Vegetation Monitoring Utilizing Gigapan Imagery

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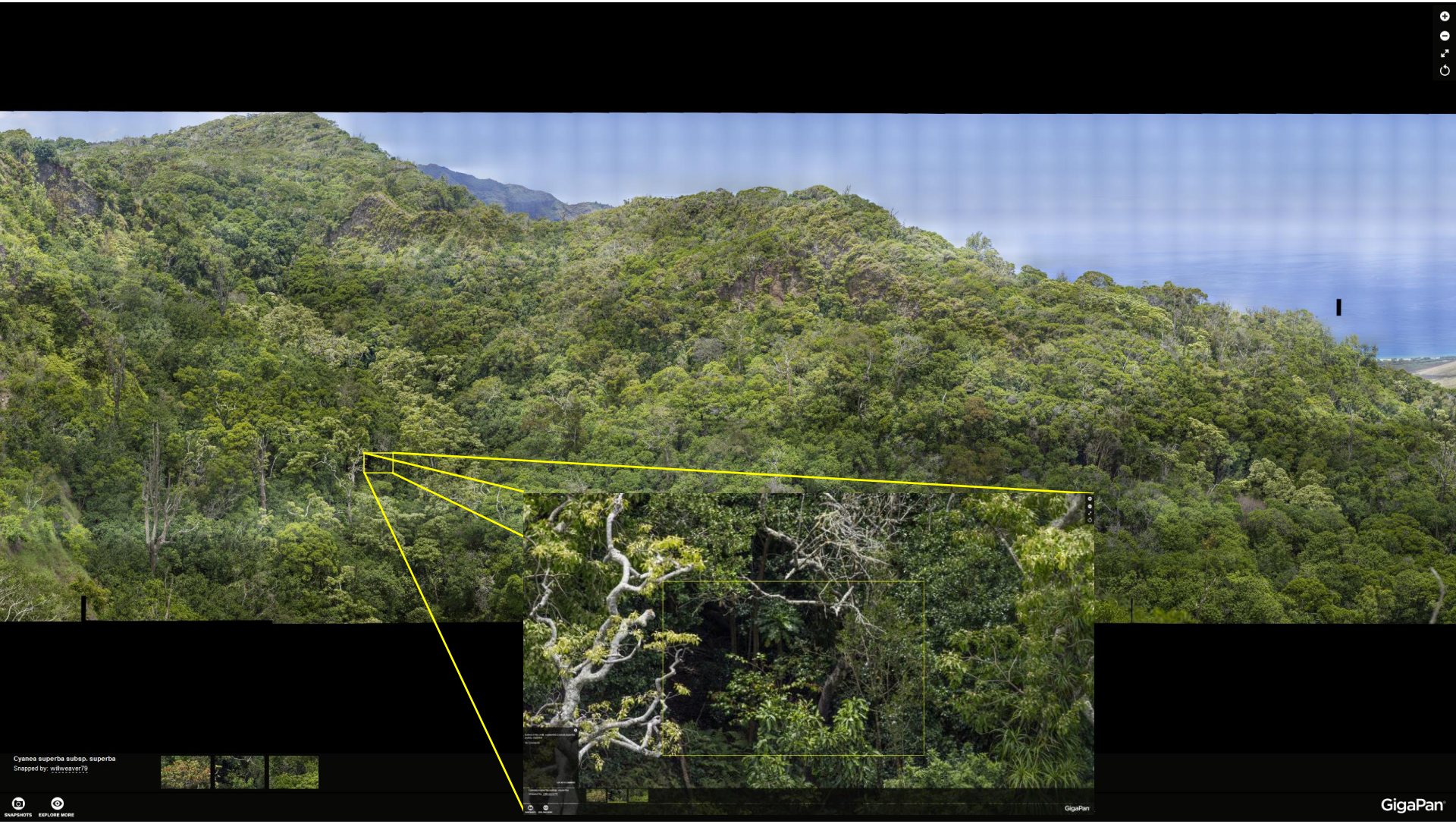
Gigapan

