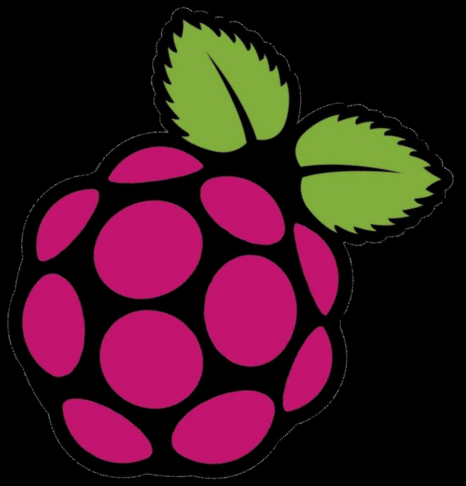
Developing ecological monitoring devices using Raspberry Pi technology

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

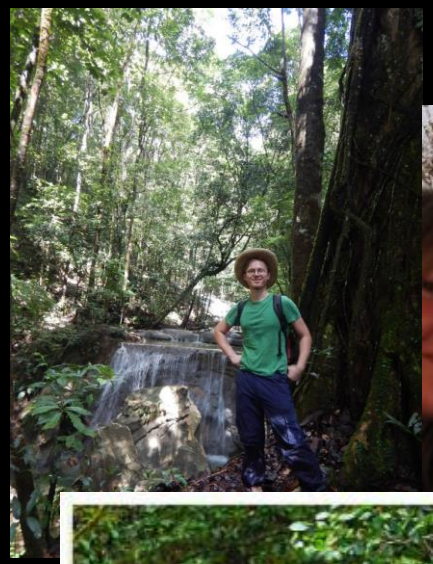
- Introduction (us, you, Pi's)
- Hands on session building either a camera trap or SOLO's
- Put them out / test them! Try and access the files.
- Breakout discussion – What to build, where to get information, important considerations.
- Wrap up and prize for best video / audio

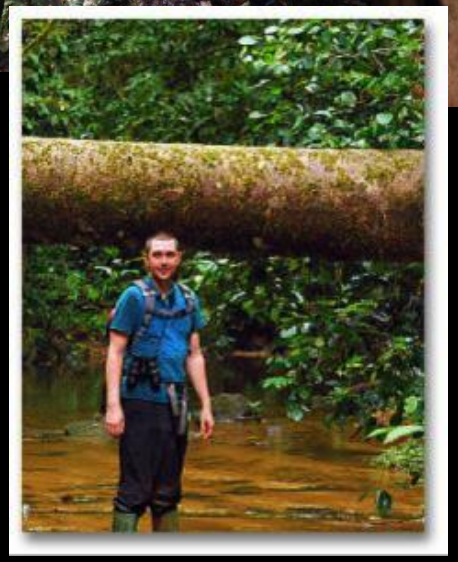
Who are we?

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

- Emily Simmonds (Norweigen 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 Hererra Olivares (Universiteit Antwerpen)
  - Embedded technology


$\sin 2\alpha = 2\sin\alpha\cos\alpha;$
$\cos 2\alpha = \cos^2\alpha - \sin^2\alpha;$
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gifak.net


FEAR OF RASPBERRY PIS

What are Raspberry pi’s?

