

# HIPPNEWS: Newsletter of Hawaii's Permanent Plot Network

Volume 1

June 2007

## Background

The Hawaii Permanent Plot Network (HIPNET) will utilize the spectacular climate, elevation, and substrate age gradients found in Hawaii to develop a unique set of permanent research sites. The data collected through coordinated projects carried out at the HIPNET sites will enable the University of Hawaii and collaborators to become leaders in numerous important areas of ecology. We plan to begin the network with 10 permanent plots of native dominated forest, 4 ha in area, on the Big Island (6 plots: wet vs. mesic vs. dry; high vs. low elevation), Oahu (2 plots; wet vs. dry side) and Kauai (2 plots; wet vs. dry side). Permanent plots will be established following widely used protocols developed for tropical and temperate forests. These sites will have woody plants tagged and mapped. The forest plots will be re-censused every 3 years along with continuous climate data to understand forest dynamics. Additionally, we propose to designate and monitor adjacent land areas of invasive dominated forest to understand how invasive species alter these dynamics. Two of the ten plots will be located on the newly established USDA Forest Service Hawaii Experimental Tropical Forest (HETF).



## Expected and Future Research

HIPNET will enable researchers in Hawaii to become world-class leaders in studies of:

- Global change ( i.e. climate impacts, community dynamics, invasive species)
- Ecohydrology (linkages between forest-water-atmosphere)
- Ecosystem services (services vital to our economy and well-being including many biological, aesthetic, and cultural values)
- Remote sensing (modeling of ecosystem dynamics)
- Restoration (returning an ecosystem to its historic trajectory)
- Comparative forest ecology (comparing Hawaii's forest with tropical and temperate forests around the world)
- Community structure and organization
- Population genetics and evolutionary ecology of forest plants
- Biogeochemical processes

## CTFS and the Permanent Plot Network

The Center for Tropical Forest Science (CTFS) of the Smithsonian Tropical Research Institute is the world's largest tropical forest research program. CTFS comprises a global network of large-scale and long-term studies that together monitor more than three million individual tropical trees, representing more than 6,000 tropical tree species. <http://www.ctfs.si.edu/doc/index.php>. With the help of Jill Thompson (see page 3), **HIPNET** Plots are designed to complement the CTFS network, adding Hawaii to the growing number of permanent census plots, where researchers can study long-term forest dynamics. Our methods will largely follow protocols established for existing CTFS plots, with an additional component of weed removal in plots.

## HIPPNET Supervisors

Two Permanent Plot Supervisors have been hired to manage the installation and baseline vegetation census of permanent plots. Faith Inman and Lisa Ellsworth joined the HIPPNET team in May, and have been busy organizing gear purchasing, programming field equipment, hiring technicians, putting together an herbarium, meeting with land managers, writing protocols, and selecting potential sites for future plots.



Faith Inman worked at Hawaii Volcanoes National Park prior to receiving her M.S. in Botany from North Carolina State University on forest restoration for Puerto Rican parrots. She recently worked at HAVO studying Limiting Factors for Rare Plants with Linda Pratt. Her research interests are Tropical Forest Restoration, Gap Dynamics, and Seed Ecology.



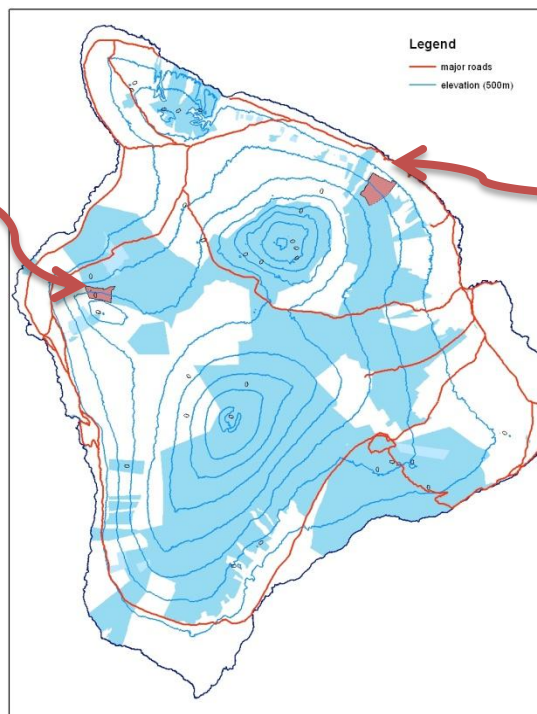
Lisa Ellsworth was most recently working in Arid Lands Restoration at the University of Nevada, Reno. She completed her M.S at Oregon State University studying effects of prescribed fire in sagebrush grasslands. Previous work in tropical systems included nutrient dynamics work in Costa Rica. Research interests include Fire and Disturbance Ecology, Restoration of Native Ecosystem Function, and Tropical Ecology.