- **A ground based high resolution remote sensing platform**
- **Allows a user to obtain a very high resolution mosaic of hundreds to thousands of images stitched into a gigapixel file**
- **Initially developed for the Mars Rovers**
- **Gaining use in science to track landscape change over time**
- **Has yet to be explored to its full potential for vegetation monitoring and mapping**


Cyanea superba subsp. superba
Snapped by: willweaver79
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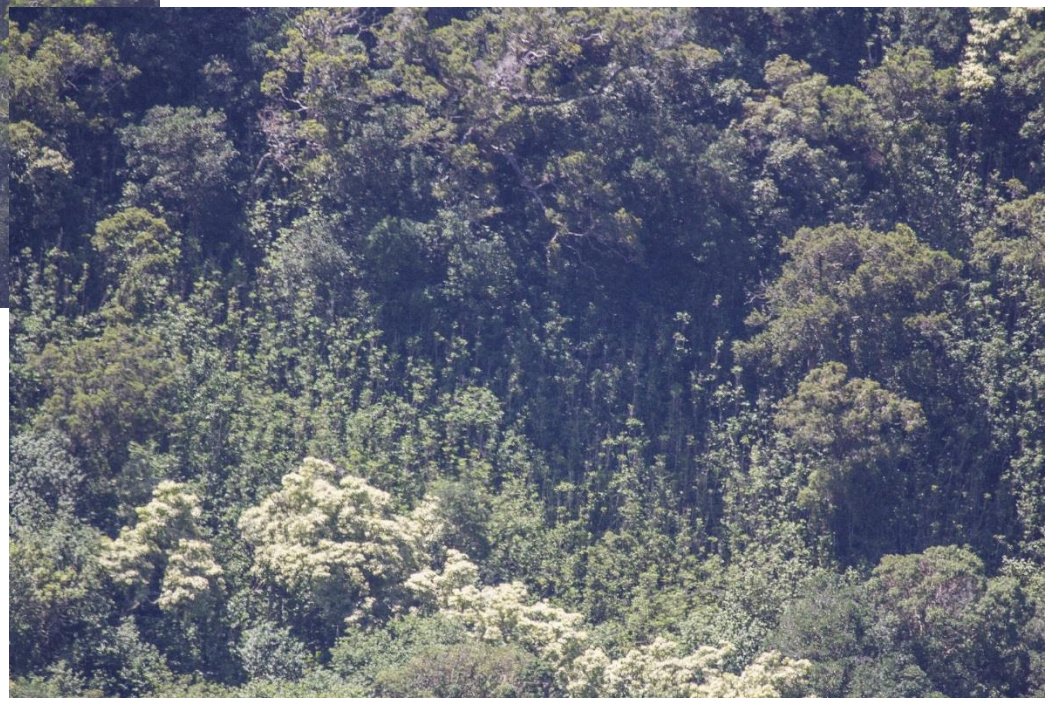
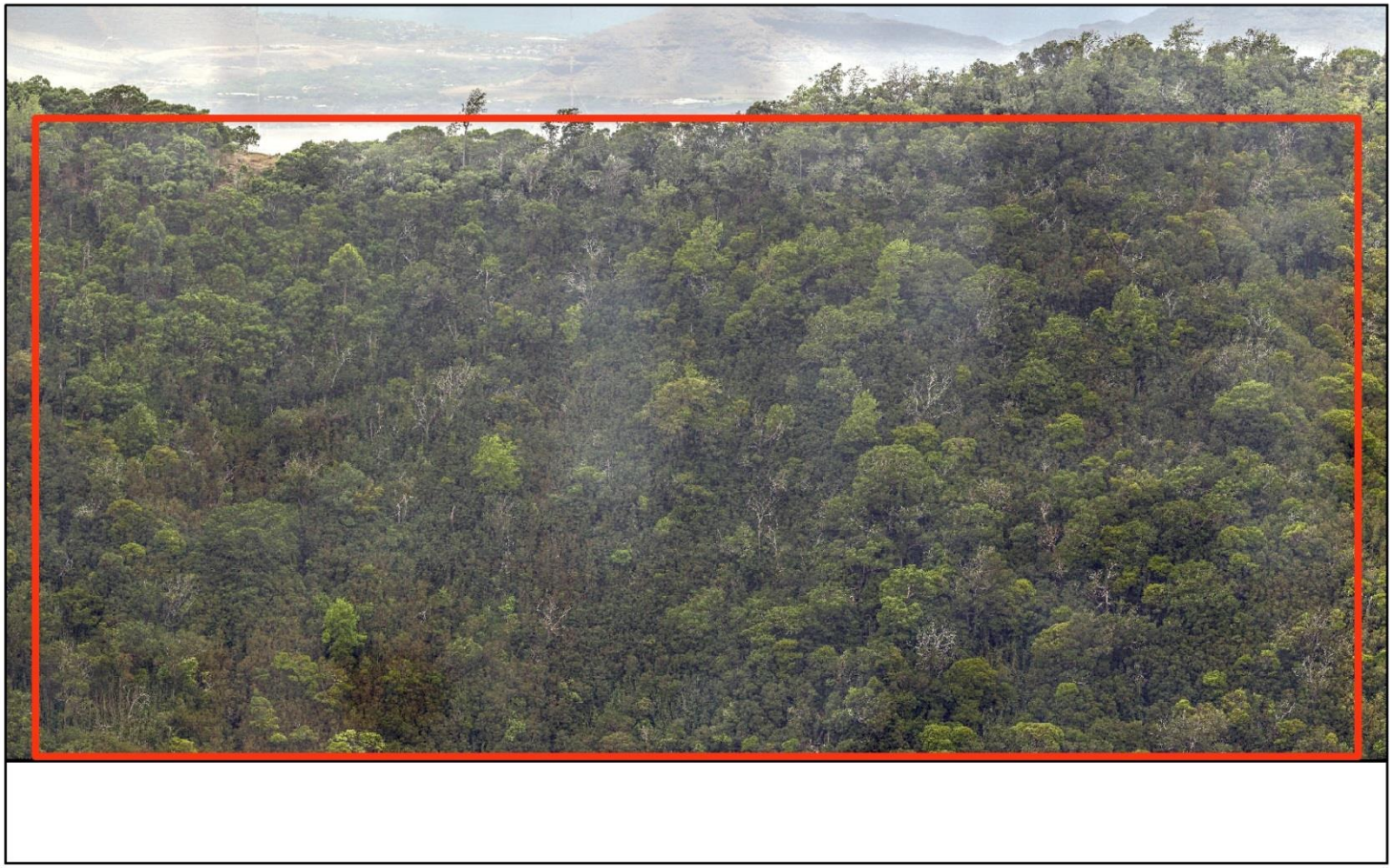
Visual Classification