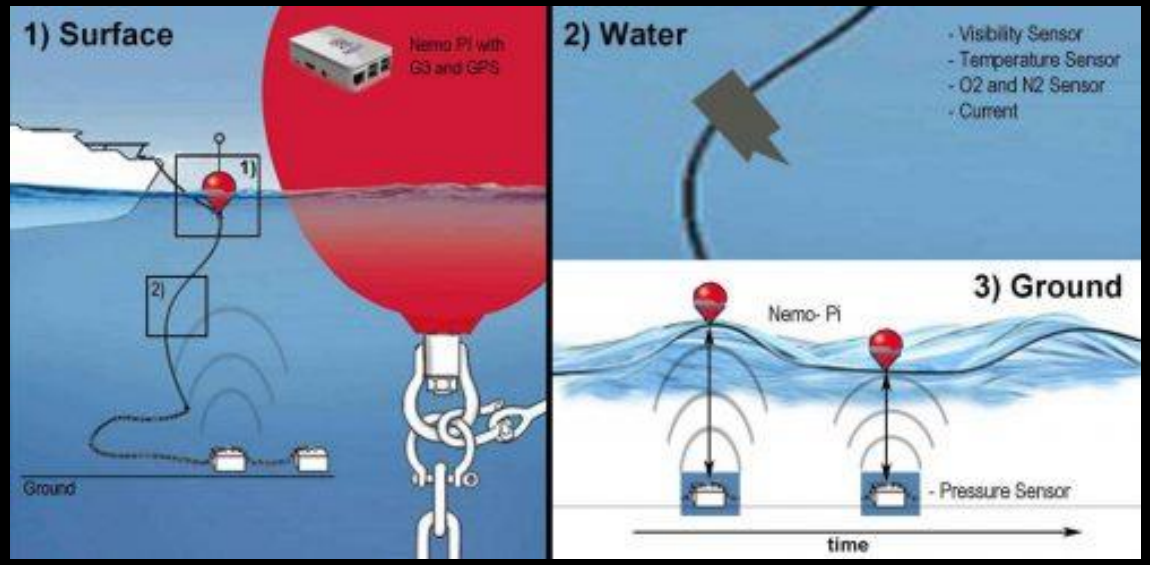
Where to go for help?

- https://www.raspberrypi.org/help/
- https://www.raspberrypi.org/forums/
- https://raspberrypi.stackexchange.com/

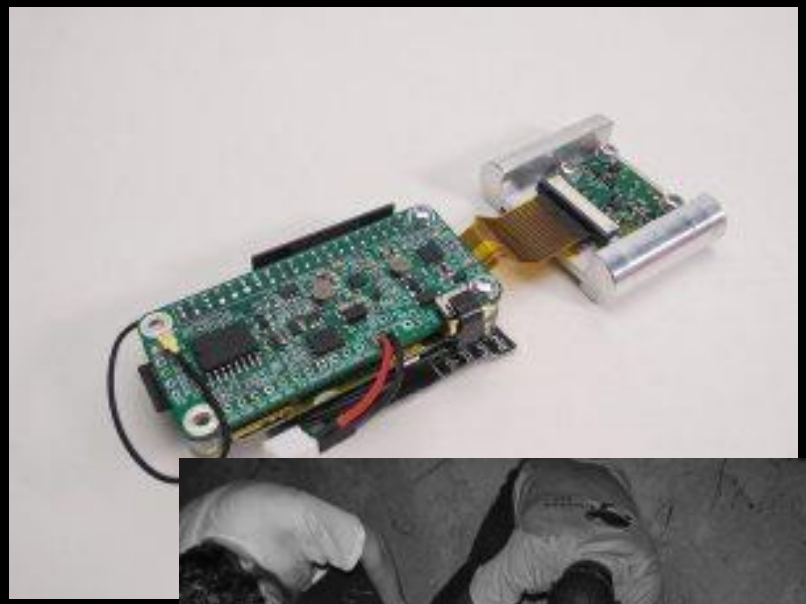
- GOOGLE! Lots of really cool tutorials out there

