

UAV Uses for Conservation: Beyond Imaging

Ryan Perroy



UNIVERSITY
of HAWAII®
HILO



SDAV
UH HILO

Pu`u Pahu Reserve on Haleakala Ranch

Rapid 'Ōhi'a Death (ROD) Mortality



Strawberry guava (*Psidium cattleianum*)





National Park Service

Hawai'i Volcanoes

National Park
Hawai'i

[Plan Your Visit](#) ▾ [Learn About the Park](#) ▾ [Get Involved](#) ▾



Faya (NPS Photo/J. Robinson)

Faya

Originating from the Canary islands, *Morella faya* was introduced to the Hawaiian Islands by the Portuguese in the 1800s as an ornamental plant for landscape architecture. While Faya was later used in reforestation efforts, it was considered an invasive species by 1937. It is feared to displace native plants by changing the soil pH and shading out native vegetation. Faya has a shrub-like appearance with smooth, light colored bark. The leaves are oblong, toothed, and dark green, although the flowers become small black or red berries, which are eaten by native birds. To control Faya, the trees are girdled and herbicide is applied.







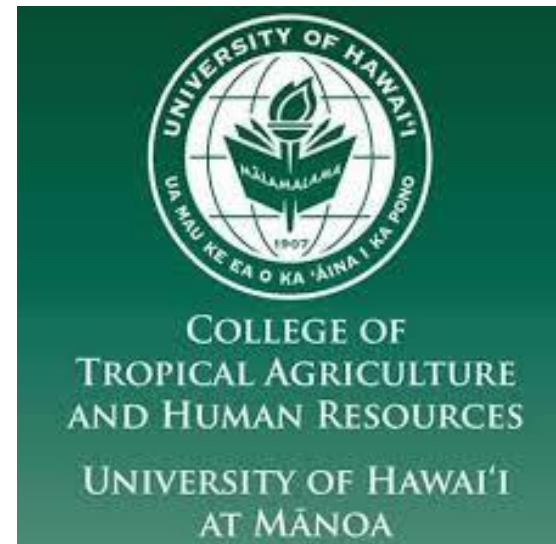
COLLEGE OF
TROPICAL AGRICULTURE
AND HUMAN RESOURCES
UNIVERSITY OF HAWAII
AT MĀNOA





COLLEGE OF
TROPICAL AGRICULTURE
AND HUMAN RESOURCES

UNIVERSITY OF HAWAII
AT MĀNOA



Aerial branch sampling
to detect forest pathogens

ETH zürich



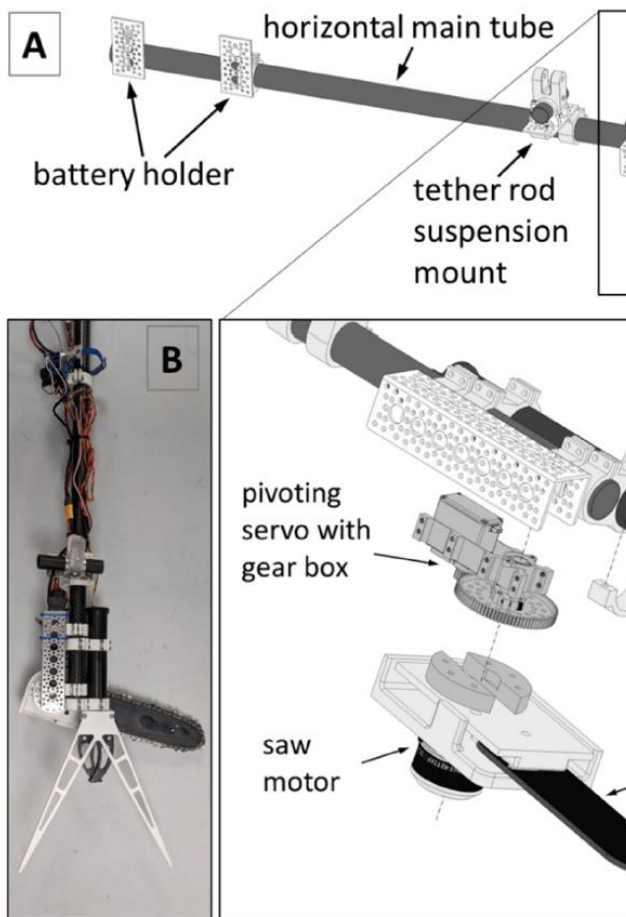


Figure 6. (A) Kūkūau V2 branch sampler components. (B) Expanded view of branch attachment and cutting mechanism.



