



# Drones and the Betterment of Our Lakes

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zero  gravity  
aerial.com

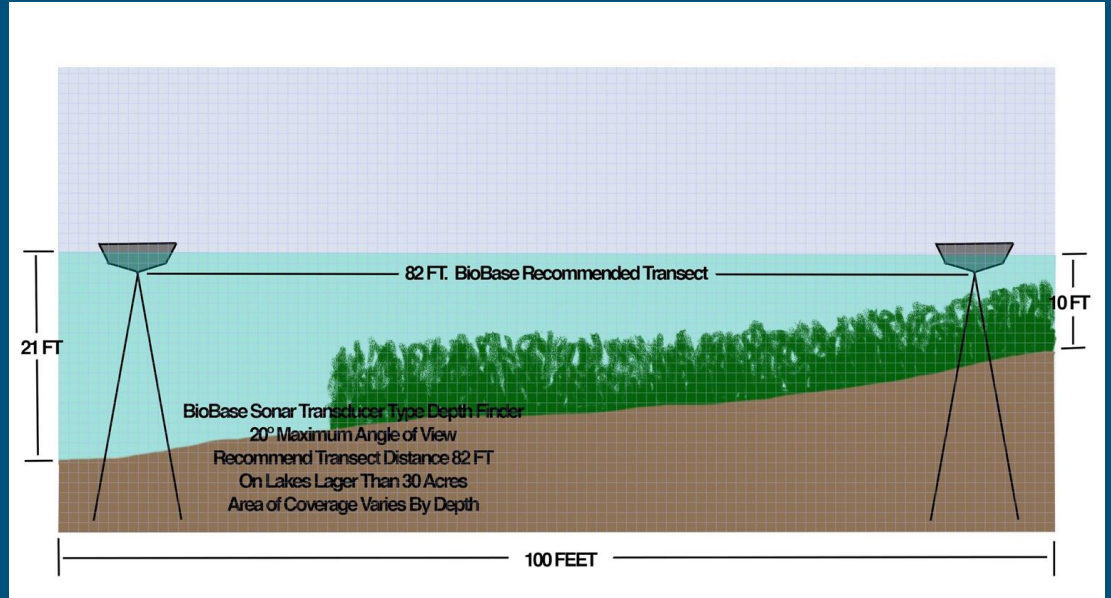


# Aerial Detection and Mapping of Invasive Aquatic Plants

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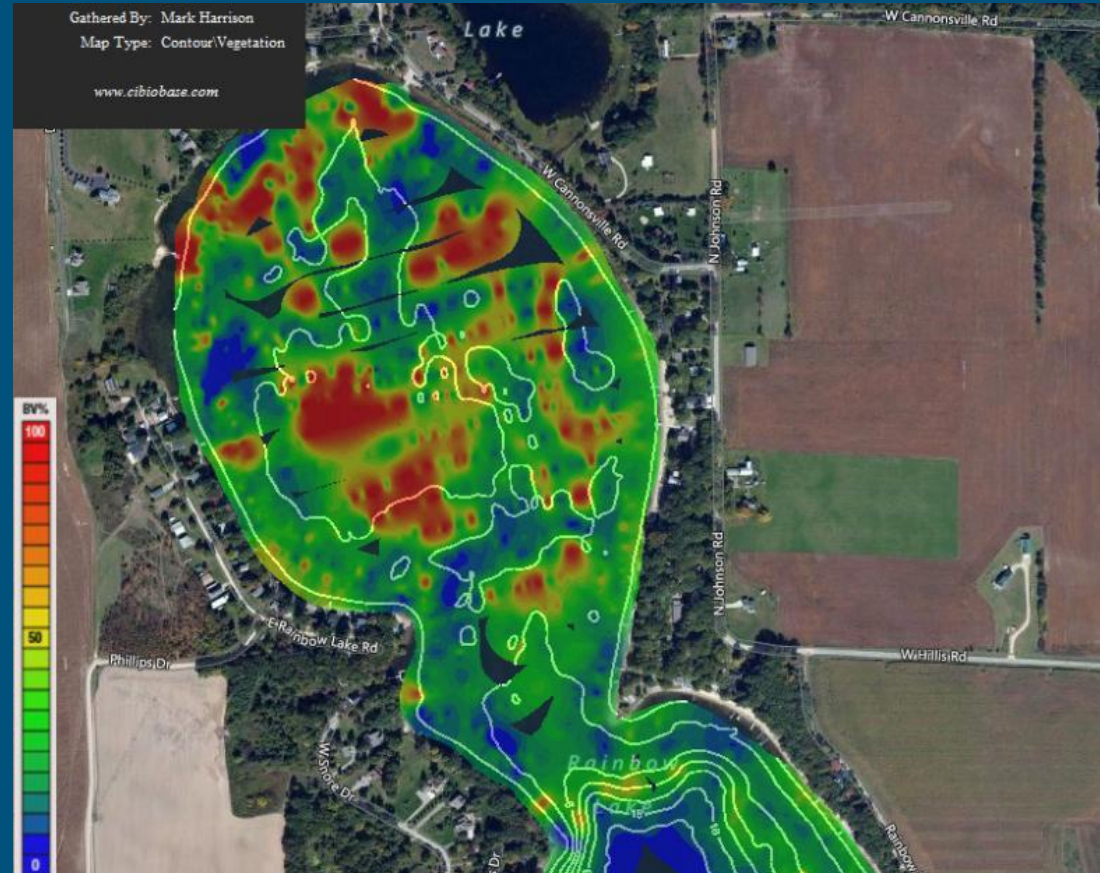
# Traditional Methods

