USING ADVANCED MAPPING TOOLS TO IMPROVE SILVICULTURE OPERATIONS MANAGEMENT

CASE STUDIES

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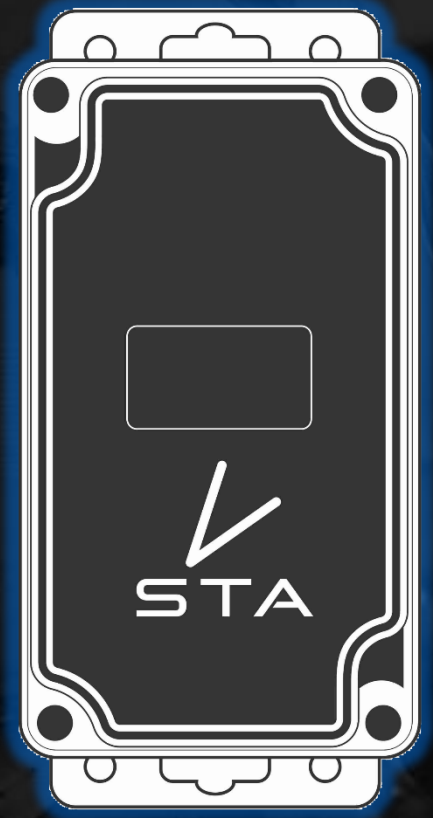
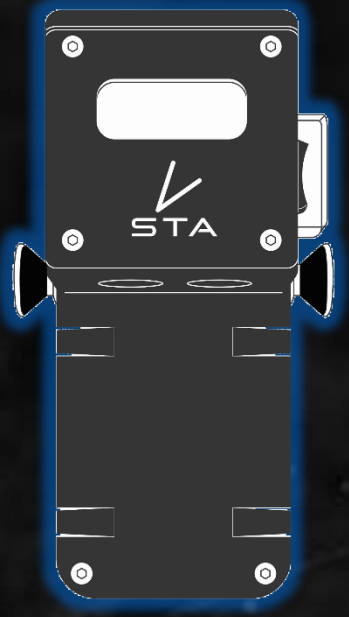
THE **FUTURE** WE’RE BUILDING

THE WORK WE’RE **STILL DOING**

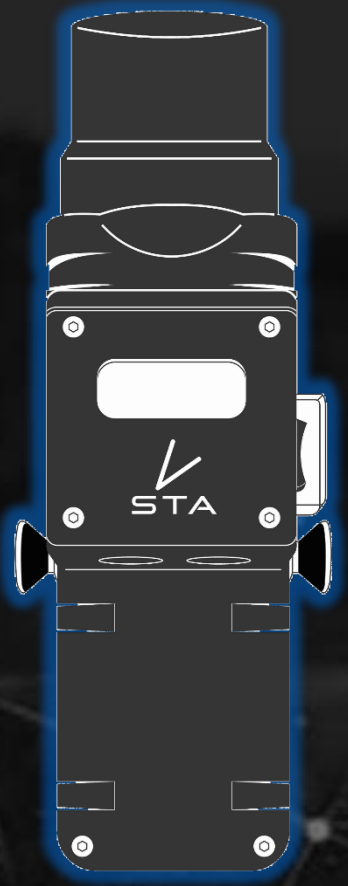
DON’T EXCLUDE MANUAL WORKFLOWS FROM YOUR DATA PIPELINE



STA LOGGER



STA EXPLORER

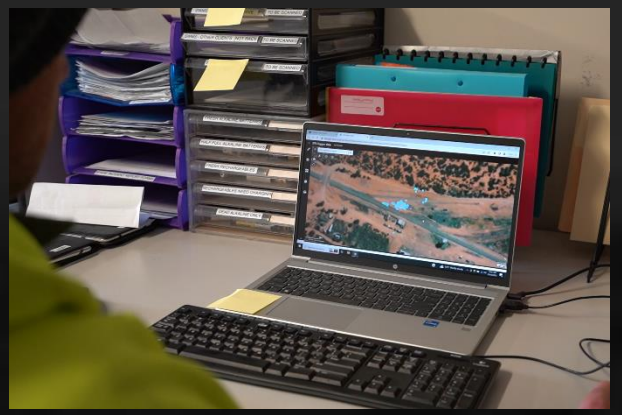


STA EXPLORER
HIGH-ACCURACY

CLIP IT ON
AND FORGET IT'S THERE

DATA, MAP PRODUCTION
AND ANALYTICS
AT YOUR FINGERTIPS

COMPLETE ORGANISATION
GIS INTEGRATION



ONE DEVICE, ALL OPERATIONS

CASE STUDIES

1. Site prep
2. Planting (GPS)
3. Planting (PPK)
4. Maintenance and monitoring

CASE STUDIES

Case Study 1:

Tracking site prep for QA and stocking purposes.

