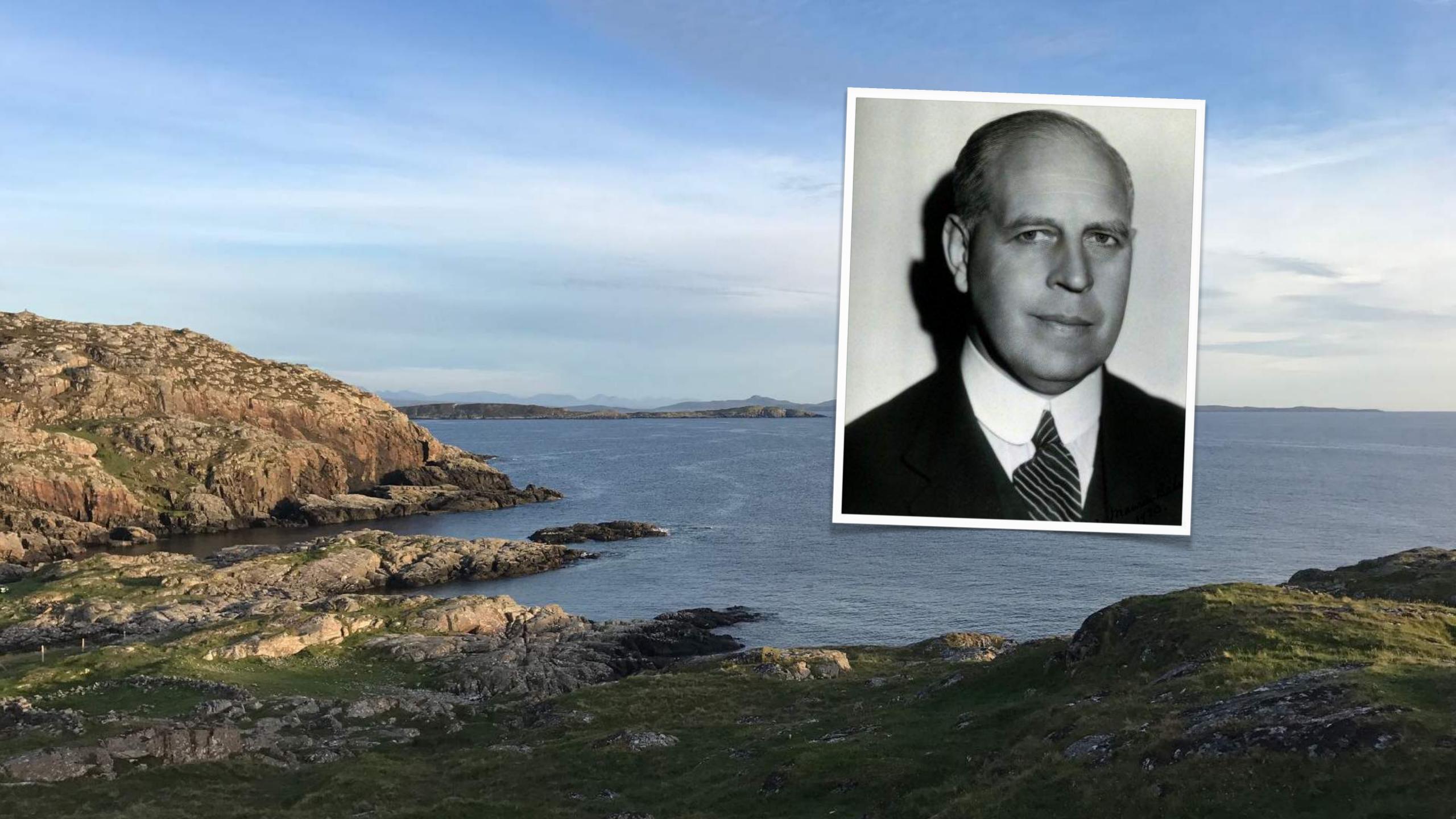# The Internet of Natural Things

Simon Collison
@colly
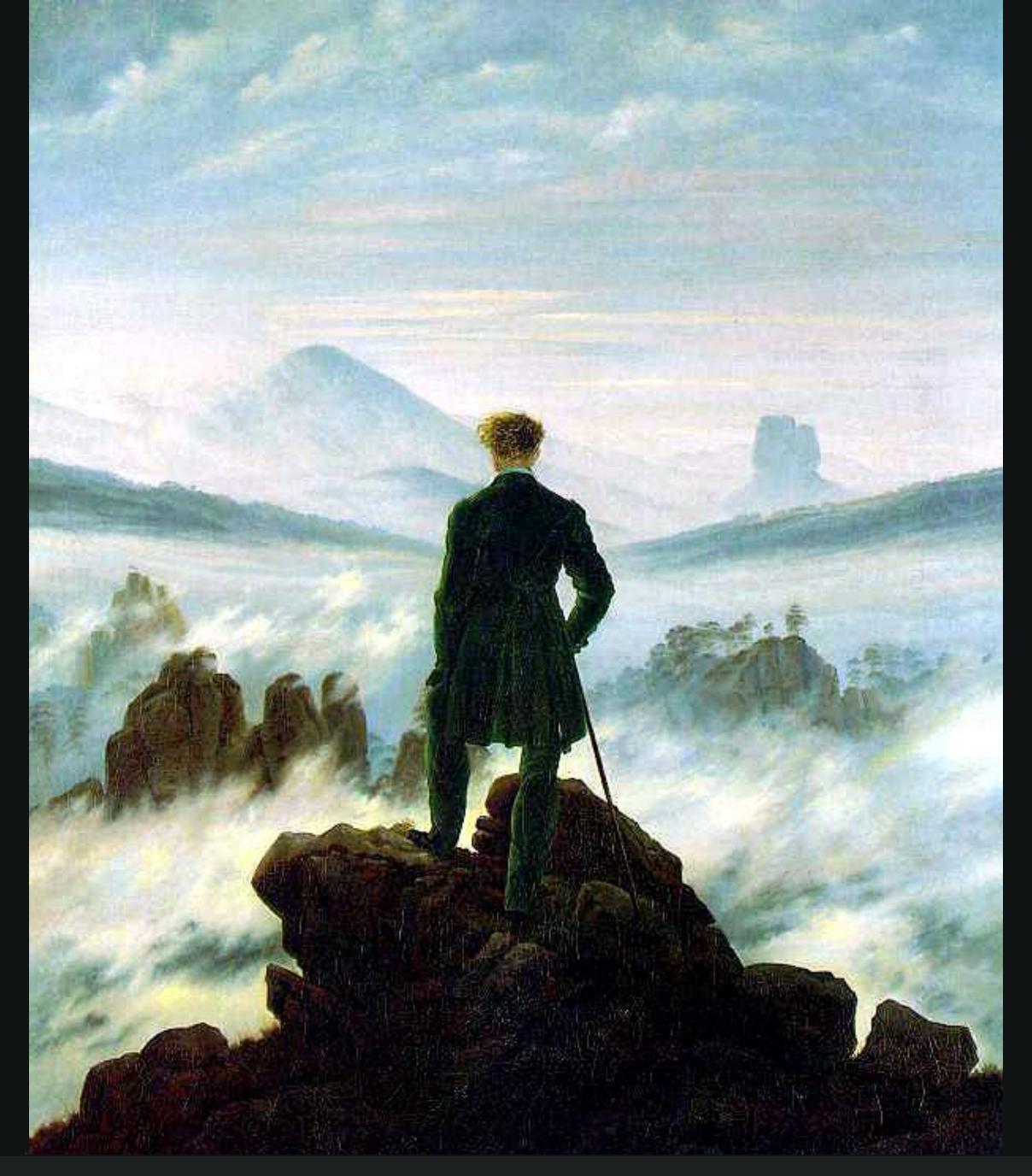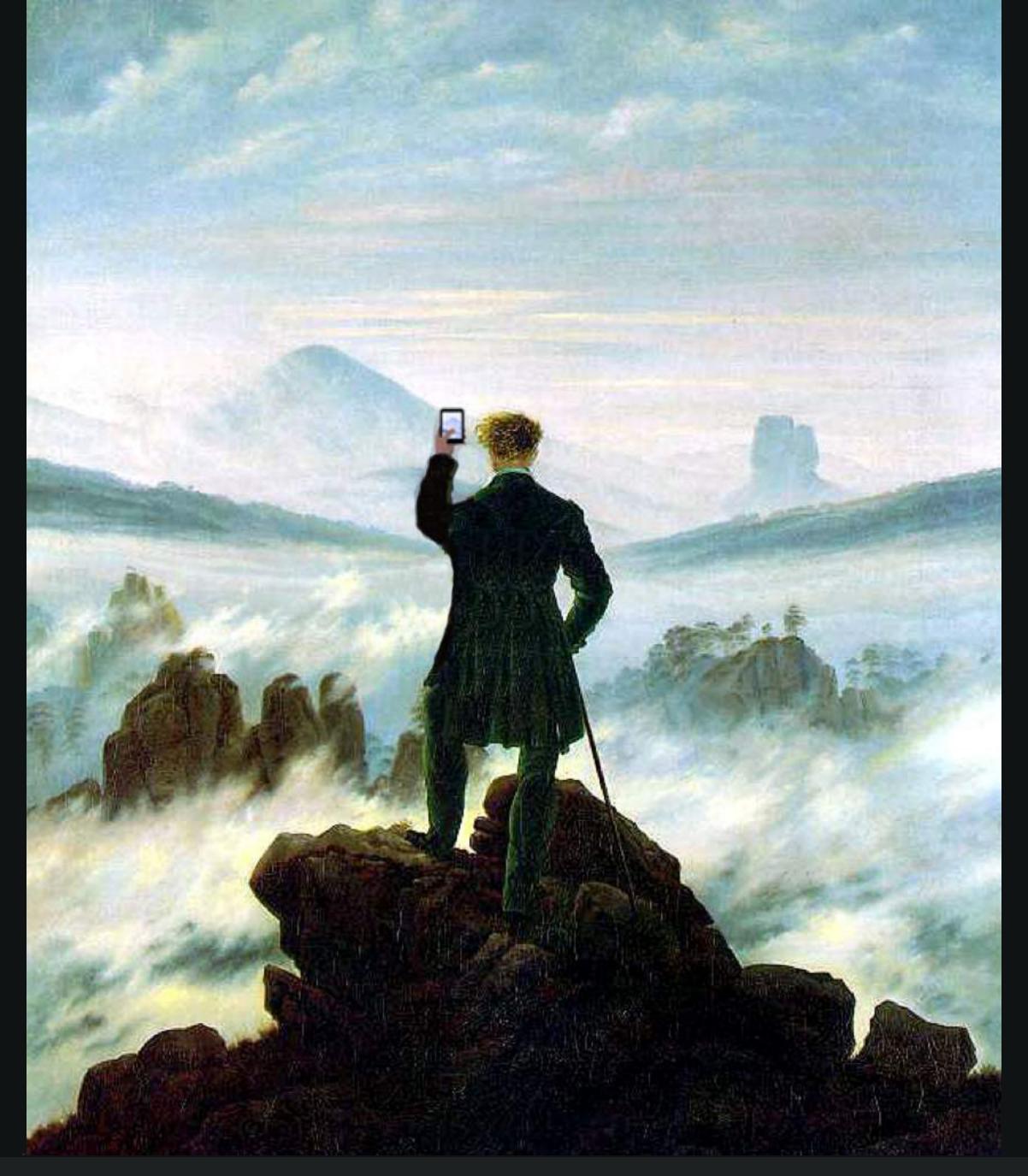
Achmelvich

