

East Maui Watershed Partnership

Dan Eisenberg, Program Manager



Outline:








- Partnership formation and brief history
- Resource mgt. theory, mission, mgt. plan
- Project organization
- Geographic scope
- Resources and threats
- Stakeholder input
- Management activity example: Hed Gar

Partnership Formation

- Formed by voluntary agreement: 1991
- First Management Plan approved: 1993



EMWP PARTNERSHIP LANDS

-  DOFAW (Forest Reserve)
-  DOFAW (Hanawi NAR)
-  East Maui Irrigation
-  Haleakala National Park
-  Haleakala Ranch
-  TNC's Waikamoi Preserve
-  County of Maui

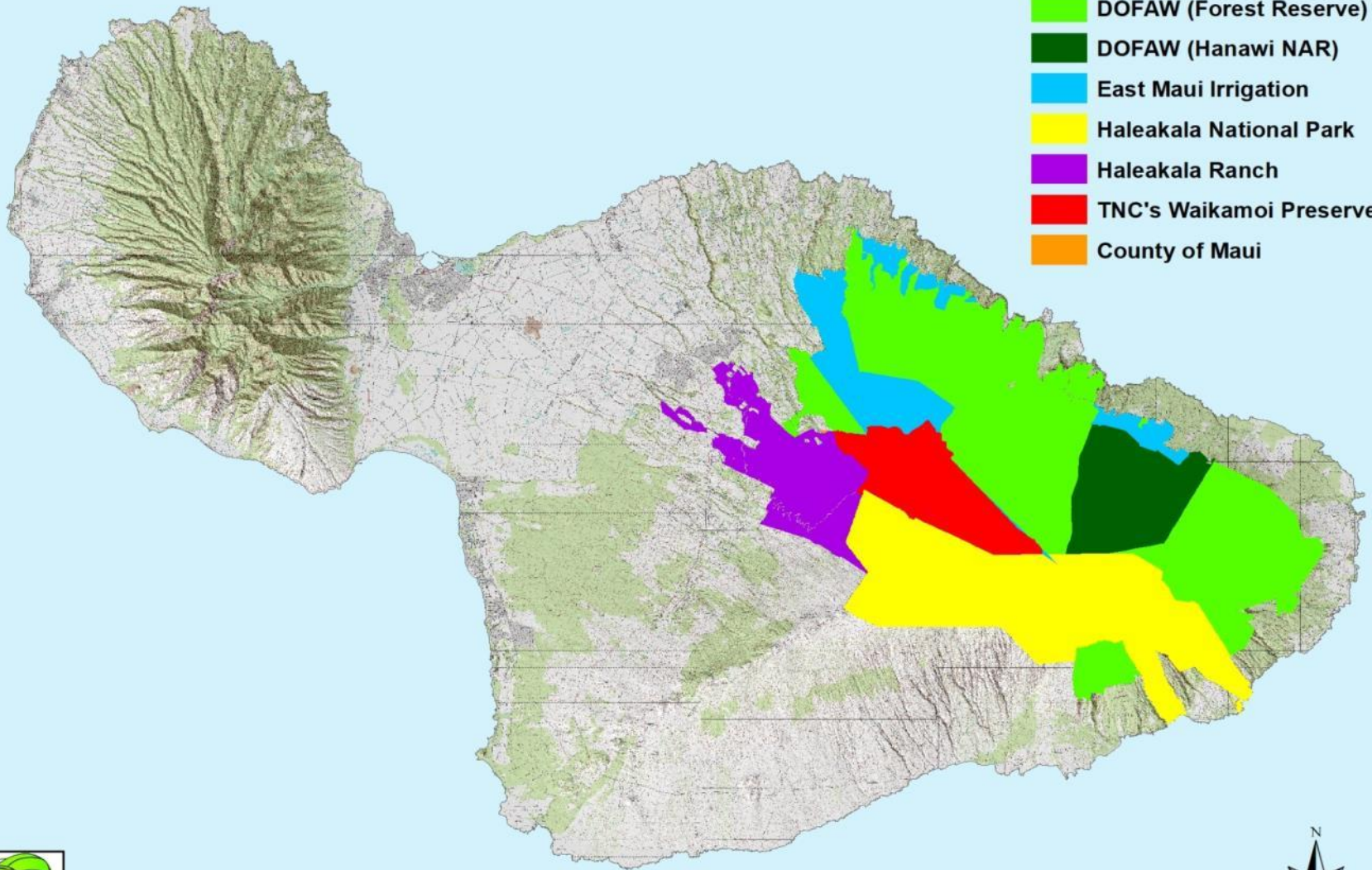
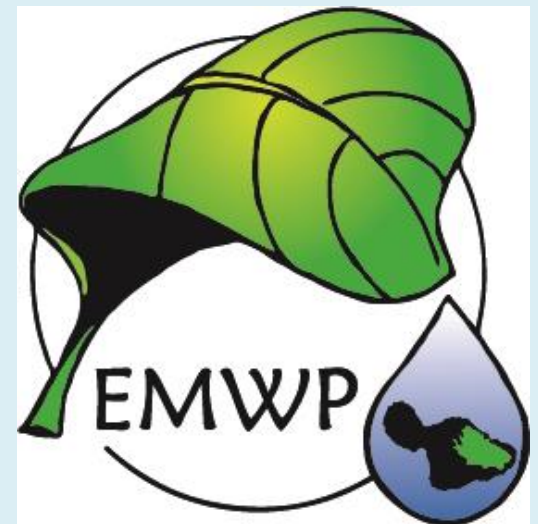


Figure 1



Mission Statement

“The overall mission of EMWP is to continue protecting East Maui’s primary water source, including, but not limited to, the native forested watershed by significantly reducing targeted threats.”



