THE SAMUEL ROBERTS

# NOBLE FOUNDATION

DRONING IN OPPORTUNITY

Michael Komp, MS, MBA

#### WHY ARE WE INTERESTED IN GIS & UAS

- Advance agricultural science and practice
- Improve operations and transparency
- Agricultural data is intrinsically location-based
- Object-oriented identification and remote sensing
- Understanding forage health and stocking rates
- Modeling weather and climate



# **UAV FLEET**











# SENSORS

- · Video (2015)
- RGB Visual (2015)
- Multispectral (2015)
- · LiDAR (2016 or 2017)
- Thermal (2016 or 2017)

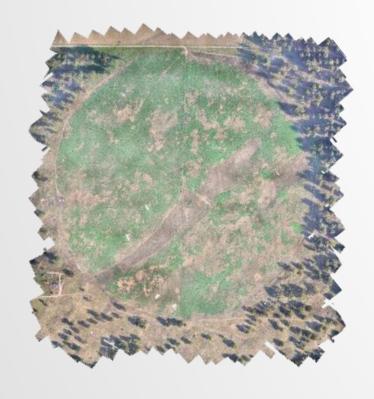








# RESEARCH APPLICATIONS



# FORAGE365







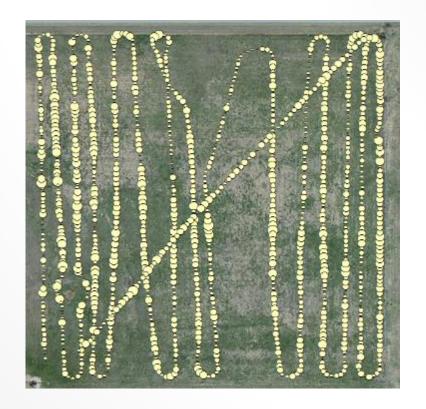






## RESEARCH APPLICATIONS

- Forage Estimation
  - Rising Plate Meters
  - Ground-based sensors
  - Remote Sensing Correlation









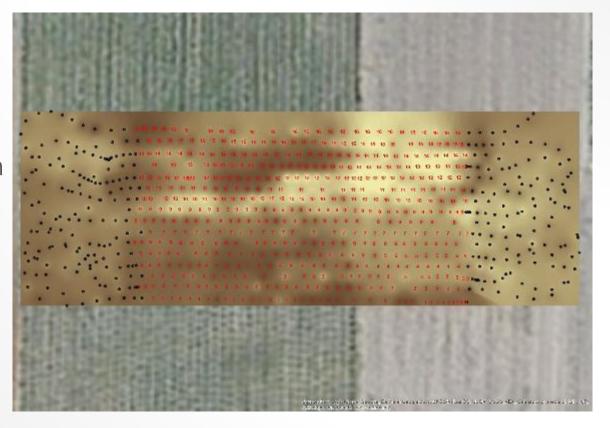






## RESEARCH APPLICATIONS

- Forage Estimation
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## CONSULTATION APPLICATIONS

- Non-fee services
- Support for existing consultation services















# CONSULTATION APPLICATIONS

- Brush Management
- Flooding Impacts





#### OPERATIONS APPLICATIONS

- Fence Inspections (~190 mi)
- Erosion Monitoring Inspection
- Fire Monitoring
- Cattle Inventory
- Animal Surveys















# OPERATIONS APPLICATIONS















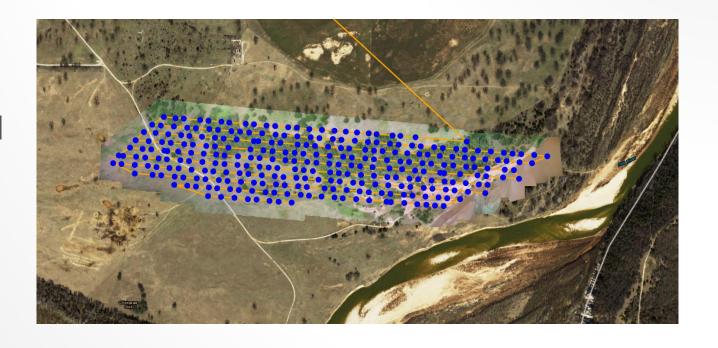






# CEDAR RIDGE EXAMPLE

- Bank erosion
- Hog damage
- Updated Surface/Canopy Model



# ORTHORECTIFICATION & MOSAIC

Homogeneous areas cause difficulties



#### DATA STORAGE IMPLICATIONS

- A strategy for long-term storage
  - Storage Costs
  - Store tiles or only images?
  - Caching concerns?
  - How do you share data?

#### DATA STORAGE IMPLICATIONS

- Storage Costs
  - Drone2Map up to 20 gb per project (DSM, Mosiac, Tiles)
  - Agisoft less storage for project, but outputs as costly
- Long-term Storage
  - What do you do with individual images?
  - 6, 12, 24-month strategy

#### DATA STORAGE IMPLICATIONS

- Caching and Sharing Strategy
  - Mosiac Datasets
  - ArcGIS Server Image Extension
- Who's your audience
  - Internal customers
  - External customers
  - GIS vs non-GIS Users

#### FIXED WING VS COPTERS

- Fixed wing
  - More coverage and range
  - Difficult to land
  - Line of sight implications (Part 107)
- Copters
  - Easier to get up and running
  - More control for specific inspections
  - Many different software choices



