Lānaʻi Conservation Internship Program, 2005
Program Outline

- The Lānaʻi Conservation Internship Program took place over a five week period, from the 13th June, 2005 to 13th July, 2005.
- The second week of the program occurred at the Bishop Museum, Honolulu. All other activities occurred on Lānaʻi , based at the Lānaʻi High and Elementary School.
- Activities began daily at 8:00am and finished at 2:00pm, with a one hour luch break.

Week 1: Lānaʻi

Staff: Shelley James, Clyde Imada, Barbara Kennedy, Laura Crago

Monday 13th June, 2005

Introduction activity

- Staff and student introductions.
- Outline of expectations.
- Outline of program.

Formation, geology, and climate

- Brief introductory Powerpoint.
- Hands-on activity demonstrating concepts related to Lānaʻi .

Plants and the watershed

- Review of watershed concept.
- Video presentation.
- Playacting activity.

Germination and glasshouse activity

- Brief Powerpoint of propagation techniques.
- Understanding of requirements for native seed germination.
- Preparation of native seed for propagation (nicking seed, heat treatment, soaking overnight).
- Keeping records of experimental protocol.

Tuesday 14th June, 2005

Speciation

- Brief Powerpoint presentation outlining concepts.
- Activity to be determined.

Plant morphology

- Brief Powerpoint presentation outlining concepts.
- Developing vocabulary associated with plants; use of handlenses; drawing of plant parts; dissection of plants.

Plant communities

- Where plants grow and the physiological and morphological adaptations that allow plants to grow where they do.
- Activity utilizing herbarium specimens; develop skills of observation.

Shadehouse activities

- Preparation of potting media and sowing of seed.
- Preparing and planting cuttings.
- Air-layering as a technique for hard to propagate plants.

Wednesday 15th June, 2005

Animal and plant interactions

- Picture show of Hawaiian plant and animal interactions.
- Discussion of the importance of these interactions to the ecosystem, and the effects of extinction.

Invasive species

- Brief Powerpoint outlining concepts and terminology.
- Invasive species game show.

Science garden planning

- Begin planning of Science Garden.
- Develop map for garden preparation and outplanting in final week of program.

Basic soil science

- Learning how to do field determinations of soil texture and pH.
- Activity testing different soil types found in the Hawaiian Islands.
- Develop an understanding of the impacts of soil on community structure.

Week 2: Bishop Museum, Oahu
Staff: Shelley James, Clyde Imada, Barbara Kennedy, Napua Harbottle, Laura Crago, Heidi Lennstrom (Monday), Jack Fisher (Wednesday), Maya LeGrande (Friday)

Monday 20th June, 2005
Arrive at Honolulu Airport at 8:00 am

9:00 am-9:30 am Museum orientation
- Tour of campus; receive name tags, fill in missing forms etc.

9:30 am – 11:00 am Behind the Scenes Natural Sciences Collections Tours
- Touring the Ichthyology, Vertebrate Zoology and Entomology collections.
  - Entomology and Vertebrate Zoology 9:30 - 10:30 am (2 groups, rotating)
  - Ichthyology 10:30 – 11:00 am

12:00 -2:00 pm Rotation between two activities:

Seedsploration (Paki 1)
- Activity in which students identify the seeds found in cores drilled into Kawai Nui Marsh, and how this can show changes in the environment and biota of an area.

DNA activity (DNA lab)
- Tour of the Pacific Center for Molecular Biodiversity.
- Develop an understanding of what DNA is, and how molecular research can assist in conservation practices.

Tuesday 21st June, 2005
8:00 am Leave Kam School
8:30-1:30 pm Visiting Kawai Nui Marsh
- Tour of a wetland habitat.
- Assist in the clearing and outplanting at Nā Pōhaku O Hau Wahine, an active restoration site.

2:00 pm Back at Kam School

Wednesday 22nd June, 2005
8:00 am Leave Kam School
8:30 – 10:30 Marine excursion
- Reef walk: observing and identifying marine plants and animals.
- Collections of specimens to be used in the new Bishop Museum Science Adventure Center displays.
- Develop an understanding of the *ahupua'a* system, and the impacts of land activities on the ocean and reef systems.

11:00 -12:00 pm Waikiki Aquarium

12:00 -1:00 pm Lunch and travel back to Bishop Museum
1:00 – 2:00 pm Cultural collections tour
- Interns will be shown artifacts made from many native Hawaiian and Polynesian introduced plants.