SITE PREP

GOAL:

Tracking site prep to verify completion and estimate stocking before planting.

ORGANISATION:

wild + pine

LOCATION:

Alberta Canada

SITE PREP

- Classification of spray data based on thumb switch
- Verification of extent of prep work.
- Estimate of stems to plant in planting zone.

CASE STUDIES

Case Study 2:

Integration of the STA logger into a custom tree planter, Uruguay

PLANTING (GPS)

GOAL:

Achieve 95% traceability in planting to understand the causes of plant mortality.

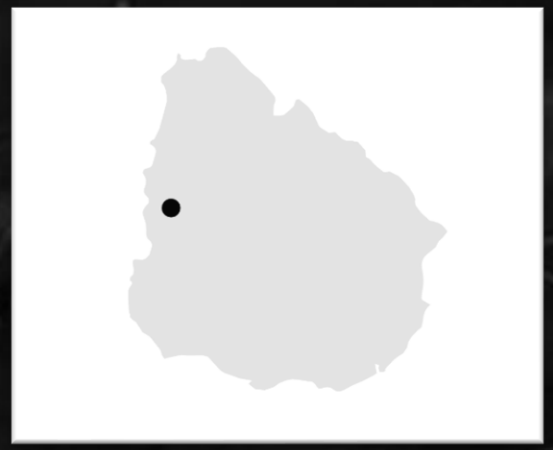
ORGANISATION:

Montes del Plata

FERRANDO & ASOCIADOS

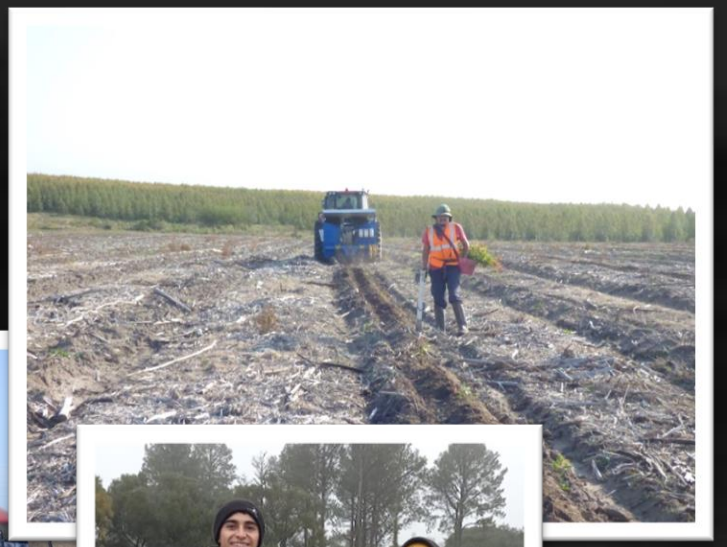
LOCATION:

Uruguay.



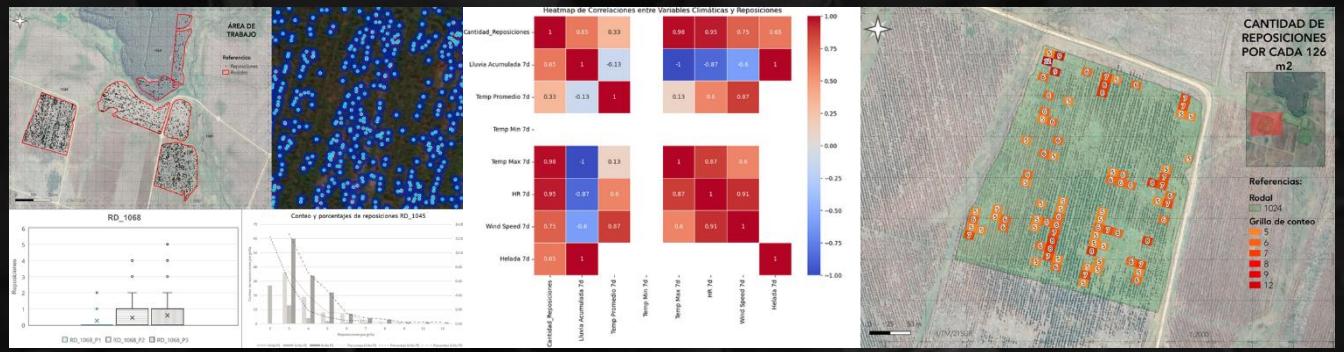
PLANTING (GPS)