IMPACT
FACTOR
5.532

CITESCORE
7.2

Aerial Branch Sampling to Detect Forest Pathogens

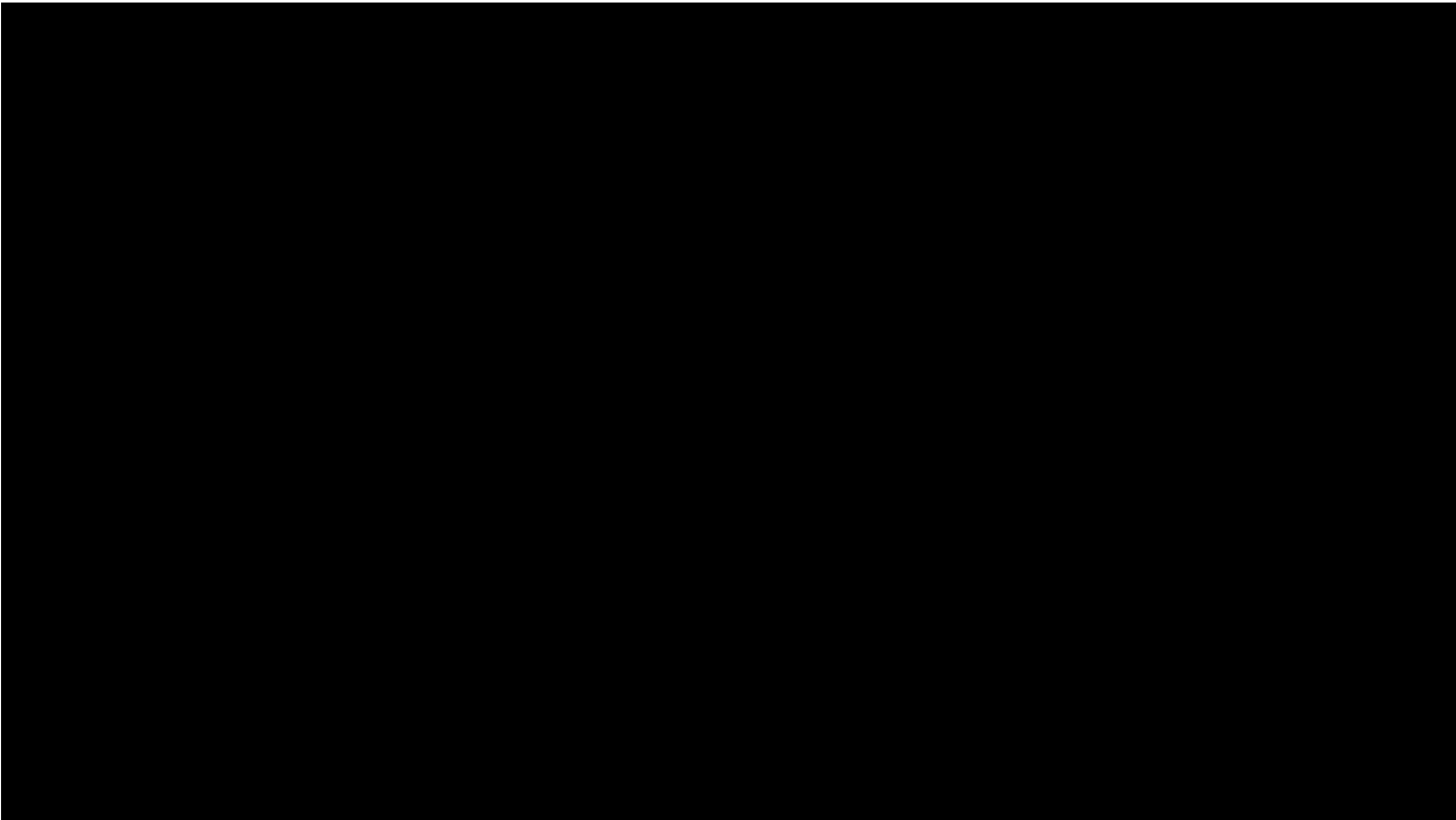
Volume 6 • Issue 10 | October 2022



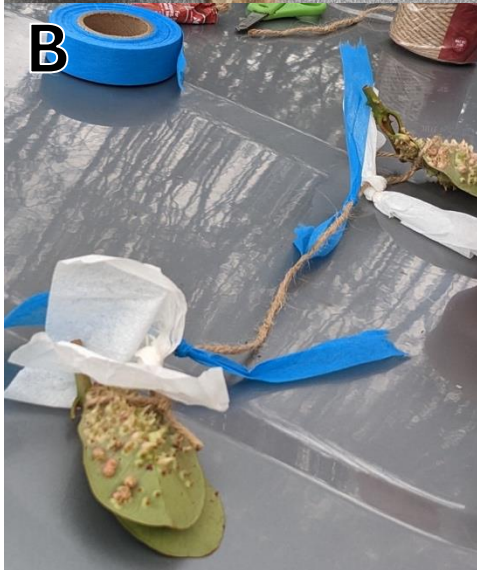
mdpi.com/journal/drones
ISSN 2504-446X



(A) Kūkūau branch sampler in the air following a successful cut; (B) U.S. Quarter dollar (25 cents coin) for scale; (C) Two different branches, the left contains healthy green leaves from a tree exhibiting partial mortality; (D) A person holding a 2 m tall branch collected by the Kūkūau branch sampler.



