Aerial Pine Control – Past, Present and Future

Jonathan Marshall

Haleakalā National Park (HALE) – National Park Service and
Pacific Islands Exotic Plant Management Team (EPMT)

The problem – Pines!

- North American and European pine species are spreading across higher elevations of East Maui.

- They threaten critical endangered species habitats across montane scrublands and grasslands with displacement.

- Species of primary concern –
  - Monterrey Pine (*Pinus radiata*) - NA
  - Mexican Weeping Pine (*Pinus patula*) - NA
  - Maritime Pine (*Pinus pinaster*) - EURO

2007 Polipoli Fire

Young Pine Trees in Haleakalā Crater

Project Objectives

- Prevent the establishment of a breeding pine population within Haleakalā crater.
- Control the spread of bordering populations into neighboring park lands.
- Use aerial spraying due its ability to reach remote, inaccessible targets. Park topography does not allow safe access to many targets by ground crews.

Past Control Efforts

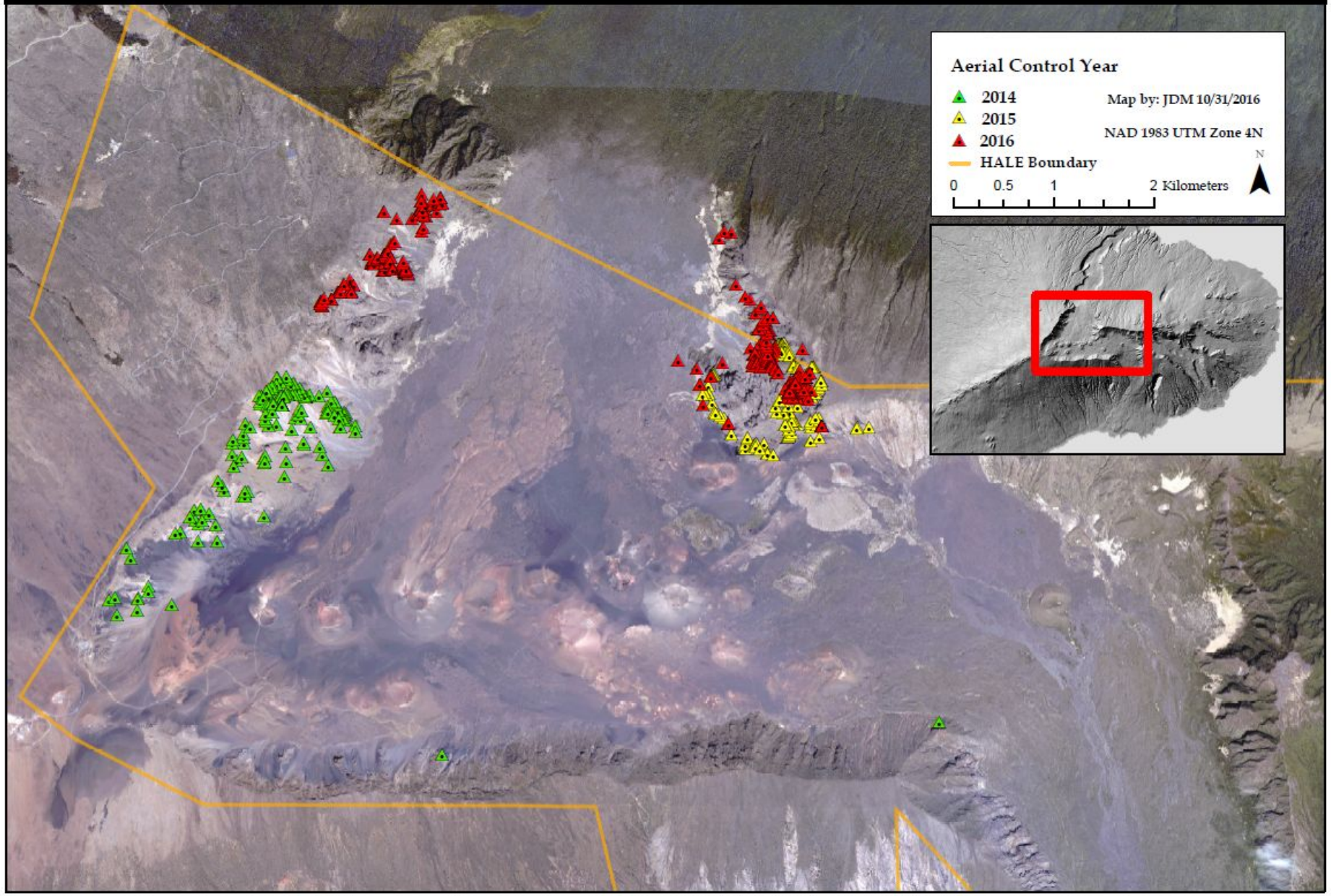
- Consistent ground control since the 1980's utilizing both cutting and cut stump herbicide treatment.
- Per target, point shapefile data since 1996.
- Helicopter aerial control began December of 2014.

