

## **NEW ZEALAND/HAWAII CONSERVATION EXCHANGE JULY 1997**

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### **RATIONALE**

Hawaii and New Zealand both being extremely isolated island systems, have evolved along essentially similar lines. Their ecosystems are characterised by a depauperate flora and fauna, a high degree of endemism, and an absence of browsing mammals. As such, they are extremely susceptible to anthropogenic modification, having little or no defences against alien plants and animals associated with human arrival and settlement. Lowland wetland ecosystems in particular have been targeted for extensive modification by both Polynesians and, more recently, by Europeans, as these produced fertile agricultural land for growing crops and raising animals. The wetlands that now remain continue to be threatened by ongoing drainage, fragmentation, and invasion by introduced biota, resulting in loss of biodiversity values and services that benefit mankind. Recognising the need for a coordinated strategy on protection, management and restoration of wetlands, conservation agencies in both New Zealand and Hawaii are currently in the process of developing appropriate frameworks. A wetland forum at the Hawaii Conservation Conference was initiated to bring together wetland researchers, land owners and land managers to raise awareness of the research and strategies required for long term conservation of Hawaiian lowland wetlands.

### **AIMS**

The main aims of the trips were to:

- participate in a forum on protection and restoration of lowland wetlands at the Hawaii Conservation Conference in Maui.
- exchange information with wetland researchers and managers on strategies for restoration of wetland ecosystems.
- visit and learn about Hawaiian wetlands analogous to New Zealand wetlands.

### **TRAVEL DIARY**

#### **Monday 21 July**

Arrived in Honolulu on the island of Oahu at 3:20 am from Auckland, New Zealand

#### **Tuesday 22 July**

I met with Katherine Ewel, USDA Forest Service, Honolulu, my sponsor for the New Zealand/Hawaii Conservation Exchange Programme. I was taken to Kathy's workplace in downtown Honolulu to meet other members of her team, in particular Dr Jim Allen and Dr Judy Drexler, who were also involved in wetland research.

#### **Wednesday 23 July**

Travelled to Maui then on to Wailea, where the conference was being held.

## **Thursday 24 July**

### Hawaii Conservation Conference

The first day of the conference concentrated on a showcase of conservation efforts on the island of Maui. It covered protection, management and restoration of a variety of ecosystems, and highlighted the many problems involved with controlling invasive alien plants and animals such as *Miconia* and Argentine Ant. The penultimate session covered the role of fire in conservation of the Hawaiian biota, and this was followed by poster presentations in the early evening. More than 30 posters were displayed, covering the following five categories: Resource management tools & resources, Native species, Non-native species, Ecosystems, and Conservation programs on Maui. Two wetland posters were included. One was on the restoration of Kanaha Pond Wildlife Sanctuary, Maui, which was focussed on recovery of two endangered birds; the Hawaiian stilt and the Hawaiian coot, and the other was on eradication of mangroves (introduced) from a Marine Corps Base site on the island of Oahu.

## **Friday 25 July**

### Hawaiian Conservation Conference continued

The second day of the conference included sessions on biodiversity conservation issues, bird recovery problems and programmes, and concurrent panels on four distinct conservation issues. The concurrent panels were; Protection and restoration of lowland wetlands, Kahoolawe restoration plan, Rare plant reintroduction, and Strategic goals of environmental activists. I was involved in the wetlands panel.

Concurrent Panel: Protection and Restoration of Lowland Wetlands 10-12 am 25 July 1997  
Moderator: Jim Allen

This was in the format of a 10 minute presentation by five panellists, followed by a one-hour discussion on restoration strategies and research needs for effective management of Hawaii's lowland wetlands. The panellists and their presentations were:

Mike Lee, Army Corps of Engineers: Status of Hawaiian coastal wetlands.

Dave Smith, Hawaii Division of Forestry and Wildlife: State of Hawaii efforts to restore endangered Hawaiian waterbird species on Oahu.

Rodney Haraguchi, Kauai Taro Farmers Association: A farmer's perspective on taro farming with endangered water birds.

Andy Engilis, Ducks Unlimited Inc.: Ohiapilo, Molokai: an example in coastal, seasonal wetland restoration.

Diane Drigot, US Marine Corps Base Hawaii, Environmental Department: Mangrove management: sustainable success through linkages to cultural systems.

Beverley Clarkson, Landcare Research, New Zealand: Strategies used to identify and protect lowland wetlands in New Zealand.

Mike Lee set the scene by outlining some of the problems encountered in Hawaiian coastal wetland conservation. It centred on the lack of understanding of wetland ecosystems, of wetland definition and of the impacts of human settlement. He highlighted the need for more

research in these systems and outlined opportunities for better management in existing individual coastal wetlands.

Dave Smith, Rodney Haraguchi and Andy Engilis outlined case studies on Oahu, Kauai and Molokai for restoring endangered water bird habitat, and Diane Drigot outlined the intensive and expensive efforts needed to eradicate mangroves from a wetland on Kaneohe Marine Corps Base, on Oahu. These cases highlighted the need for developing linkages (cultural, environmental, existing land use, etc), and the need for adequate background information, for successful restoration and long term management of the sites.

My talk was based on the New Zealand Protected Natural Areas Programme, which is an ecosystem-based framework for identifying significant wetland ecosystems and for determining protection priorities. My emphasis was on the more threatened lowland wetlands, and I outlined a couple of examples of restoration of New Zealand wetlands analogous to those in Hawaii. I demonstrated that an inventory of wetland ecosystem types compiled on a GIS database can be compared with the original wetland extent (compiled from soil maps, pollen records, old reports, etc) to assess representativeness of the current reserves network. This identifies priorities for protection and, in areas where the resource is heavily depleted, priorities for restoration.