Aerial deployment of biocontrol for strawberry guava





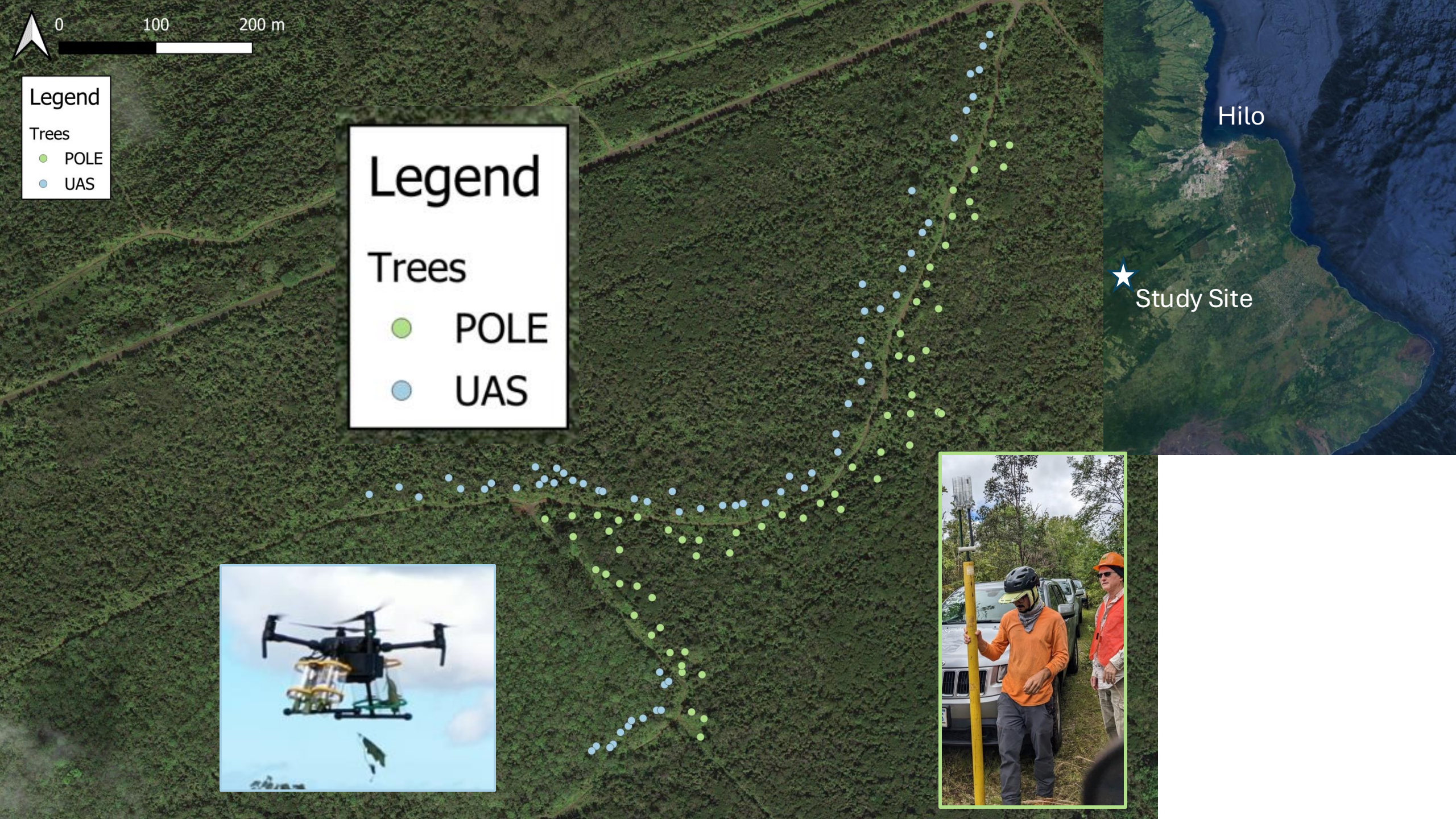
