

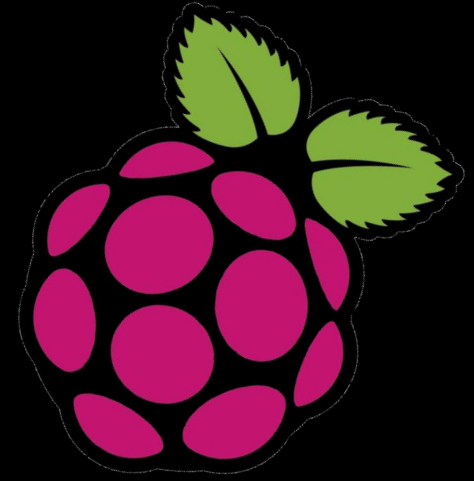
The background is a low-poly, geometric illustration. The top half features a blue sky with various shades of blue and white, while the bottom half shows a green field with different shades of green. The entire image is composed of many small, irregular polygons.

Developing ecological monitoring devices using Raspberry Pi technology

Luci Kirkpatrick, Emily Simmonds, Tomos Potter,
Susanne Vogel, Robbie Whytock

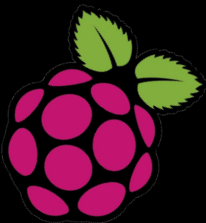
Outline:

- Order of the day
- Who are we
- Why did we want to do this
- What are raspberry pis
- Where to go for help
- Example projects – nemo, squirrels, green turtle tags, 100\$ lab, hatching tuatara
- Projects we are going to do – Solo and camera trap



Order of the day

- Introduction (us, you, Pi's)
- Hands on session building either a camera trap or SOLO's
- Put them out / test them! Try and access the files.
- Breakout discussion – What to build, where to get information, important considerations.
- Wrap up and prize for best video / audio



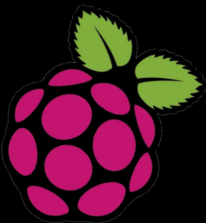
Who are we?



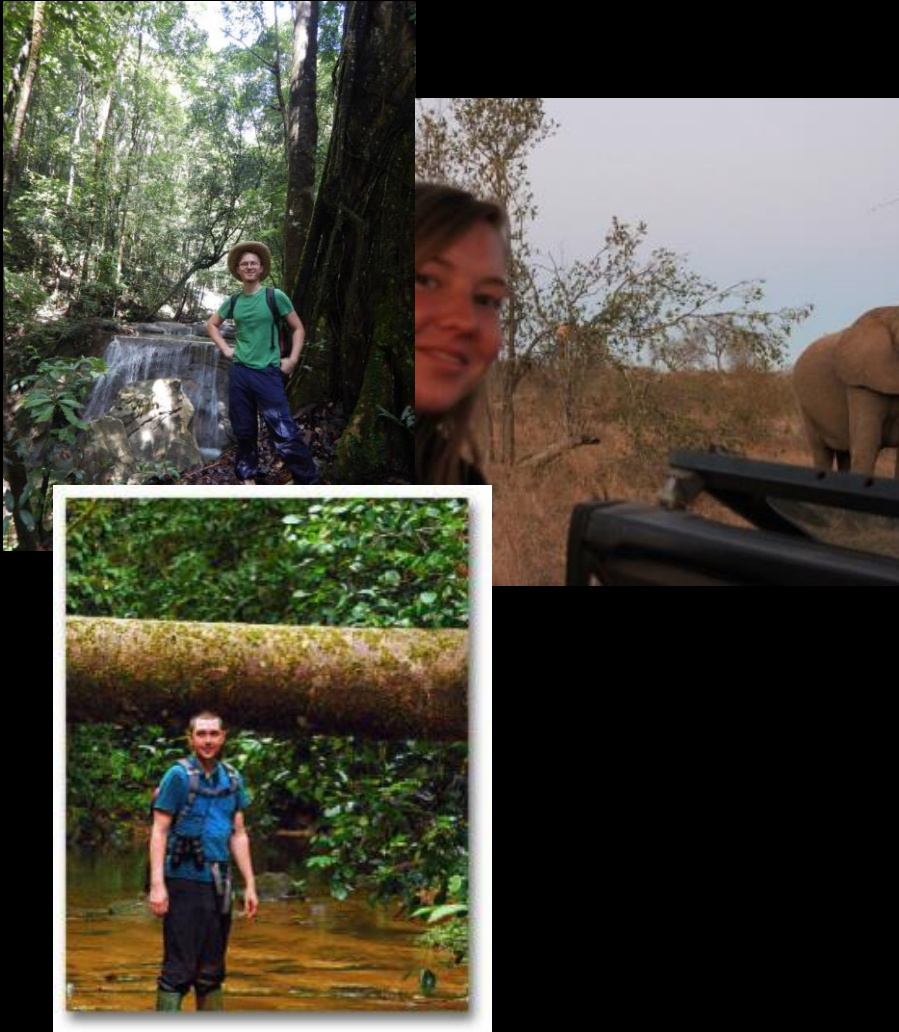
- Luci Kirkpatrick (Universiteit Antwerpen)
 - Interest in open source technology for conservation and technology
 - Interest in low budget solutions




