EchoBook - Echo Parakeet tracking system in Mauritius

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Project Description

Due to the rapid decline of the Echo Parakeet population in the mid 1800's, resulting in 8-12 individuals by 1986, the 'Mauritian Wildlife Foundation' along with their governmental associate 'Mauritius National Parks and Conservation Services' begun work to recover Echo Parakeet population. The research team and field staff actively manage around 108 nest sites, including 85 artificial nest boxes. Currently, to monitor progress, field staff spend approximately 1 hour conducting field observations and then adding the resulting data manually into main spreadsheet.

The aim of our project is to improve this labour-intensive process by automating data collection. RFID enabled rings and feeders equipped with readers are being introduced to the parakeet population to help collect information. Our solution uses ZigBee to send data to the hub where it is processed using Python and stored in relational database (MySQL). Data is then displayed on web-based user interface for researchers to use. To accomplish this desired outcome the project was divided into two parts. First was to decide what hardware & technology to use to achieve best results. Second, working closely with personnel from research team to understand current data collection process and system requirements.

Results

To ensure that the system fully met the user requirements, we have produced system prototypes that were tested and approved by the field-staff. The user interface was developed using Sails.js web framework and MVC approach has been applied to clearly delineate the systems functionality. System usability is based on the principles of least privilege (POLP) depending on staff's activities and responsibilities. User Activity monitor has been added to ensure that information can be easily recovered in case of incorrect data input. Researchers can monitor bird activity by viewing live screen that displays bird visits to the feeders in real-time mode. System also allows to manage nest sites and RFID rings. Filters are added to each view to ensure researchers can find relevant information fast and export function is available to those users who have privileges to export information from the system.