



**National Park Service
Fire Ecology Annual Report
Calendar Year 2005**

Summary

Field crews spent much of FY05 monitoring FMH and other vegetation plots (seedling recruitment, biomass plots) in preparation for the 2nd Pili Prescribe Burn. Begun in 2003, the Pili Prescribe Burn project is a series of controlled burns to examine the response of pili grasslands and alien species to multiple fire events. Pili grasslands once dominated the lowlands and were historically managed with fire by Hawaiians prior to the arrival of Westerners. This practice was abandoned in the 1800's. Today pili grasslands are rare because of increased urbanization and invasion by alien species. Hawaii parks seeking to restore pili grasslands will use the information from these multiple burn experiments to determine if prescribe fire is a feasible approach to keeping out alien fuels and restoring these areas. The first burn was conducted in 2003 and a second burn scheduled for 2005 was postponed because of uncooperative weather and untimely green-up of fuels. The results from the first burn (2003) were summarized and presented as a poster at the Annual Hawaii Conservation Conference in July 2005.

The fountain grass (hazardous fuel) control program was expanded to include the new 116,000 ac Kahuku addition to HAVO. Fire monitoring technicians discovered and mapped two populations of fountain grass in Kahuku. The plants were spreading from the adjacent subdivision. Work crews treated the populations inside the park, and HAVO is coordinating control efforts with the subdivision to create a fountain grass free buffer zone along the Park boundary. The Fire Ecologist and monitoring technicians provided technical assistance mapping infestations and doing community outreach to inform the public about the increased fire hazards created by fountain grass.

Field technicians also assisted as resource advisors and fire fighters in the Kipuka Pepeiao Burn, December 2004. The fire was mapped and burn assessments were conducted. The information was included in a BAER proposal that was funded for restoring native species diversity in the burn.

Table 1. Management Objectives and Monitoring Results 2005

Monitoring Unit	Management Objective (Restoration)	Monitoring Results (XX% confidence interval)	Objective Achieved?
Pili grasslands (kealakomo, Pili)	Decrease alien fuels	For Pili Burn: Alien herbaceous did not change (p=0.253) Alien woody reduced by 100% (p=0.001) For Kealakomo Burn: Data being analyzed	NO for alien herbaceous YES for alien woody
	Increase native biodiversity Test fire tolerance and methodology to restore 10 native species	For Pili Burn: Seeds of 6 native species able to survive and establish after fire (3 reached reproductive maturity 2yrs after fire) For Kealakomo Burn: Data being analyzed	NA, too early to tell
Dry ohia woodlands (Hilina Pali)	Increase native biodiversity Test methods to establish	Data being analyzed	NA
Fountain grass	Reduce fountain grass populations within its former range (100,000 ac) in the Park	Number of individuals discovered and removed dropped from 1,400 to 929 individuals from FY04 to FY05. Census data, no statistical confidence interval calculated.	Yes. Yearly follow up is needed to remove individuals that re-establish from existing soil seed bank and new dispersal into area

Table 2. Fire Effects Plot Workload 2005

Park	Monitoring Unit	Type of Plot (FMH, photo point, other)	Pre-burn	Immed. Post	Postburn (1-20 yrs)	Total Plots
HAVO	Pili grasslands	FMH grass plot (includes biomass, shrub plots)			12	12
HAVO	Pili grasslands	Seedling recruitment			506	506
HAVO	Kealakomo	FMH grass plot (includes biomass, shrub plots)			30	30
HAVO	Kealakomo	Seedling recruitment			105	105
HAVO	Hilina Pali	Survivorship plots			240	240
HAVO	Hilina Pali	Seedling recruitment (plots read 2x in FY05)			168	168
Total					1,061	1,061

Table 3. Fire Ecology Staffing 2005

A seasonal (Maya Vaidya) was hired thru a cooperative agreement with the University of Hawaii. Her position was funded by Firepro (6 mo) and HAVO (6 mo). This person lead volunteer field crews (2-4 individuals provided by HAVO) to establish and monitor FMH (includes biomass plots) and seed plots in the Pili Prescribe Burns (2003, 2005 was cancelled), Kealakomo Prescribe Burn (1999), and Hilina Pali Restoration Project (1999). Vaidya also conducted burn assessments in the Kipuka Pepeiao Burn. David Benitez, a GIS and invasive species specialist, was provided by HAVO to assist in mapping fires, fountain grass, and getting inputs together for the FPA runs. He attended a 1 week FPA workshop held in Arizona.