- Emily Simmonds (Norwegian University of Science and Technology)
 - Statistical modeller - species interactions and climate variability
 - Missing fieldwork! (and lives in Norway where there is lots of cool wildlife..)



Who are we contd...



- Tomos Potter (University of Oxford)
 - Evolutionary change and ecological dynamics
 - Guppies!
- Susanne Vogel (Aarhus University)
 - Human wildlife conflict (in Okovango Delta, Botswana)
 - Post doc - Elephants
- Robbie Whytock (University of Stirling)
 - Temperate and tropical forest biodiversity
 - Elephants!
- Ivan Herrera Olivares (Universiteit Antwerpen)
 - Embedded technology



$\sin 2\alpha = 2 \sin \alpha \cos \alpha;$
 $\cos 2\alpha = \cos^2 \alpha - \sin^2 \alpha;$
 $\operatorname{tg} 2\alpha = \frac{2 \operatorname{tg} \alpha}{1 - \operatorname{tg}^2 \alpha};$



gifak.net

A photograph of a small white dog with a red collar running away from a black cat on a light-colored wooden floor. The dog is in the foreground, slightly out of focus, moving towards the bottom right. The cat is in the background, slightly to the left of the dog, looking towards it. The floor is made of light-colored wooden planks. In the top left corner, there is a yellow bowl. In the top right corner, there is a yellow container and some other items. The text "FEAR OF RASPBERRY PIS" is overlaid on the bottom right of the image, written in a bold, black, sans-serif font, slanted upwards from left to right.

FEAR OF RASPBERRY PIS

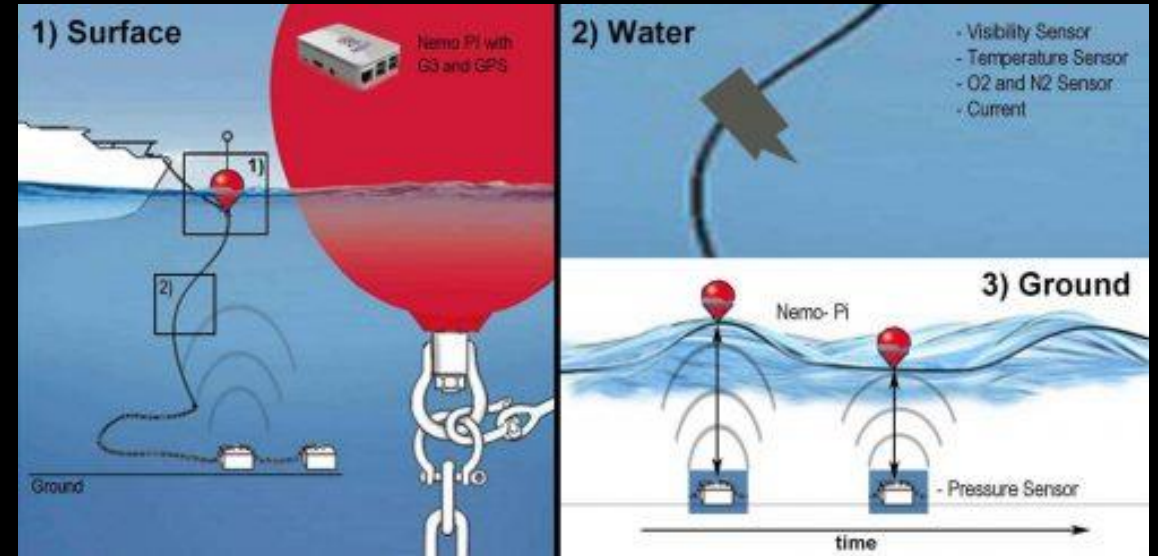
What are Raspberry pi's?



