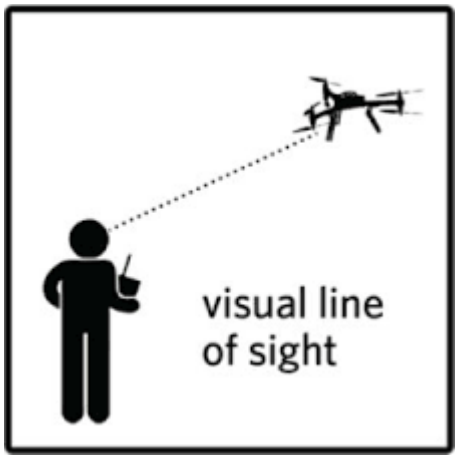
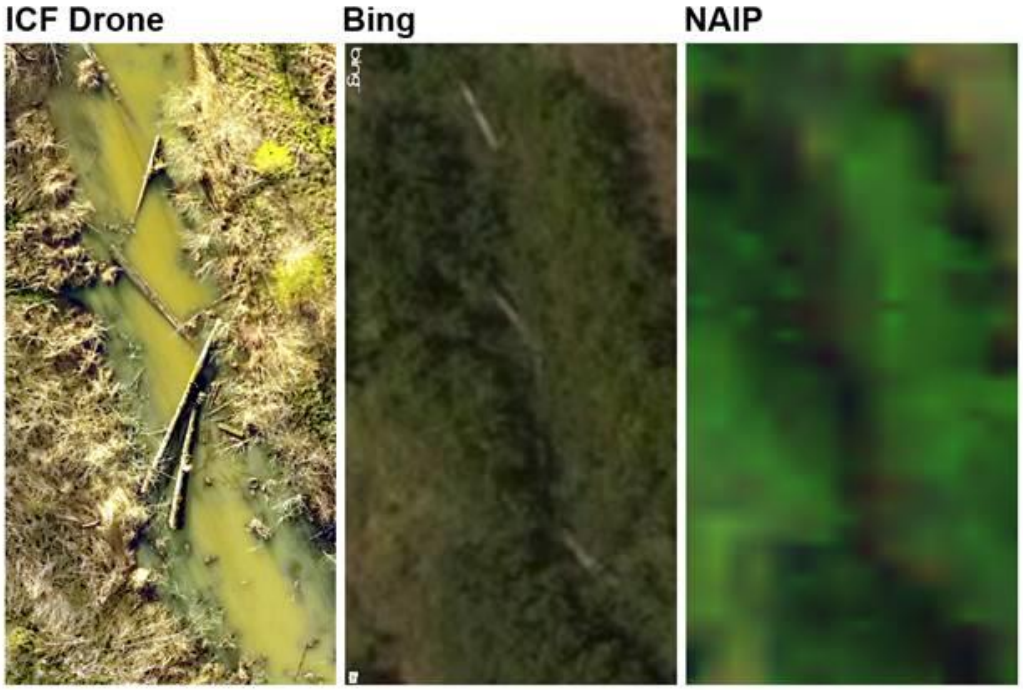
Using drone technology to support field surveys

Limitations



- Licensed Pilot
- Visual Line of Sight
- Inclement weather

Benefit



- Drone imagery can be much more detailed than off the shelf imagery such as Bing or National Agriculture Imagery Program data
- Can obtain real time, right now imagery

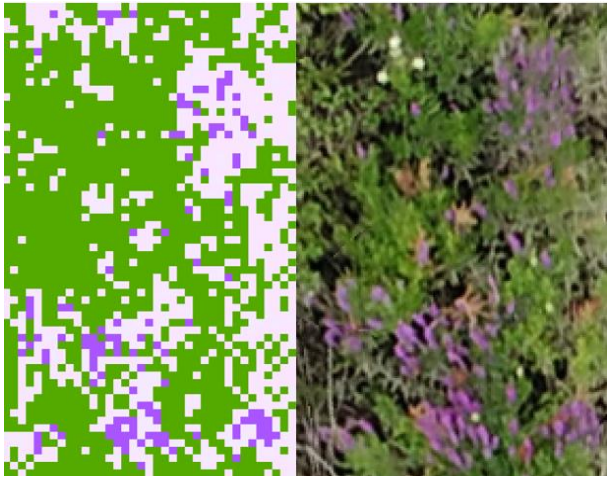
Project Applications
Otay River Valley

Project Applications
Otay River Valley

- Classify vegetation types
- Monitor construction progress

Project Application
Smith Island, City of Everett, Washington (93 acres)

