What we do

• Work with **researchers** and **organisations** to engage the **public** with data collection

  • Design **bespoke smartphone applications**

  • **Innovate** to take the technology in new directions

  • Provide **data visualisation** tools to enhance feedback
The Products
How it works

Lat/Long obtained via phone’s GPS in the field
Normal accuracy between 2 and 8m

Photo + Metadata
Making a difference

Priority eradication zone
Some statistics

PlantTracker

• 15,000 downloads
• 6,000 records of invasive species since Aug 2012
• Appearance on BBC Countryfile
• Data has already enabled early intervention
• Cost saving to the Environment Agency
• SNH and SEPA are new partners
PlantsTracker results

Distribution of Japanese Knotweed reports

Note: Only verified records appear on the map

Japanese Knotweed | Himalayan Balsam >>
And now for something different…
BatMobile

Test if we could build an app capable of automatically identifying the UK’s bat species from their ultrasonic calls

Collaboration with bat researchers @

- Institute of Zoology and UCL
- Bat Conservation Trust
Services such as **SoundHound** and **Shazam** enable people to identify songs they hear, using a mobile app.

**BatMobile** aims to apply the same principle to identify species of bats from their ultrasonic calls.
20 kHz
140 kHz

? How much on-phone?
? Approximate ID on-phone then pass to server for + accuracy?

1. Record .wav high sample rate
2. Display via Sonogram S/W
3. Enable call isolation
4. Call characterisation
5. Pass to ANN
Key Challenges

Challenges:

• Creating accurate algorithms to characterise bat species by call
• Creating accurate ID matrix
• Real time on a mobile
• Online vs. offline analysis
• Ultrasound => need a special microphone
Identifying bats by their calls...

Bbar - Barbasella barbastellus;
Eser - Eptesicus serotinus;
Nlei - Nyctalus leisleri;
Nnoc - Nyctalus noctula;
Pnat - Pipistrellus nathusii; Ppip - Pipistrellus pipistrellus;
Ppyg - Pipistrellus pygmaeus;
Rfer - Rhinolophus ferrumequinum;
Rhip - Rhinolophus hipposideros.
The barbastelle is a medium-sized bat, distinctive by its pug-shaped nose. The ears are broad, joined across its head by skin, and covered in gingery-brown fur on the rear surface. The tragus is triangular – broad at the base but with a nearly parallel tip which starts about halfway along its length.

**Vital statistics**

| Head & body length: | 40mm - 55 mm |
| Forearm length:     | 35mm - 45 mm |
| Wingspan:           | 260mm - 290mm |
| Weight:             | 6g – 13g     |

**Colour:**
Fur dark, lighter tips on back. Skin surfaces black or dark brown.
BatMobile Summary

• Current mobiles are up to the job

• However, bats are tricky since they use ultrasonic frequencies

• Some are trickier than others

• We need to work with a bat bio-acoustic specialist to enhance the feature extraction and ID element

• Currently also working on a project with the CEH to auto-id Orthoptera.
Why crowd sourcing/citizen science works for the public

Why it works for us
Why it works for the public

- Immediacy
- Minimal effort
- Usability (paramount for public engagement)
- It appeals to the “geek” in us
- I can use my phone to do something useful…
- The apps are informative
- Feedback loop
Why it works for us

• High quality data
  • Photo attached (verifiable… most of the time)
  • Geo-located
  • Other metadata

• Digital data
  • Data flow consistent (to BRC – iRecord - then to NBN)
  • No work converting it from another format
  • Accessible by anyone (potentially)
  • No time lag for data to appear in public domain
Email: d.kilbey@bristol.ac.uk
Website: http://naturelocator.org/
Mobile: 07985 914111
We specialise in helping researchers and organisations collect crowd-sourced data for biological surveys.

Case study: LeafWatch
- App available for iPhone and Android
- Over 5000 unique records collected in first season
- Featured on the BBC’s The One Show, Radio 4, Sunday Times – even tweeted by Stephen Fry!

How we could help your project

1. We work with you to design and build a custom phone app with a user-centred focus

2. Participants download the app and go out into the field to collect photographic, geo-located records.

3. Records are verified by nominated experts using an easy-to-use system. You get high quality, validated results!