



# 2020 Weed Workshop

Managing *Myoporum*'s Most Menacing Pest: Decontamination  
Protocols for Naio Thrips Operations on O'ahu



Wednesday, March 11, 2020

# Naio in Hawai'i

- ▶ *Myoporum sandwicense* (**Scrophulariaceae**)
  - ▶ Distributed across main Hawaiian Islands
  - ▶ Grows from sea level up to 3,000 meters (~9,800')
  - ▶ Dominant species in coastal strand
    - ▶ Also present in dry forests, shrub lands, mesic & wet forests
  - ▶ Can grow upright or prostrate
    - ▶ Prostrate = "Naio Papa"
  - ▶ Hawaiian historical uses
  - ▶ Bow & stern ornamental end pieces, gunwales for outrigger canoes, house posts, fishing net spacers, long-burning torches for night fishing



Photo: Forest & Kim Starr



# Upright Naio



Photo: Forest & Kim Starr

# Naio Papa





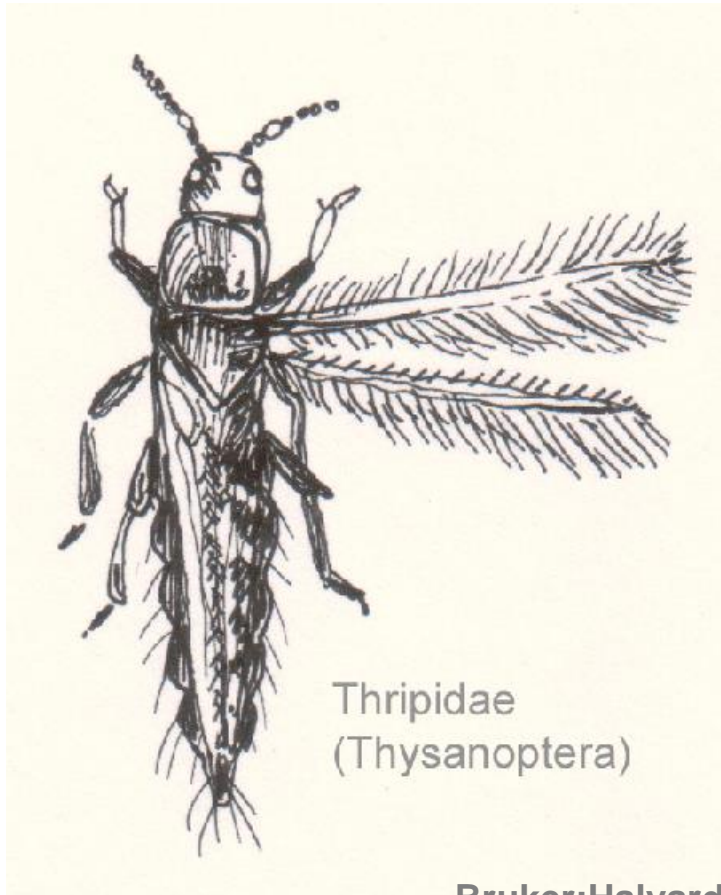
# O'ahu Endemic Species

- ▶ *Myoporum stellatum*
  - ▶ Found in SW O'ahu & Wai'anae Mts
    - ▶ Once the dominant shrub of coastal Ewa plain
    - ▶ Last known wild population = 150?
  - ▶ Prefers sunny/dry regions
    - ▶ < 50 inches rainfall per year
  - ▶ Primarily found up to 150' elevation
  - ▶ Slightly more resistant to thrips



Photo Credit: Native Plants Hawaii

# What is a thrips?



- ▶ Order Thysanoptera
- ▶ Small insects (0.5-14mm), with elongate body and piercing sucking mouthparts
- ▶ > 5,000 described species
- ▶ Well known pests of commercial crops: feeding damage, vectors for plant diseases
- ▶ Some beneficial as predators of mites and other insects

# Myoporum Thrips Timeline

- ▶ 2005 - First detected in CA
- ▶ 2007 – Species description completed
- ▶ 2008 – Observed by landscapers on Hawai'i Island
- ▶ Feb. 2009 – Reported to HDOA, delimiting surveys initiated
- ▶ May 2009 - Suspension of inter-island movement of Naio by HDOA-PQ
- ▶ Detected on O'ahu on November 23<sup>rd</sup>, 2018