- Integration of the STA logger into the ‘Sarapico’ planter.
- Geolocated plantings within ~1.2 m.
- Cross-referenced with variables such as soils, climate and genetics.
- Analysed to understand causes of plant mortality.



PLANTING (GPS)

- Presented last year by Santiago Ferrando.
- For details, refer to his presentation:



Images from Ferrando presentation, accessible by QR code.

PLANTING (GPS)

- Next steps:
  - Achieve location accuracy <30 cm.
  - Larger scale trials.
  - Differentiation of planting and infill.
  - Improved logistics such as remote charging and transport of equipment.

CASE STUDIES

Case Study 3:

High accuracy testing for tree planting applications, New Zealand and Australia.

PLANTING (PPK)

GOAL:

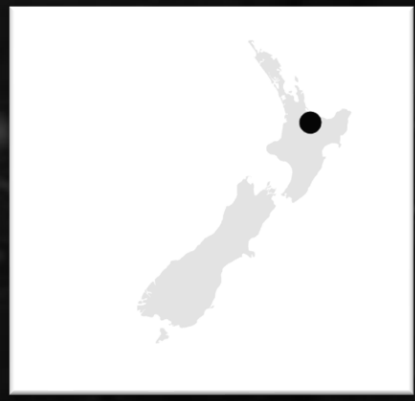
Achieve sub-foot accuracies during tree planting.

ORGANISATION:

FOREST GROWERS RESEARCH

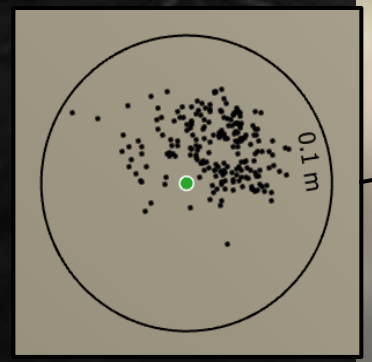
LOCATION:

Australia and New Zealand



PLANTING (PPK)

- Capable of centimetre level accuracy, but in the real world typically achieves <10 cm level accuracy under standard conditions using PPK workflow.
- Detection of planting action through integrated accelerometer, or button press.
- Suitable in low impact (Sarapico, Pottiputki, etc) and rover scenarios.



PLANTING (PPK)

- Field trials identified loss of continuous carrier-phase during periods of >4 g acceleration.
- Standard GPS remains operational but RTK/PPK requires re-lock and to re-resolve integer ambiguities resulting in poor corrections.

PLANTING (PPK)

- Way forward:
  - Software solutions for one-off, short losses of signal.
  - Separate hardware for parts that undergo rapid acceleration.

CASE STUDIES

Case Study 4:

Estimating tree density during relief spraying, USA.

MAINTENANCE AND MONITORING

GOAL:

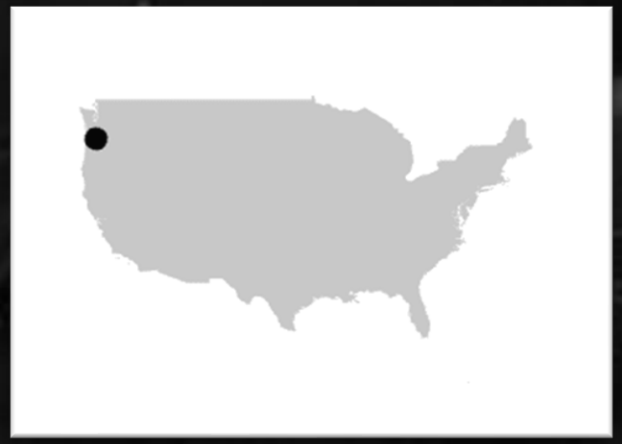
Estimate tree density from weed spraying data.