- **Using visual cues, such as tone, texture, shape, pattern, and relationship to other objects, an observer can visually classify species.**

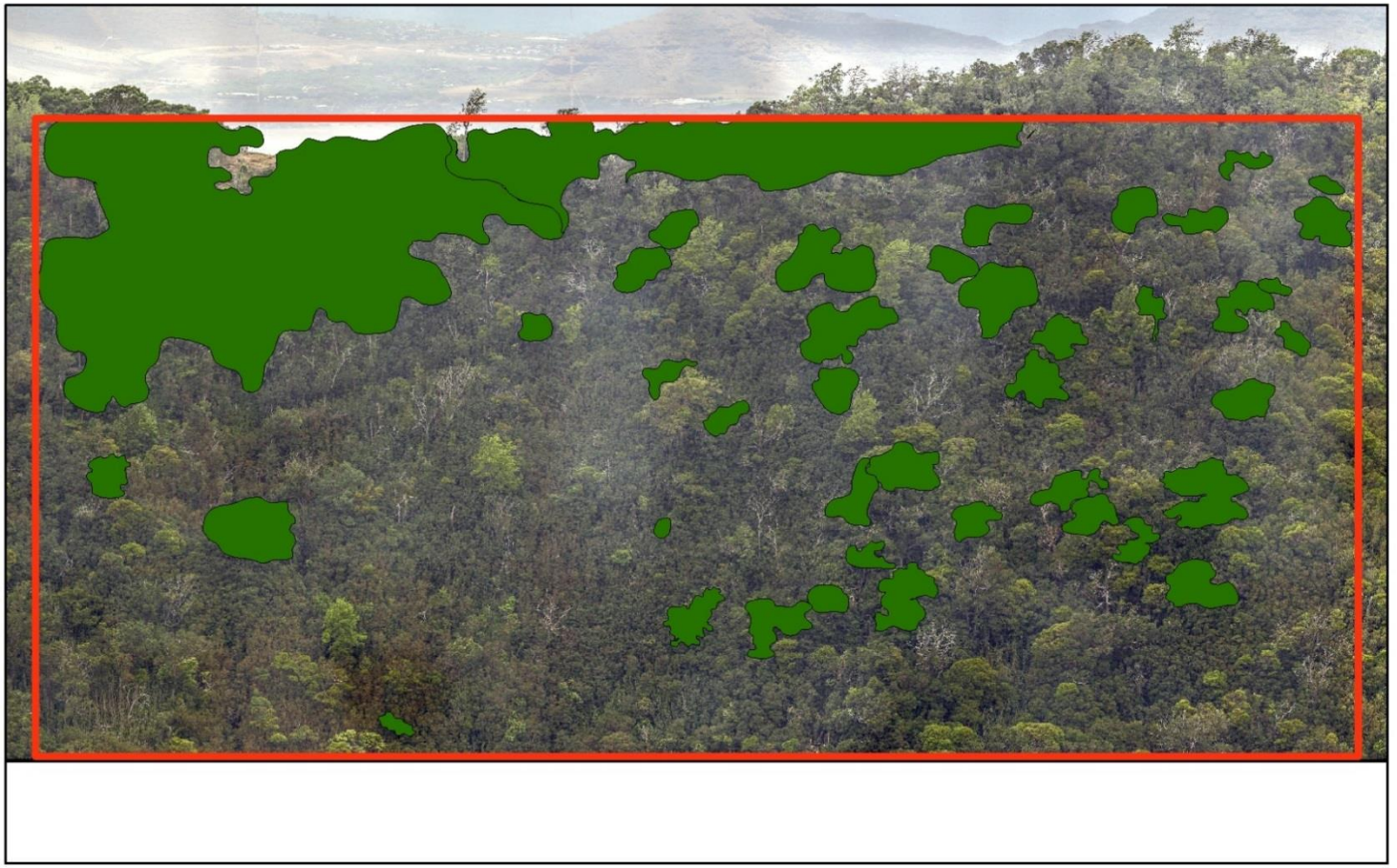
Upper Makaha Kumaipo Ridge Visual Vegetation Classification