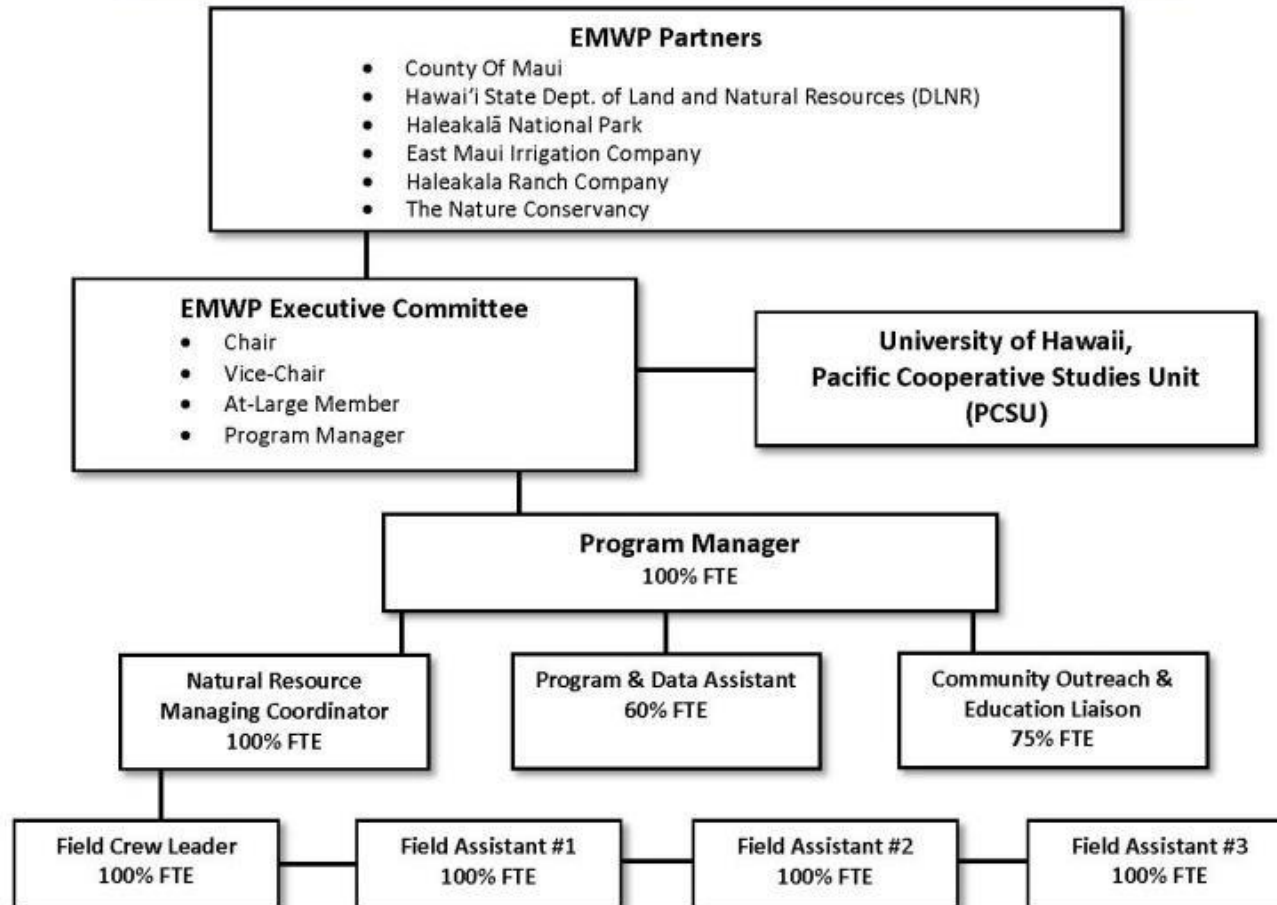
DWP Watershed Protection Grants: Project Proposal Requirements

“The DWS Watershed Protection Grants Program was established to maintain and increase efficient hydrologic processes which feed our surface and ground water supply. Non-native animals and non-indigenous plant species threaten the watersheds’ ecosystem and must be controlled and eradicated to ensure sufficient water recharge”

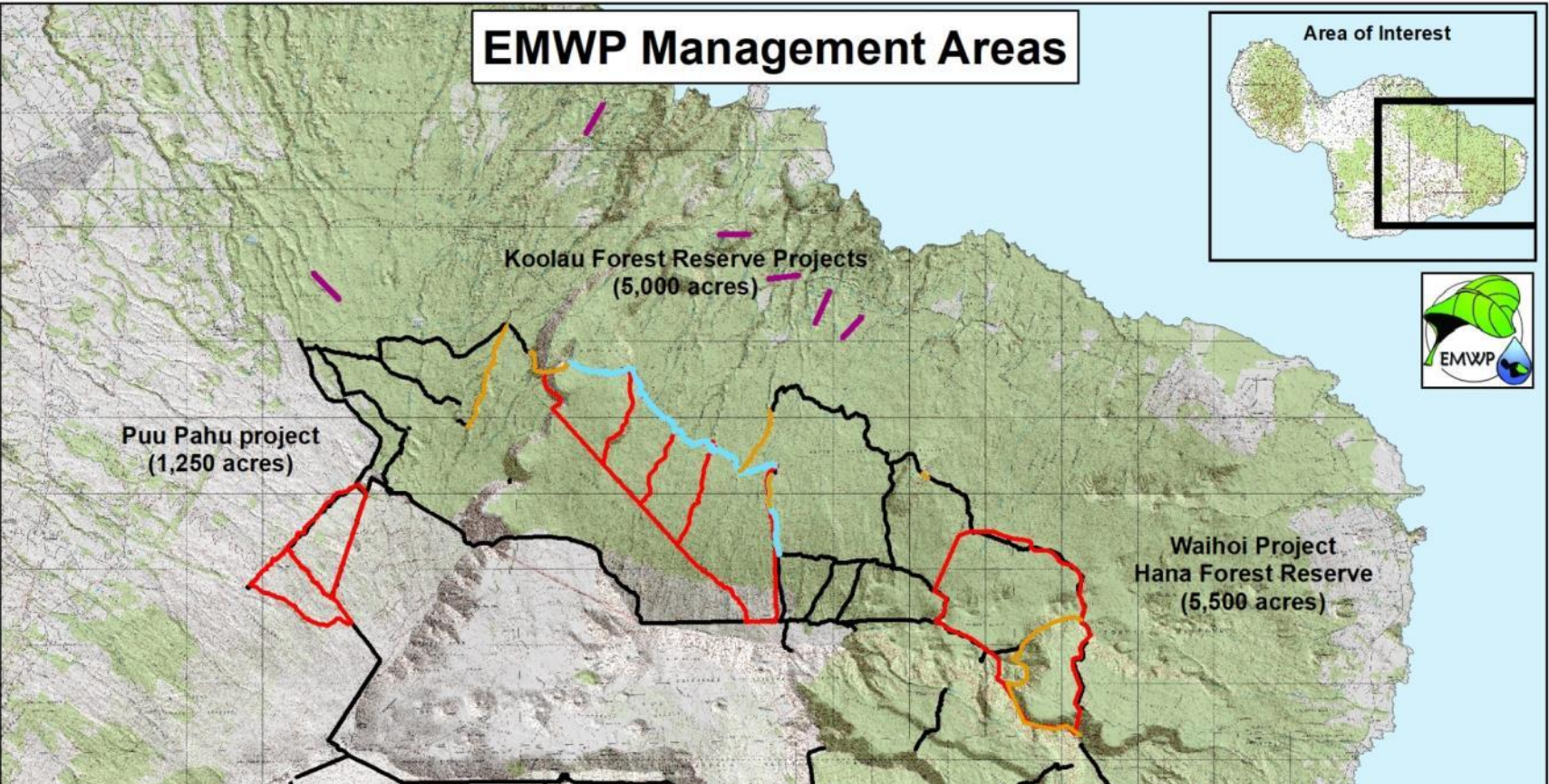
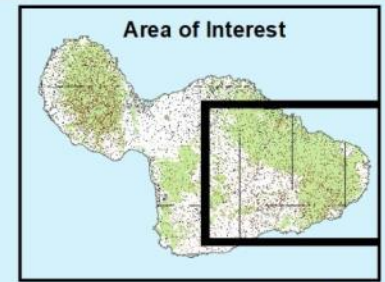
EMWP Structure



