

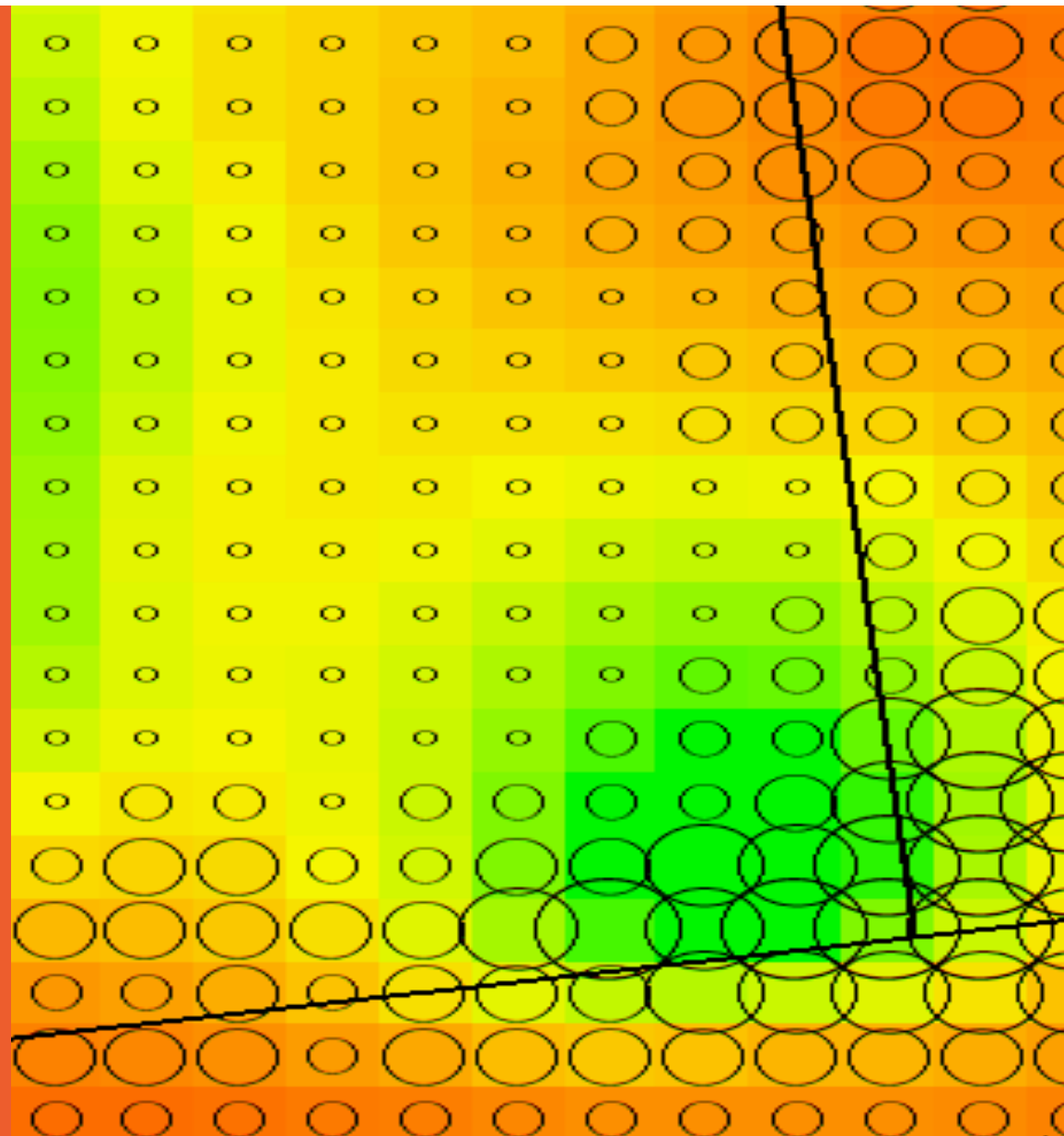
Pasture determinants of sheep location in the Central Tablelands

Presented by

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Background



The New South Wales Central Tablelands



- Climate and Landscape:
 - Temperate
 - High Elevation
 - 600-900mm/yr
- Industry and economics:
 - 5 million head of sheep
 - Contributes \$350 M to national economy

The issue...