Where to go for help?

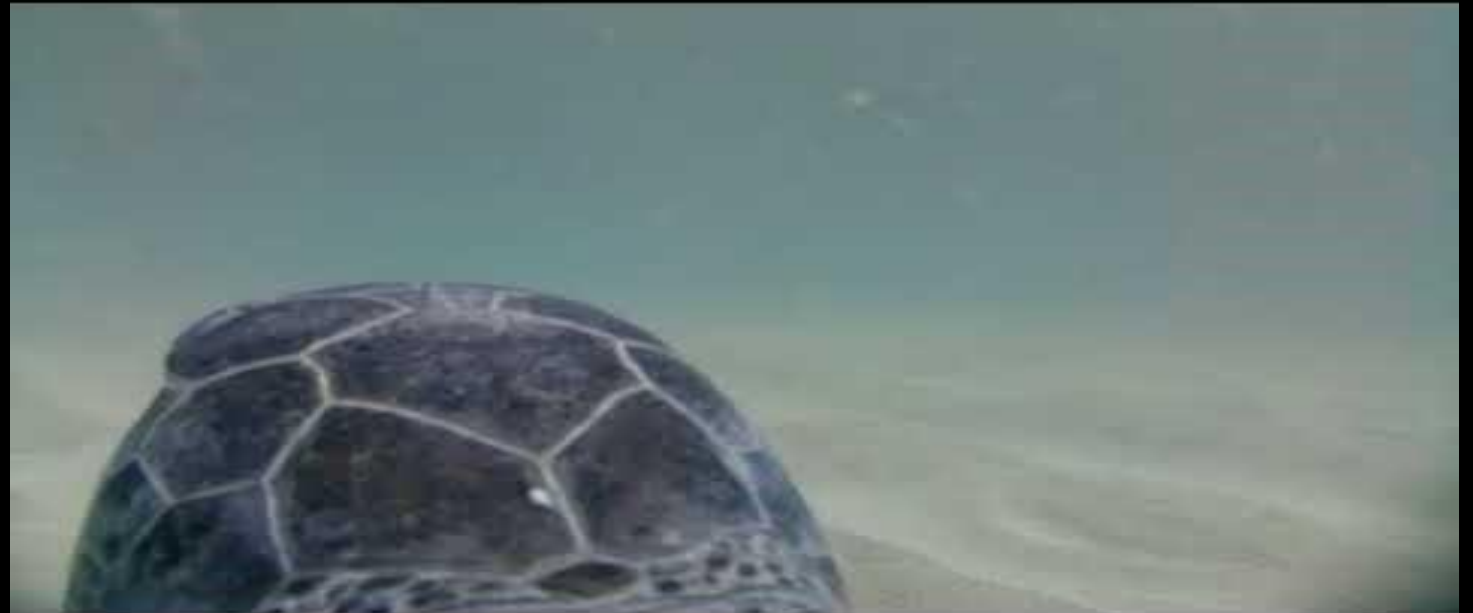
- <https://www.raspberrypi.org/help/>
- <https://www.raspberrypi.org/forums/>
- <https://raspberrypi.stackexchange.com/>
- GOOGLE! Lots of really cool tutorials out there
- <https://www.raspberrypi.org/blog/> - ideas

Underwater monitoring



Green turtles (and Arribada Initiative)