## Site selection

Our first two permanent plots are on state land recently designated as The Hawaii Experimental Tropical Forest at the Laupāhoehoe rain forest in North Hilo and the Pu'u Wa'awa'a Forest Bird Sanctuary in North Kona.

### Pu'u Wa'awa'a: Forest Bird Sanctuary:

- Tropical dry and mesic forests
- Ohia and Koa dominated forests
- Ongoing research and collaborative efforts with land managers
- Removal of ungulates underway in Bird Sanctuary
- Managed by DOFAW as A Forest Bird Sanctuary



### Laupāhoehoe Rain Forest:

- Primary rain forests
- Habitat to many endangered plants and animals
- Dominated by Ohia and Koa
- Good road access
- History of ecosystem-level research
- Managed by DOFAW as a Natural Area Reserve and Forest Reserve

## Job Board

### Field Technicians:

We've posted job announcements on local and national job boards seeking field help. We're looking for 2 full-time, temporary technicians to help with plot set-up, tree censusing, and weed removal. If you have any students or interns who are looking for tropical forestry experience, please have them contact: Lisa Ellsworth (808) 933-8121 ext 156 or [lisaells@hawaii.edu](mailto:lisaells@hawaii.edu)

Job announcement can be viewed:

<https://listserv.umd.edu/cgi-bin/wa?A2=ind0706b&L=ecolog-l&X=28B76B25D8417E4216&Y=lisaells%40hawaii.edu&P=3912>

### Volunteer Opportunity:

Volunteer groups needed for weed eradication projects in HIPNET plots. If you have school groups, EcoTours, conservation groups, etc... available to participate in one or more days of restoration work, please have them contact [finman@hawaii.edu](mailto:finman@hawaii.edu) or [lisaells@hawaii.edu](mailto:lisaells@hawaii.edu)

## Timeline

- December 2006: Initial HIPNET planning meeting
- Spring 2007:
  - Micro-Met towers planned, first two sites chosen
  - Permits acquired to place plots on state land
- May 2007:
  - Faith and Lisa joined the HIPNET team
  - Tower systems and weather stations planned and ordered
  - Field supplies ordered
- June 2007: Jill Thompson visited to teach permanent plot sampling protocols to HIPNET team
- Summer 2007:
  - Temporary Technicians to be hired
  - Plots set up at Laupāhoehoe and Pu'u Wa'awa'a
  - First HIPNEWS goes out
  - Survey conducted to determine future plot placement based on research and management needs



### Jill Thompson's Visit



We were fortunate to have Dr. Jill Thompson visit and train our HIPNET team on CTFs permanent field plot methods. Jill is manager of the 16 hectare Luquillo Forest Dynamics Plot in the Luquillo Experimental Forest, Puerto Rico.

<http://www.ites.upr.edu:8081/ites/jthompson.htm>

[http://luq.lternet.edu/research/projects/forest\\_dynamics\\_description.html](http://luq.lternet.edu/research/projects/forest_dynamics_description.html)

### Survey Coming Soon:

We are looking for additional sites to establish plots both on the Big Island and other Hawaiian islands, and would like suggestions from researchers and managers on site placement. Watch for a survey in the next couple weeks and give us your input!

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