BISS Biodiversity Information Science and Standards

Biodiversity Information Science and Standards 3: e46690
doi: 10.3897/biss.3.46690

OPEN ACCESS

Conference Abstract

Agouti: A platform for processing and archiving of camera trap images

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Received: 18 Sep 2019 | Published: 24 Sep 2019

Citation: Casaer J, Milotic T, Liefting Y, Desmet P, Jansen P (2019) Agouti: A platform for processing and archiving of camera trap images. Biodiversity Information Science and Standards 3: e46690.
https://doi.org/10.3897/biss.3.46690

Abstract

Camera traps placed in the field, photograph warm-bodied animals that pass in front of an infrared sensor. The imagery represents a rich source of data on mammals larger than ~200 grams, providing information at the level of species and communities. Camera-trap surveys generate observations of specific mammals at a certain location and time, including photo evidence that can be evaluated by experts to map species distribution patterns. The imagery also provides information on the species composition of local communities, identifying which species co-occur and in what proportion. Moreover, the images contain information on activity patterns and other interesting aspects of animal behaviour. Because surveys can be standardized relatively easily, camera traps are well suited for documenting shifts in the behaviour, distribution and community composition, for example in response to climate and land-use change. Imagery from camera traps can thus serve as a baseline for subsequent surveys.

In less than two decades, camera traps have become the standard tool for surveying mammals. They are simple to use and non-invasive, requiring no special permits. As a consequence they are widely used by professionals and hobbyists alike. Together, tens of thousands of users have the potential to form a huge sensor network. Unfortunately however, imagery and data collected are currently rarely integrated. Rather, they are lost at a massive scale. Users tend to retain only a subset of the photos and discard the rest. Or

the material ends up on an external hard disk that will at some point fail or be erased as these scientific data tend to be used within the scope of specific projects. Very few of the wealth of material becomes available for scientific research and monitoring. Moreover, joint projects are rare and there is little coordination between camera-trap users.

A solution to this problem is provided by Agouti, a platform for the organization, processing and storage of camera-trap imagery (www.agouti.eu). The aim of Agouti is, on the one hand, to standardize and facilitate collaborative camera-trap surveys, and on the other hand to compile and secure imagery and data for scientific research and monitoring, by encouraging users to share their material. Agouti provides an interface that allows users to collaborate on projects, organize and manage their surveys, upload and store imagery, and annotate images with species identifications and characteristics. Images can also be annotated through basic image recognition and crowd sourcing via a connection with the citizen science platform Zooniverse, which creates the potential to reach new audiences. Exporting data and imagery in the Camera Trap Metadata Standard (Forrester et al. 2016) will be supported in the near future. This will allow data to be archived outside of Agouti in research repositories such as Zenodo and by further mapping to Darwin Core to be made discoverable on the Global Biodiversity Information Facility (GBIF).

Agouti provides both professionals and the public with a practical solution for retaining camera-trap surveys and simultaneously engages people in contributing data to science in a standardized and organized manner, to the benefit of science and conservation.

Keywords

camera traps, mammals, biodiversity monitoring, distribution, citizen science, open data, standardization

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Presented at

Biodiversity_Next 2019

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