ORGANISATION:

Withheld

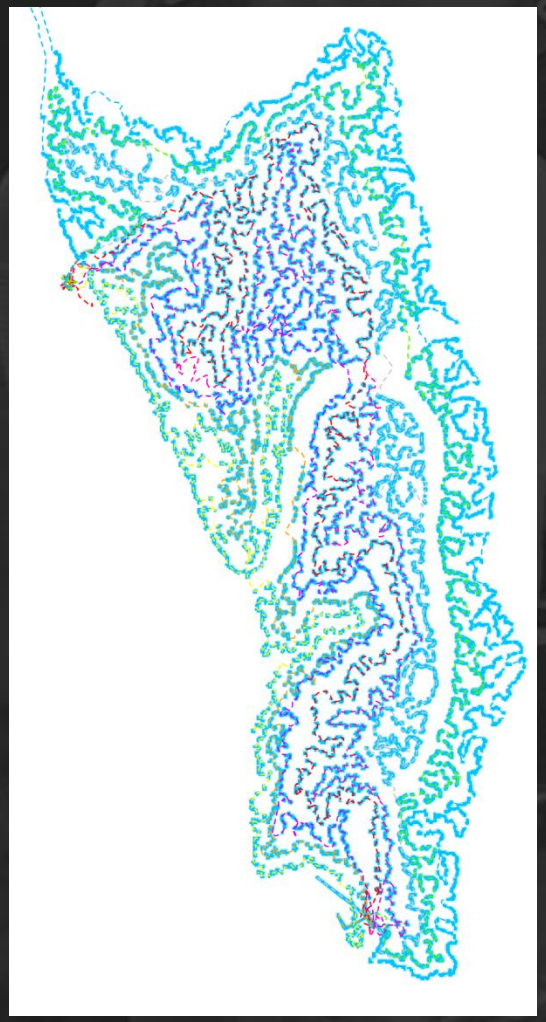
LOCATION:

Pacific Northwest, United States.