Part one / **Research**

Introduction

Embracing technology

The new image of nature

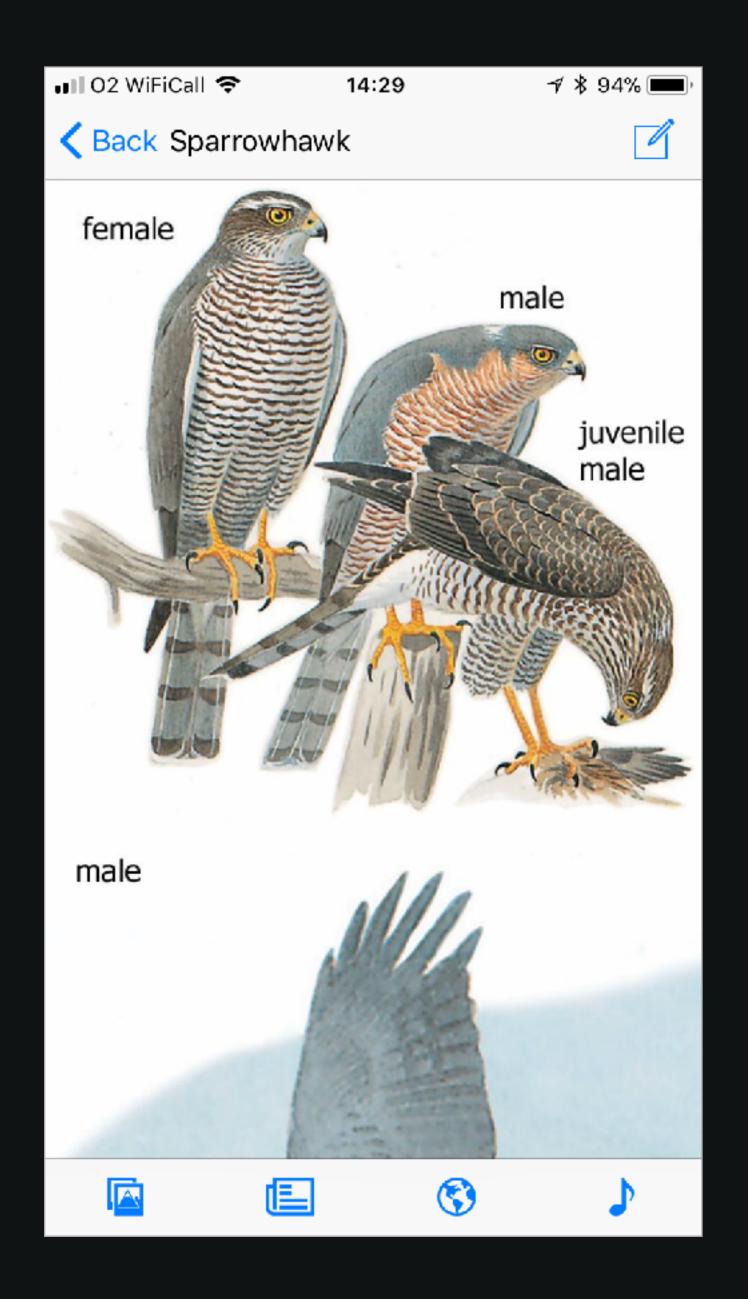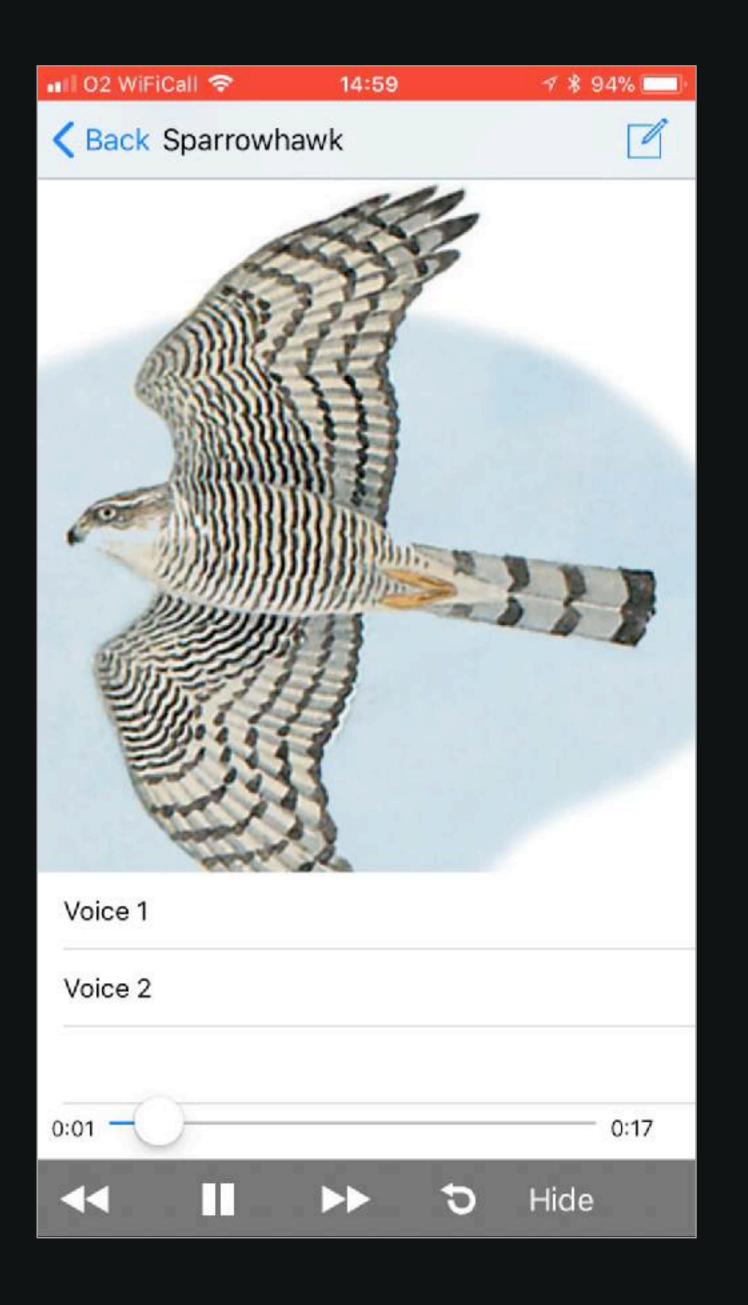Wanderer Above the Sea of Fog, Caspar David Friedrich, 1818
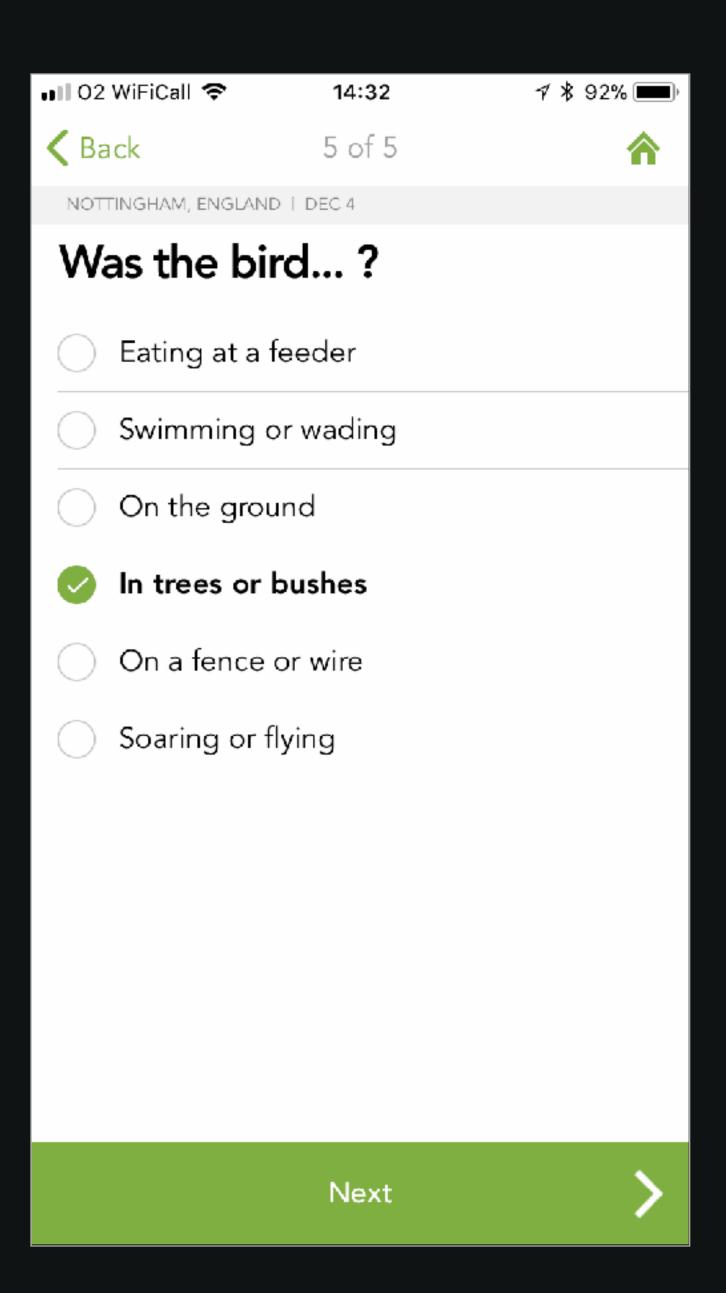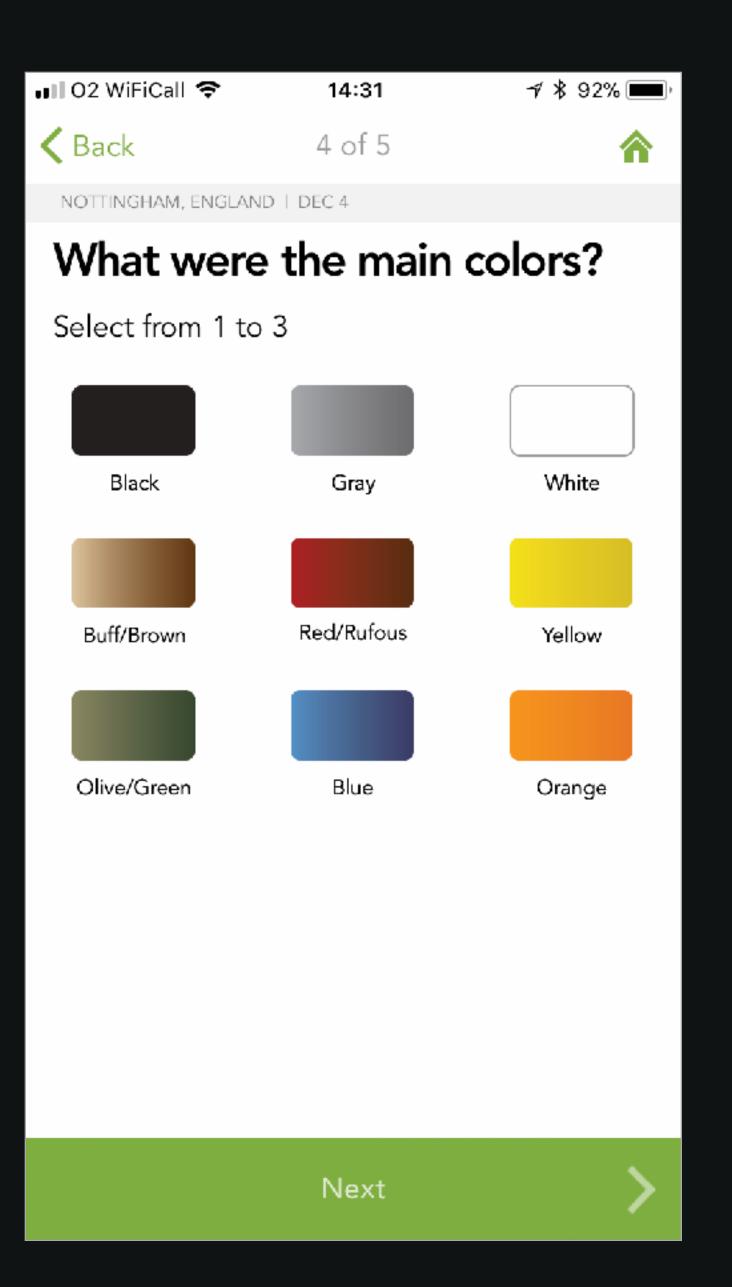
Wanderer Above the Sea of Fog, Caspar David Friedrich, 1818
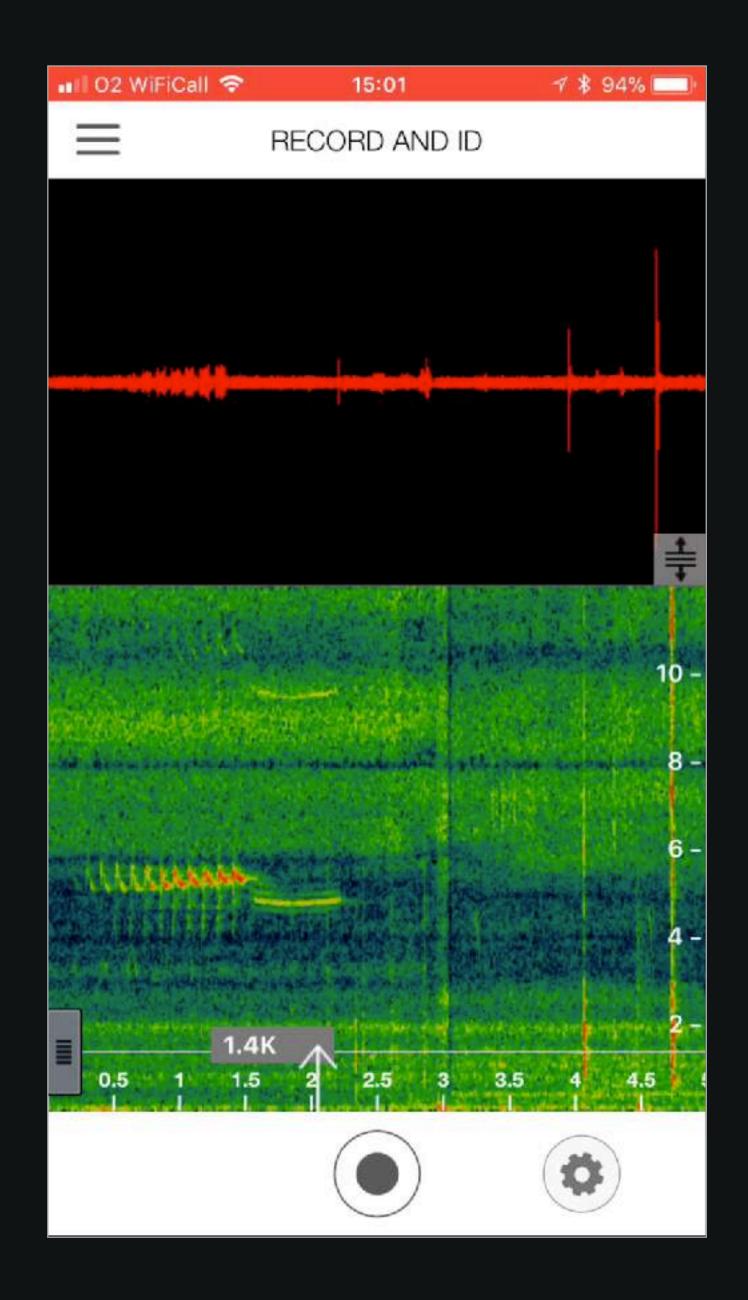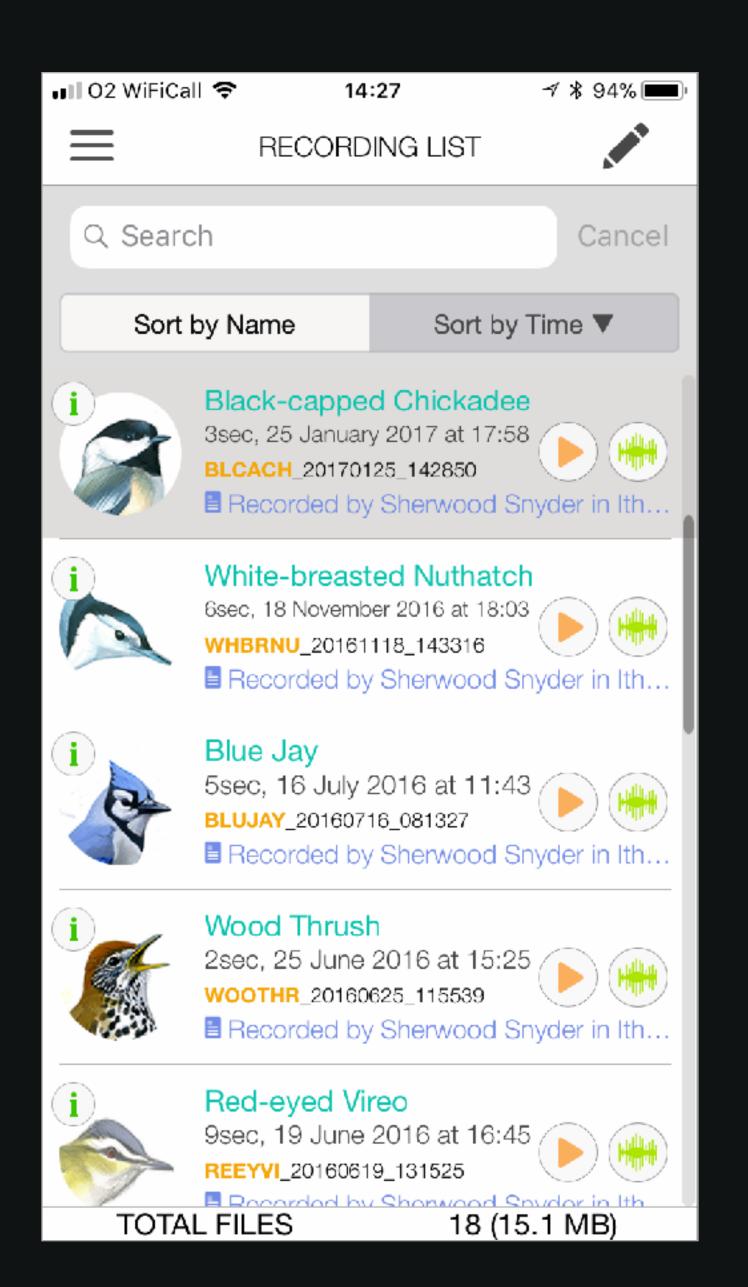
Nottingham Trent University peregrine