- Observation at water level using viewing scope and GPS.
- Point Intercept or Transect method using rake samples at intersects.
- Sonar (Navico Bio-Base)



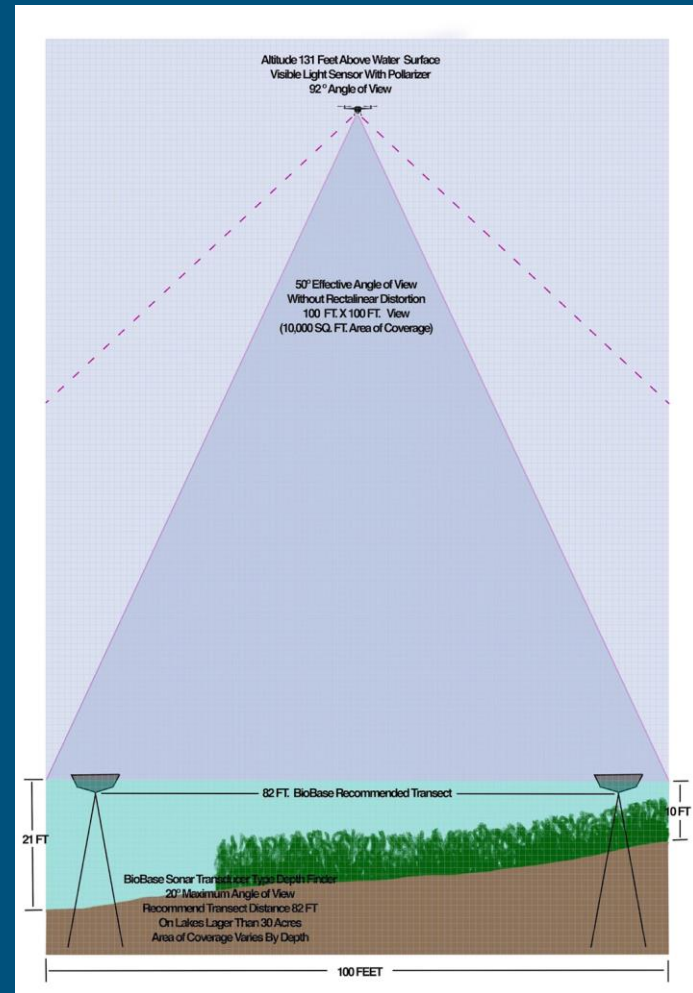
# Sonar

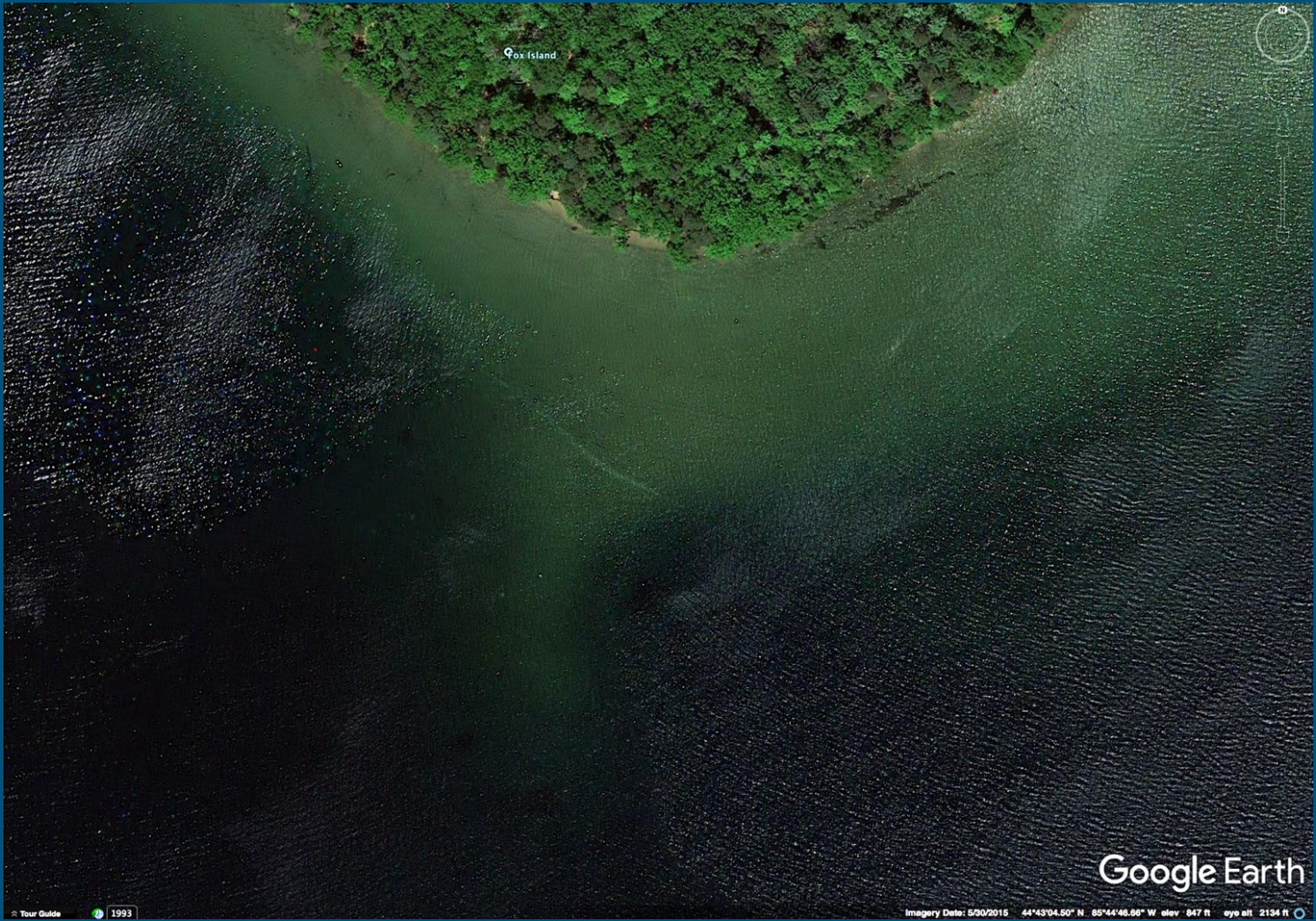
- Transducers on depth finders calibrated to identify plant mass lake bottom.
- Point Intercept Transect method. Many times combined with rake samples.
- Software interpolates data using algorithms to estimate area of infestations.