Thursday 23rd June, 2005

8:00 – 8:45 am Tour of the *Herbarium Pacificum* (Botany)

- Demonstration of how to collect and press specimens

9:00 – 11:00 am Collections management skills (1 hour each station – 3 groups)

- Mounting of specimens.
- Databasing of information related to specimens (day 1 – algae)
- Imaging specimens.

12:00 – 1:00 pm Collections management skills continued

1:00 - 2:00 pm Hawaiian Hall and other exhibits

- Interns will have time to explore the public exhibits of the Bishop Museum.
- Activity worksheet.

Friday 24th June, 2005

8:00 – 11:00 am Collections management skills continued (repeat stations)

- Mounting of specimens.
- Databasing of information related to specimens (day 2 – terrestrial plants)
- Imaging specimens

12:00 – 1:00 pm GPS hide and seek activity – learning to use GPS units.

1:00 – 2:00 pm Planetarium: *Deep Impact: Rendezvous with a Comet*

Week 3: Lānaʻi
Staff: Clyde Imada, Maya LeGrande, Barbara Kennedy, Napua Harbottle
Guests: LIFE crew

Monday 27th June, 2005
Keone field site

- Set up 20x20 m plot, divided into four quadrats of 10x10 m.
- Interns will work in four teams.
- Use of dichotomous keys and picture identification guides to identify plants present in the plot: record information.
- Baseline monitoring
- Photopoint (taking images of the four quadrats before beginning, after weeding, after outplanting as a visual indication of change)
- Point intercept: diagonal transect across quadrat; recording plants that touch pointer at every 0.5 m along transect.
- Quantitative/qualitative measurement within 0.5x0.5 m quadrat along same transect.
- Identification of plant species to remove.
- Begin removal of invasive species.

Botanical surveys on Lānaʻi – past and present
Shadehouse maintenance

Tuesday 28th June, 2005
Kānepuʻu field site

- Same protocol as for previous day in order to gain baseline data for the site.

Building a dichotomous key

- Activity using plastic animals to create a key.
- Identify problems associated with the use of dichotomous keys.

Wednesday 29th June, 2005
Waiakeakua field site

- Same protocol as for previous day in order to gain baseline data for the site.

Holoholo Lānaʻi hale

- Visiting the top of Lānaʻihale which has many native species, and different forest type.

Week 4: Lānaʻi
Staff: Shelley James, Clyde Imada, Barbara Kennedy, Laura Crago
Guests: LIFE crew

Tuesday 5th July, 2005
Keone field site

- Clearing of site and preparation for outplanting.
- Photopoints.
- Outplanting and record of species planted.
- Point intercept.

Data analysis

- Compare baseline data to that after clearing and outplanting.

Begin preparing presentations

- Develop Powerpoint or other form of presentation to be given on final day.
- Presentation to outline what students have learned during the program, technologies and techniques developed, what they liked the most about the program, what has inspired them; results for their plots.

Wednesday 6th July, 2005
Kānepuʻu field site

- Clearing of site and preparation for outplanting.
- Photopoints.
- Outplanting and record of species planted.
- Point intercept.

Data analysis

- Compare baseline data to that after clearing and outplanting.
- Final comparison of data at the Keone and Kānepuʻu sites.
- Prepare presentations.

Thursday 7th July, 2005

- Hike along the coastline of Manele.
- Coastal plant adaptations.
- Using GPS to track course and take waypoints.
- Reef walk at Manele if time (and conditions suitable – low tide at ~9:20 am).

- Download track onto TOPO5 – use of GIS.
- Work on presentations.

Week 5: Lānaʻi
Staff: Shelley James, Barbara Kennedy, Napua Harbottle
Guests: Darrell Stokes, LIFE crew

Monday 11th July, 2005
Restoration maintenance

- Visit Keone to water plants, outplant pili at site, place cages over outplants
- Shadehouse maintenance – repotting seedlings

Presentation preparation

Tuesday 12th July, 2005
Science garden preparation

- Outline plan for garden
- Preparation of garden and planting
- Maintenance of current Science Garden

Presentation preparation

Wednesday 13th July, 2005
Science Garden maintenance

Student and staff presentations 10 am -12 pm

Potluck 12 pm – 2 pm

- Invitations to all sponsors, past interns, and guest speakers for both presentations and potluck.