VULNERABLE BIRDS AND AI

By

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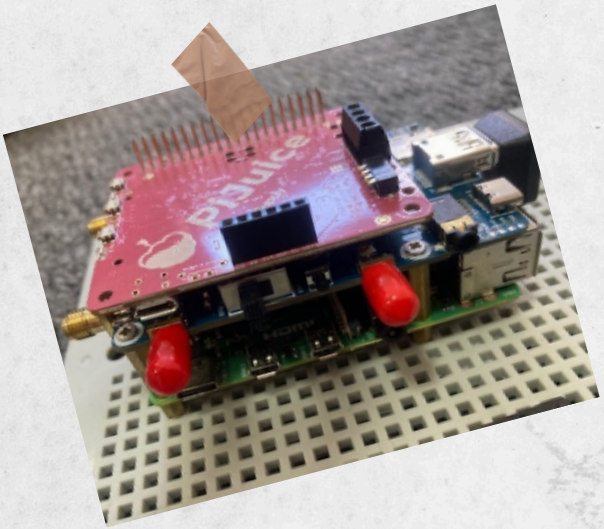
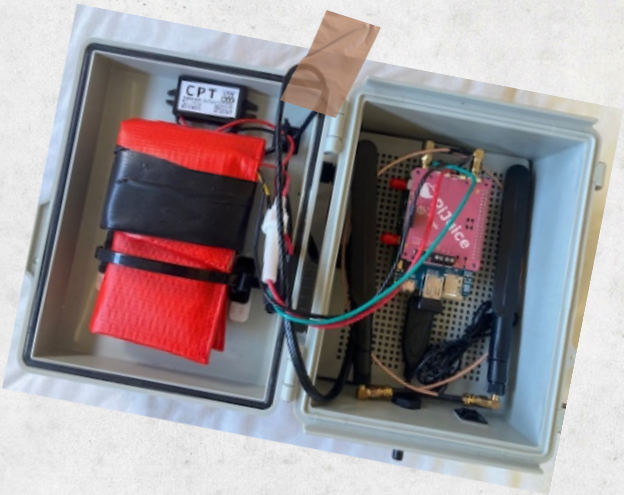
Bachelor of Zoology

Glossy Black- Cockatoo (Calyptorhynchus Lathami)

The Glossy-black cockatoo (Glossy) was once in abundance, spanning most of the south-eastern area of Australia . As the usual story goes, humas did a few things and now there are not many. Compounding the human impacts are the specificities of their behaviour, such as only eating from a handful of *Allocasuarina* species and only breeding in hollows of certain dimensions and characteristics. The Sunshine Coast of SE Queensland is apparently one of the historical hotspots for breeding activity, although as far as we know there hasn't been any observed nesting activity for over a decade.

Bushland Conservation Management, the company I currently work for, have been tracking the Glossies in the Sunny Coast area for 5 years. Since I joined 12 months ago, we have processed many hours of audio data and spent a fair wack of time wandering the bush following up on sightings received from people living in the area. This is very time consuming and often results with validation of the occurrence weeks or even months after the actual event. The goal is to locate and monitor nesting behaviour, so time is of the essence, considering courtship to hatching is about 30 days.
With a newfound interest merging technology with conservation, I decided to try and conjure up a more efficient and most importantly 'faster' method of detecting and verifying Glossy-black cockatoo occurrence.





Recently, I successfully tested a prototype unit, which uses an open source, machine learnt, bird detection software called “BirdNet”, installed on a Raspberry Pi (very small computer) with a 4G modem attached. After housing it in a watertight box, connecting a power source and a solar changing[JS1] solution, I ended up with a self-sustainable Glossy detection unit that provides results in real time (or close to it). In a nutshell it works by listening through a microphone for the calls of a Glossy, once a Glossy is heard it will trigger and record a 15 second audio chunk. This, along with its spectrogram are uploaded to my google drive at a time specified (Daily).

This development means we can verify detections the day they happen, meaning any actions required for research or conservation can happen in a timely manner and without too much bush bashing or analysing a million hours of audio data. It has been quite the journey, involving many long nights of swearing at my computer and a couple of run-ins with a soldering iron, but … As a next step, I would like to make my own machine learnt model, able to classify the Glossy calls down to behavioural calls, such as begging, allofeeding and other nesting related squawks.

Tom Armstrong is a third year Zoology student with a range of interests including, but not limited to, using technology in conservation, bioacoustics/eco-acoustics, bird-nerding and peaceful walks in nature. He is not too sure where this zoological journey will take him, but he is hanging on for the ride, excited to find out.

Thank you Tom for your amazing story!