Legend

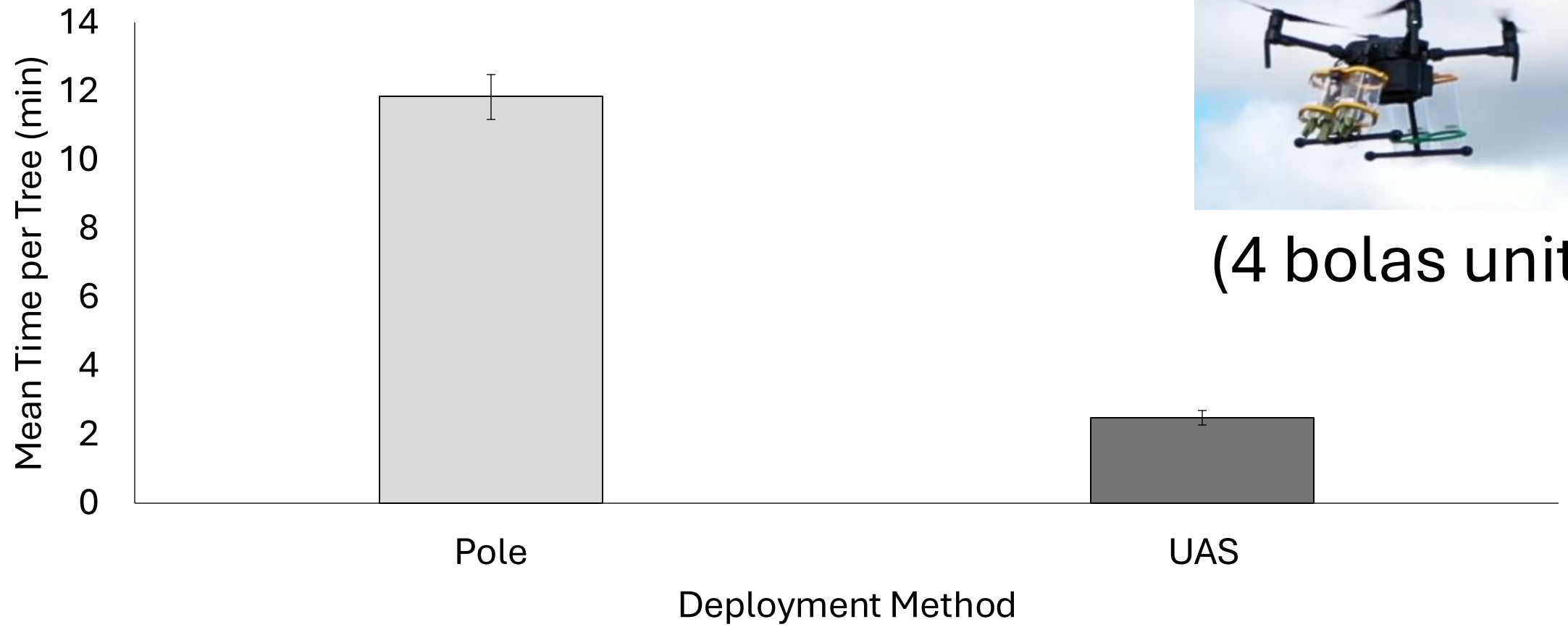
- Trees
- POLE
 - UAS

