

# Current Status of Coqui Frog (*Eleutherodactylus coqui*) on Maui and an Overview of Approaches to Control



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## Biology and Impacts

# Coqui Reproductive Biology



male guards & keeps eggs moist until hatching



Female lays eggs and does not vocalize

- Froglets hatch in 14-17 days, mature in 8 months, & may live as long as 4-6 years
- In Hawai`i [lab conditions] , mating pairs produce a clutch every 2½ weeks
- Native to Puerto Rico, female coqui lay clutches of 34-75 eggs, 4 to 6 times a year
  - <https://www.ctahr.hawaii.edu/coqui/life.asp>



*Eleutherodactylus* genus of frogs does not have a tadpole stage; hatch as froglets



# Potential Coqui Distribution



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**Strategy**



19 Eradicated Coqui Populations  
10 Active Coqui Populations  
(including Maliko)



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## Citric Acid Control



Crew Truck and Citric Tank/Sprayer



Trucks, Reservoirs, Tractors, Pumps



Unloading Pallets of Citric Acid Anhydrous



Citric Acid Anhydrous



Mixing 12% Citric Acid Solution



12% Citric Acid Transferred to Reservoirs Tanks



PVC Pipeline Placed In Remote Gulch Areas



Rappelling to Install Vertical Pipe from Rim Reservoirs to Gravity Fed Treatment Pipe



Spray Stations Installed for Fire hose Drench Treatments



1" and 1.5" Fire hose Treatment Delivered Through PVC Pipeline



Multiple Crews Treating Gulch Populations from PVC Pipelines



Hoses Carried into Gulches in "Dry Bags"



High Volume Ag Sprinkler Gun Placement



High Volume Pump and Reservoir System



High Volume Ag Sprinklers Spray into Maliko Gulch

## In Development



Small Fixed Line, Movable Sprinkler Systems



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## Habitat Reduction



Male Coqui and Eggs in Foliage Habitat



"Cane Grass" Habitat



Coqui in Favorable Habitat



Mowing to Reduce Coqui Habitat



Chipping Overgrown Trees in Infested Areas



Illegal Greenwaste Dumping Spreads Coqui



Coconut Dumping from Coqui Infested Areas to Uninfested Areas

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## Barrier



Coqui Barrier Diagram



Guardrails Adapted for Coqui Barrier Infrastructure



Coqui Barrier



Homeowner Experimentation with Different Barrier Materials

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## Data Driven Systems



Data Driven Systems



Our Systems Have Developed from Paper Data Forms...



...and Outdated Trimble GPS Units...



...to Galaxy Android Smart Phones Using...



Web Based Online Forms for Crew Data Collection



....Interconnected Operational Data Systems for Field Crews



Locus Map on Android Phones Documents Frog Points (Downward Arrows), Survey Tracks (Yellow), and Treatment Tracks (Blue)



ArcMap GIS is the Final Destination for Spatial Data

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## Community Engagement



Community Meeting with Maui's Mayor



Community Trucks Transporting MISC's 100 Gallon Sprayers for Neighborhood Treatment



Control Work Reported by Public Volunteers