EMWP Organizational Chart



EMWP Management Areas



Legend

- Fences Inspected by EMWP
- Fences (All Agencies)
- Natural Barrier
- DOFAW Weed Transects
- Existing EMWP Management Units









Benefits of Healthy Native Forests: Water Source Protection

- Decrease in evapotranspiration
- Increase in cloud-water interception
- Decrease in erosion/ sedimentation in nearshore environment
- Decrease in nonpoint source pollution
- In addition to aesthetic, cultural, ecological and recreational improvements

Partnership Accomplishments - Fences

- Emt. Assessment and construction of over 6 miles of highest priority fencing 1996-2006

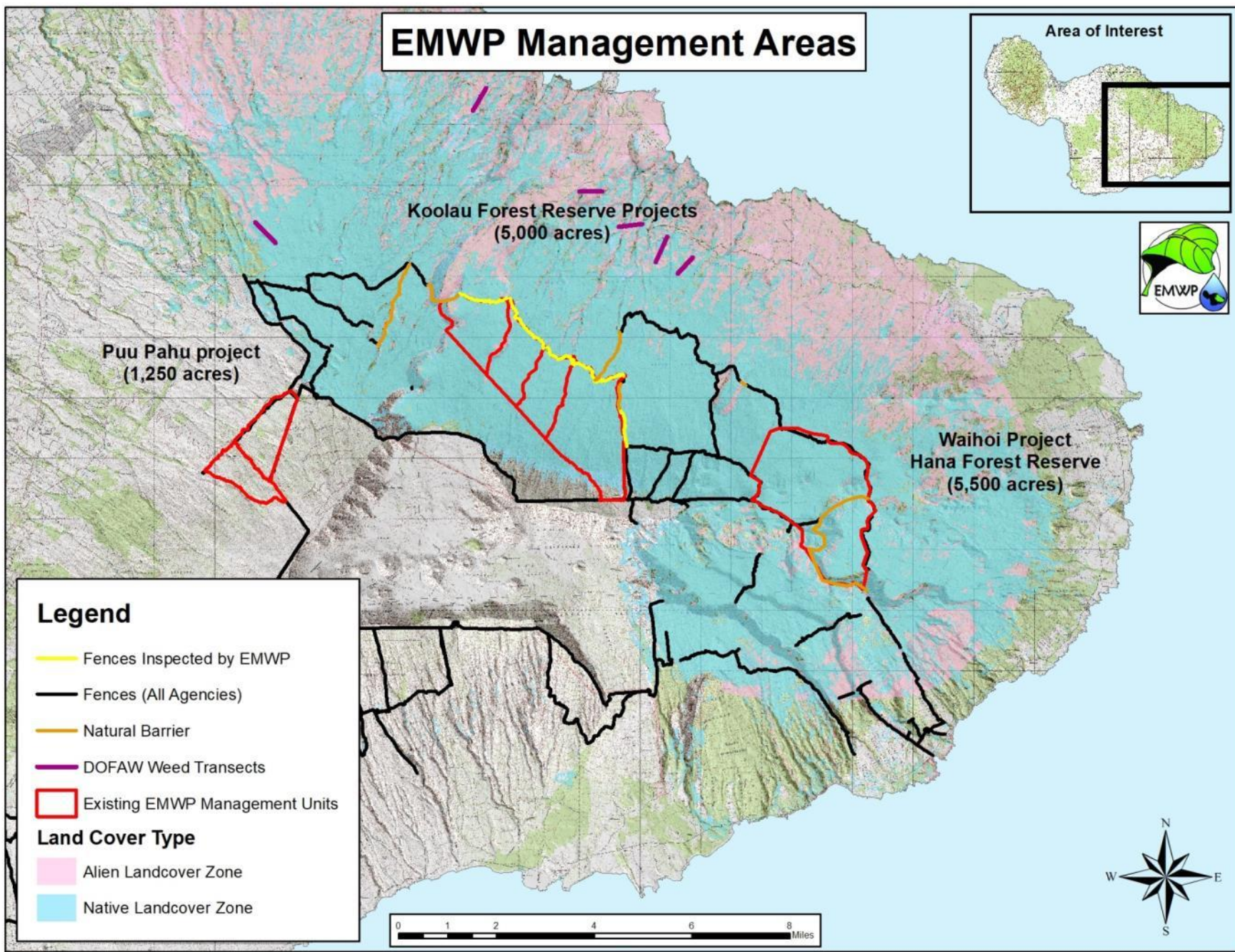
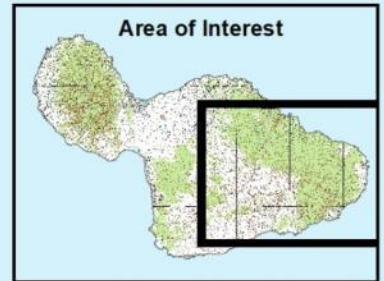