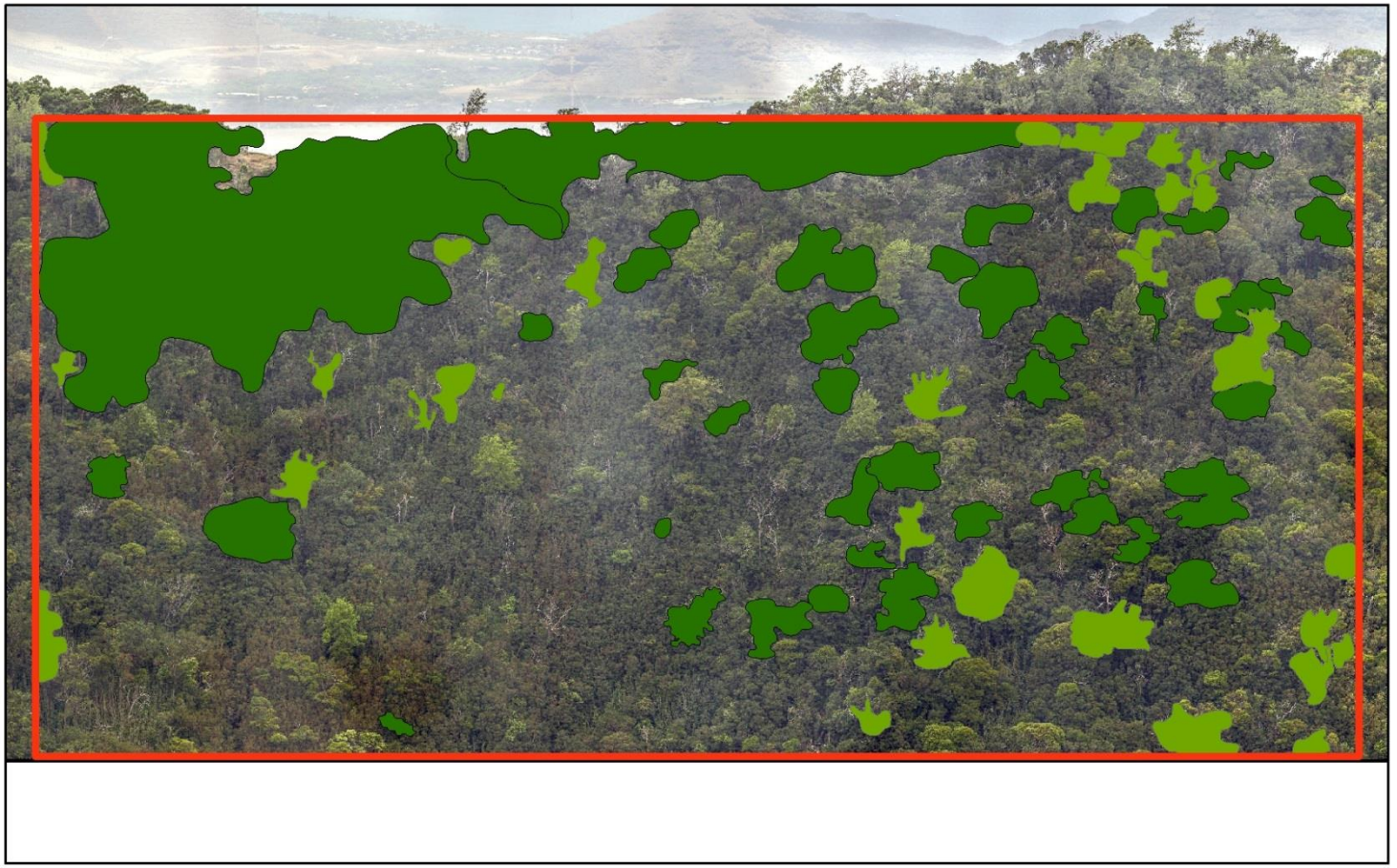
Legend

boundary

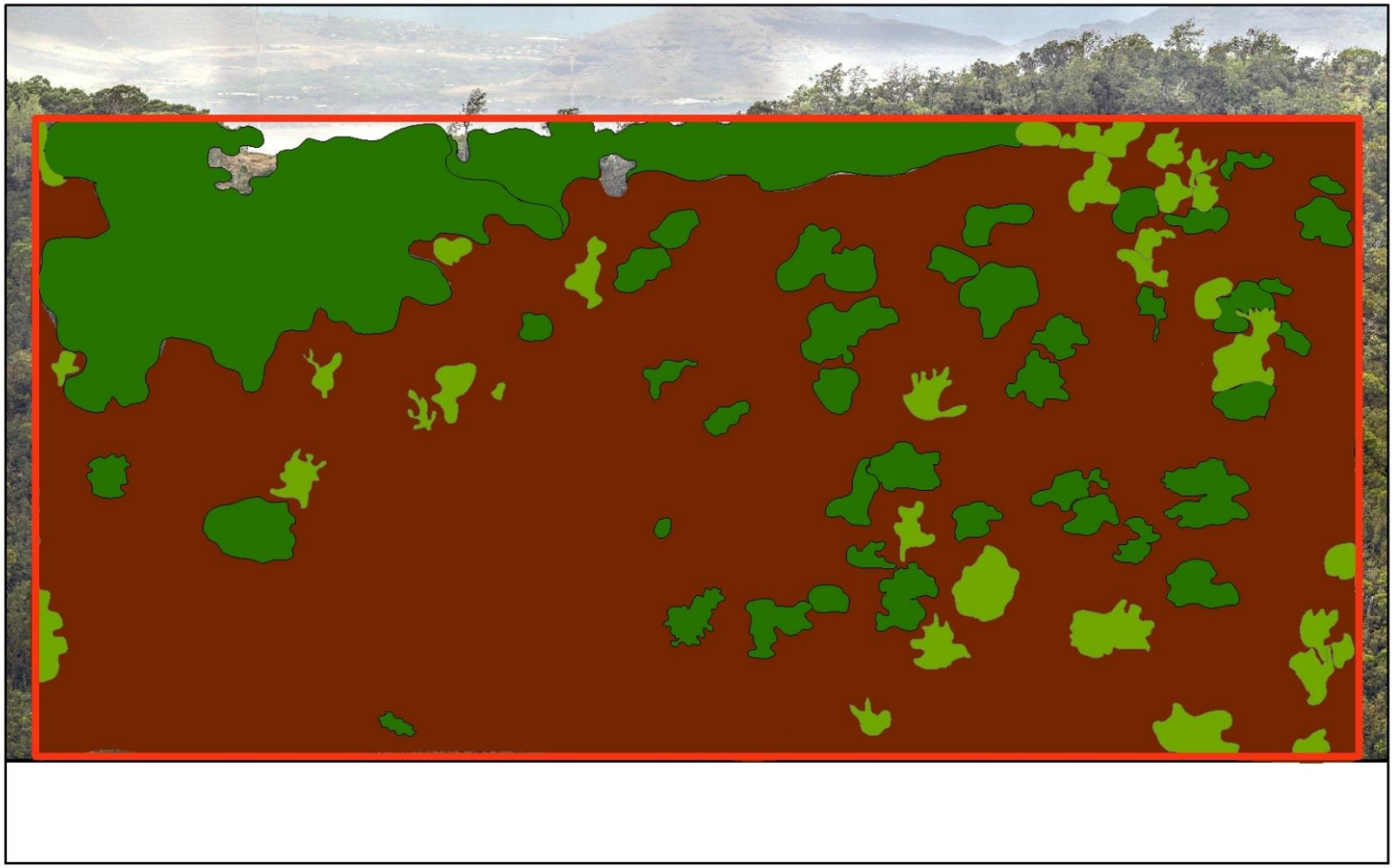
Upper Makaha Kumaipo Ridge Visual Vegetation Classification