- Smith Island/Union Slough Habitat Restoration Project (estuarine restoration site)
- Used drones to enhance and expedite collection, analysis, and mapping of invasive species over the site
- Used the high-resolution imagery (1cm pixels) and open source GIS image classification tools to map invasive purple loosestrife
- Isolated image pixels matching the color of the blooming flower
- Image classification required analyst input for a portion of the site, after which predictive algorithms classified the remaining acres
- Reviewed outputs to confirm consistency with observed reference conditions



Example of image classification output using high resolution imagery and open source software

Project Application
Smith Island, City of Everett, Washington (93 acres)

Project Benefits

- Survey conducted from perimeter of site
- Cost savings of 50% over traditional survey
- Eliminated limitations related to line-of-site
- Eliminated difficulty of survey in mudflats
- Protected sensitive salt marsh vegetation
- Provided high-accuracy and quick-turnaround imagery so invasive could be removed within a week

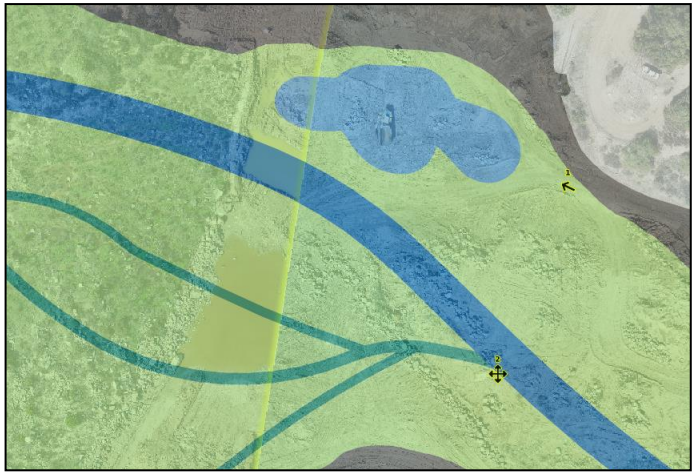
Project Application
Proposed Solar Facility – Central California

- Aerial survey of 1200 acres in two days
- Over 5,000 burrows mapped and burrow density assessed
- Entire process completed in 8 days

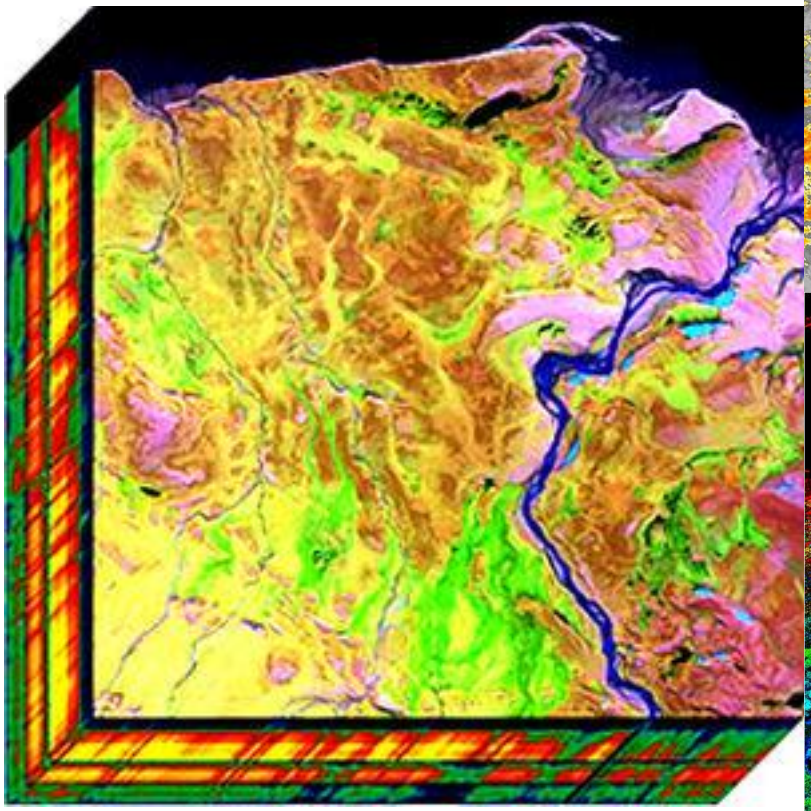
- Limitations: difficulty spotting burrows in areas where ground view is obscured (e.g. vegetation, plowed)