Partnership Accomplishments - Fences

- Construction of over 6 miles of additional priority fencing HFR 2008-2014



EMWP Management Areas



Legend

- Fences Inspected by EMWP
- Fences (All Agencies)
- Natural Barrier
- DOFAW Weed Transects
- Existing EMWP Management Units

Land Cover Type

- Alien Landcover Zone
- Native Landcover Zone



Is this idea supported by stakeholders?

DWS water use and development plan survey

	Agree	Disagree	No opinion or not sure	Total
A. Use an ahupua'a (comprehensive ridge to reef) approach to watershed management	66.96% 75	14.29% 16	18.75% 21	112
B. Expand programs to control invasive and nonnative plants and ungulates (pigs, deer, etc.) and expand reforestation measures (existing County Dept. of Water Supply program)	90.18% 101	6.25% 7	3.57% 4	112
C. Expand watershed protection to lower elevations (the County Dept. of Water Supply program focuses on upper watersheds, while lower watersheds also affect ground and surface water)	82.57% 90	6.42% 7	11.01% 12	109
D. Increase funding and involvement by state and non-county water system providers in watershed protection partnerships and reforestation programs (County Dept. of Water Supply currently provide significant funding)	85.32% 93	5.50% 6	9.17% 10	109
E. Water providers should fund watershed management programs in proportion to the benefits on groundwater recharge	55.45% 61	19.09% 21	25.45% 28	110
F. Water providers should fund watershed management programs with broader ECOLOGICAL benefits, even if groundwater recharge benefits are less direct	55.45% 61	16.36% 18	28.18% 31	110
G. Consult with the Native Hawaiian community, Mokus, and local experts on watershed resource management	61.11% 66	20.37% 22	18.52% 20	108
H. Near drinking water wells, restrict land uses that have a high risk of well contamination (a 'wellhead protection ordinance' based on well capture zones is proposed)	83.64% 92	10.91% 12	5.45% 6	110
I. Maximize groundwater recharge during non-drought periods to stabilize supply (reduce pumping, increase use of surface and alternative water sources, require aggressive conservation)	86.24% 94	4.59% 5	9.17% 10	109
J. Increase funding for scientific studies of hydro-geologic and ecological conditions to support decision making	78.18% 86	13.64% 15	8.18% 9	110
K. Use drought conditions as the baseline for determining water supply availability (average climate conditions are currently used, drought conditions are more cautious)	66.36% 73	16.36% 18	17.27% 19	110
L. Do not allow new stream diversions for non-instream uses until numerical 'instream flow standards' are adopted by the State	62.04% 67	19.44% 21	18.52% 20	108

Is this idea supported by stakeholders?

Water Roundtable survey (June 2018)

Q5: What steps could Maui Communities take to promote Conservation, Recharge, and Reuse and lessen pressures to rely more on East Maui waters above current and 2020 projected levels? TOP FOUR ANSWERS:

- Expand watershed partnerships and restore native ecosystems to allow more water to recharge aquifers (62%)
- Build or expand fresh water reservoirs to store and capture high flows (60%)
- Increase use of reclaimed water for large landscape areas in Central Maui/Northshore (50%)
- Change Grey water laws to allow more reuse of household water in residences, resorts and businesses to lower potable water demand for landscape irrigation (40%)

Answered: 43 Skipped: 1

Deliverables: DWS funding

- Fence inspection, maintenance and repair
 - Over 6 miles
- Invasive plant control and removal
 - Ginger, gorse, strawberry guava, strategic locations
- Resource monitoring
 - Ungulate activity (near zero), invasive weeds
- Community outreach
 - Watershed hikes, native species art show, community events, classroom presentations
- Native planting for restoration and outreach