British Birds by mydigitalearth

Merlin Bird ID from Cornell Lab

Song Sleuth from Wildlife Acoustics

Merlin Bird ID (Cornell Lab), and British Trees (Woodland Trust)
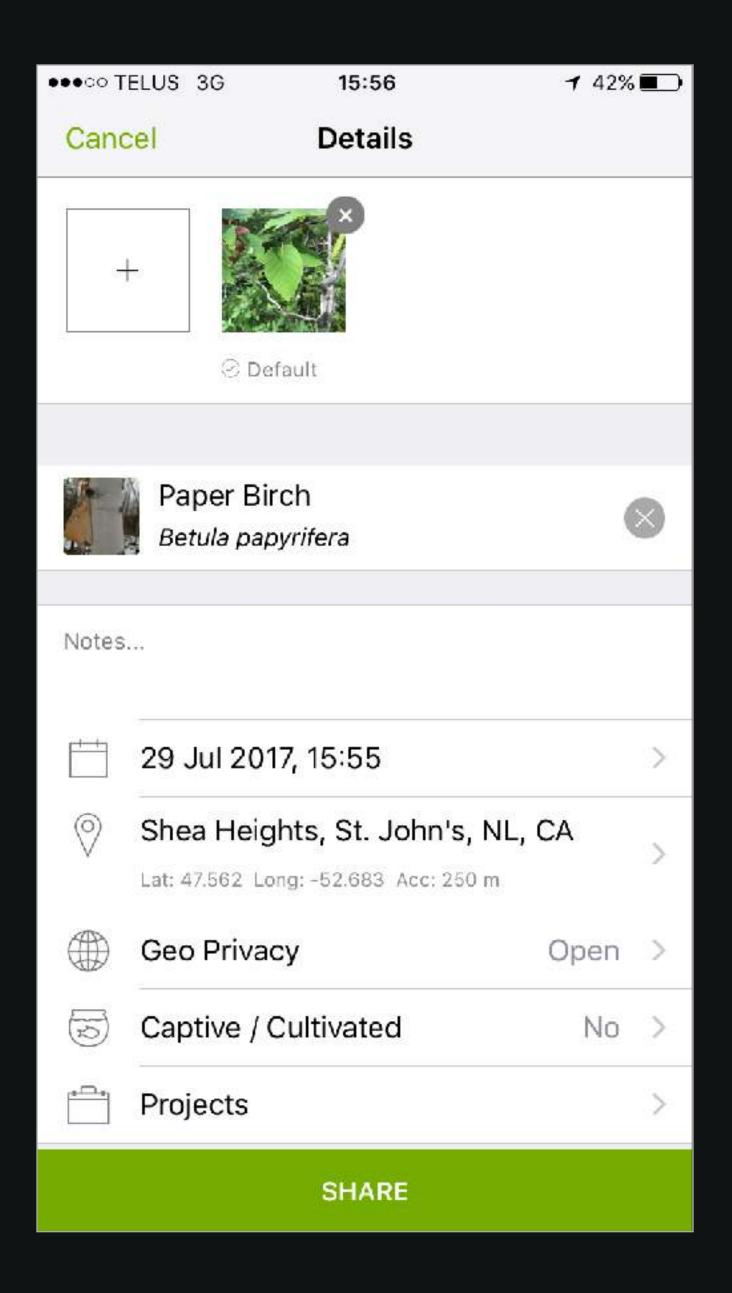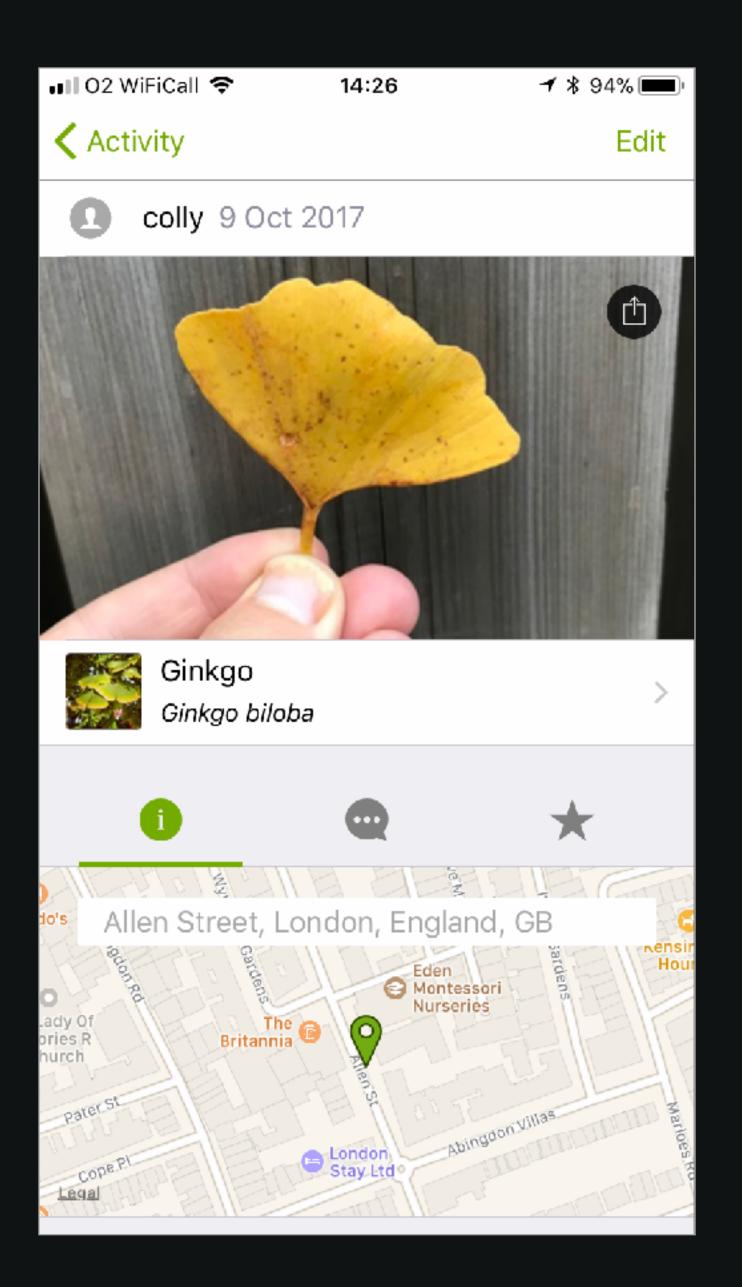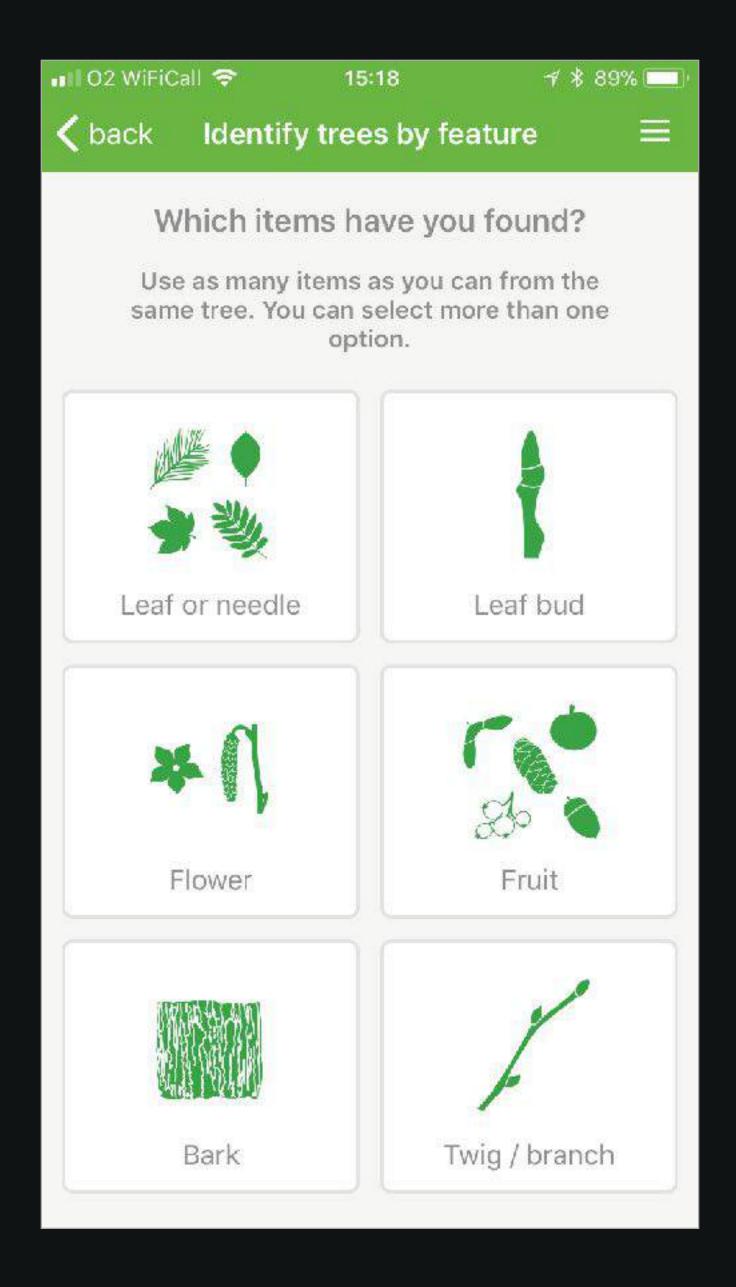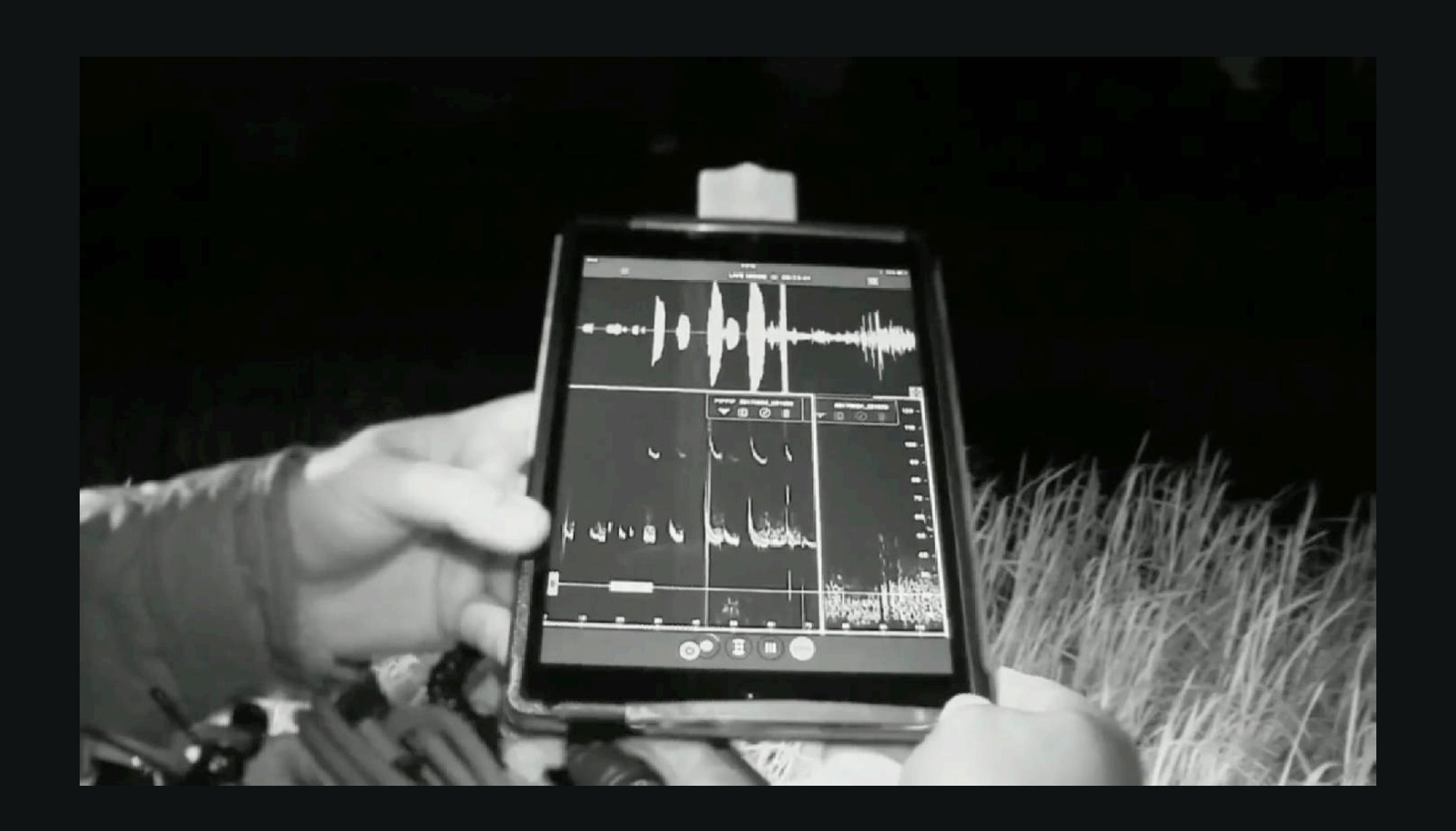
Echo Meter Touch 2 (footage from BBC Springwatch)

GET READY FOR THE CAT® S61

The Cat S61 smartphone is built to be rugged and robust, to take on whatever elements, challenges or tasks you throw at it. It's the upgrade to your Cat S60; bigger, better, bolder than ever before.