# sUAS Advantage

Electro Optical/RGB sensor calibrated to record light waves reflecting from objects beneath the surface of the water (such as plants and lake bottom) that are not consistently visible to the human eye from above the surface. Aerial observation eliminates the need to interpolate areas between transect points.





Fox Island

Google Earth



Google Earth

# Scanning Littoral Zone

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- A video Scan of the littoral zone of the lake to show where vegetation is located. The vegetation is identified for mapping.
- Areas free of vegetation can be quickly eliminated from the need of mapping.





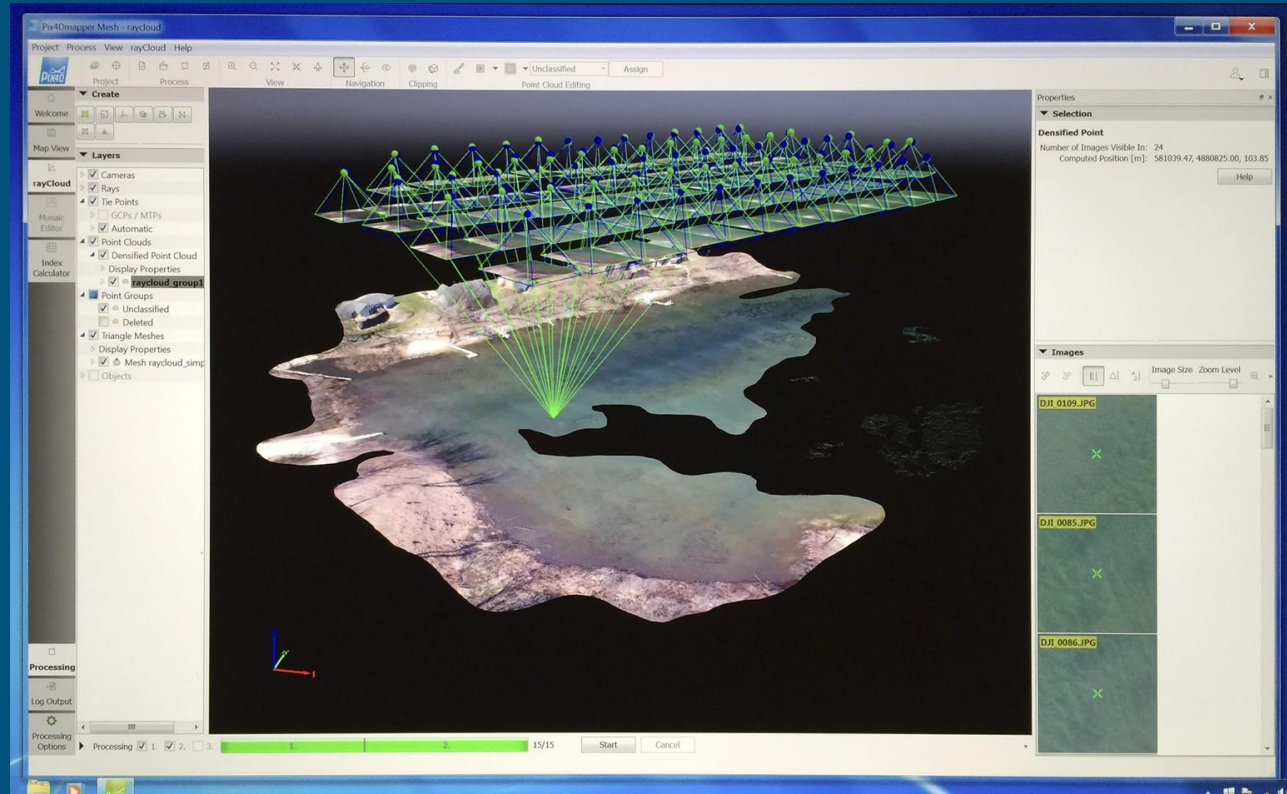
# Data Collection

- Autonomous Flight Plan Grid.
- Manual Flight and Sensor Operation.