Fence Maintenance and Inspection

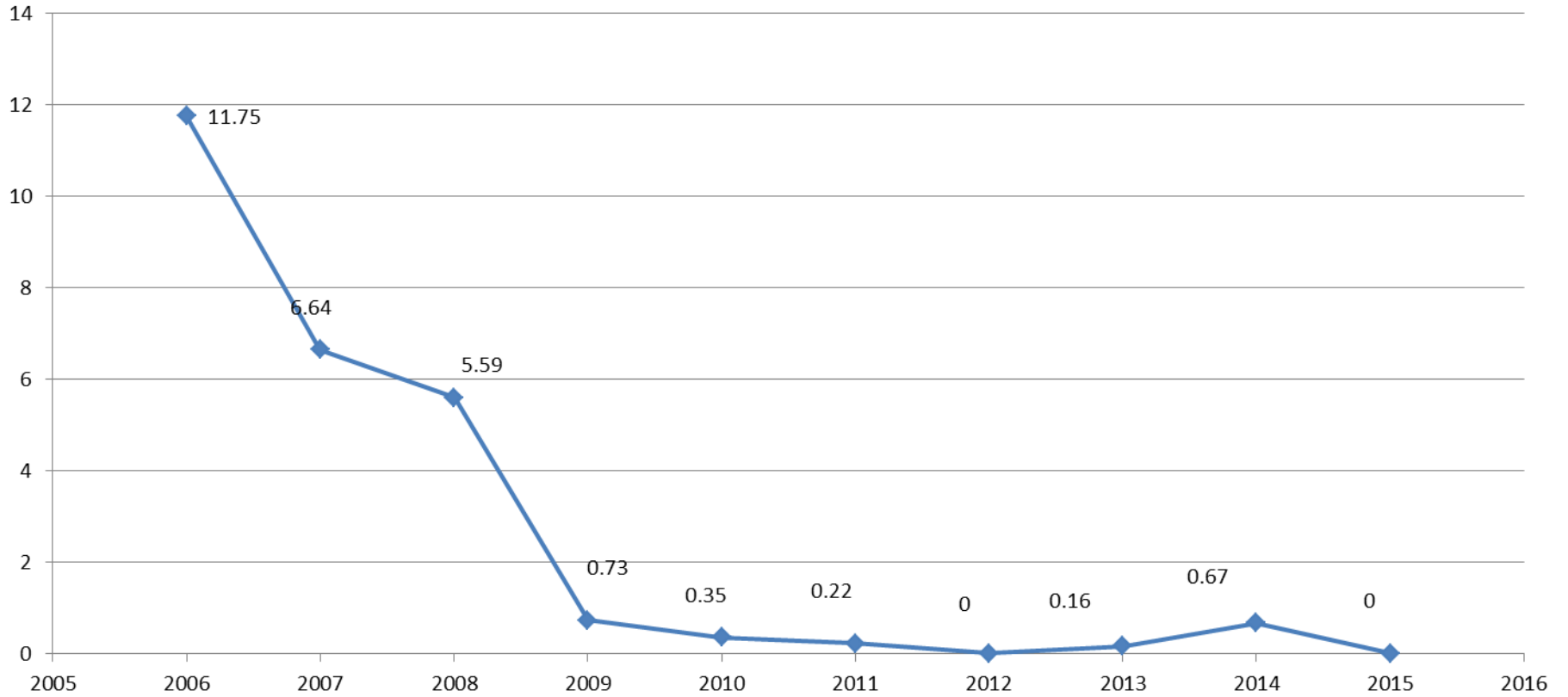






Ungulate Presence Transects and Non-Native Plant Transects

EMWP Transect Monitoring: % Stations with Ungulate Disturbance

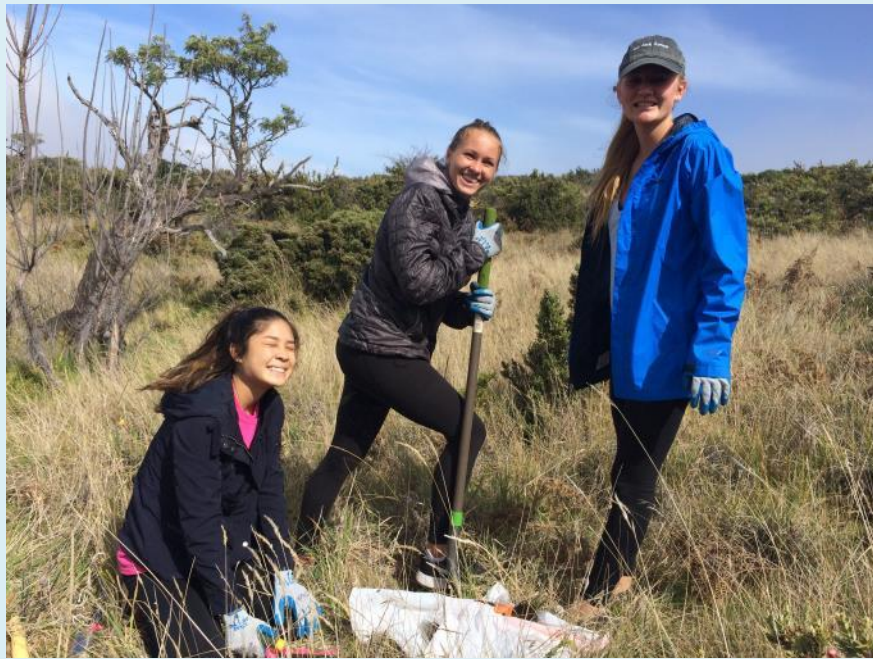


Build and Maintain Appropriate Infrastructure





Volunteer Based Watershed Restoration



Community Outreach and Education



Invasive alien weeds like Himalayan ginger (*Hedychium gardnerianum*), miconia (*Miconia calvescens*) and strawberry guava (*Psidium cattleinum*) out-compete native species, creating monocultures and completely displacing native vegetation