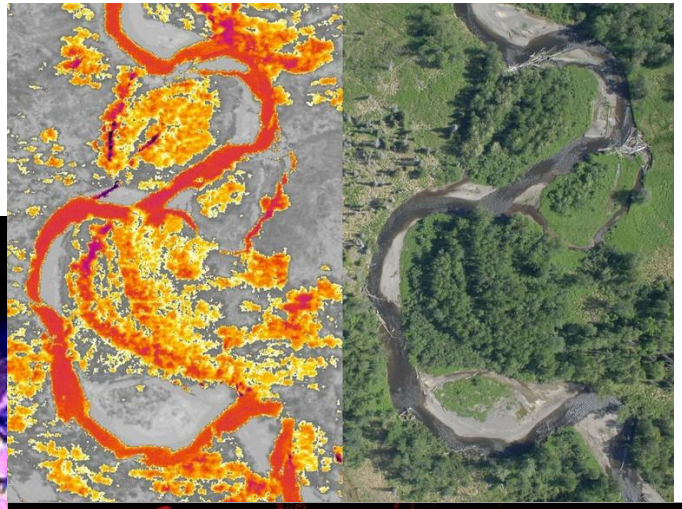
Support tools

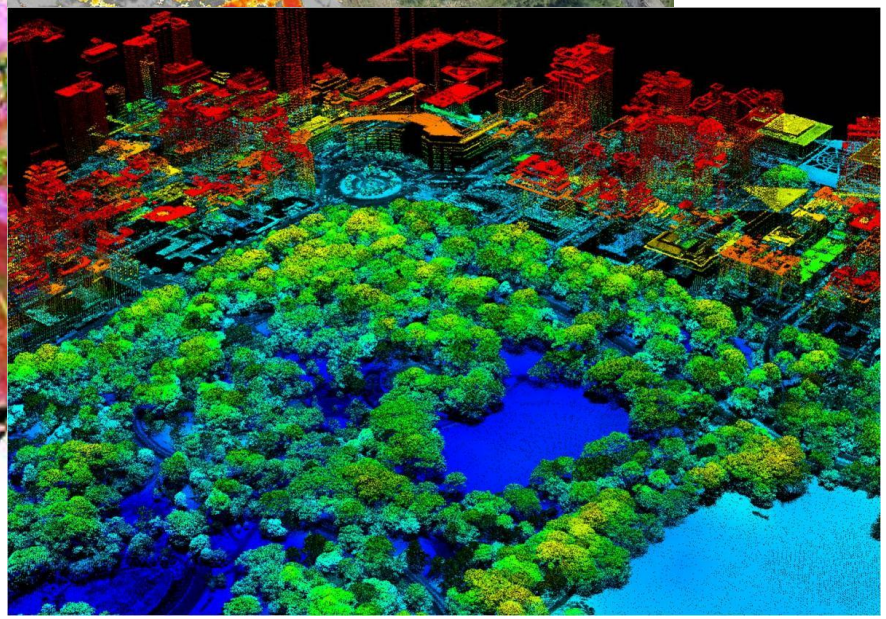
- Streamline on the ground and aerial data collection through visualization
- Track progress and change
- Visualize alongside field photos and other layers
- Identify features, communicate with project team



Future of Drones







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