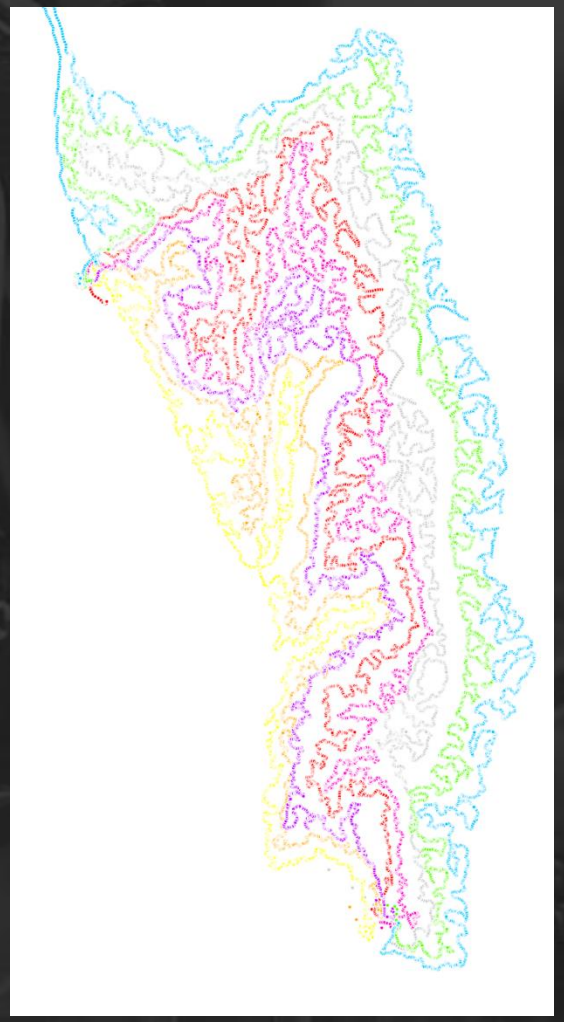


MAINTENANCE AND MONITORING

BASIC DATA

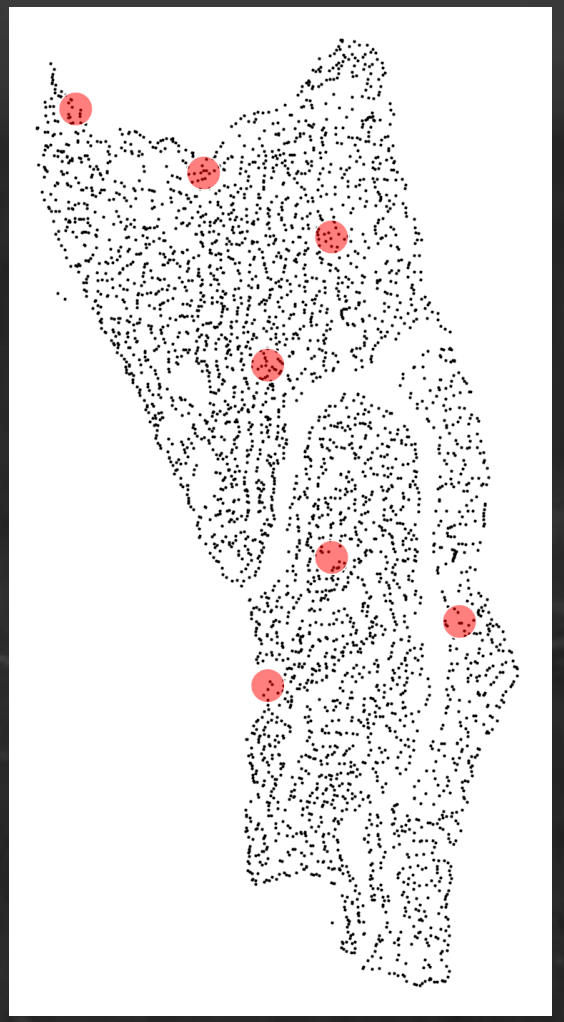


POINT DATA



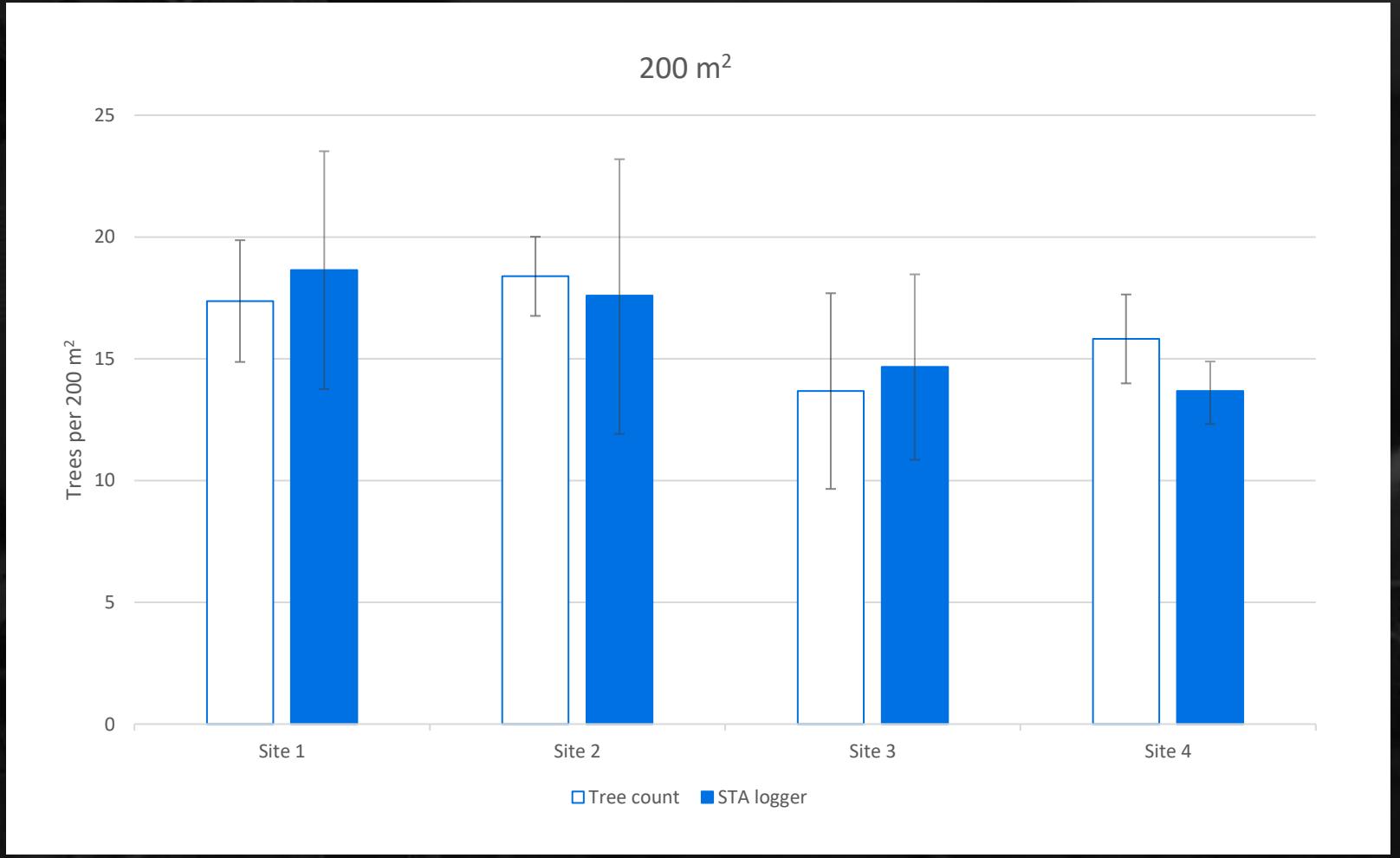
PROCESSED DATA

PLOT DATA



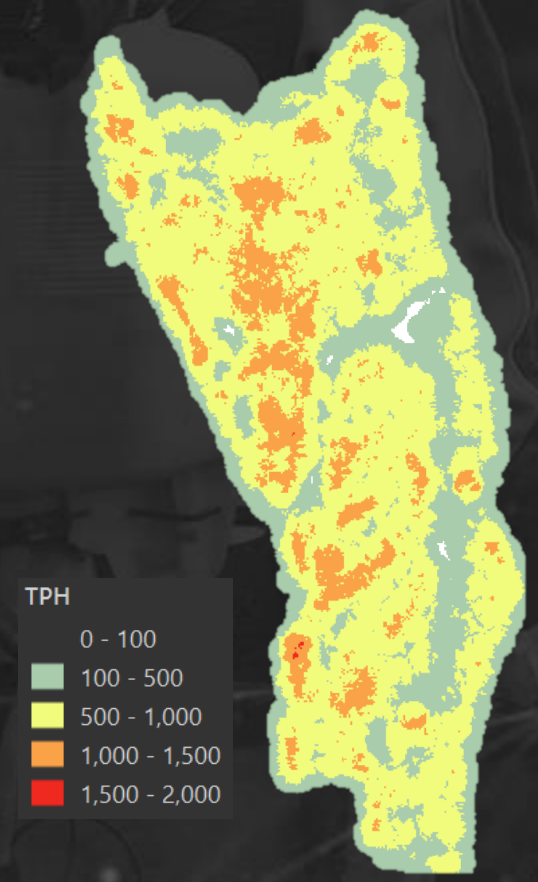
MAINTENANCE AND MONITORING

PLOT COUNTS vs STA DATA

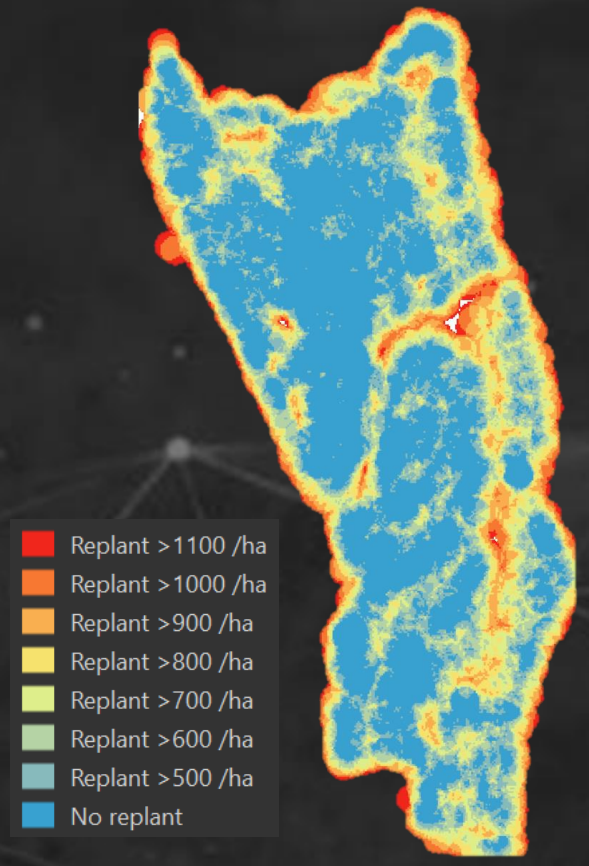


