rules and can now sell T&E species to the public as long as strict requirements are followed. A few of the T&E species, as well as other natives, are very attractive and could hopefully be grown in a residential environment. More research is needed to determine how best to care for these plants. The following are just a few of these species:

- Hawaiian violet
- Lobelia
- Trematalobilia
- Silversword
- Iliau

Act 73, signed into law in 1992, mandates the use of indigenous plants for public landscaping

wherever and whenever feasible. Appropriate signage would accompany these plants for public information purposes. Other safeguards will be taken to protect the native plants in the wild. So far, Act 73 has not been implemented because the agency in charge of this law, the Department of Accounting and General Services, has yet to draft rules to carry out the purposes of this law. When I inquired as to the status of these rules this year, I was told that they are still working on it and will contact us for input. Due to DOFAWs ability to use proceeds from the sales of seedlings from its nurseries, our division could produce additional revenues for its operations. The use of native plants in the landscape makes all the sense in the world because, at one time, these plants were the only ones growing from the ocean to the mountains.

Introduction of Exotic, Invasive Species

Another concern of DOFAW is the introduction by private nurseries of exotic plants that could escape cultivation and become weedy. Many introduced plants have become noxious weeds by: 1) displacing native plants; 2) competing with vegetable crops and fruit trees for water, nutrients, and space; 3) invading yards, gardens, pasture, and so on; 4) killing native trees; 5) acting as carrier for wildland fires; and 6) hybridizing with native plants. It's amazing what people will smuggle into Hawaii—snakes, birds, lizards of all shapes and color, and piranhas and other noxious fish, to name a few. When people do not want their pets anymore, they often let them loose in the forest or streams. When people first moved to Hawaii from the continental United States or from foreign countries, they wanted to have ornamental plants from their previous home in their yards. This is how the majority of noxious plants arrived in Hawaii. Although quarantine regulations are stricter today, plants are still being introduced to Hawaii. Of all of the noxious plants in Hawaii today, the greatest threat is *Miconia calvescens*, commonly called miconia, which is a fast growing tree from South America that was introduced into Hawaii in 1959. It has large, dark-green oval-shaped leaves with a purple underside and can measure up to 3 feet long. The tree, which can reach a height of 50 feet, shades out other plants and thus increases the chance for erosion on slopes. A single plant produces thousands of tiny seeds that spread quickly. Miconia, often referred to as a green cancer, has already destroyed 70% of the forest growth on Tahiti. It is currently found on the islands of Hawaii, Maui, Oahu, and Kauai. Until people learned of the destructive nature of miconia, it was sold in garden shops here. There was an incident in the Kona area where a homeowner refused to destroy the miconia growing in his yard until the State Department of Agriculture officials threatened to take legal action against him. Other noxious weeds include: banana poka (*Passiflora mollissima*), a climbing vine from Andean highlands of South America that "strangles" trees in the forest. Dispersal of this attractive ornamental is primarily by humans and by birds and feral pigs that eat the fruit. The fruit, used commercially in South America as a drink, is found on all of the major islands as well as Molokai. Koster's curse (*Clidemia hirta*), native to the neotropics, aggressively takes over the native forest by overtopping and shading out plants. It grows in dense monotypic stands. Dispersal of this plant is primarily by birds and feral pigs that eat the fruit and by humans who carry the seeds embedded in mud on their boots. Vehicles that are not sanitized can also carry the seeds to other locations. Plants are found in mesic and wet environments from 30- to 5,000-foot (10- to 1,500-meter) elevations. First reported in 1941, *Clidemia* is now found on all of the populated Hawaiian islands.

Quarantines

State Department of Agriculture regulations state, in Chapter 70, "Plant and Non-Domestic Animal Quarantine of the Hawaii Revised Statutes," that plants requiring quarantine shall be delivered to the inspector at the port of entry when brought in as cargo, baggage, or hand carried. Plants imported by the United States Postal Service or other commercial delivery service shall be addressed to the plant quarantine office on the island on which the plants shall be held in quarantine. Everyone who arrives in Hawaii by air or water must also complete a quarantine form. All of you who came here from the mainland or a foreign country, hopefully, filled out a form that asks whether you are carrying any plants, seeds, or animals. Last month upon returning from a vacation to Colorado and California, I also was required to fill out this form. From my personal experience, it does not seem that much emphasis

is placed on having the passengers fill out this form and the flight attendants do not seem to take their role in ensuring passengers fill out the form seriously. No attempt is made to have every passenger or family fill out the form. Forms are collected only from those who hand them to the flight attendants.

I have discussed the issues with the Division of Plant Industry of the Department of Agriculture, the State agency that is responsible for preventing unwanted pests from entering the State. They feel that their hands are tied due to the current laws. When I asked what they would change if they could, here is a list they gave me:

1. Change the privacy law so officials can inspect first class mail. Currently, anyone can mail almost anything as first class mail, and officials cannot open the package.
2. Hire more inspectors who can identify plants and plant seeds. Currently, the agency is understaffed and has few qualified inspectors.
3. Regulate the importation of flower seeds. Currently, anyone can import a small amount of flower seeds as long as the plants are not on the noxious weed seed list.
4. Review the criteria for determining the designation of noxious weeds for eradication or control projects by the State. Currently, some noxious plants do not meet the criteria for being designated as noxious plants due the way the law is written.
5. Institute emergency measures that can circumvent the public input and environmental assessment process, which is so time consuming, when a noxious plant in found. Currently, when an agency wants to change their rules, public hearings are required. In addition, when a noxious weed is discovered, eradication cannot take place until after the environmental assessment process is completed.
6. Reprint the quarantine form in several languages so that visitors can understand it.

Summary

This morning I presented our Division of Forestry and Wildlife's nursery priorities involving nursery operations, threatened and endangered species, and noxious weeds. As in most places, fiscal constraints make nursery operations a challenge. Conferences such as the one for which these welcoming remarks were written give us an opportunity to discuss our problems with other nursery personnel who can help provide solutions. Threatened and endangered species will always be a challenge with us, and we need to find innovative methods for their protection and enhancement. Noxious weeds will always be a challenge for us, and we need to work with other agencies and organizations to plan for the control of these weeds as well as limit the introduction of new species. We need to work with nurseries to determine which species could be a potential weed species before it is brought in. The saying "an ounce of prevention is worth a pound of cure" is so true in this case.