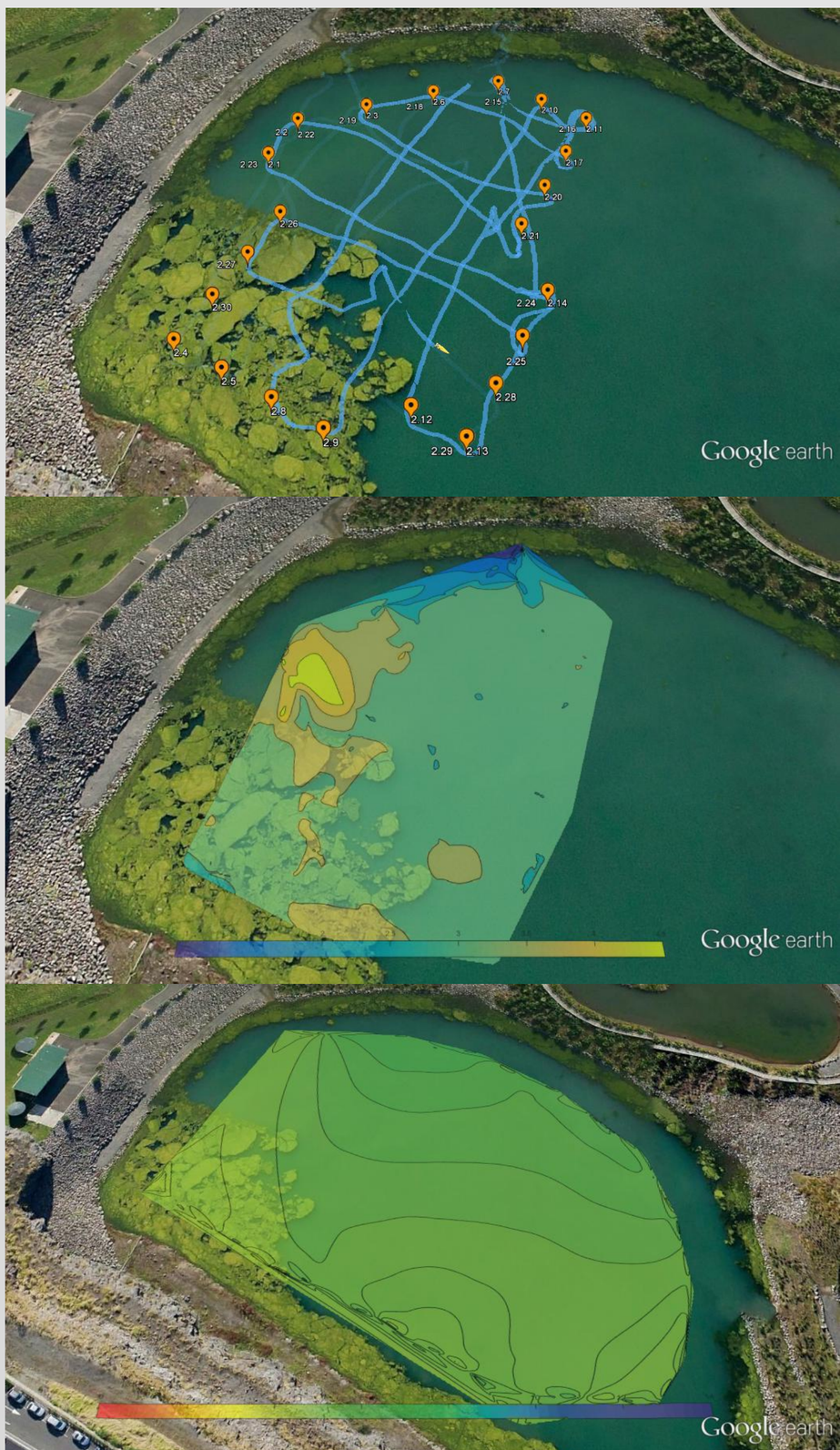
Autonomous Platforms for Aquatic Surveying

The considerable interest in waterways such as rivers, lakes, and estuaries is due to the fact that they are the habitats for many of New Zealand's unique and threatened fresh water fish. However, the interface between farming and waterways is notoriously difficult to monitor and regulate in a safe and cost effective manner.

Our solution is to use waterborne drones that can monitor inland waterways and coastal areas fully autonomously. The use of such craft to monitor waterways has a number of advantages:

- They can be built at low cost, even when equipped with scientific sensors.
- Multiple craft can cover a wide spatial areas and can be deployed and supervised safely by a single operator from a fixed location or boat.
- Floating craft can carry more payload, collect in-situ samples, carry real-time sensors and capture higher quality imagery, both above, and below, the water line.
- By leveraging real-time data collection, the vessel will have the ability to react to unusual events in order to obtain a richer dataset that includes unexpected variances.

Automatically survey an aquatic environment using GPS, computer vision and automated path planning



Generate spatial and temporal maps of common water quality indicators and bathymetry

Visualize results in Google Earth or a GIS package, allowing quick identification of problem areas

Demo Video:
https://www.youtube.com/watch?v=Z8Jx9qT2pMo

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