

The Development of an Information Management System for Camera Trap Sensor Network

Yu-Huang Wang^{*1}, Sheng-Shan Lu¹, Chau-Chin Lin¹, Kwang-Tsao Shao², Guan-Shuo Mai², Cheng-Hsin Hsu³

1 Taiwan Forestry Research Institute, Taiwan

2 Biodiversity Research Center, Academia Sinica, Taiwan

3 Center for Digital Culture, Academia Sinica, Taiwan

Camera trap has become an important research and monitoring tool for wildlife ecology as well as conservation. Many projects deployed camera traps around the world and generated huge volume of image data, which could greatly enhance wildlife conservation if the data is open to web. Although some organization has developed desktop or online tools for managing images and ancillary data generated from camera traps; however, there is still a lack of general data model for managing camera trap data as well as a platform publishing linked open data of camera traps. To facilitate camera trap data opened to the web we developed a data model to fit into the Drupal 7 content management system as an information management system for camera traps. Then we adopted the resource description framework (RDF) and related modules in Drupal 7 to publish the linked open data of camera traps. Registered data managers can input data about project, research sites, trap locations, cameras, deployment events, and upload images into this system. Based on the predefined file name format of uploaded images, i.e., location code prefix conjunct with the date and time of the image been lastly modified, then the system will automatically feed the code of trap location, date, and time of each captured image into relational content types holding all data about each image, including the identified species name, age class, and gender of animal(s) in each image. For avoiding the typo of species name and inconsistency of taxonomic naming system introduced by users, we integrated into system with the scientific name service published by TaiBIF at the Biodiversity Research Center of Academia Sinica, Taiwan. Registered users can help identified the animal and tag species name in each image by inputting the name code or common name/scientific name with the help of auto-completing function supported by the integrated species name service. All camera traps related data in this system can be published as RDFa embedded in HTML format and a SPARQL endpoint. Such a framework of this open information management system for camera traps can promote the collaboration among wildlife ecologists, citizen scientists, and policy makers by sharing labor, data, and resources, which will benefit large scale wildlife conservation in the long run.