We've taken the integrated thermal imaging camera from the S60 and given it an upgrade.

Its enhanced software makes the resolution of thermal images twice as good, it can now read temperatures up to 400°C and it can live stream thermal video back to base. And, there's more.

It boasts an indoor air quality sensor to alert you to high levels of indoor air pollutants (VOCs) in your environment and it also comes with laser assisted distance measurement.

Let's not forget its world leading IP68, Mil-Spec 810G rugged credentials – drop proof up to 1.8m, waterproof up to 3m for 60 minutes, including salt water, and resilient to all types of dust.

This tool is the most advanced, most skilled and most loyal partner you need to get any job done.

Sign up below to be the first to hear about the Cat S61 and other Cat phones.

CAT S61 smartphone
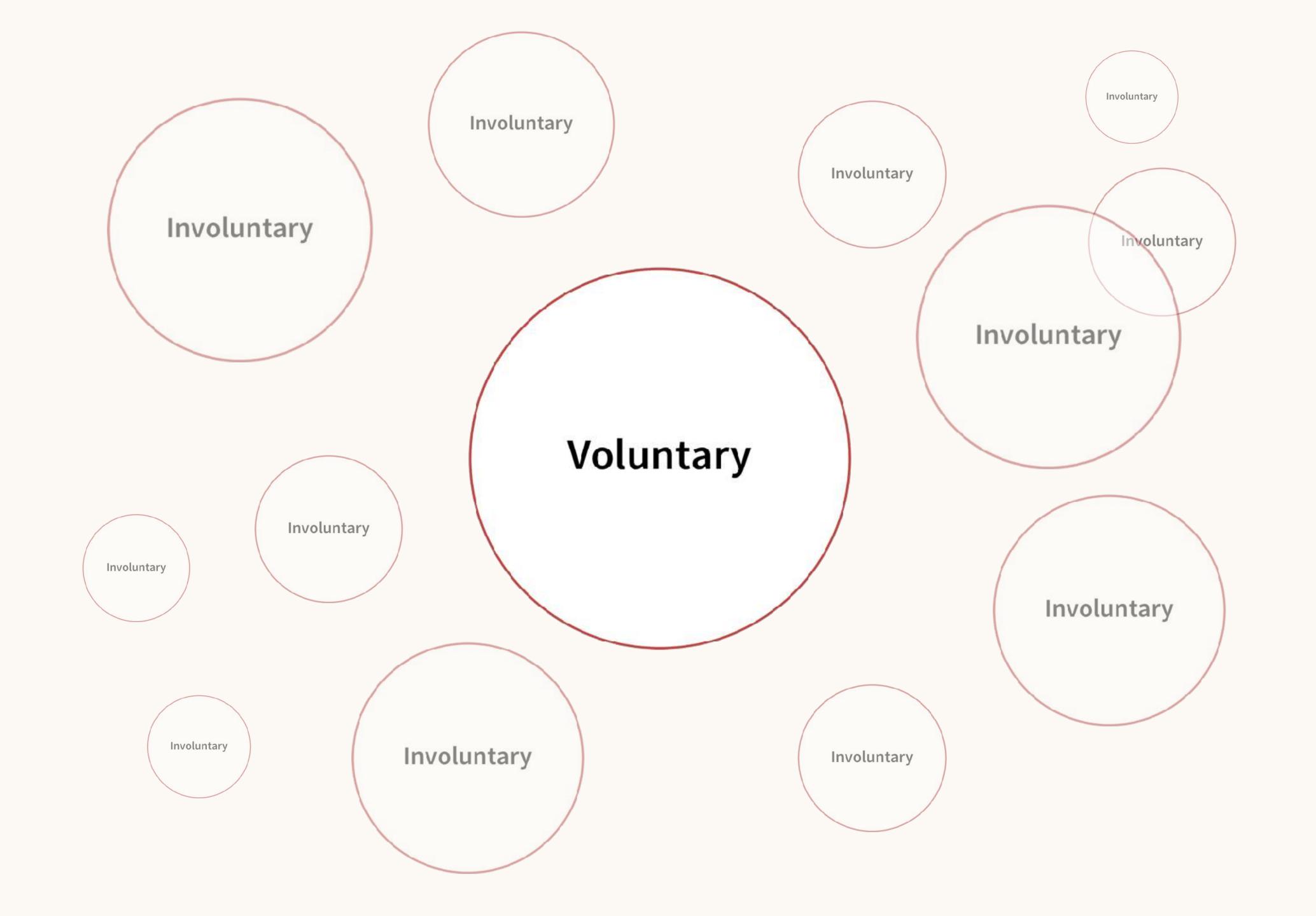
Research

Senses
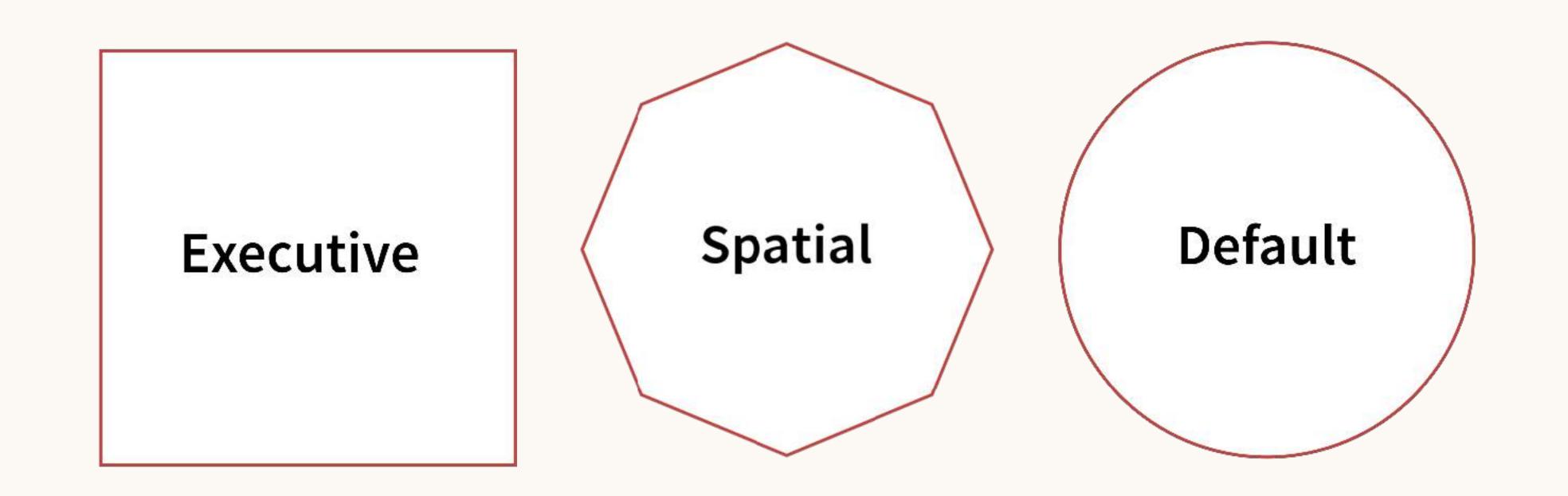
Biophilia

Biophilic Design

Some brain science

Executive

Spatial

Default
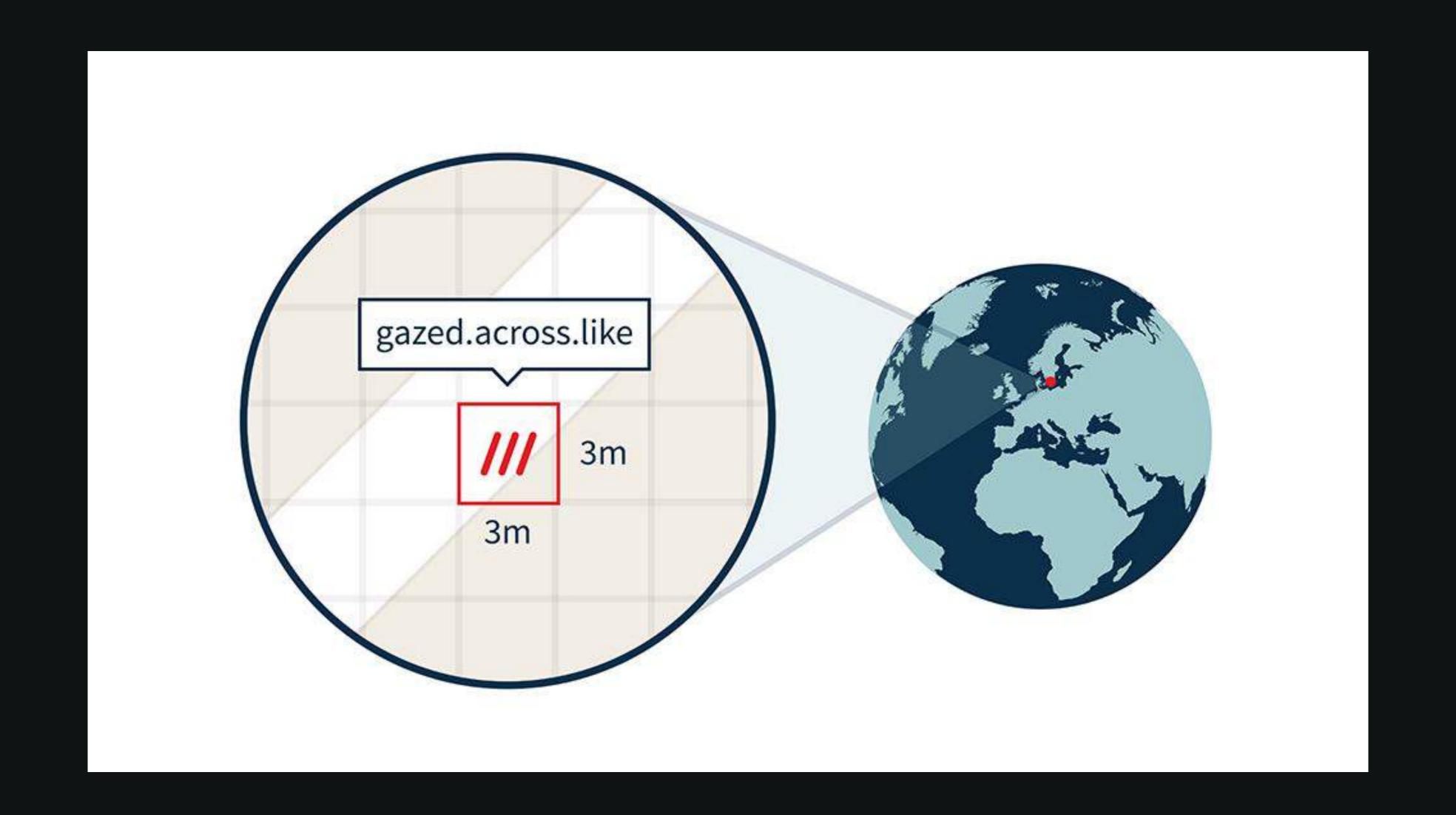
Restorative reprieves

Research

Senses / Mental stimulus

gazed.across.like

3m

3m

imprints.teach.playoffs

Bromfield, UK

what3words

green.belly.turns
Clerkenwell, London

cheese.minus.update