- https://www.raspberrypi.org/blog/ - ideas

Underwater monitoring

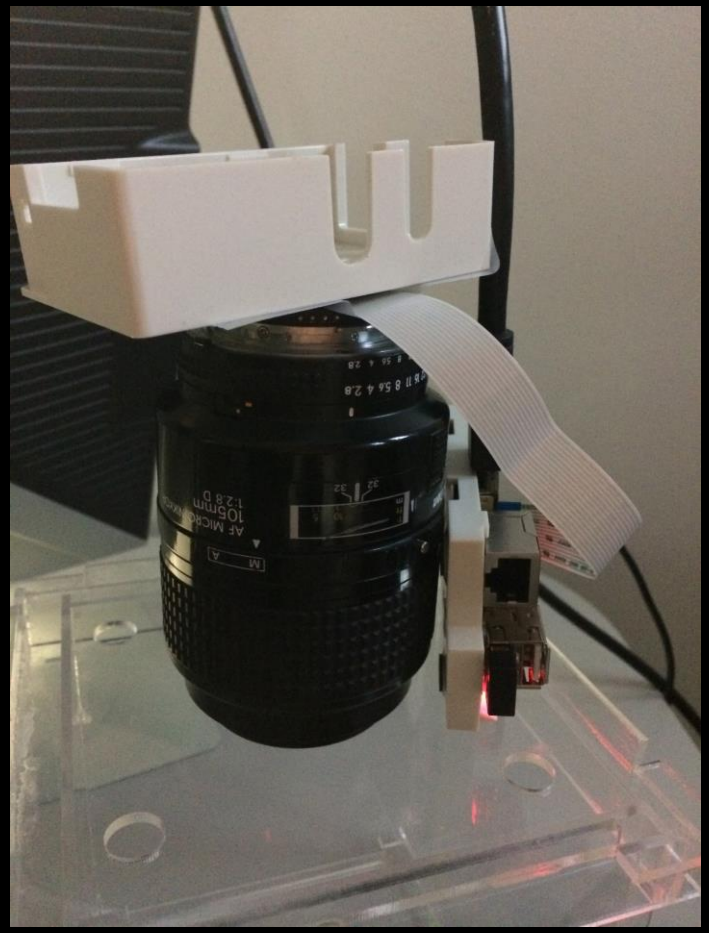


Green turtles (and Arribada Initiative)