- Decline in pasture productivity and grazing utilization due to:
 - Acidification from fertiliser use
 - Salinity from removal of native grasses, shrubbery and trees
 - Compaction from over stocking
 - Increased promotion of annual grasses
- What needs to be done:
 - Assess the behavioural drivers of grazing location

What was done

3 Easy (not so easy) Steps:

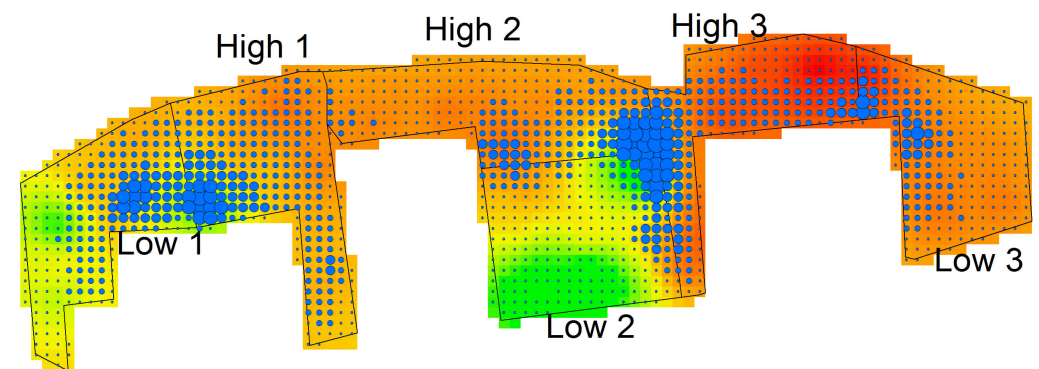
1. Track Sheep



2. Measure Pasture



3. Analyse

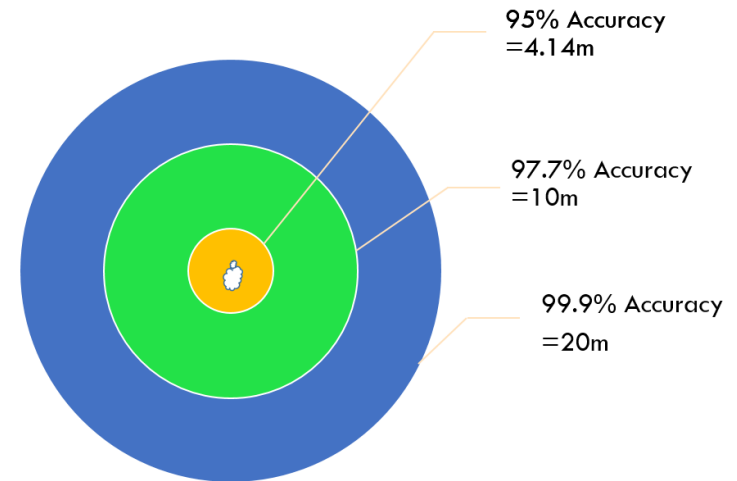


Tracking Sheep

- **Two Treatments**
 - HSR (13 DSE/ha) & LSR (8 DSE/ha)
- Three Replicates
- Six Paddocks

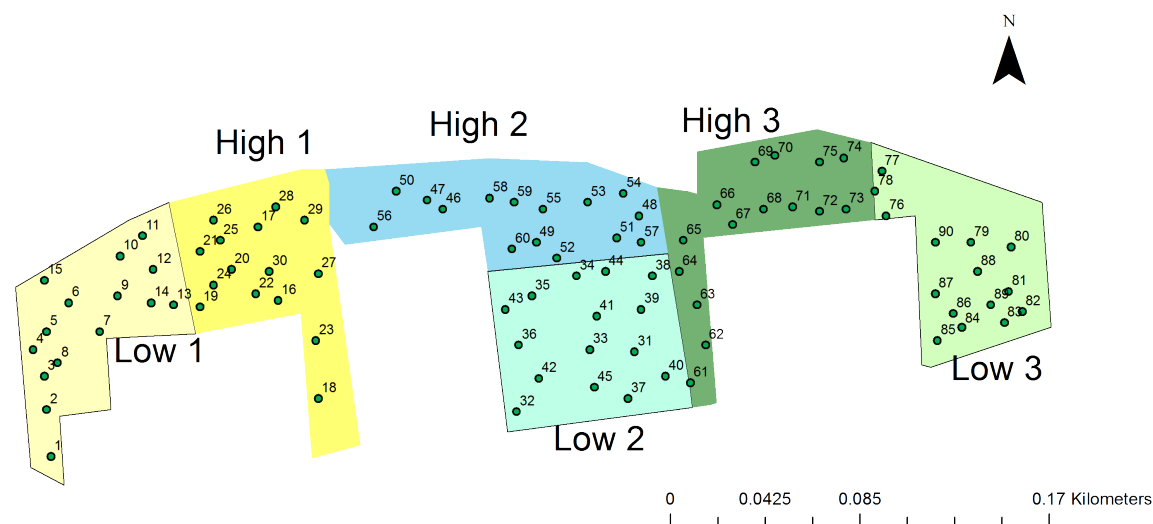


- **UNETracker II**
 - Four months (March – June)
 - One Fix every 15 minutes
 - 4.14m Accuracy