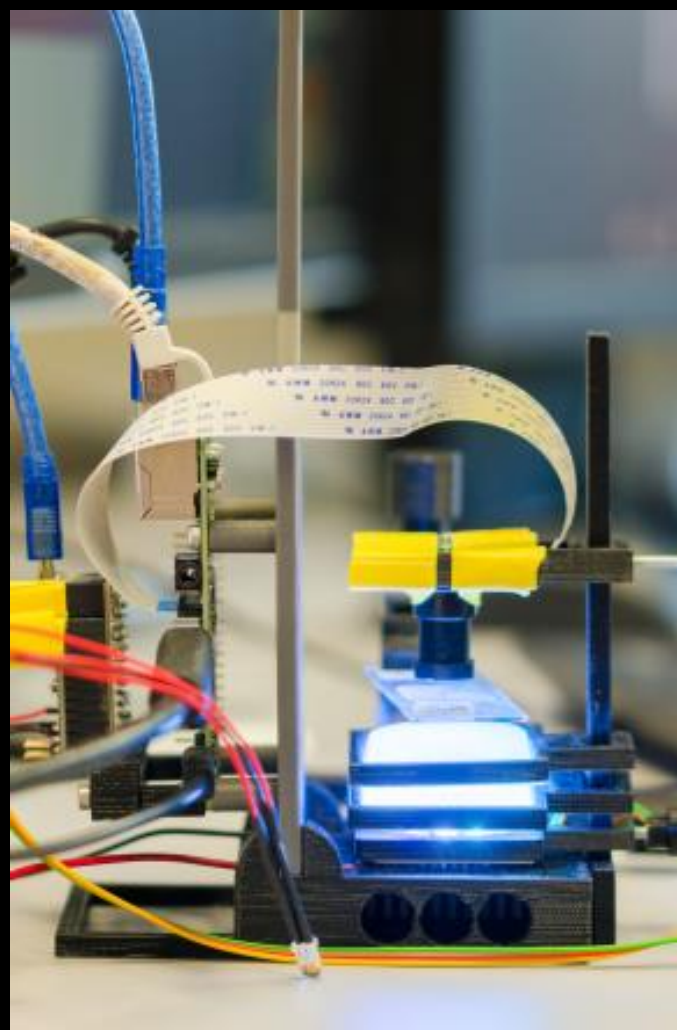
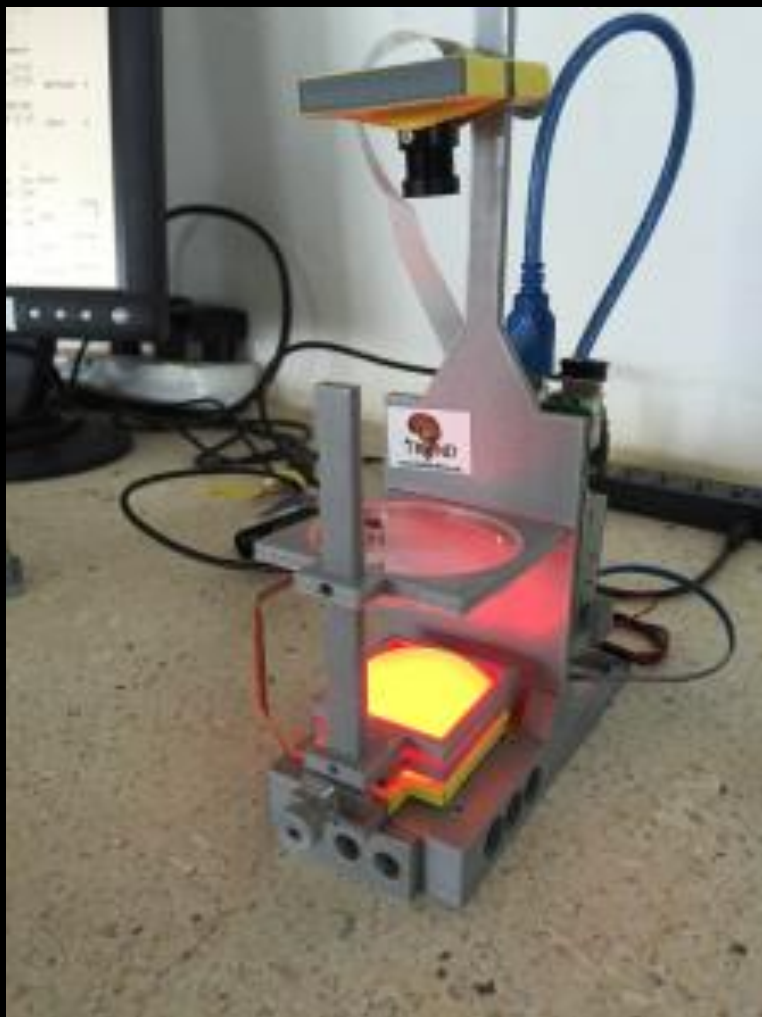
ARRIBADA
initiative