Barnsbury, London

3WordPhoto

Ordnance Survey subscription, AR mode

Looksee app / British geological Survey

Urban Good London National Park City map

Research

Senses / Mental stimulus / Place

Animal Tracker app
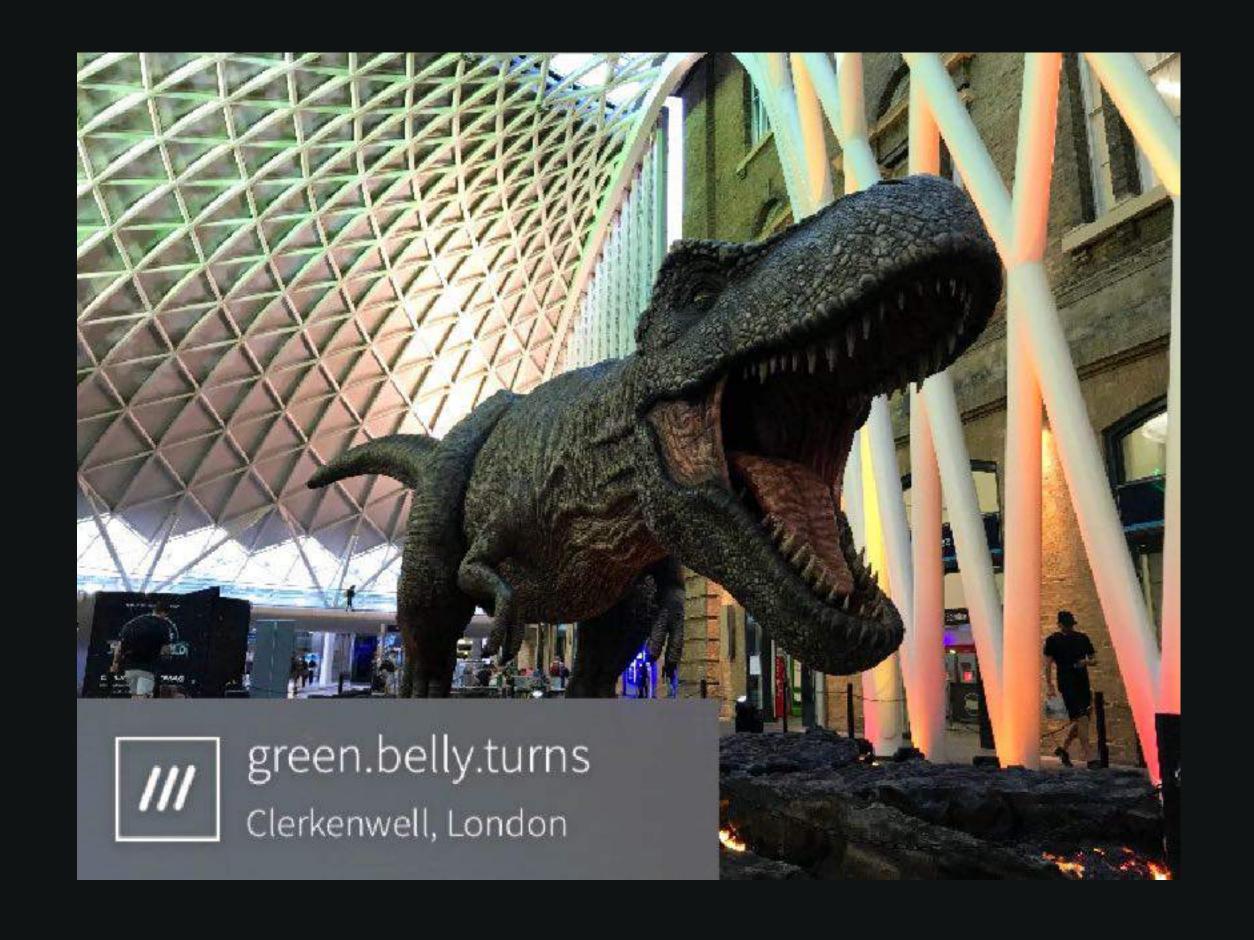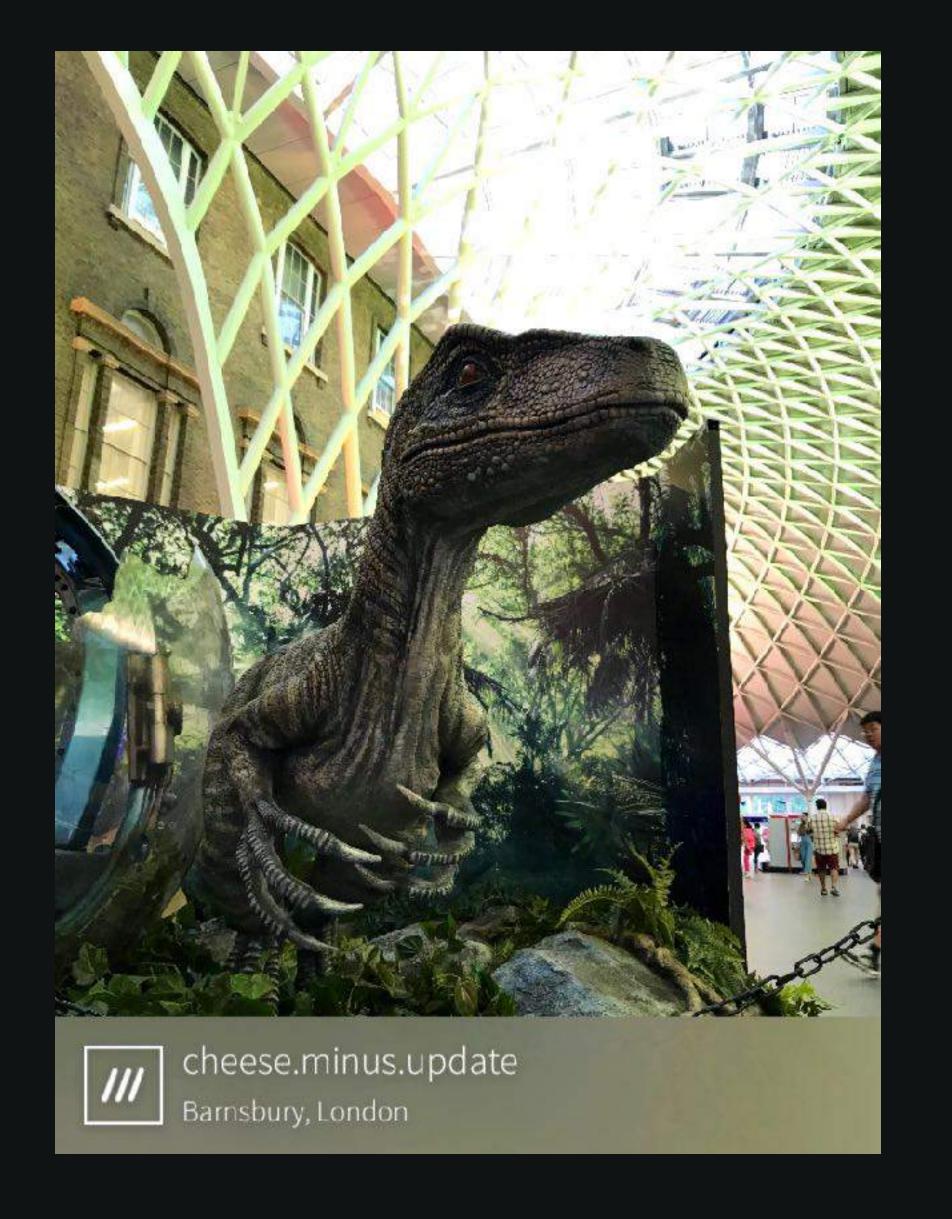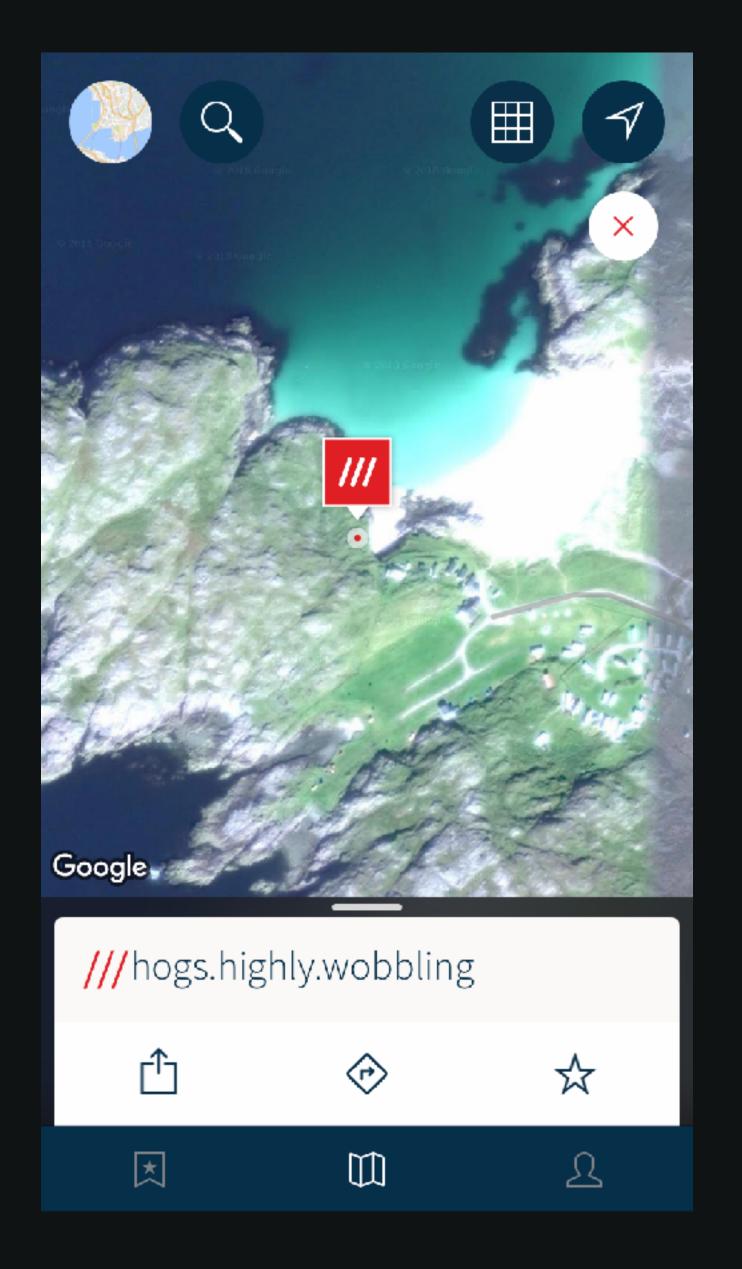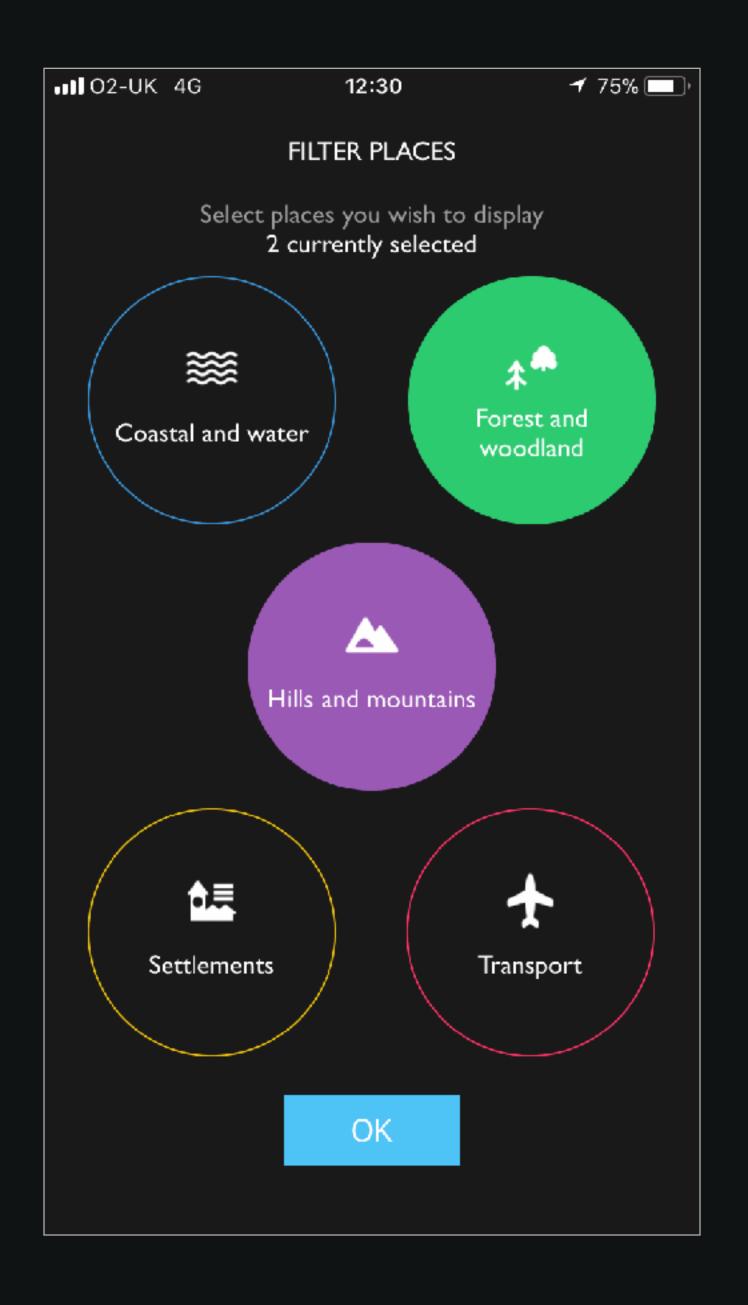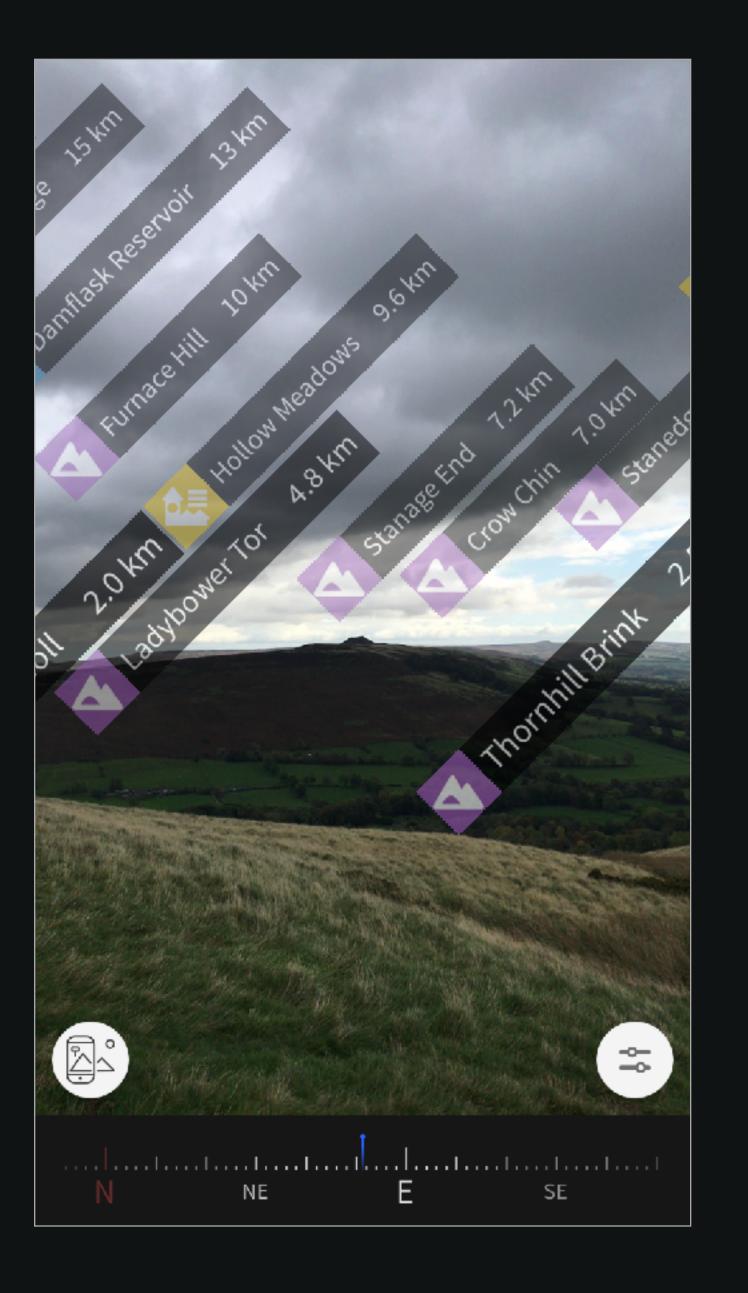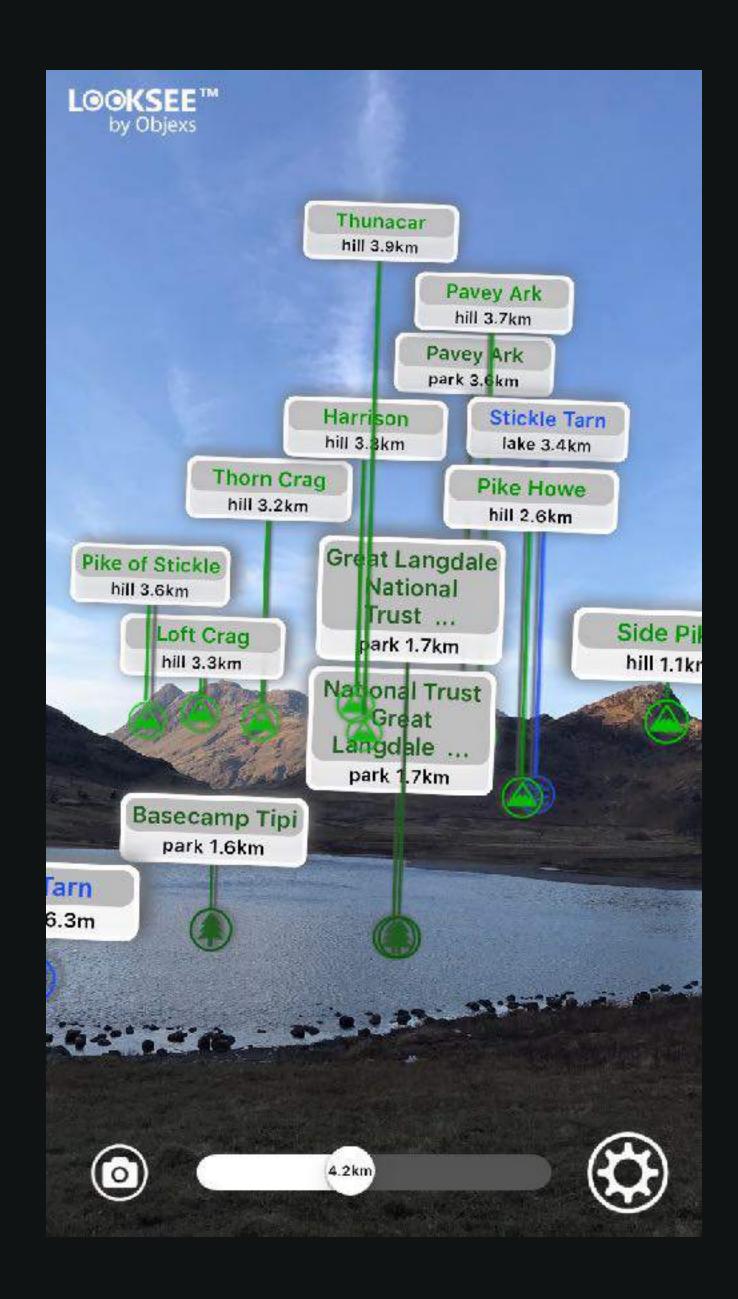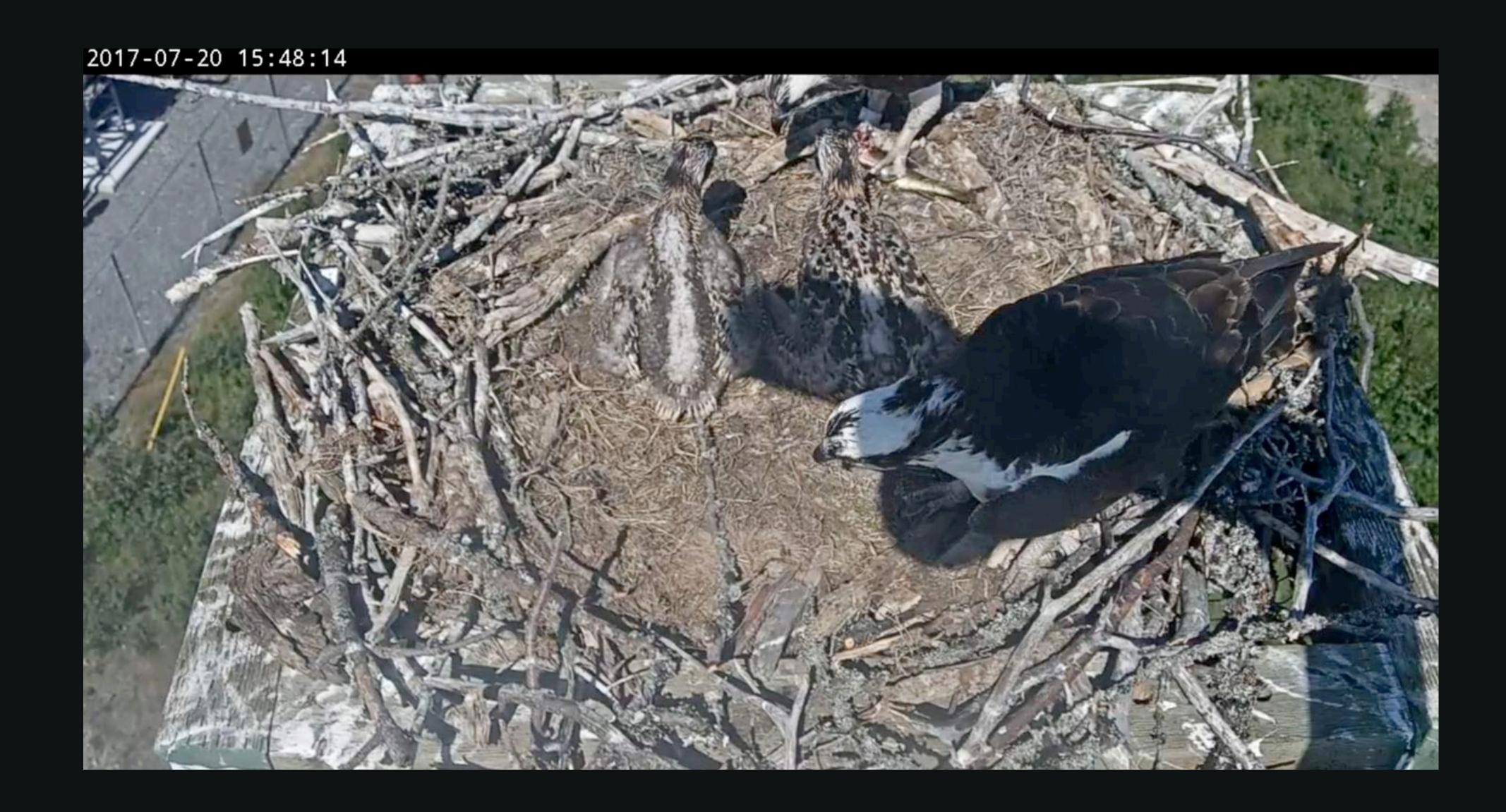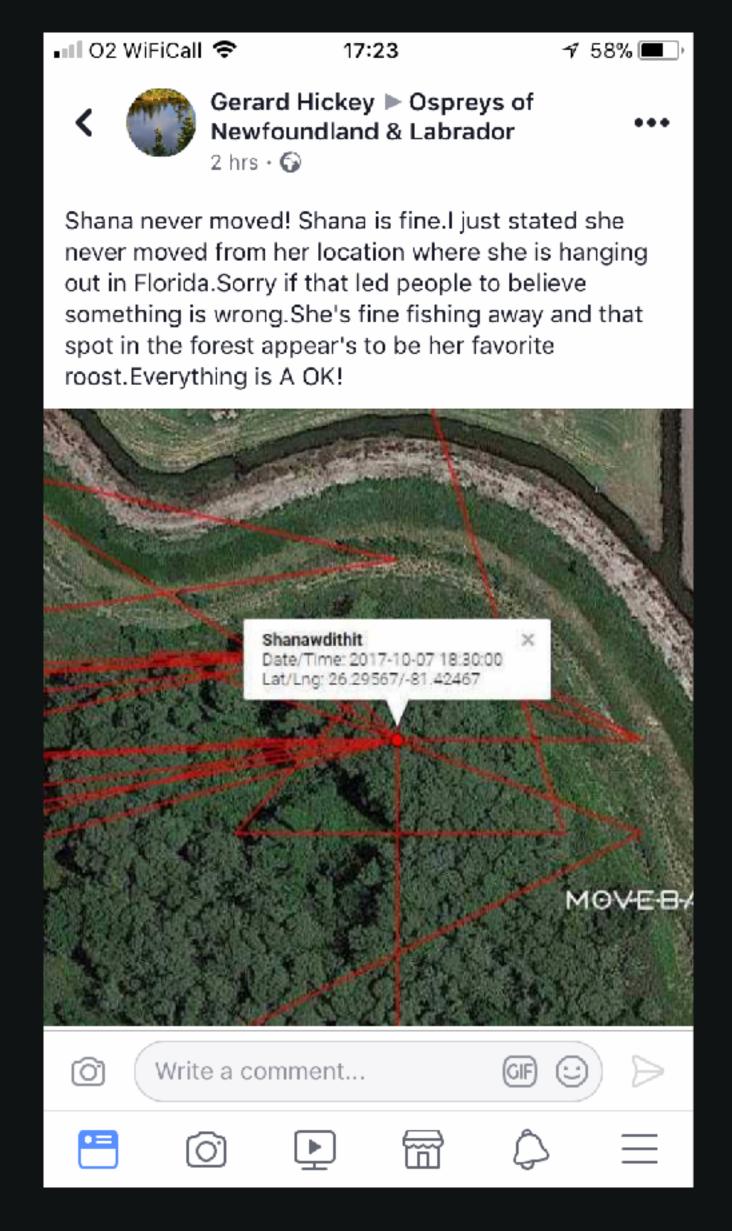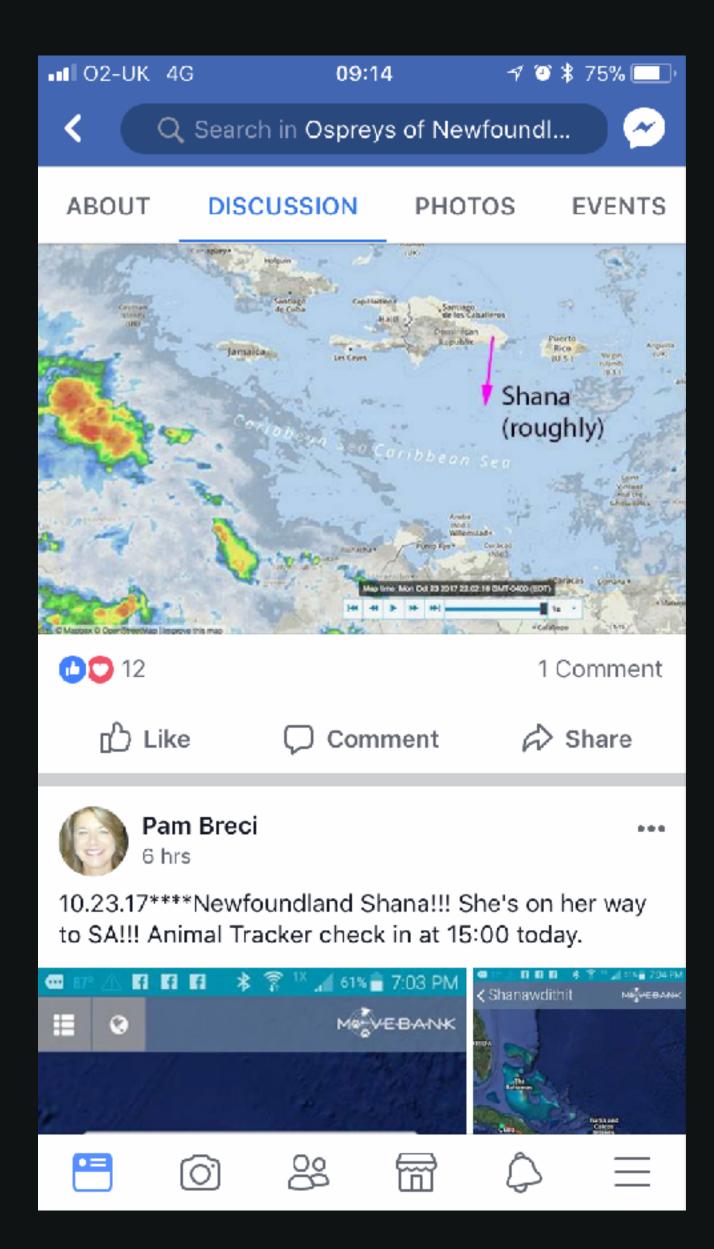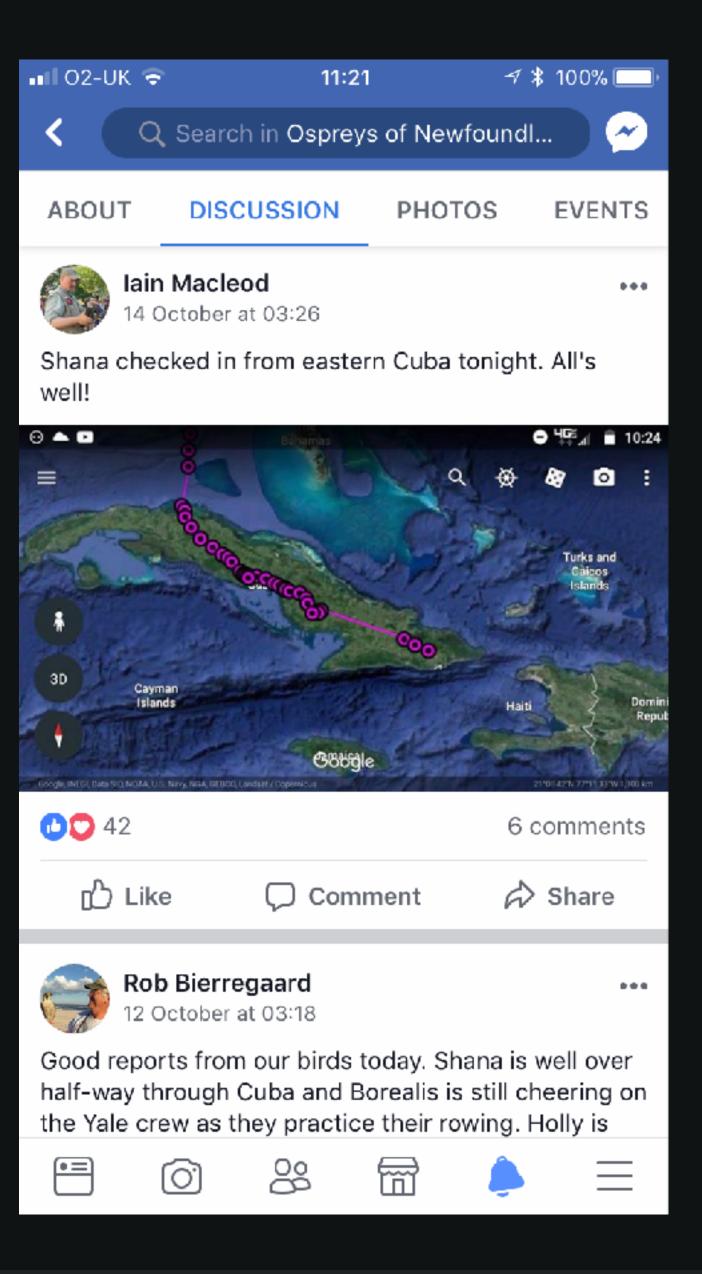
50,000