Upper Makaha Kumaipo Ridge Visual Vegetation Classification



Upper Makaha Kumaipo Ridge Visual Vegetation Classification



Upper Makaha Kumaipo Ridge Visual Vegetation Classification

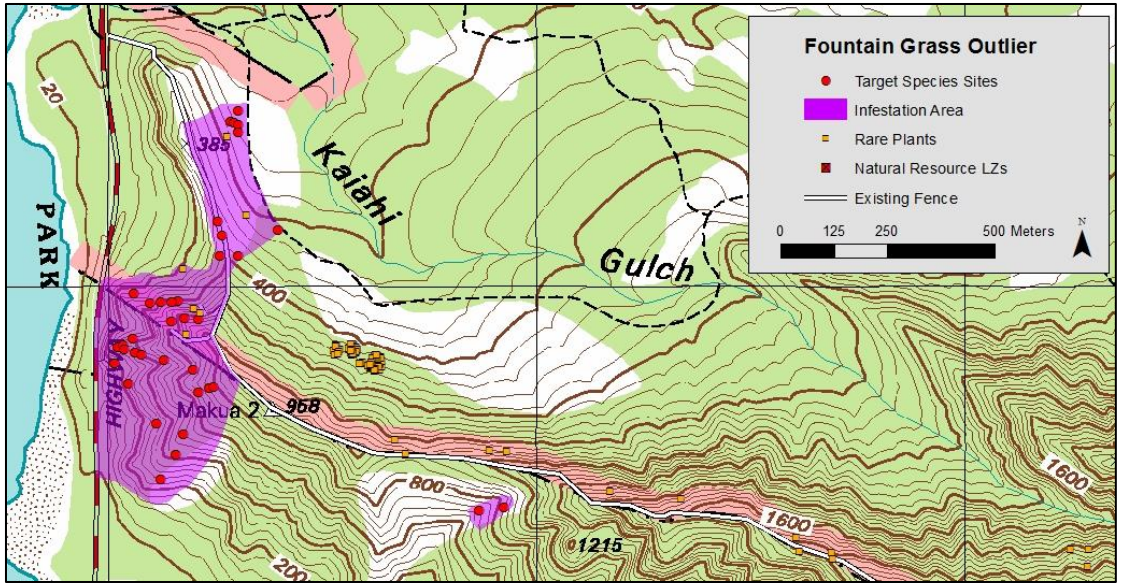
- Gigapan georeferencing -Truepulse 360R Laser Rangefinder
- Integrates by Bluetooth to obtain laser GPS offsets
- 1000m range
- Take points for landmark vegetation in the mosaic or target incipient invasives.