Current Control Efforts – 2014 to 2016

- Helicopter spraying with custom EPMT spray rig.
- Windward Aviation helicopters.
- 2016 season – 1,133 pines treated aerially.
- Aerial spray chemistry –
  - .15% Milestone (Aminopyralid) & 5% Roundup Custom (Glyphosate)
  - 1% MSO (Methylated Seed Oil & Alkyarylpolyoxyalkane ethers) - Surfactant

National Park Service
U.S. Department of the Interior

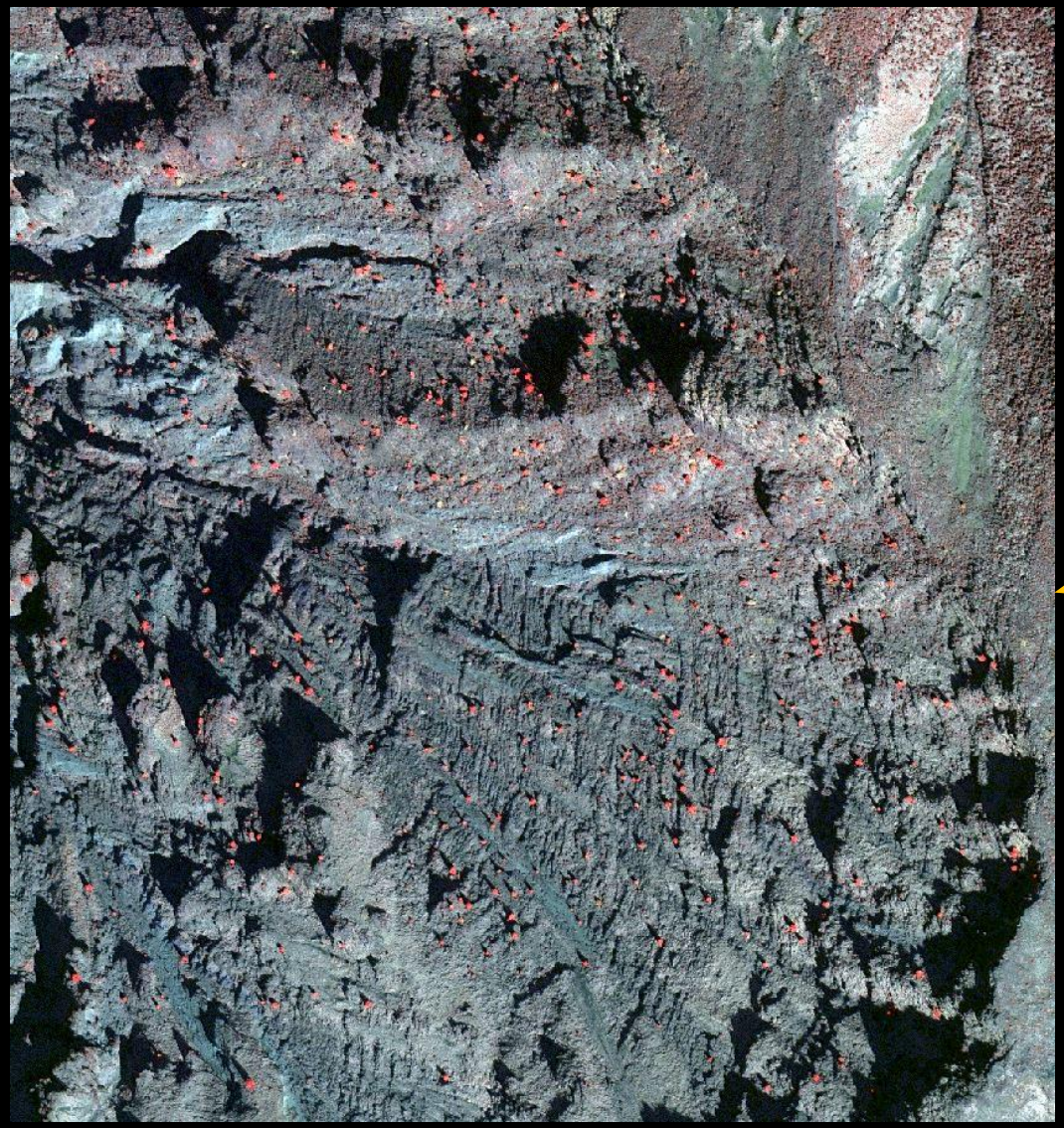
Haleakalā National Park
Pacific Islands Exotic Plant Management Team