Invasive Plant Control



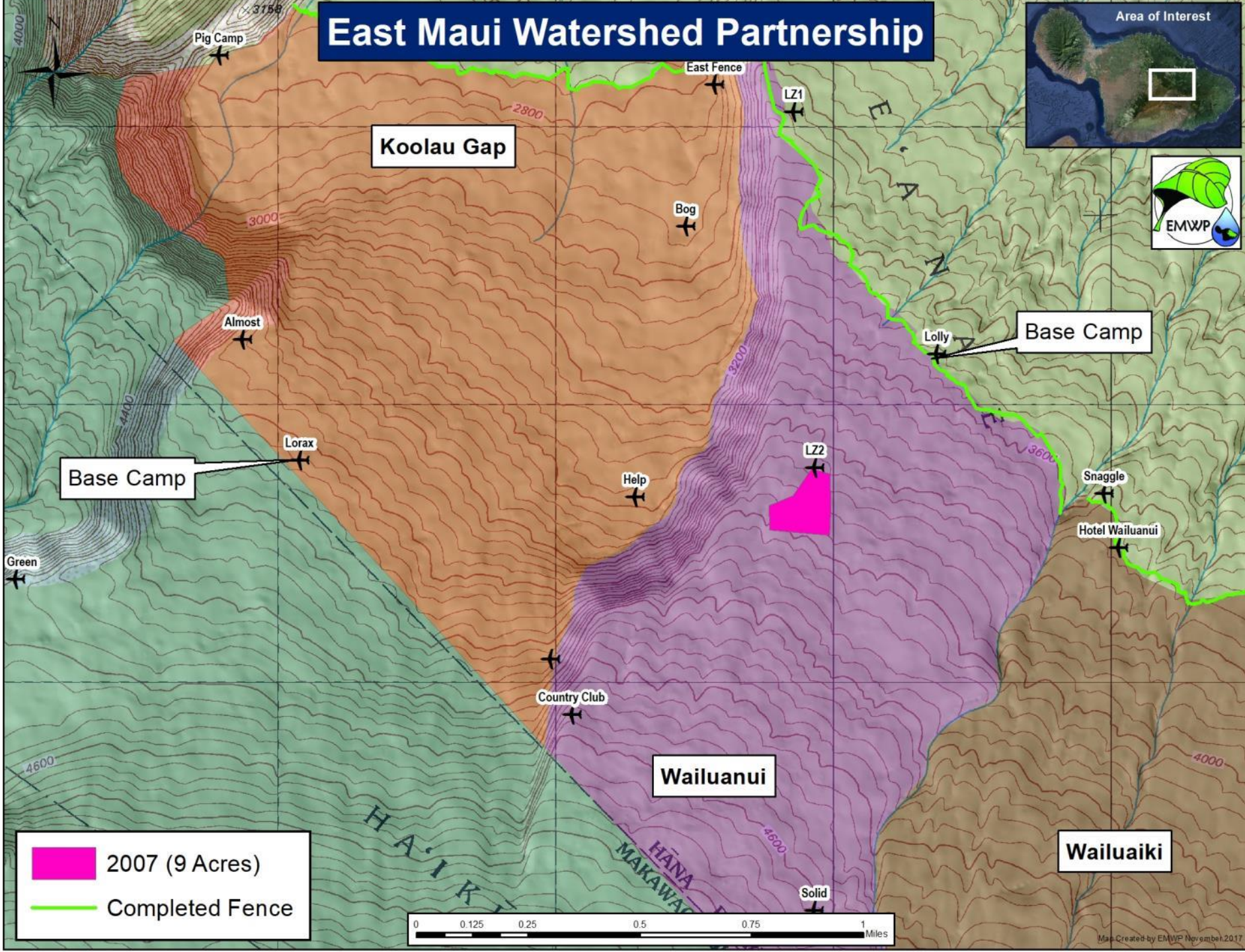
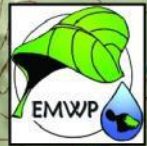
Featured Weed Problem


(Hedychium gardnerianum)


- Forms Dense Monotypic Thickets in Open & Closed Canopy Native Hawaiian Forests
- Smothers Young Native Seedlings, Prevents Forests Regeneration, Outcompetes Native Plants
- Reduces Nitrogen
- Promotes Erosion
- Inhibits Stream Flow

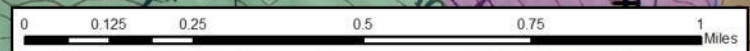


East Maui Watershed Partnership

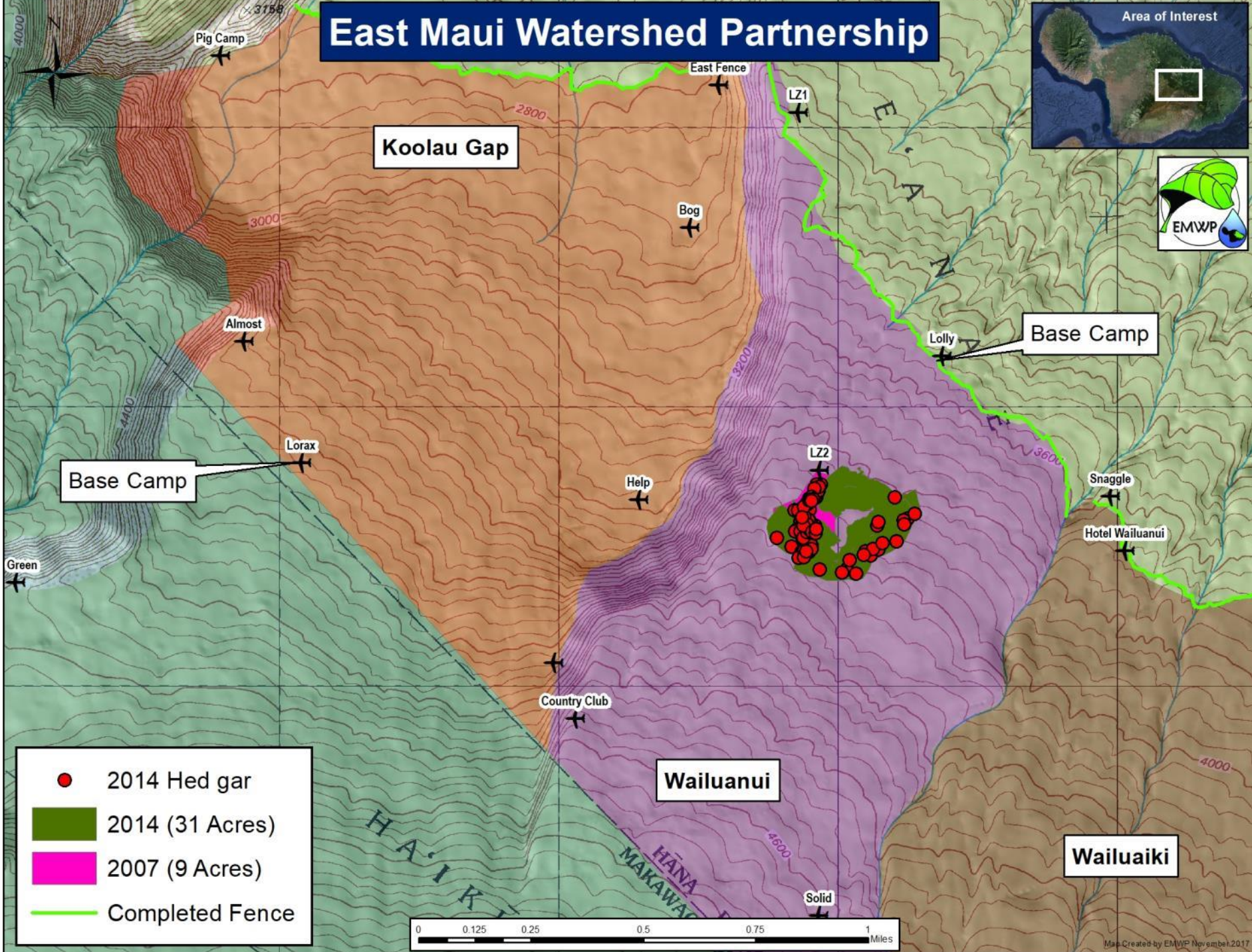


 2007 (9 Acres)