Tuatara hatching



100\$ lab



Squirrel Café – outreach / education



Our projects - SOLO

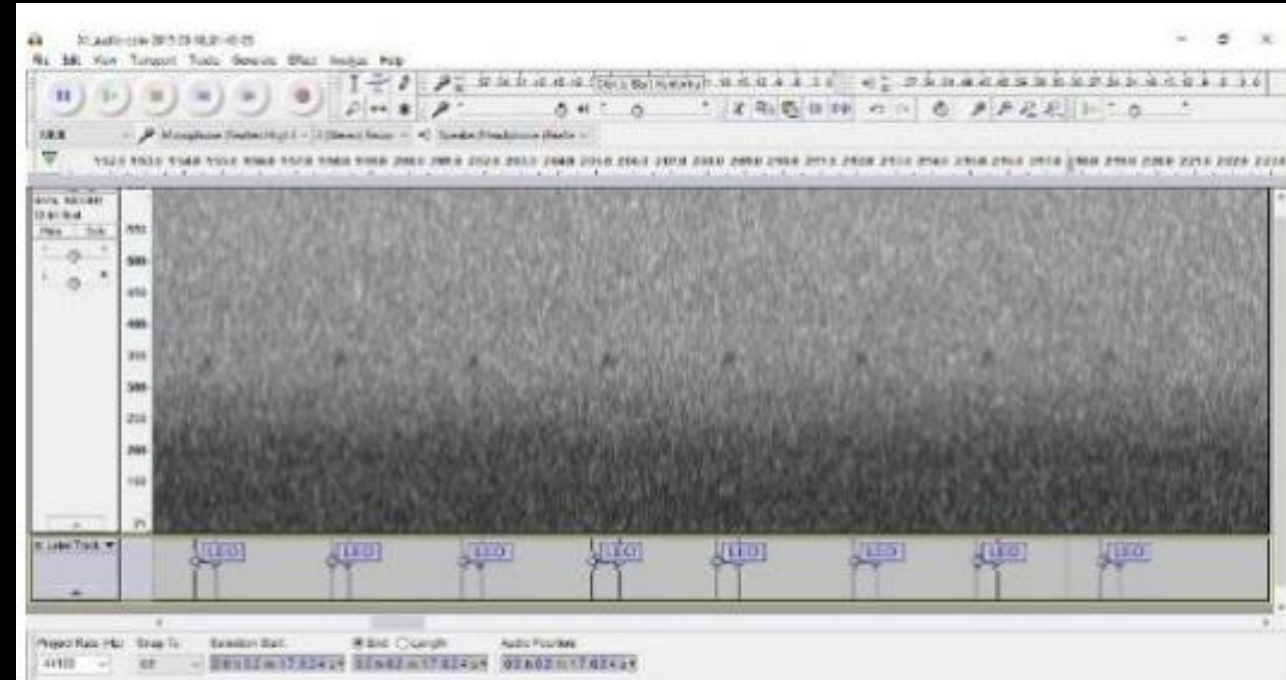


Figure 1 Annotated spectrogram showing the easily overlooked territorial song of a Long-eared Owl *Asio otus* recorded using a Solo audio recorder.

Our projects – Raspberry PiCam



Make your devices!

- 2.5hrs
- Once made try testing them and downloading files
- Breaks – Starbucks when necessary / hopefully something else nearby
- Go to the following Github page which has all the links for building your Pis:
- Place pis and get some good recordings – prizes are available! (If you like Belgian chocolate you are going to want to win...)

Breakout sessions

- Strengths
- Weaknesses
- Opportunities
- Threats