Monitor	Starting Date	Ending Date	# of Pay Periods	Training and Development
Mayavati Vaidya (part time thru coop agreement)	10/1/04	9/30/05	~18 across the year	Introductory ArcGIS training Fire Refresher, S290, HECM, First Aid, ICS, Helicopter safety,
David Benitez (part time thru coop agreement)	10/1/04	9/30/05	~3 across the year	FPA workshop Fire Refresher

Table 4. Fire Ecologist Accomplishments/Focus Area

Resources Management Botanist contributed ~77 days (1/3rd was BAER related) to Fire Management. Completed compliance, a workplan, monitoring plan, and directed field survey crews for the Pili Prescribe Burn (burn was cancelled at the end of FY05). Prepared and presented a talk on fire management strategies in HAVO, and assisted Biological Technician in creating a poster documenting results from the previous 2003 Pili Prescribe Burn at the Hawaii Conservation Conference, 2005. Updated the HAVO fire atlas to 12/04 and is currently verifying the accuracy of the information for entry into FPA. Assisted FMO with development of FMU's and attributes. Served as resource advisor for the Kipuka Pepeiao Burn, conducted burn severity assessments, drafted a BAER proposal, work plan and began implementing the restoration work on the ground. Directed field crews mapping and removing fountain grass, a hazardous fuel, in the new 116,000 ac Kahuku addition to HAVO. Coordinated with adjacent subdivision to map fountain grass along private roads and lots, and conducted two service projects to remove individuals along roadsides in order to create a buffer between the park and the invasion front.

Category	Worker Days (percent)	Accomplishments/Focus Areas
General Planning	5 (6.5%)	Project Review, CE, section 7 consultation, etc. For Pili Prescribe Burn, Kipuka Pepeiao BAER (1 day). Also coordinate logistics for field crews to prep prescribe burn site
Monitoring Plans	5 (6.5%)	Writing of monitoring plans, work plan for Pili Prescribe Burn, Kipuka Pepeiao BAER (1.5 days)
Presentations	15 (19.5%)	Presented talk on Fire Rehab strategies following the Kupukupu Fires, and poster on results for 2003 Pili Prescribe burn at Annual Hawaii Conservation Conference. Presented 45 min talk on Fire Management at HAVO at Humboldt University
Interagency Work	3 (4%)	FPA, determining and gathering inputs for FMUs, verify fire occurrence data in HAVO.

Category	Worker Days (percent)	Accomplishments/Focus Areas
Fire Assignments and Fuels Projects	3 (4%)	Resource advisor on Kipuka Pepeiao Burn (3 shifts) and Kahuku Burn (1 shift). Map fires.
Research/Management	15 (19.5%)	Wrote proposal for Kipuka Pepeiao BAER. Wrote final accomplishment report for Broomsedge BAER. Reviewed a couple of JSFP (HAVO sponsored projects) and Tall Timbers (nonHAVO project) proposals and papers.
Monitoring Field Work	10 (13%)	Read Kupukupu FMH plots, Pili FMH and seed plots, Burn severity assessments and seed plots in Kipuka Pepeiao Burn
Data Analysis	5 (6.5%)	Estimated amount of time spent analyzing monitoring data for Broomsedge report, for Pili Prescribe Burn, for Kipuka Pepeiao Burn assessments, fountain grass haz fuel reduction
Supervision/Admin	5 (6.5%)	Hiring, supervision, travel, payroll, etc.
Training & Professional Development	1 (1%)	Firefighter refresher
Miscellaneous	10 (13%)	Update and verifying fire atlas for HAVO, take NIFC BAER folks out to project sites. Coordinate/lead Fountain grass Hazardous fuel reduction project (mapping and removal) with adjacent neighbors. Assisted as firefighter in fire call-outs in Kona fires outside Park (2 shifts).