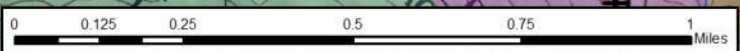
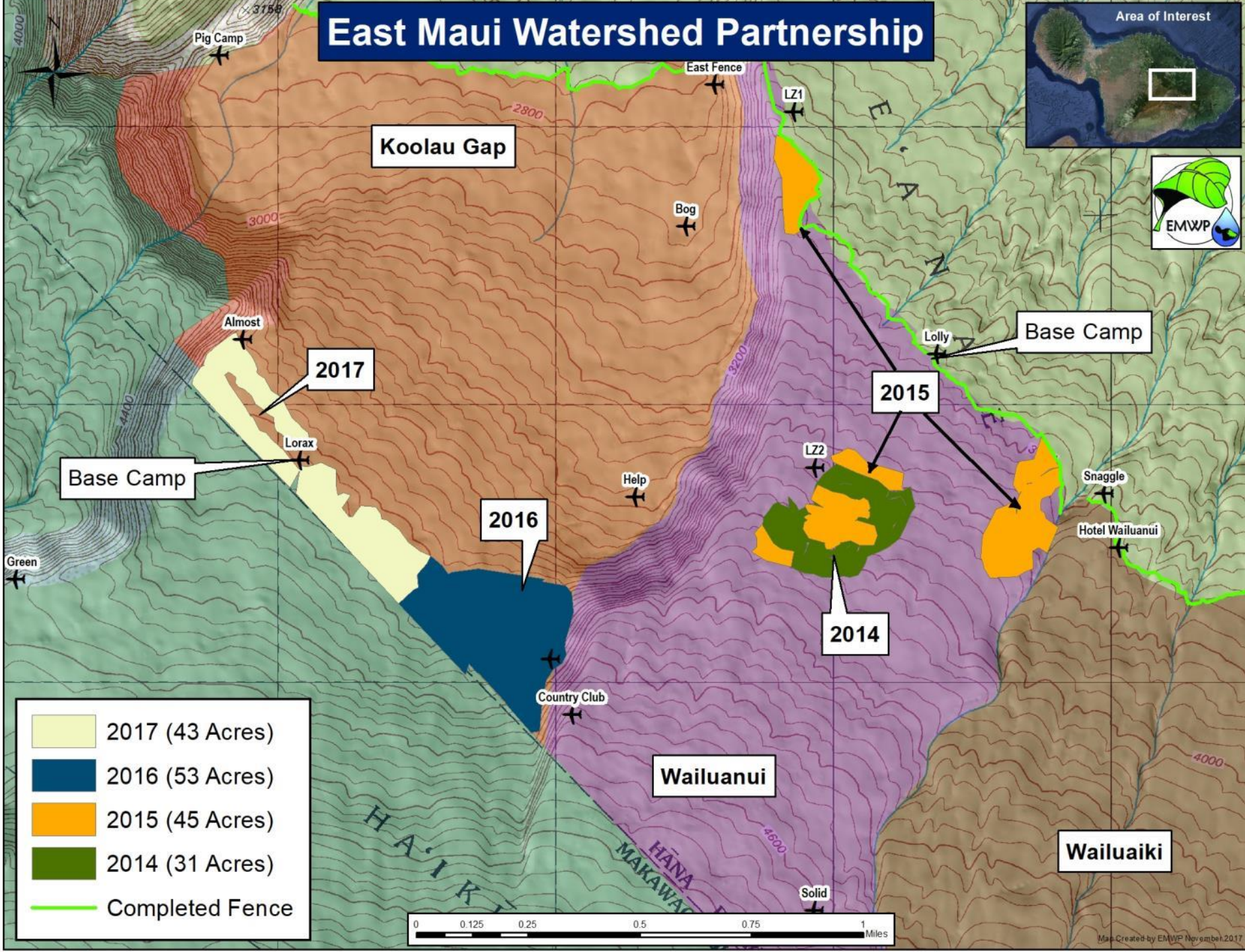
 Completed Fence