wild animals equipped with GPS units

Ospreys of Newfoundland Facebook community

Technobiophilia

Firewatch

Future Unfolding

Farmville

Grand Theft Auto V

Dorothy Howard —photo from Nottingham Post

A new beauty

I'm just a scrag — but I'm YOUR scrag

@anna_debenham

Research

Senses / Mental stimulus / Place

Connections / Data / Simulation

Nose to Tail measure

0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32

Gold Frog   Bee Hummingbird   Vampire Bat   Pygmy Jerboa   Spiny Seahorse   Hedgehog   Axolotl   Flying Squirrel   Slow Loris

NOSE TO TAIL

0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32

Gold Frog　Bee Hummingbird　Vampire Bat　Pygmy Jerboa　Spiny Seahorse　Hedgehog　Axolotl　Flying Squirrel　Slow Loris

Nose to Tail measure

Kids and nature

Every Child Wild survey by The Wildlife Trusts, 2015
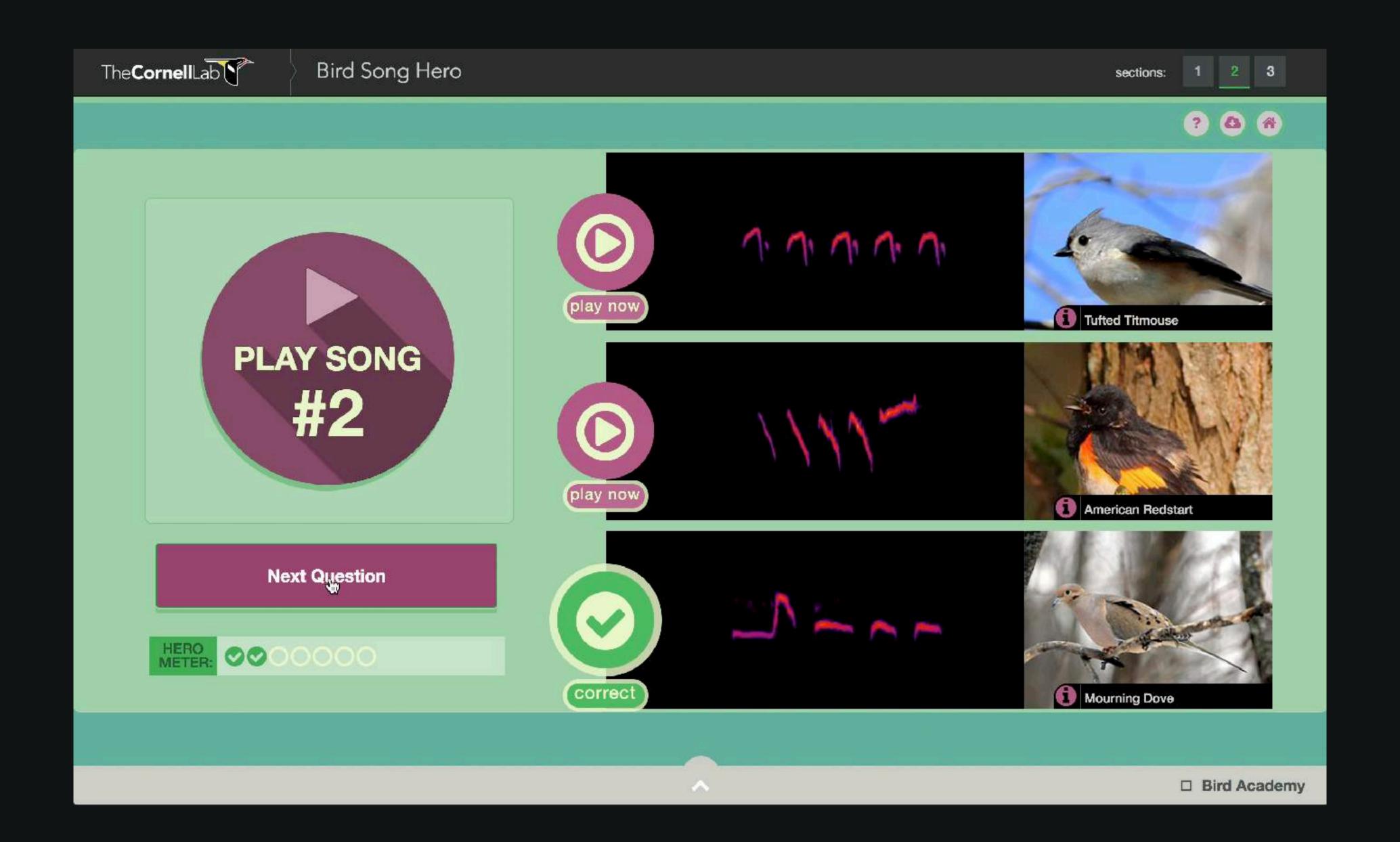
Only 10% have ever played in wild places
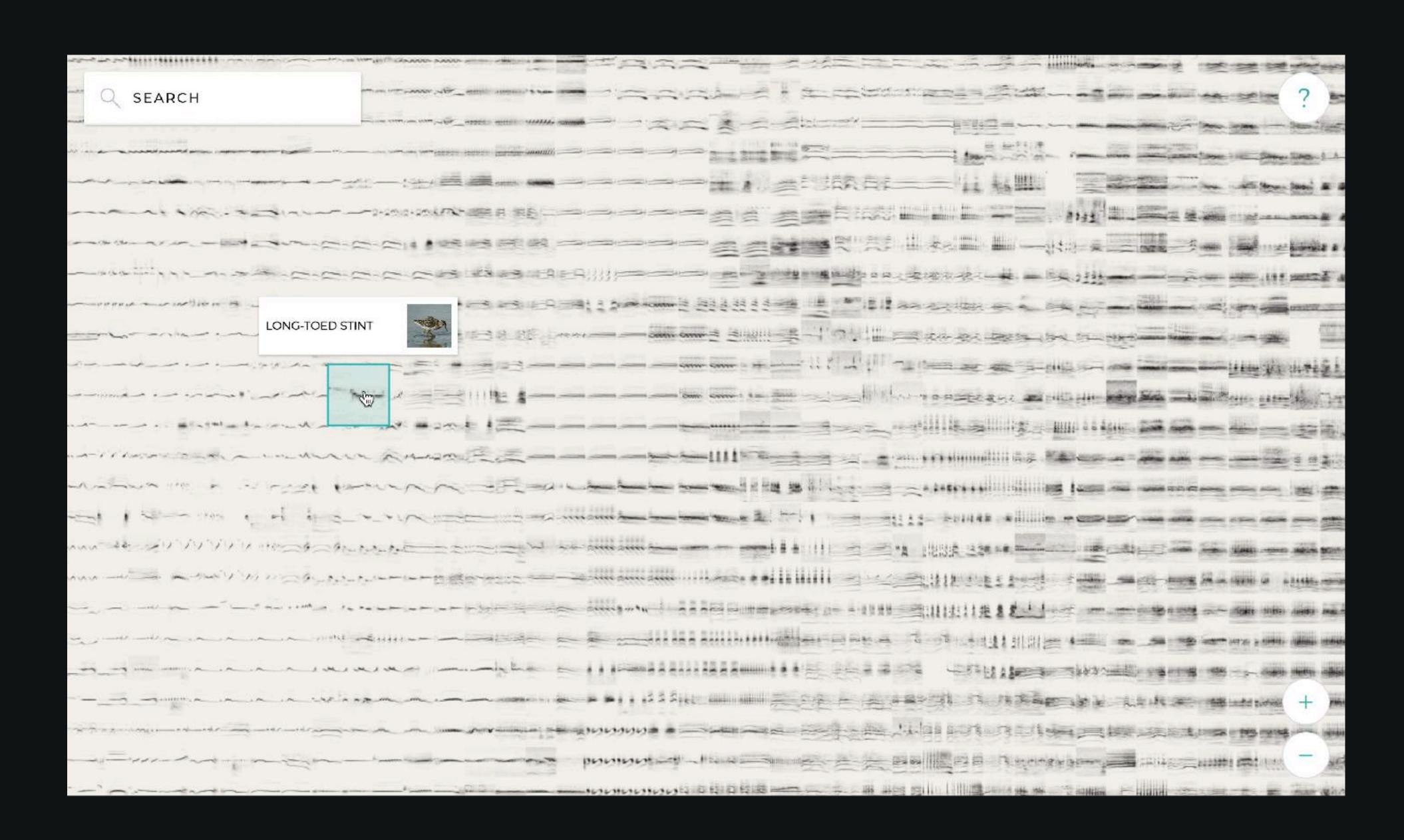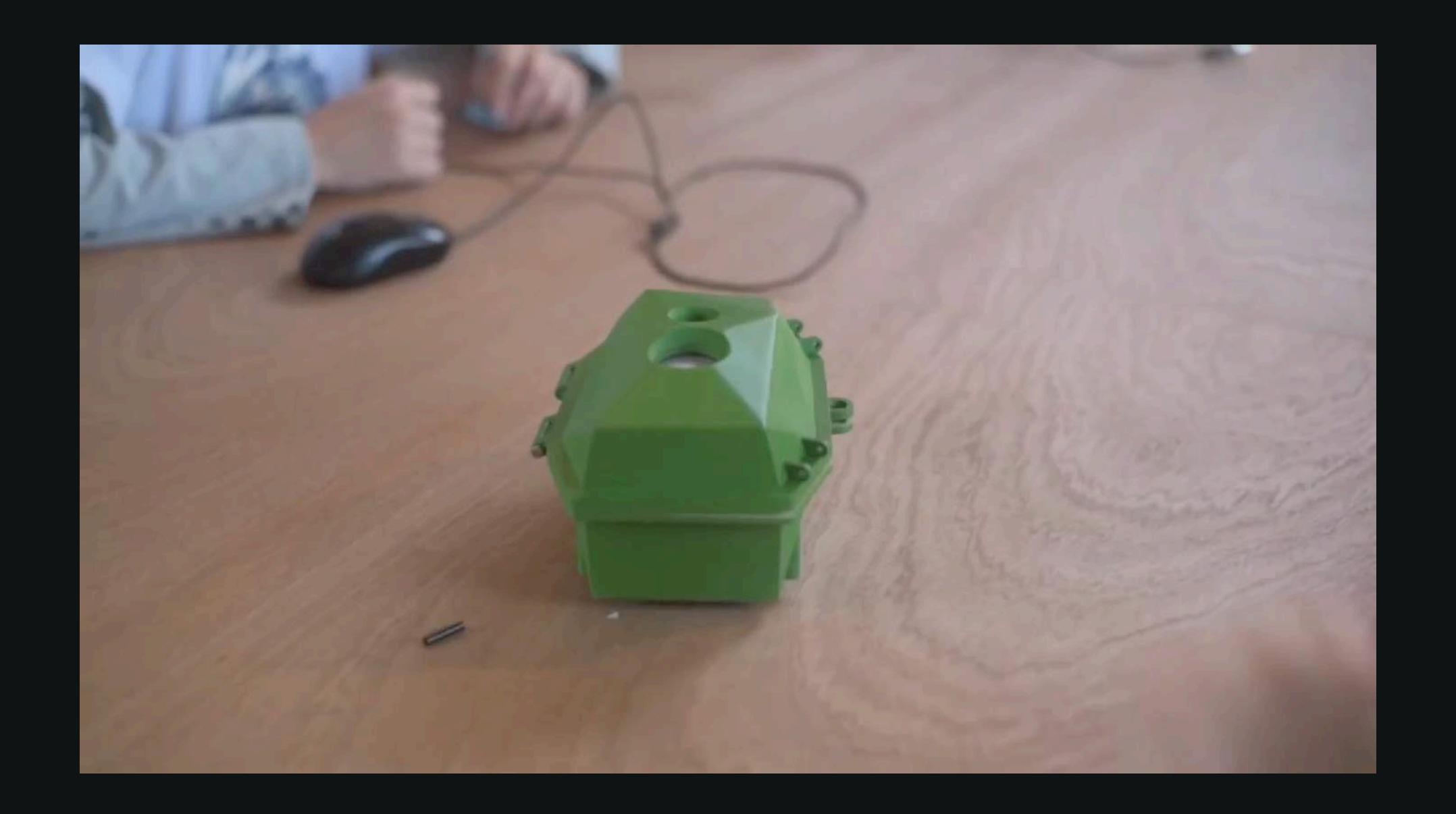
Less than 50% have found frogspawn in the wild