GigaPan

Efficacy of *Cenchrus setaceus* control at Makua 2012-2015

Background

- *Cenchrus setaceus* outbreak on cliffs at Makua
- Aerial and ground treatment began in 2012

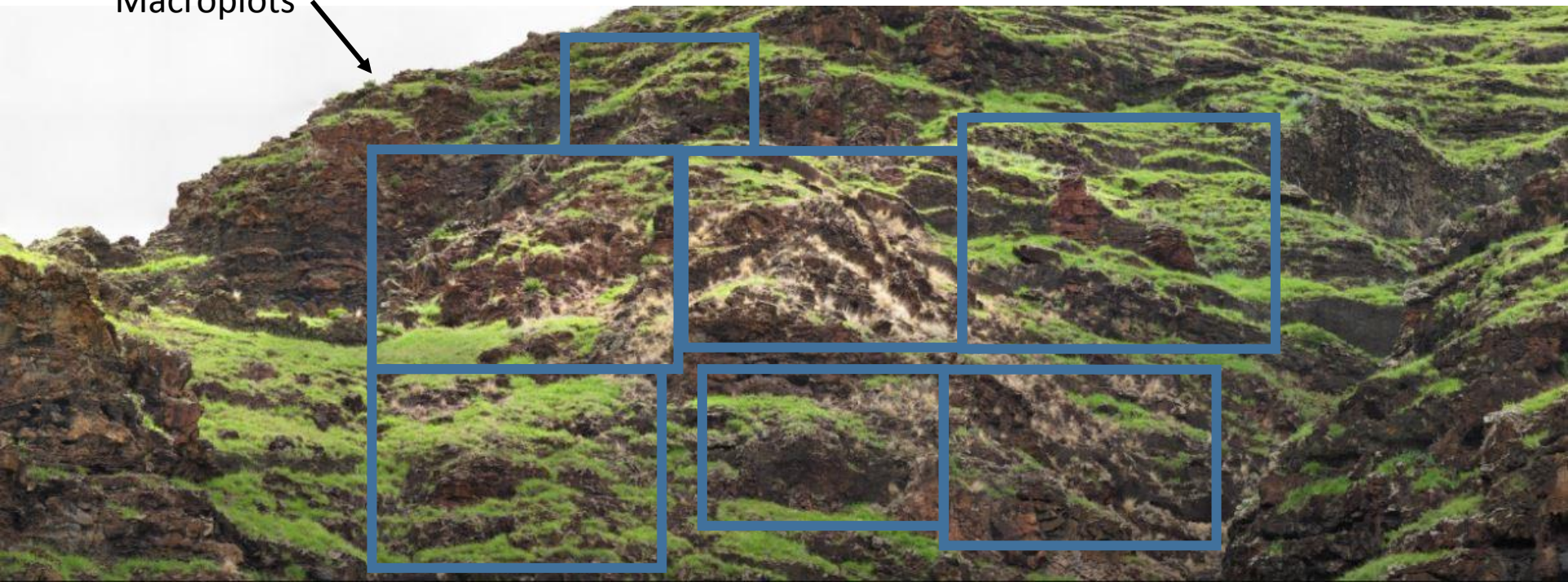


Core infestation, treated plants appear straw-colored

Efficacy of *Cenchrus setaceus* control at Makua 2012-2015

Methods

- Gigapan imagery taken between Feb 2012 - Sep 2015
- Population change in core infestation area assessed by counting live plants in 7 macroplots over time