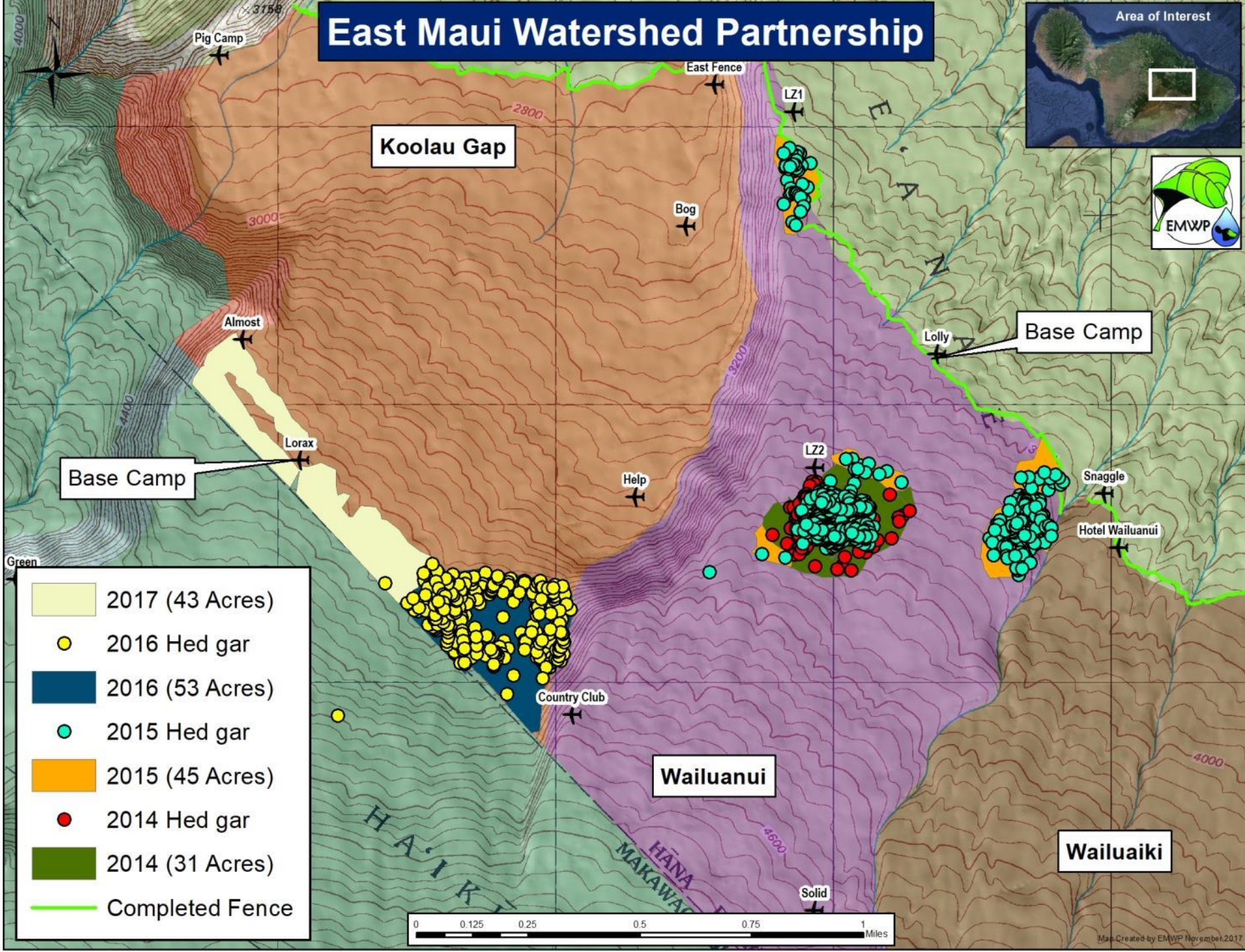
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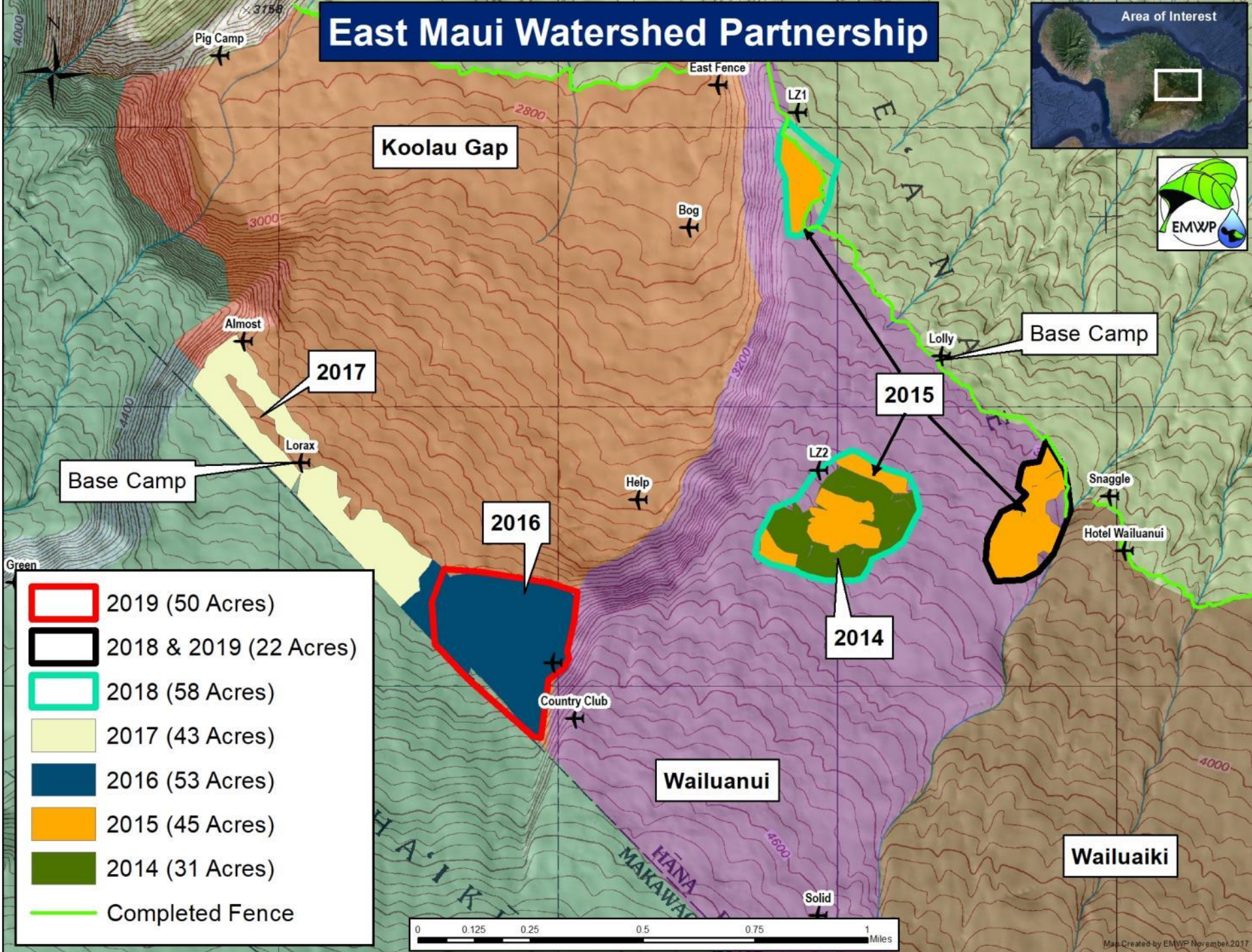
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Selected Long Term Priorities

- Support and contribute to efforts to better quantify the effects of watershed management practices on water availability and modify management accordingly.
- Support efforts to contain the spread of Rapid 'Ōhiā Death (Ceratocystis Wilt of 'Ōhiā).
- Diversify funding and seek sustainable sources.
- Diversify stakeholder input.

Mahalo!



Contract:

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