# Point Cloud

Multiple images with GPS data are recorded and then assembled with software to create an orthomosaic. This orthomosaic can be used with various mapping programs.

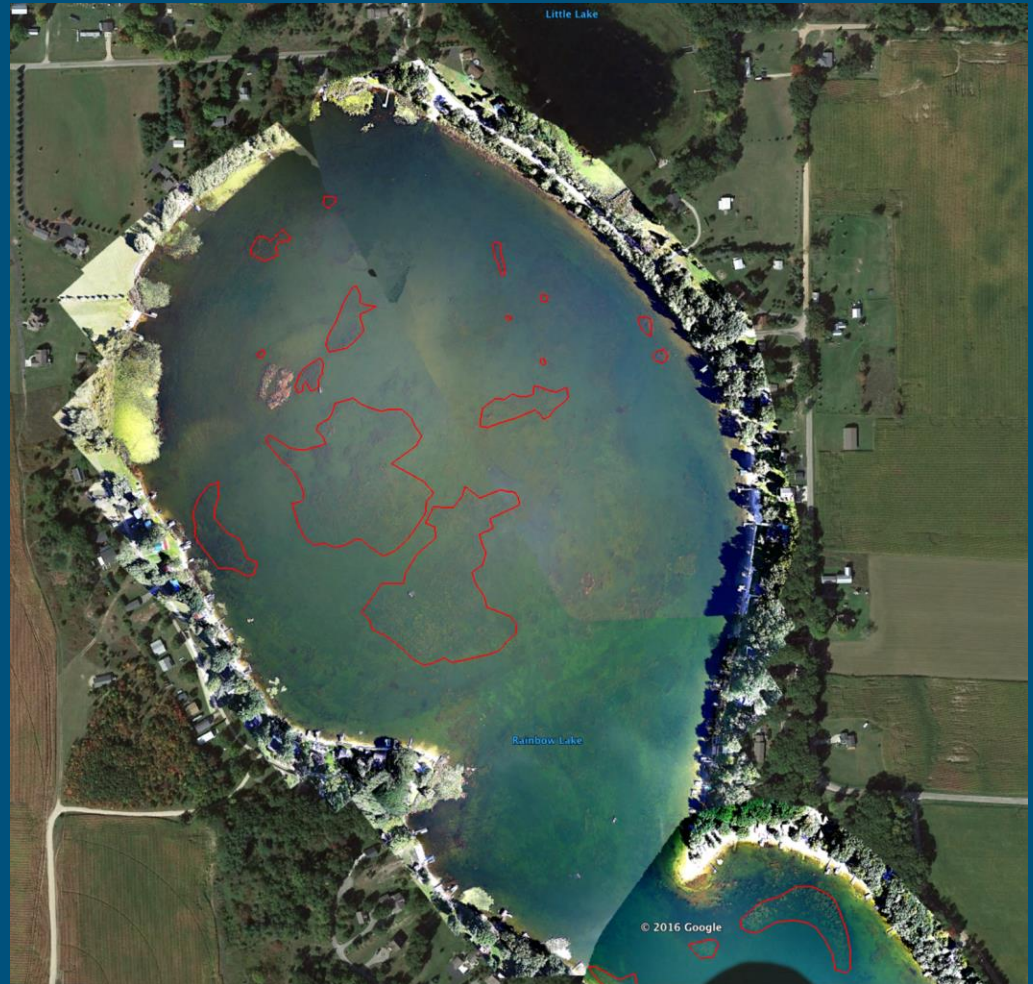


# Map Overlay

Overlay on Google Maps of an image captured by a UAV showing locations of Eurasian Watermilfoil.



The imagery produced by the E/O RGB sensor is an exact visual representation of the vegetation. GPS data gives the imagery exact placement for precise measurement and use with mapping programs.





# Shoreline Surveys



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# Shoreline Surveys

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Aerial survey takes in far more data than a ground level survey. In a single pass several items can be captured such as invasive emergent plants, cladophora, illegal drains, erosion, sandy shoals, etc.....