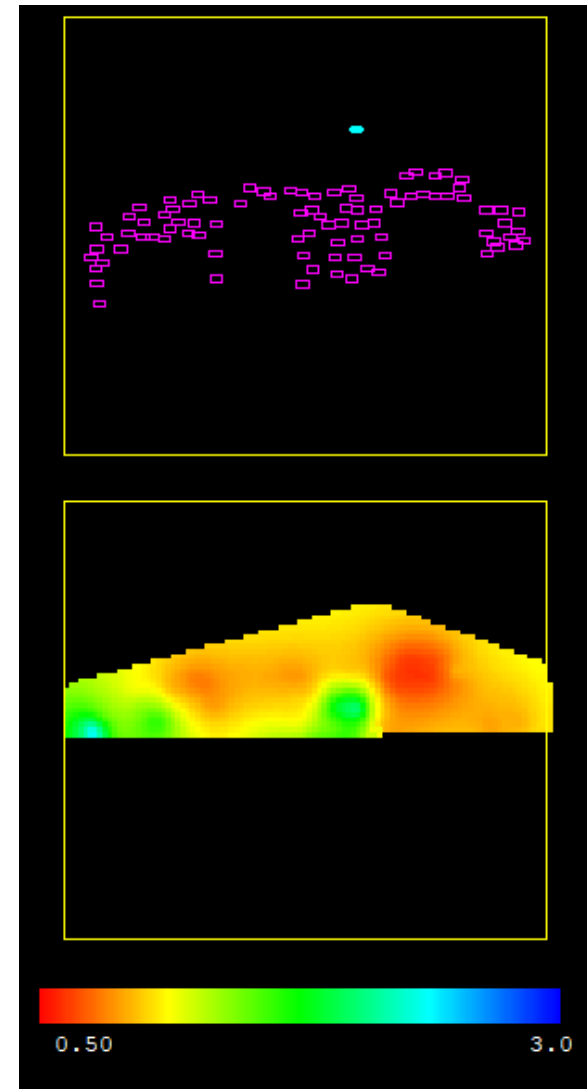
Pasture Measurements

- **BOTANAL METHOD** (*Jones and Hargreaves, 1979*)
 - 90 Fixed Measurement Sites
 - 4 Measurements per point
 - Left/Right Quadrat, Green/Dead
 - Each Point surveyed for composition and species ranked 1st, 2nd, 3rd or equivalent prevalence
 - One cut per site for calibration to predict tonnes/DM/ha of each species
 - Measurements performed:
 - Prior to trial (January)
 - During trial (May)
 - Conclusion of trial (June)



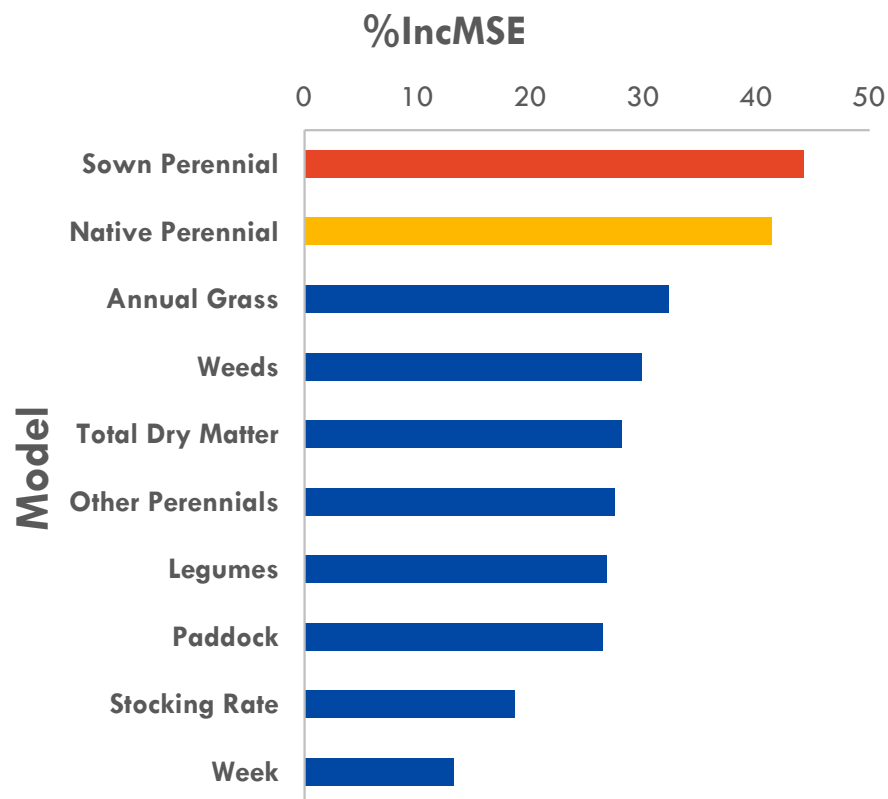
Analysis

- GPS data points removed if:
 - Outside boundary or trial time
 - HDOP >5
 - Satellites <4
- Pasture point data for all three measurements used to calculate linear model of predicted functional group composition and yield per week.
 - Functional groups:
 - Sown Perennial, Native Perennial, Other Perennial, Annual Grass, Legumes, Weed
 - Krigged
- Random Forest Model
 - Used variables: Stocking rate, functional group yield, total DM, week as predictors of GPS fix location



