

Watch out for Drop-Bears!

Enhancing Citizen Science Technology to Improve Conservation Outcomes

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We can improve some aspects of Citizen Science monitoring programs by:

- gathering better data using built-in mobile phone sensors combined with easy-to-use software
- improving our analysis of this data using novel visualisation tools
- enabling more standardised, repeatable and consistent sampling

This will lead to better conservation outcomes as well as engaging, educating and enthusing citizens who help with the scientific studies.

Issues

People go where they want, record what they want when they want, which can lead to

- **temporal** (weekend) **bias** and
- **spatial bias** – observations mostly along defined paths, streets, near home

The Great Koala Count held in 2012 in South Australia identified 3 issues that lead to large variances in species population modelling:

- **effort data** was questionable – each person provided an estimate
- **absence data** lacking – people recorded what they observed, not what they didn't
- **observer error** unknown



Project 1: Improving Technology for Citizen Science Conservation Projects

Aim

Address lack of absence data and the uncertain observer effort data to improve the species population distribution and abundance model by:

- recording paths that citizen scientists follow
- inferring absence records & getting more accurate observer effort data



- Developed a mobile app for iOS & Android
- Recorded observational data including photo
- Recorded user location (path) every 5s (including accuracy details)
- Uploaded data to server and then to the Atlas of Living Australia (ALA)



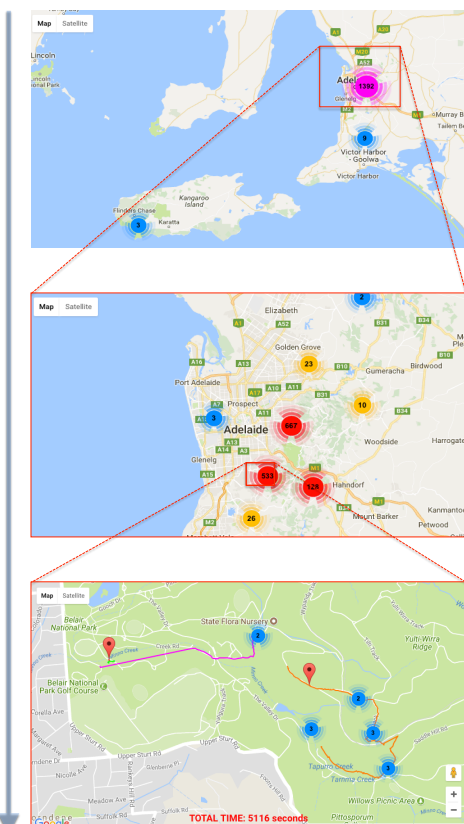
Results

285 participants over 2 days
1801 observations of koalas
470 hours of volunteer time
111 koalas recorded by 1 person

Modelling of results is currently being done.

Lessons

- Train/educate users
- Make system as foolproof as possible
- Gather device metadata
- “Redundant” data can be useful
- Feedback/management

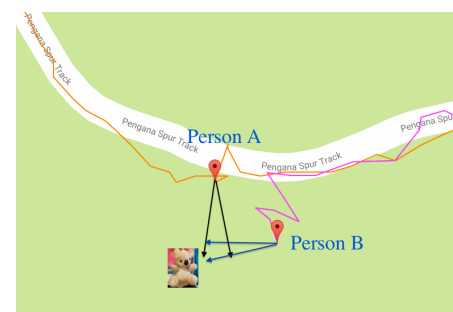


Observations in SA, around Adelaide, and some paths in Belair NP.

Project 2: Visualisation Tools to Improve Analysis of Citizen Science Data

Aims

- Improve data quality by using more sensors
- Use GPS, gyroscope and compass with camera to record the orientation and direction of camera
- Build software to detect possible duplicate observations
- “Realtime” upload to server for management of CitSci program

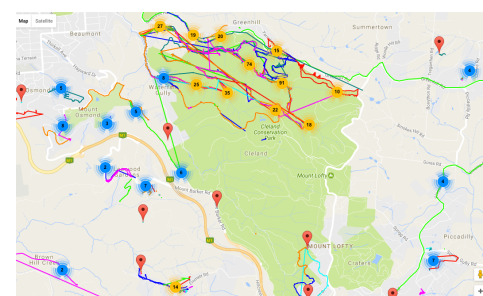


Are these 2 observations of the same koala?

Project 3: Guided Paths for Citizen Science Programs

Aims

- Scientist creates paths/transects using either mobile device to record path directly or by drawing on a map
- Paths are distributed or selected by participants to follow
- Device prompts user where, when, what to do/record on path
- Enable repeated and consistent sampling
- Improve standardisation
- Reduce location and temporal biases



Spatial bias shown in the Great Koala Count 2 with the southern half of Cleland CP not covered.