Legend

Trees

- POLE
- UAS

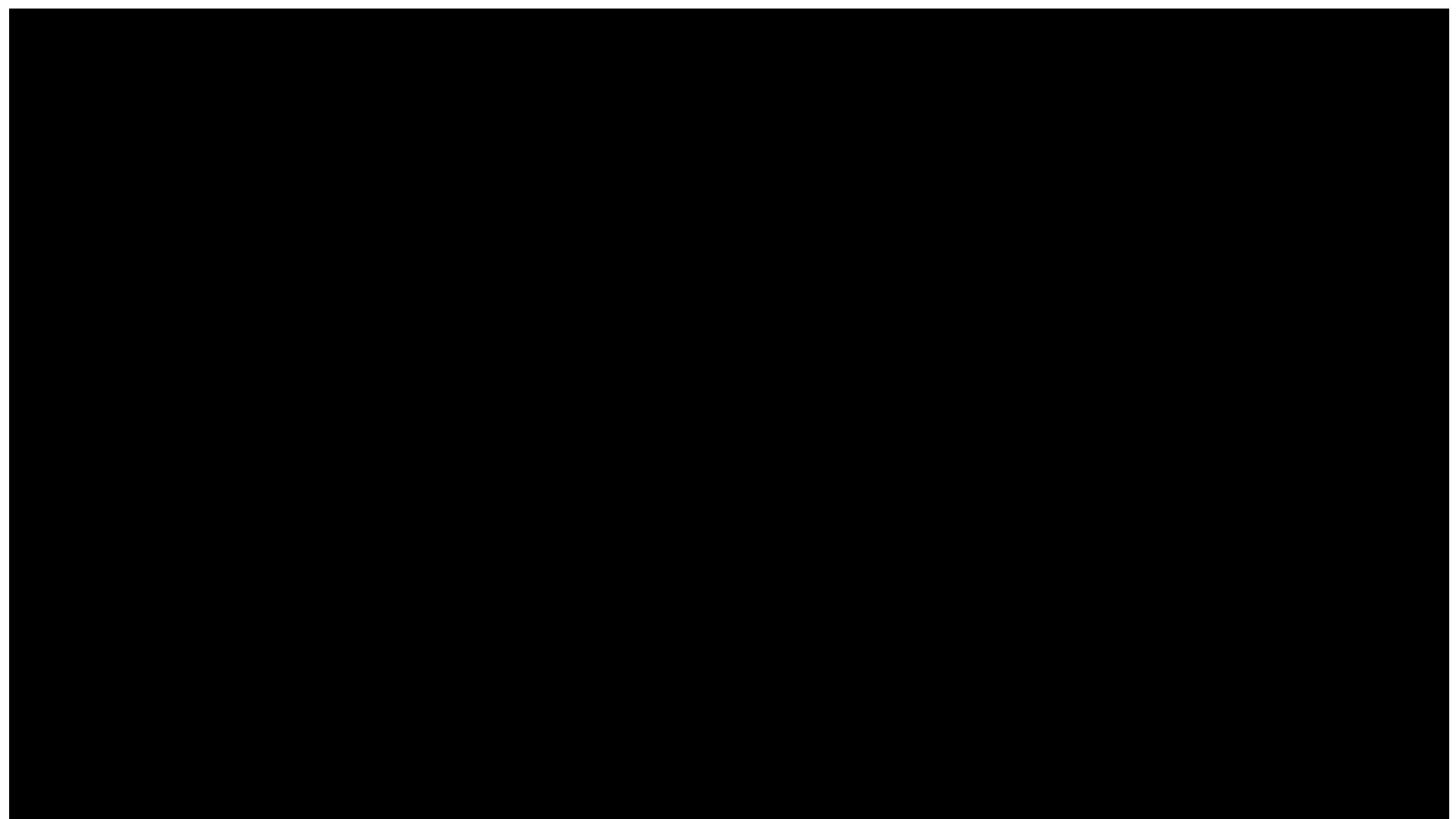




(4 bolas unit)