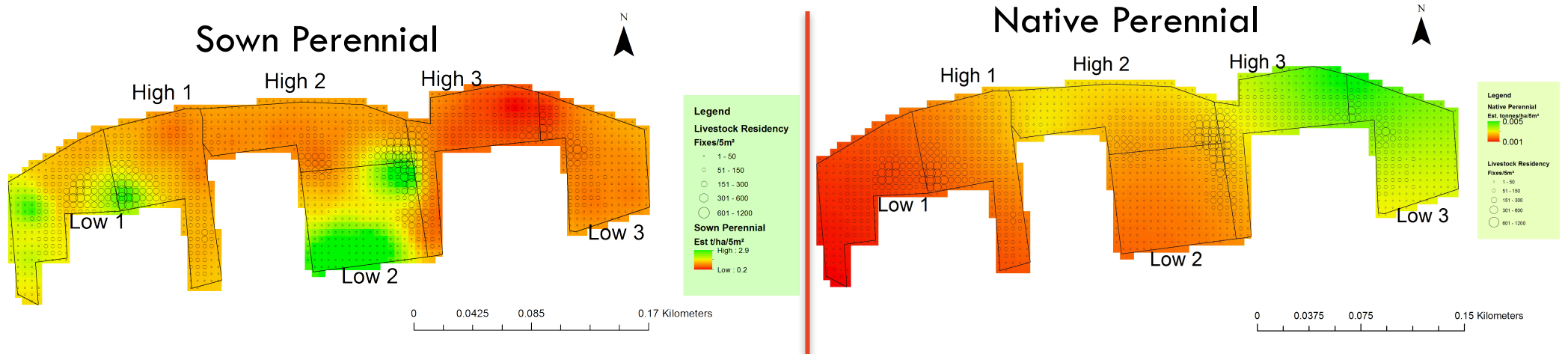
What I found

Drivers of location

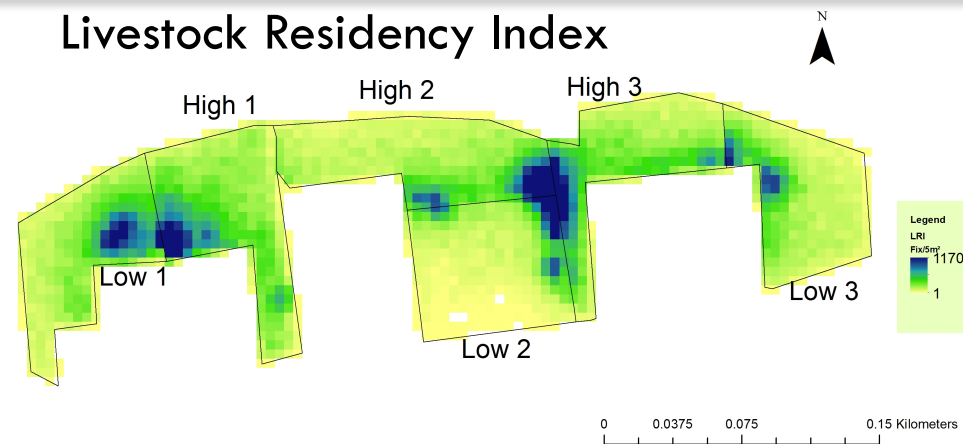


- Speed and Distance:
 - HSR significantly greater than LSR
 - 2% increase in speed and distance travelled
 - Not a strong predictor of location
- Biomass
 - Greater DM not driving sheep to graze

Sown Perennial, Native Perennial and Livestock Residency Index



Livestock Residency Index



Why is this important?

Grazing Management

Previous suggestions:

- Poor paddock utilization due to selectivity, mainly for:
 - Higher biomass and greenness (palatability)
 - Social constraints such as:
 - Mob numbers
 - Grazing competition
- Tackling pasture utilization gaps:
 - Increase stocking rate
 - Fast rotation

Current suggestions:

- Poor paddock utilization due to selectivity, mainly for:
 - Sown perennial forage
 - Native perennial forage
 - Not driven by stocking rate
- Tackling pasture utilization:
 - Increase pasture base proportion of perennial species
 - Increase distribution of perennial species

Thanks to...

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