Geyork Arakelian



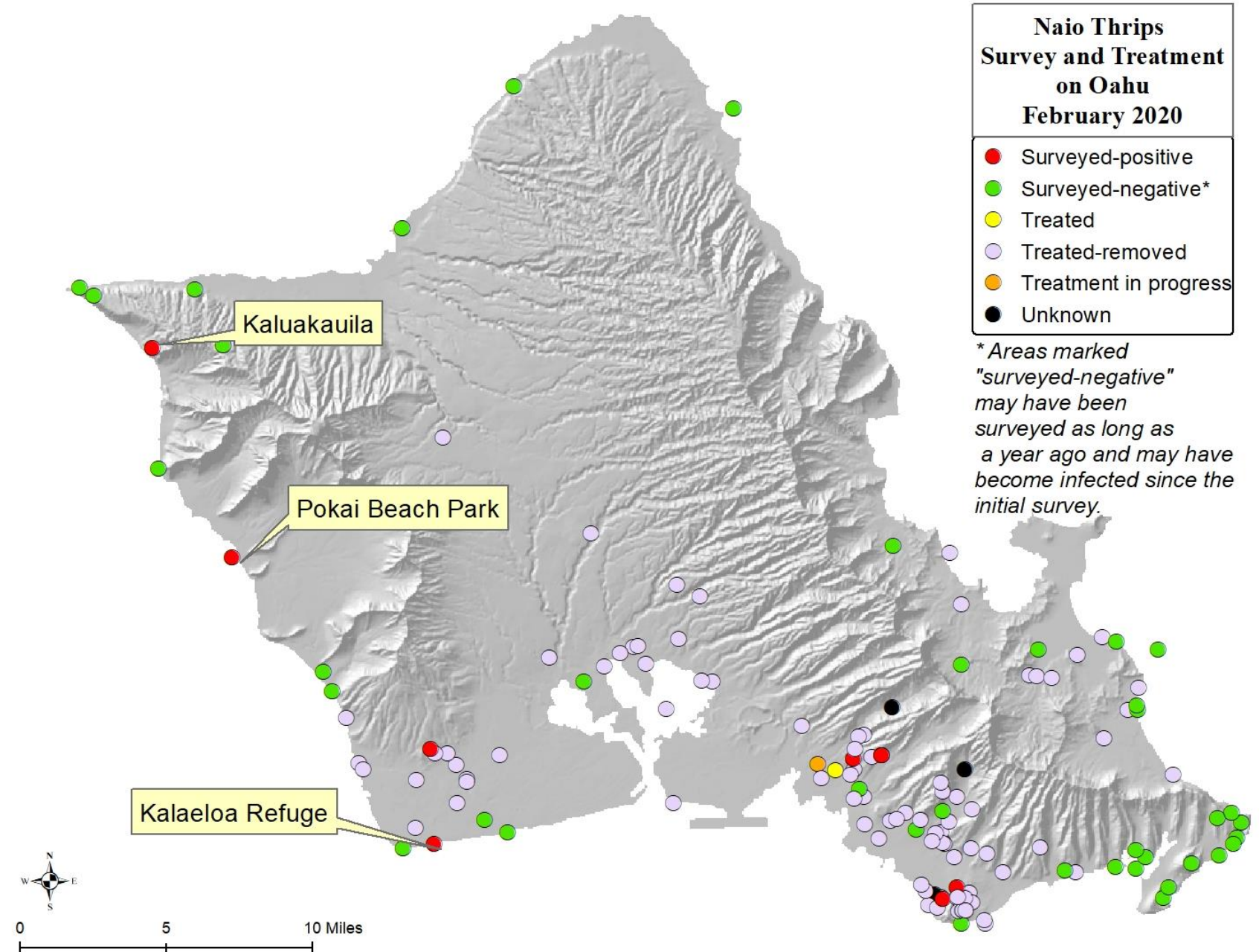
University of California



# Current Thrips Distribution on O'ahu

Wildland positive detections:

- Kalaeloa
- Kaluakauila



# Damage Identification





# Naio Thrips Damage







**Infested**



**Healthy**



# Naio Thrips Damage on Naio Papa





# Leaf Distortion & Galling





# Leaf Distortion & Galling



# Leaf Distortion & Galling





## Leaf Distortion & Galling



End Result:  
Defoliation &  
Death





# Decontamination Considerations

- ▶ Thrips are tiny, discrete, & wind dispersed
  - ▶ Cancel ops on windy day?
- ▶ Chemical treatments mostly ineffective so far
  - ▶ Thrips chemical resistance
  - ▶ Cannot rely on “complete kill”
- ▶ Work least infested to most infested
  - ▶ Between sites
  - ▶ Between plants at sites
- ▶ No consideration for decontamination, no chance for success



# Thrips Identification





# Thrips Identification



# Site Decon

- ▶ Park vehicles far from contamination site
- ▶ Inspect all equipment thoroughly & clean
- ▶ Treat plant material and cover securely with tarps



# Personnel Decon

- ▶ Change out of contaminated clothing at site, secure in garbage bags
- ▶ Inspect each other thoroughly & brush off
- ▶ Wear species specific clothing & Tyvek when possible





**Questions?**



Pau.