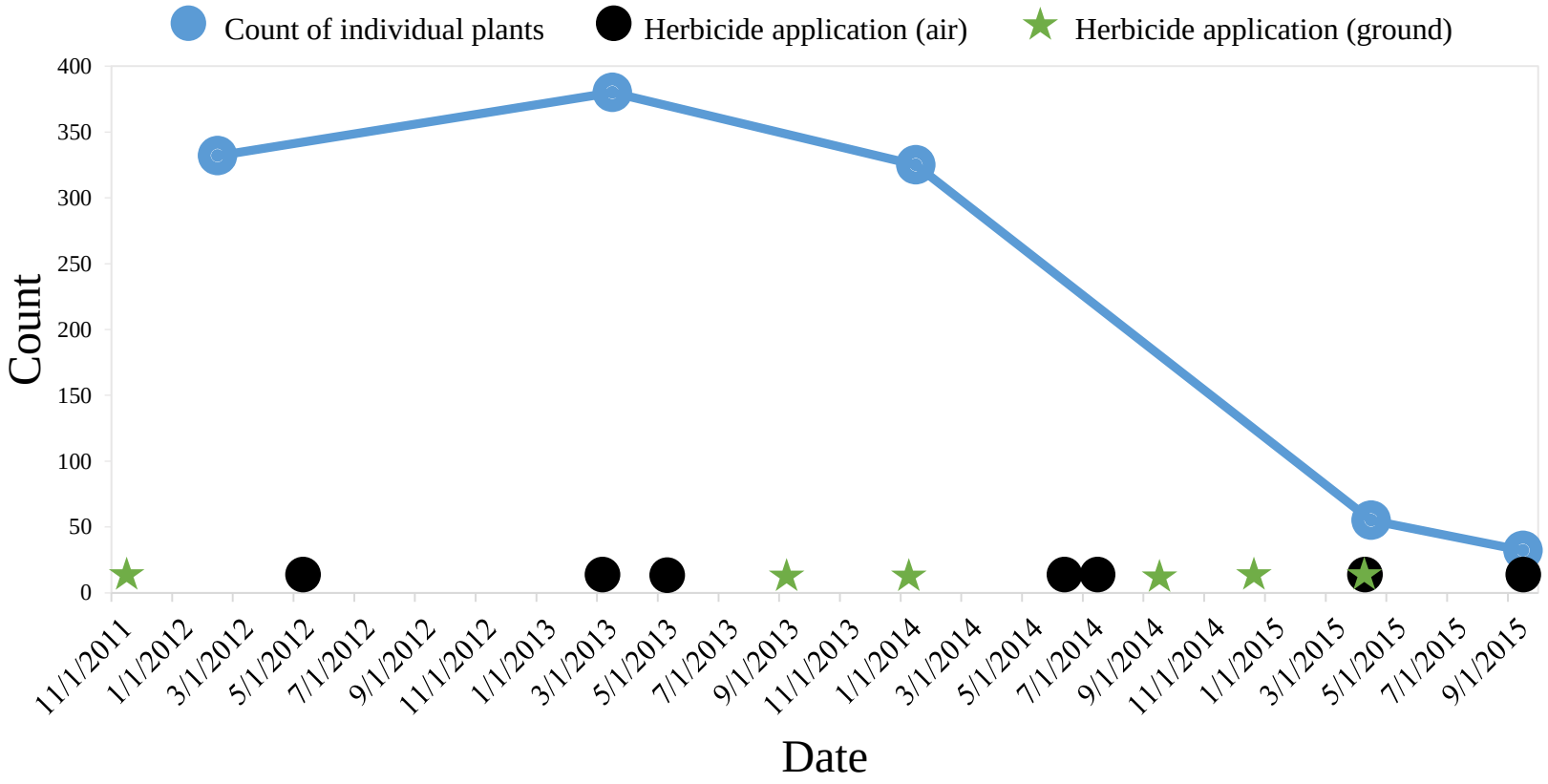


Efficacy of *Cenchrus setaceus* control at Makua 2012-2015

Efficacy of *Cenchrus setaceus* control at Makua 2012-2015

Results

- 90% reduction in population within core area by 2015



Efficacy of *Cenchrus setaceus* control at Makua 2012-2015

Discussion

- Sampling error: fuzzy imagery, vegetative plants hard to ID
- Isolated plants outside core area could be similarly analyzed separately
- Individual treatment efforts could be analyzed to see how many plants are missed or herbicide ineffective, though a bit more problematic

Mahalo!