The session was well moderated by Jim Allen, and succeeded in bringing together key people and organisations to find out where we were at with wetland protection and restoration in Hawaii, and where we need to go from here.

### **Saturday 26 July**

Puu Kukui Boardwalk Field Trip

Sponsored by Maui Pineapple Company

Hosts: Randy Bartlett, Scott Meidell and Hank Oppenheimer

Puu Kukui summit rises to 5788 feet in the West Maui mountains and together with its extensive catchment, and is owned and managed by the Maui Pineapple Company. It is one of the biologically richest areas in the state of Hawaii and includes pristine bog and cloud forest, with many endemic plants and animals. We were helicoptered into near the top of the boardwalk so we could hike the seven or so miles down to a pickup point on the lower flanks of the mountain range. Randy, Scott, and Hank, who are responsible for managing the area, were our guides and we were all extremely impressed in their knowledge of the biota, and their commitment to eradicating alien pests. The catchment is in excellent condition as pigs have been virtually eliminated, and intensive control of rats and mongoose is ongoing. The highlight for me was the bog system on the upper flanks. This comprised mosaics of low growing ohia (*Metrosideros*), *Oreobolus*, carices, grasses, herbs and ferns. Some of the genera were familiar to me as they also occur in New Zealand (*Machaerina*, *Metrosideros*, *Oreobolus*, *Asplenium*) but others, including the spectacular tropical shrubs and herbs (*Argyroxiphion*, *Trematolobelia*, *Dubautia*) were not.

### **Sunday 27 July**

Travelled back to Honolulu.

I was unable to attend a barbecue hosted by Nancy Glover, Secretariat for Conservation Biology, due to a recurring bout of a persistent 'flu viral infection.

## Monday 28 July

This was a day in the field with Kathy Ewel, Jim Allen and Judy Drexler, all of USDA Forest Service, Hawaii, mainly to visit a montane bog on Mt Kaala, but also to inspect a mangrove site on windward Oahu where Jim had just initiated some research. We met Betsy Gagne and Randy Kennedy from the Department of Land and Natural Resources, Division of Forestry and Wildlife at Wailua High School, and Randy drove us to the summit of Mt Kaala. At 4017 feet asl this is the highest point on Oahu and the special climatic conditions caused by persistent cloud, fog, wind and rain have resulted in stunted plant growth. The Kaala Bog Trail consists of a boardwalk of nearly one mile, which minimizes trampling impacts on a fragile ecosystem that has many endemic and threatened plant species. With introduced animals (particularly pigs) now under control thanks to the efforts of Randy and his team, the major management issue now is the invasion of *Sphagnum*. According to Betsy, this species was introduced from another Hawaiian island some 30 years ago and has now spread in a narrow swathe up to six feet wide, along virtually the whole length of the boardwalk. Luckily it does not produce capsules, so its spread is entirely vegetative and linked to the access route through the bog. Some quick pH measurements by Judy revealed that the pH of the substrate of non-*Sphagnum* areas was about 4-5, but under *Sphagnum*, it was considerably lower. *Sphagnum* has the potential to change the Kaala bog ecosystem because it can out compete the 'native' species by its dense growth habit and can form raised bogs with low species diversity. Bog restoration studies usually involve trying to re-establish *Sphagnum*, not remove it so I was subsequently unable to find any literature on this topic. However, because the *Sphagnum* is still very limited in extent, and because attempts at control by spraying were unsuccessful, a concerted hand eradication programme is still feasible, with regular follow-ups to ensure removal of fragments/populations that were missed.

The visit to Jim's mangrove site on windward Oahu revealed what a problem these aggressive plants are. The two introduced species that dominate here are *Rhizophora* and *Bruguiera* and they are damaging ancient walls of a Hawaiian fish pond at the site. There had been some minor logging attempts to remove the trees but as the wood is not seen as a valuable commodity by the locals, this has languished.

## Tuesday 29 July

Returned to Auckland

## SUMMARY

The Hawaiian Conservation Conference involved more than 350 people from a wide range of interests, including researchers, land owners and managers, native Hawaiians, and the general public. It was extremely well organised, enjoyable and thought-provoking.

There are many apparently daunting challenges to face when dealing with conservation issues in Hawaii. A lot of these are also common to New Zealand, eg, aggressive alien plants and animals, conflicts between recreational hunters and conservation, and conflicts between existing land uses and conservation. Continued

liaison between New Zealand and Hawaii will help in developing the most effective strategies for dealing with particular issues.

Despite the challenges there have been many impressive successes, and these will breed further successes.

I was especially impressed with the consultation and integration of native Hawaiian cultural values throughout all stages of individual projects, and of the extensive input by voluntary groups.

The role of the Maui Pineapple Company, as a private provider of management of land for protection of biodiversity values, is a model for similar possibilities in New Zealand. Some of our larger companies (e.g., forestry companies) could be responsible for funding conservation on their own lands without reliance on government organisations.

The wetlands forum was a good starting point to find out where we are at with protection and restoration of lowland wetlands in Hawaii. Subsequent to the conference, a second forum to summarise the research needs and restoration priorities is in the process of being organised (Jim Allen, pers. comm.). Issues that will have to be addressed include:

- (i) setting up a small coordinating group to liaise with all major players
- (ii) development of a strategy for assessing priorities (ecosystem/species based?)
- (iii) education, raising public awareness of wetlands and their values
- (iv) funding - basic research versus individual projects (who pays?)
- (v) further workshops to develop issues and continued collaboration with other wetland groups, such as at Landcare Research.

## **ACKNOWLEDGEMENTS**

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