MAINTENANCE AND MONITORING

POINT DENSITY

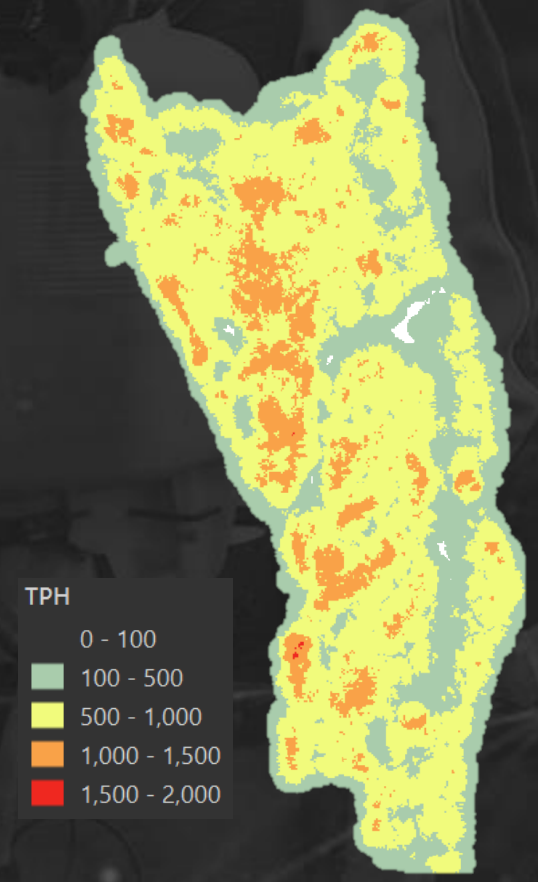


INVERSE POINT DENSITY OR “REPLANTING” MAP



MAINTENANCE AND MONITORING

POINT DENSITY



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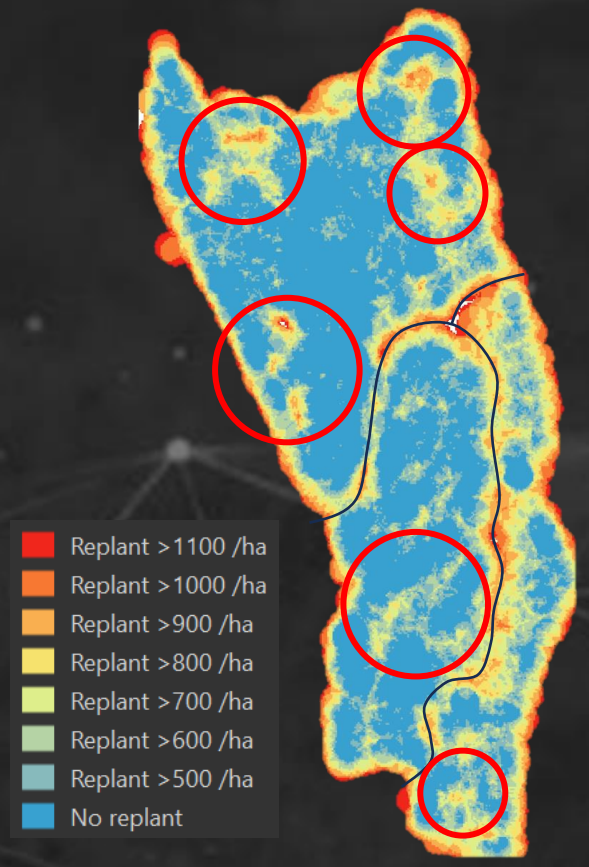
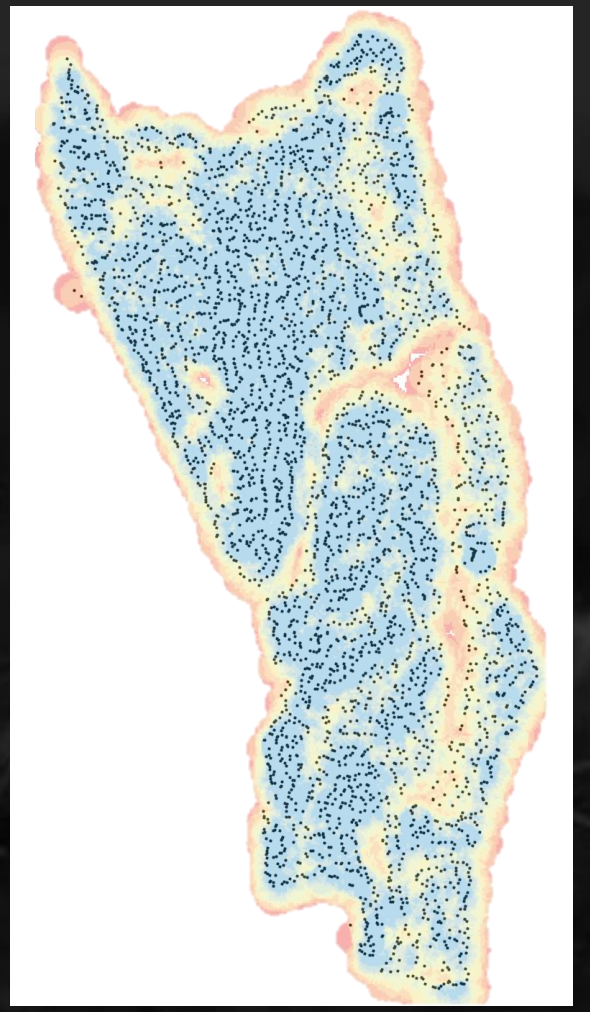