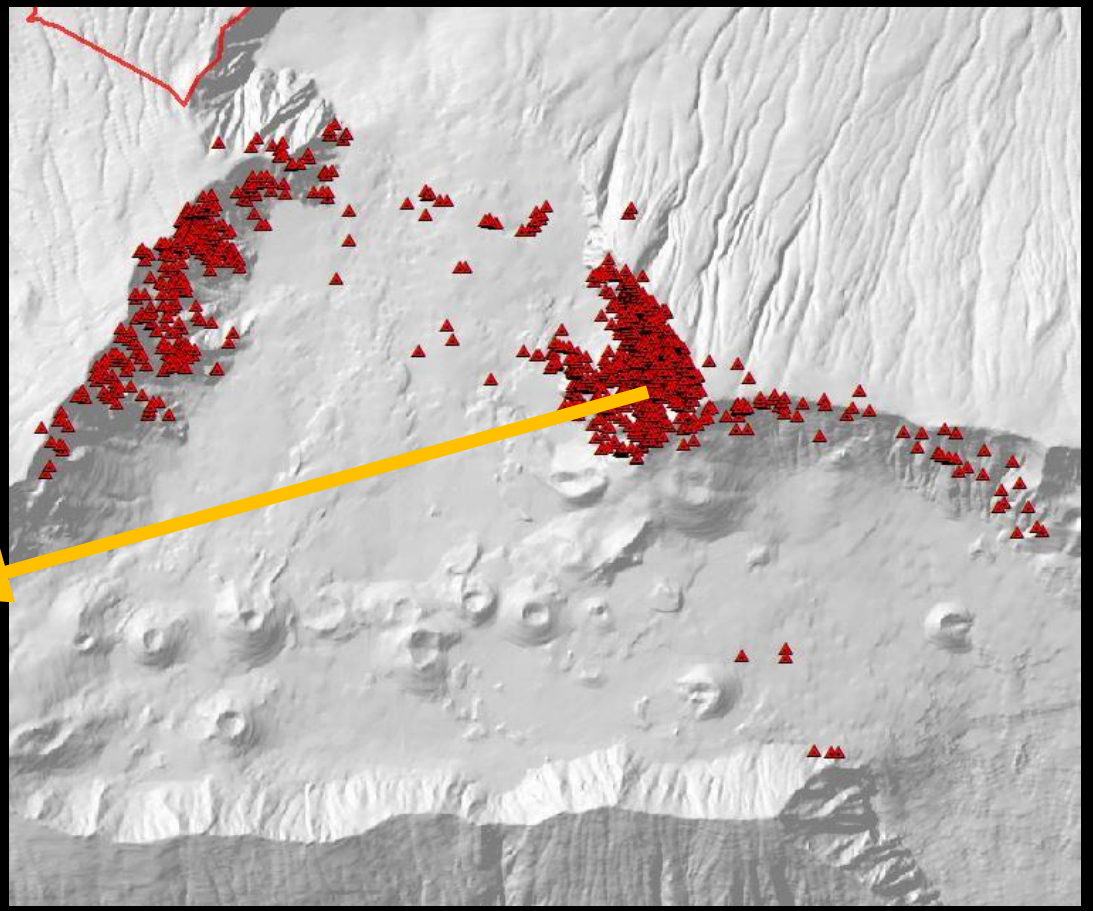


Future Control Objectives - 2017

- Continue treatment while prioritizing untreated targets, aided by remote sensing.
- Spray ball design may be updated (higher volume and droplet size).
- Second priority is retreatment of past targets. Also aided by remote sensing.
- Continue partnerships with TNC, Watershed Partnerships, UH, and DLNR to address pine invasion and develop future strategies.

Recon with Remote Sensing





Note: Positions are only trees over 2m in width due to sensor limitations


Mahalo!