Table 5. Fire Effect Crew Accomplishments

A total of 440 worker days was spent on fire monitoring and related work. A seasonal (Maya Vaidya) was hired thru a cooperative agreement with the University of Hawaii. Her position was funded by Firepro (6 mo) and HAVO (6 mo). This person lead volunteer field crews (2-4 individuals provided by HAVO) to establish and monitor FMH (includes biomass plots) and seed plots in the Pili Prescribe Burns (2003, 2005 was cancelled), Kealakomo Prescribe Burn (1999), and Hilina Pali Restoration Project (1999). Maya presented a poster summarizing the results from the 2003 Pili Prescribe Burn at the Annual Hawaii Conservation Conference. She also conducted burn assessments in the Kipuka Pepeiao Burn. David Benitez, a GIS and invasive species specialist, was provided by HAVO to assist in mapping fires, fountain grass, and getting inputs together for the FPA runs. He attended a 1 week FPA workshop held in Arizona.

Category	Worker days (percent)	Notes
FMH plots and Biomass plots	97(22%)	97 worker days spent collecting plot data; includes any preparation time. (Pili, Kealakomo) includes 68 field days provided by volunteer biologists
Mechanical Treatment plots	26(6%)	26 worker days spent collecting plot data; includes any preparation time. (Hilina Pali) includes 21 field days provided by volunteer biologists
Other plot work	185 (42%)	185 worker days spent collecting data; includes prep time. seed recruitment plots, outplant survivorship, in Hilina Pali, Kealakomo, Pili. Includes 124 field days provided by volunteer biologist
Fire Assignments and Fuels Projects	35 (8%)	Power Fire, Kipuka Pepeiao Fire (35 shifts).
Data Entry	16(4%)	16 worker days spent on data entry for pili burn, kealakomo burn,

Category	Worker days (percent)	Notes
		Hilina Pali restoration project (included 9 volunteer days)
Data Management and Conversion	14 (3%)	manage monitoring data; includes preparing species lists, error checking, learning conversion program, etc. Benitez-inputs for FMUs, FPA analysis
Data Analysis	8 (2%)	Maya summarized average, se, t-test for pili burn
Supervision/Admin	10 (2%)	Schedule volunteer field crews establishing and monitoring plots, collecting seeds for Pili prescribe fire, Kealakomo prescribe fire, Hilina Pali restoration, log work days, purchasing.
Presentations/Training & Professional Development	22 (5%)	Vaidya made and presented poster documenting results of 2003 Pili Prescribe Burn at the 2005 Hawaii Conservation Conference. Benitez and Vaidya attended Fire Fighter refresher. Benitez attended a 1week FPA workshop. Vaidya attended Helicopter crew member training, and S-290
Miscellaneous	14 (3%)	Benitez and Vaidya participated in fountain grass fuel reduction WUI Project (4 worker days). Benitez lead mapping, managed treatment data, provided community outreach and coordinated service projects with adjacent subdivision (10 worker days). Vaidya did burn assessments for Kipuka Pepeiao Burn BAER project (2)

Optional question for the fire ecologist.

Plans for FY06. Continue establishing and monitoring FMH and other veg plots for new HF projects (if they get funded) and summarize dry ohia woodlands and pili work across burn sites. Spend a couple more days to verify fire atlas by checking fire reports 1970-1992. Assist with FPA inputs and analysis. Continue coordinating WUI project with adjacent neighbors to control fountain grass along park boundaries. Field verify and complete 1st round of fuel classification for remaining unmapped section of older HAVO. Continue overseeing Kipuka Pepeiao BAER project and write up final report for Kupukupu BAER. Rework draft reports on prescribe burn exps in dry ohia woodlands and pili grasslands (not optimistic getting to that).