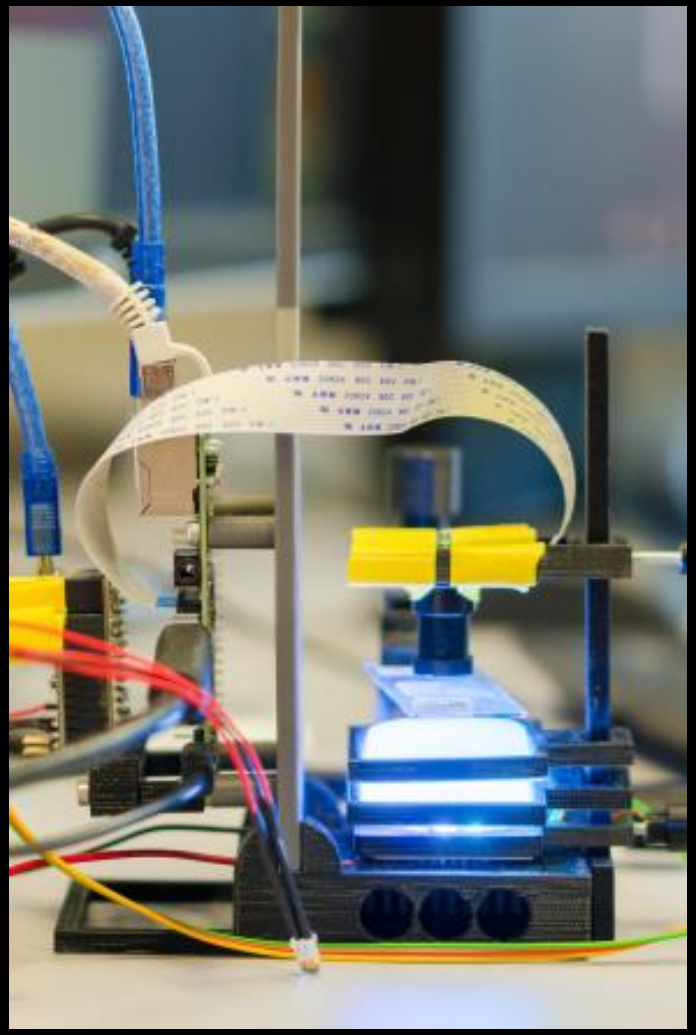


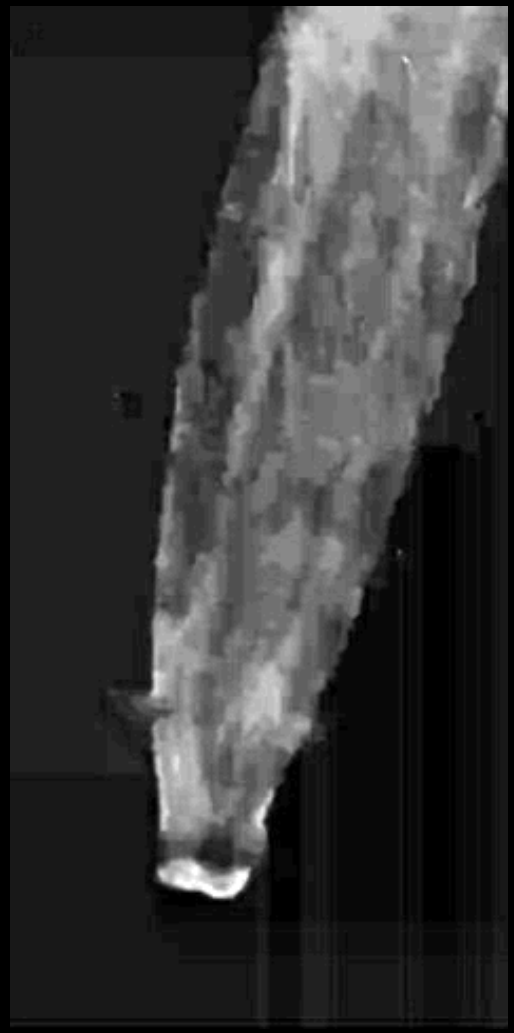
ARRIBADA initiative

Tuatara hatching



100$ lab





Squirrel Café – outreach / education

Our projects - SOLO

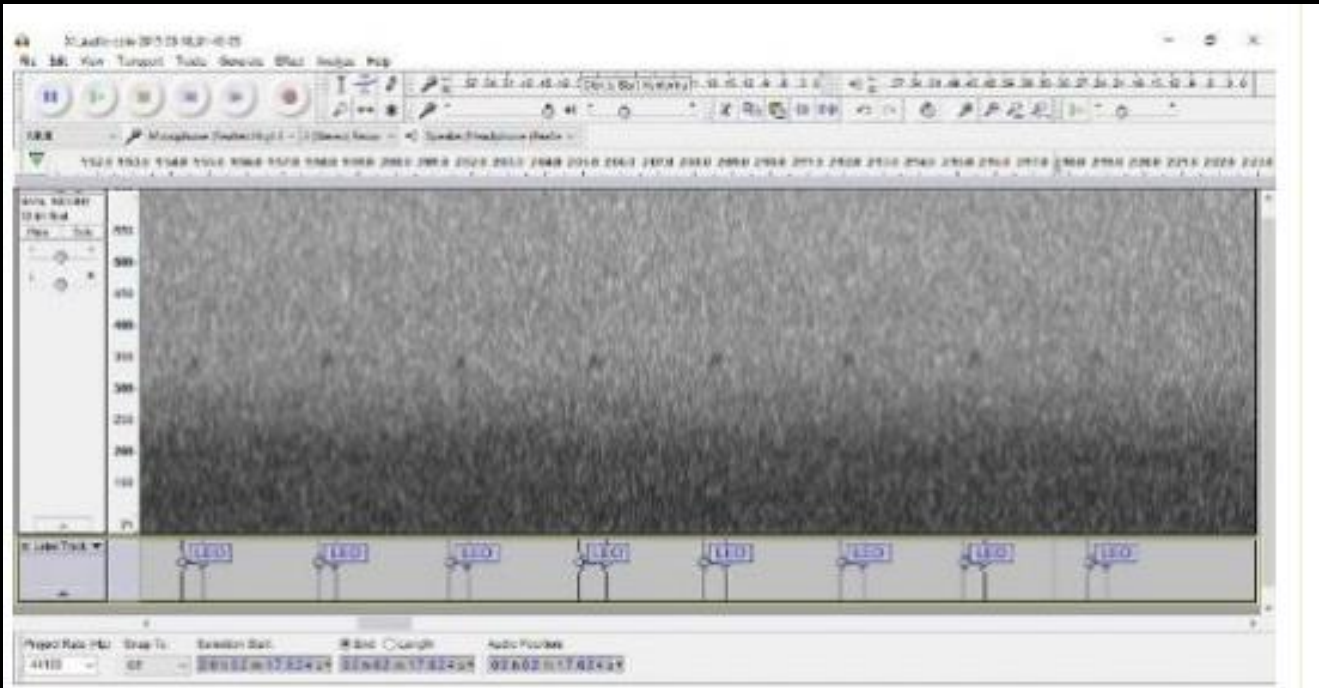


Figure 1 Annotated spectrogram showing the easily overlooked territorial song of a Long-eared Owl *Asio otus* recorded using a Solo audio recorder.

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