Kūhualūlū
n=54











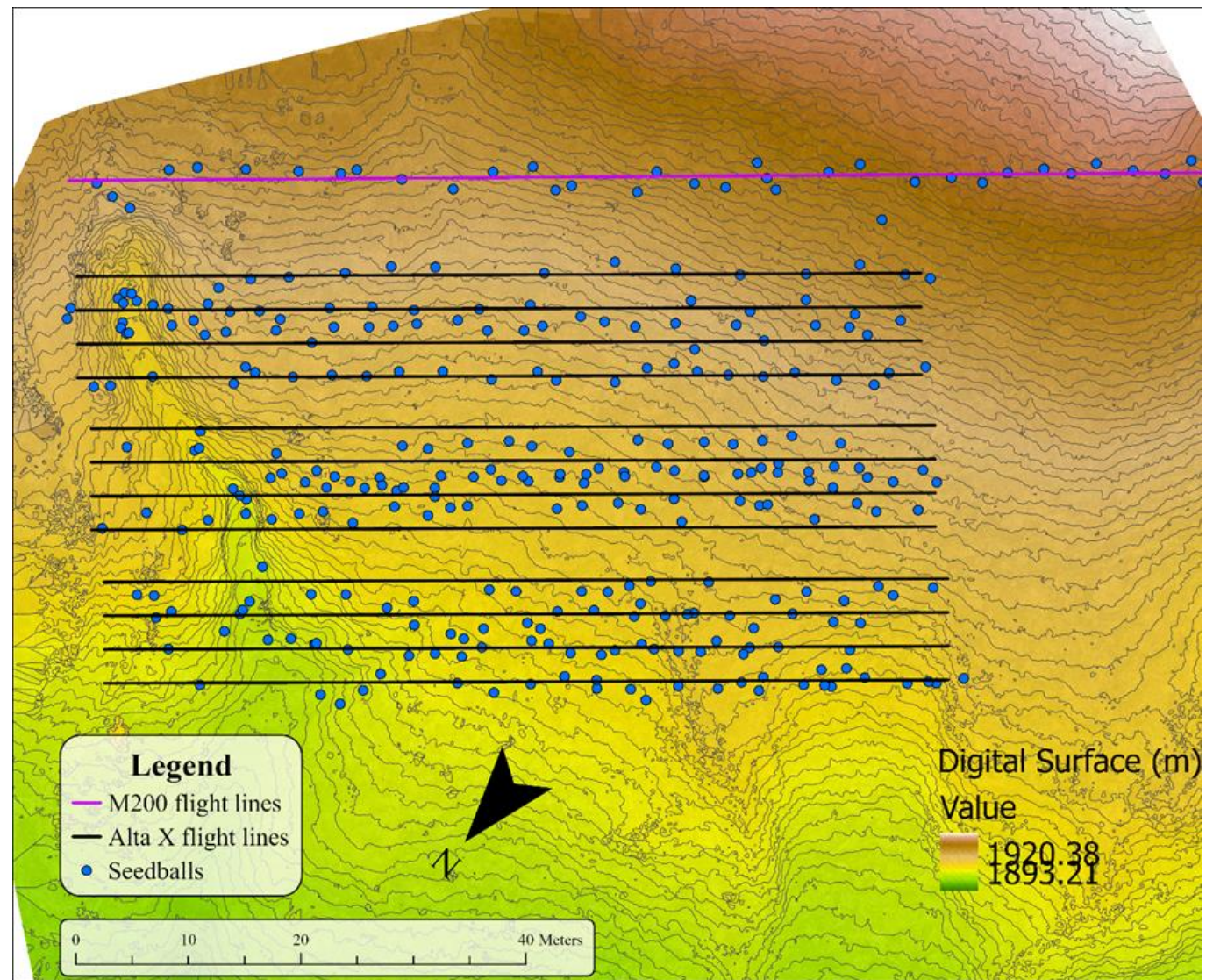




- Drone seed ball drop 08/14/2024:
 - # of flights: 9
 - Type of flight: manual
 - Drone platform: DJI M200
 - Seedball dropping capacity: 4
 - Plotting line length: ~100m
 - Seed balls dropped (and visible in mapping run): 36
 - Intended spacing: 3m
 - Height of flight: varied; done manually (10-20 m)
 - Speed of flight: varied; done manually (0.5-2 m/s)

Drone seed ball drop 08/15/2024:

- # of flights: 6
- Type of flight: automated
- Drone platform: Freefly Alta X
- Seedball dropping capacity: 54
- Plotting line length: 75m
- Seed balls dropped (and visible in mapping run): 278
- Intended spacing (including between plot lines): 3m
- Height of flight(s): 20m
- Speed of flights: 1 m/s



Mahalo nui!!



rperroy@hawaii.edu