

# Design of an Underwater Video and GPS Mapping System for the Exploration of Streambed Aquatic Populations

## Objectives

Design hardware to collect georeferenced video to be used for aquatic population distribution and habitat assessment.

## Approach

Video capture should be dynamic such that the user can react to what she sees and wants to document, as apposed to static, where the video is captured in a determined path.

GPS is captured simultaneously to allow for synchronization to video. This provides for location mapping of aquatic species.

Hardware should be adaptable for the terrain of the entire stream system.

## Results

Current system is adept at capturing video throughout the stream for a variety of aquatic species and applications. GPS is integrated easily into all footage.



## Snorkel Mapping System

### First Prototype

Recording backpack equipped on life vest, camera mounted on snorkel mask



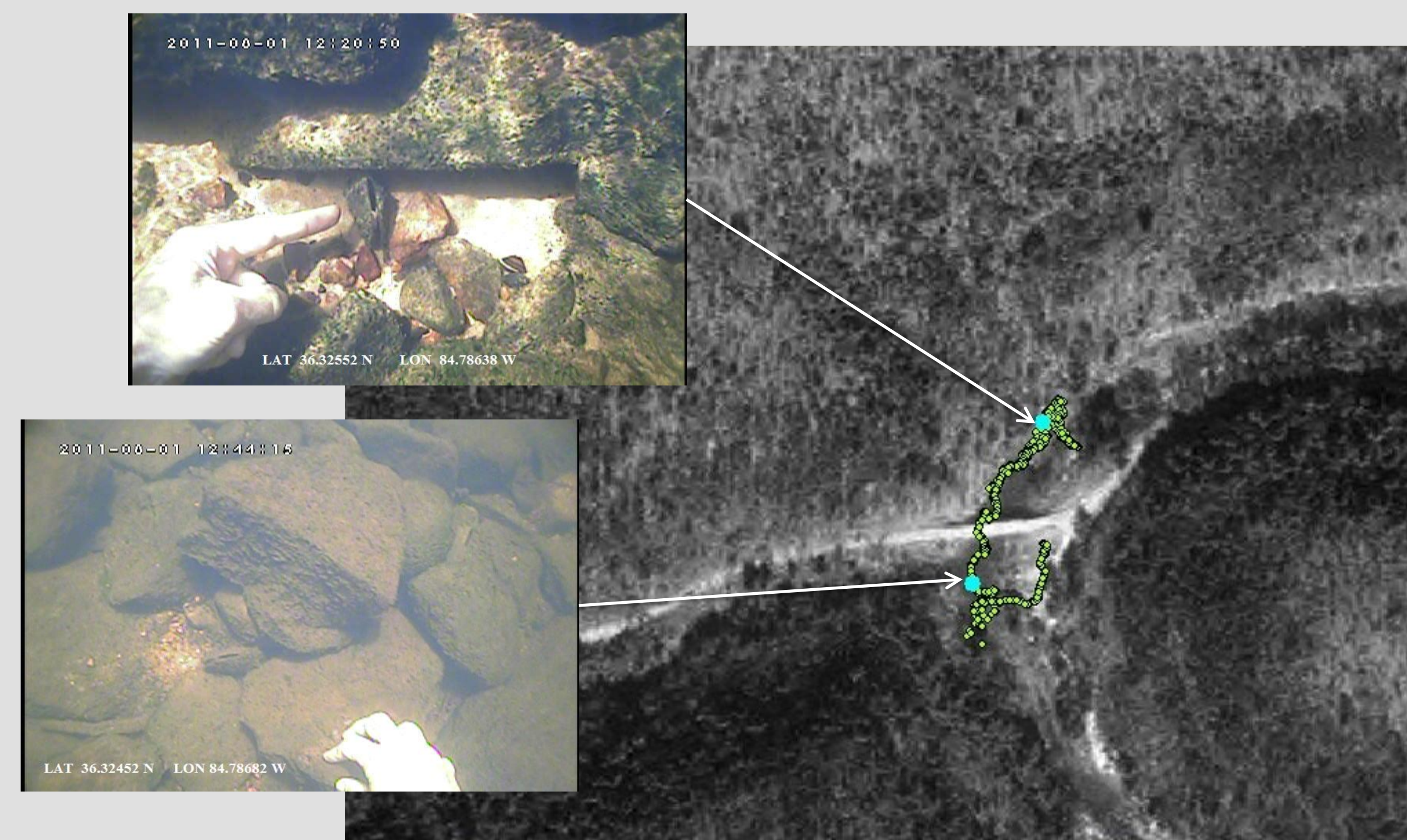
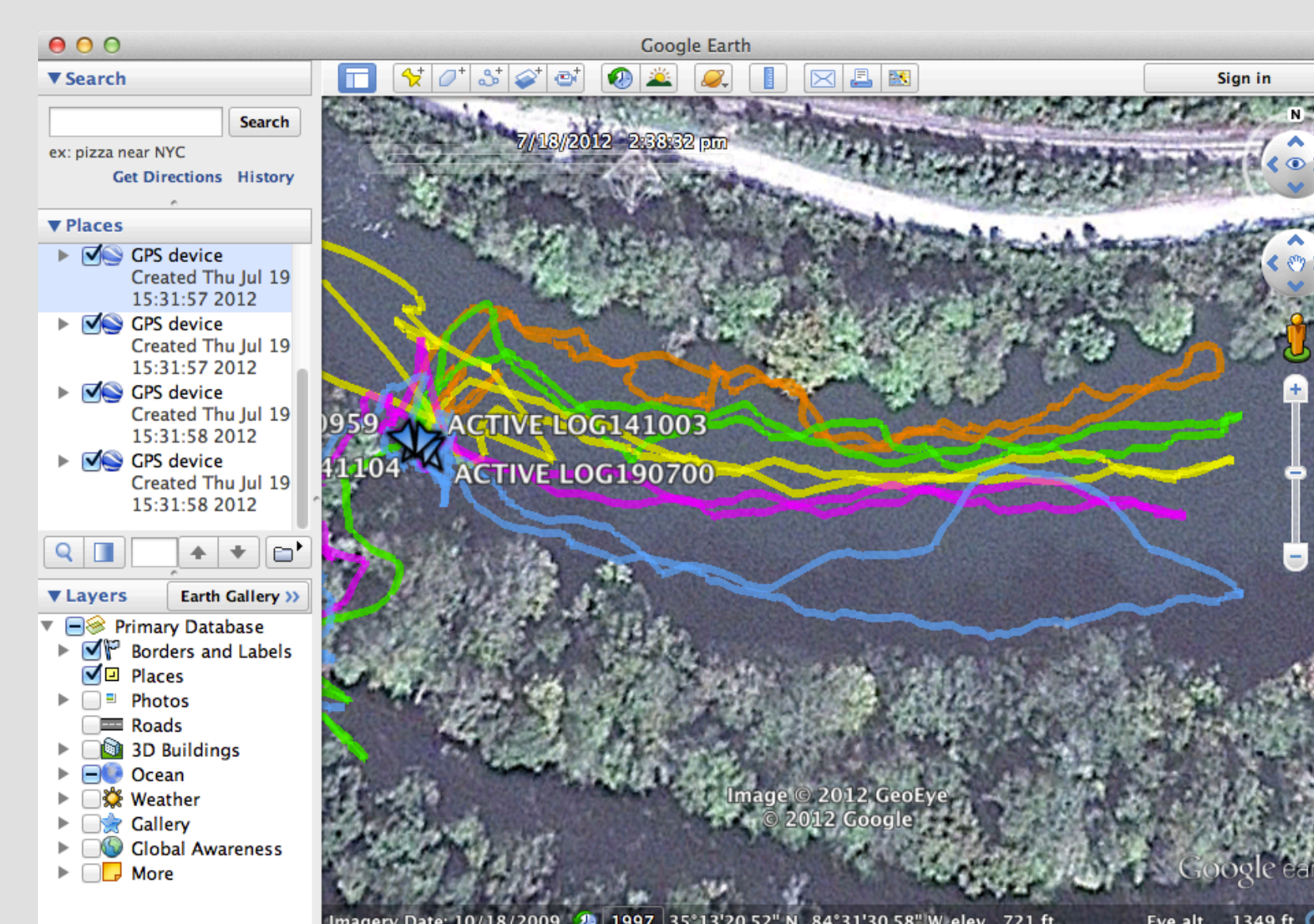
### Current Design

Liquid Image® integrated video snorkel mask, accessory GPS unit mounted on strap



### Stream Mapping

Five snorkelers swim side-by-side down the stream to cover the entire width in video. GPS data is shown for the five snorkelers.



Acknowledgements: Brett Connell, Stephanie Kerrigan, Alex Shpik, Ken Swinson, UT Biosystems Engineering

## “Sneak Peek”

### Current Design

Waterproof bullet camera, handheld digital video recorder, dual high-intensity underwater flashlights, flexible head for easy navigation of obstacles, accessory GPS unit mounted on side



### GPS Integration

GPS data is synchronized with video. This allows for location information to be gathered for any point in video. We can also access the video stream at any recorded GPS point.