MAINTENANCE AND MONITORING

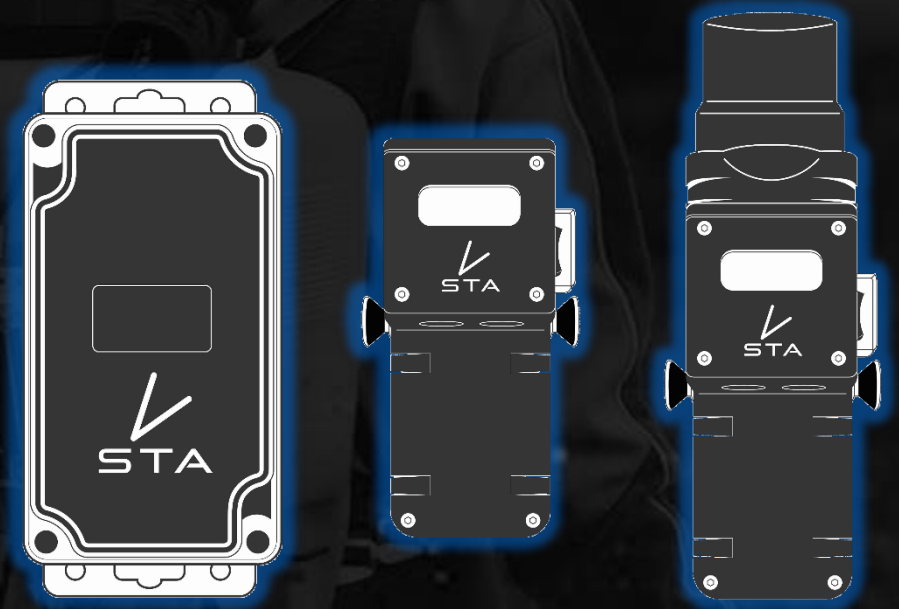
- Verification of the extent of relief spray.
- Results appear to match site-based assessment.
- Estimate of survivorship without a dedicated cruise.
- Geolocated map of replanting zones.
- Integration with site monitoring dashboard.



FULL LIFECYCLE

- Estimate tree density during preparation spraying.
- Map tree installation to get obtain stand density.
- Use high-accuracy device to determine tree position accurately allowing for precision forestry workflows.
- Obtain stand metrics during relief spray.

THANK YOU



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