Only a third know that acorns come from trees

Cornell Lab's Bird Academy

SEARCH

LONG-TOED STINT

Bird Sounds, an AI experiment from Google

Research

Senses / Mental stimulus / Place

Connections / Data / Simulation / Knowledge

Part two / **Development**

Research

Senses / Mental stimulus / Place

Connections / Data / Simulation / Knowledge

Material

The web / Nature

Space / Light / Time

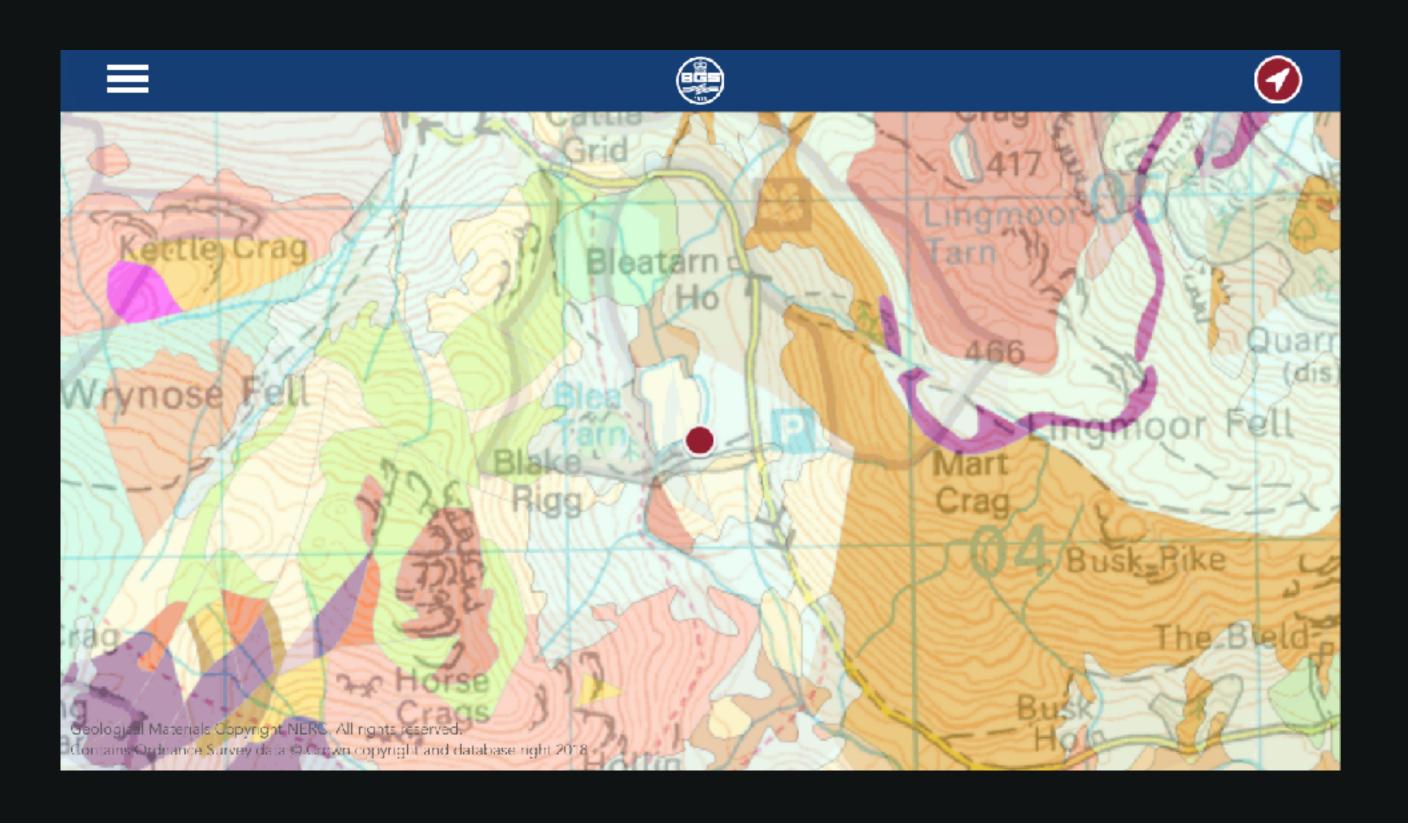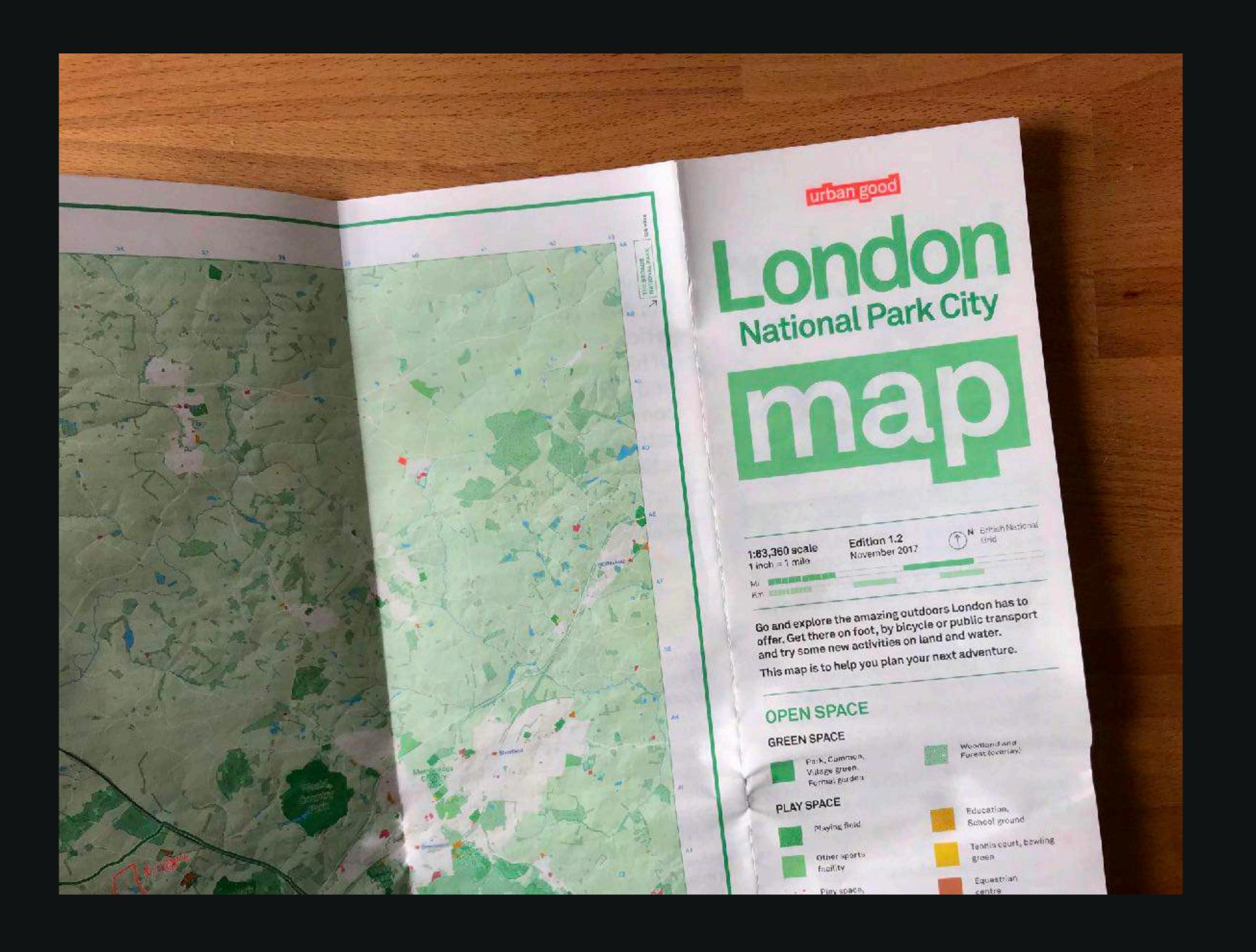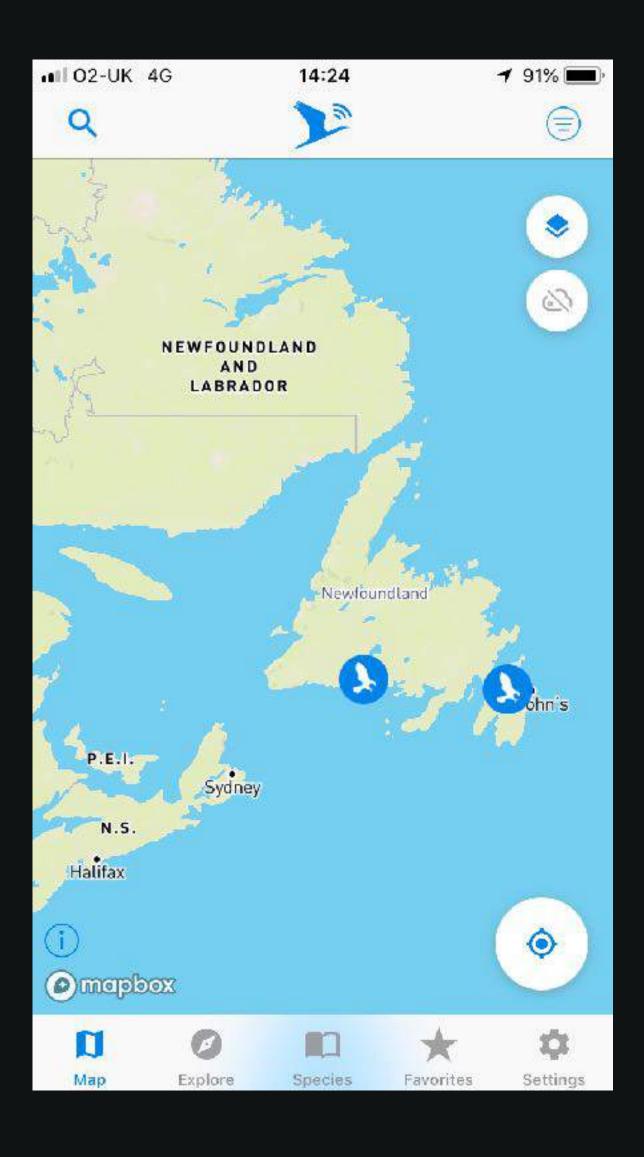| **Physics** | is a language of | **light** |
| **Music** | is a language of | **time** |
| **Architecture** | is a language of | **space** |

Research

Senses / Mental stimulus / Place

Connections / Data / Simulation / Knowledge

Material

The web / Nature

Space / Light / Time

how fancy

Guiding principles

1 Ideation

Scriptwrite the experience, with real words

Explore the highest-level experiences

Don't think within rectangles: think without edges

Consider intentions and resulting events

Think about designing moments in time

2

Physicality

Be spatially aware of what you're building

Visualise it as spaces, with rooms and doorways

Imagine it in 3D, and draw how that feels

Design an open-ended experience, find natural boundaries

Imagine someone moving through your experience

3 **Purpose**

Less tasks or goals; more open learning

Encourage exploration without being too abstract

Help people accomplish new and unexpected things

Build a lens through which the world can be seen differently

4 Choice

Don't paralyse with too much choice

Offer the right amount at the right time

I chose bullets

Trigger choices in the right context

Provide clear, simple, minimal prompts

Define realistic expectations

5 Tone

Craft machine personality gently, and cautiously

Know when to use humour, and don't overdo it

Offer warmth, but avoid over-familiarity

Be kind, patient, and act as guide

Be forgiving, and allow the system to be forgiven too

6 **Trust**

Set out to improve lives; avoid guilt or addiction

Make as few demands as possible

FFS

Avoid ambiguity and unguided assumptions

Catch errors before they happen, be honest when they do

Allow consent
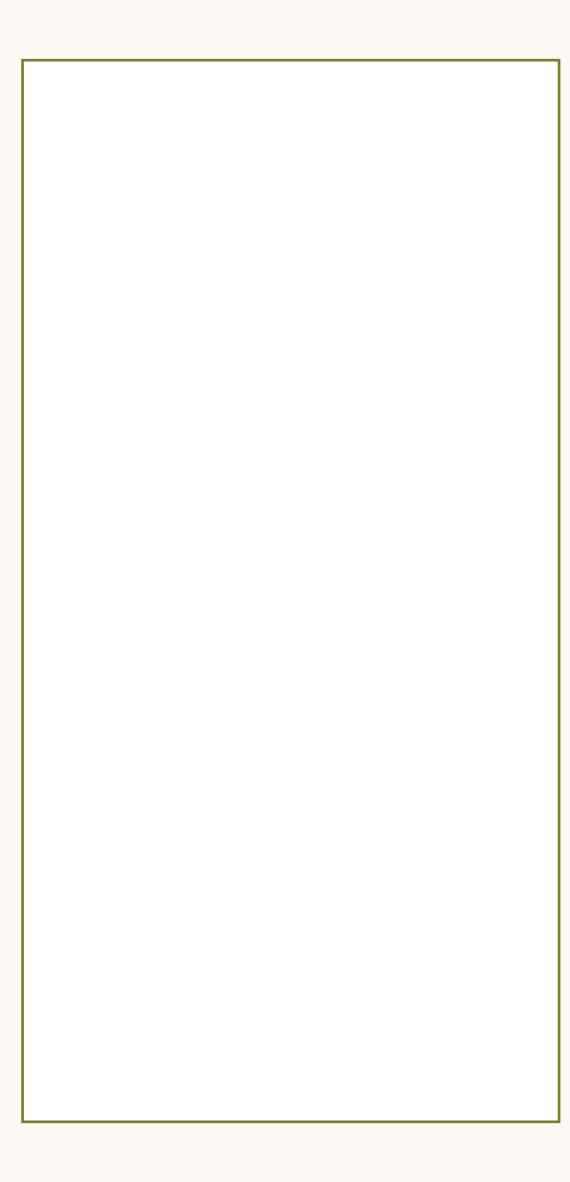
7 **Learning**

Create experiences that are open and inviting

Consider multi-sensory inputs

WTF

Increase learning through repeated experience

When will it end?

Build system knowledge through habit

Offer gently persuasive feedback, non-addictive rewards

Onboarding

Get started quickly

Unobtrusive guidance, always available

Slow and thoughtful steps; a little at a time

Encourage discovery, ensure early results

I bet they're really sick of bullets

Support failure and gently correct
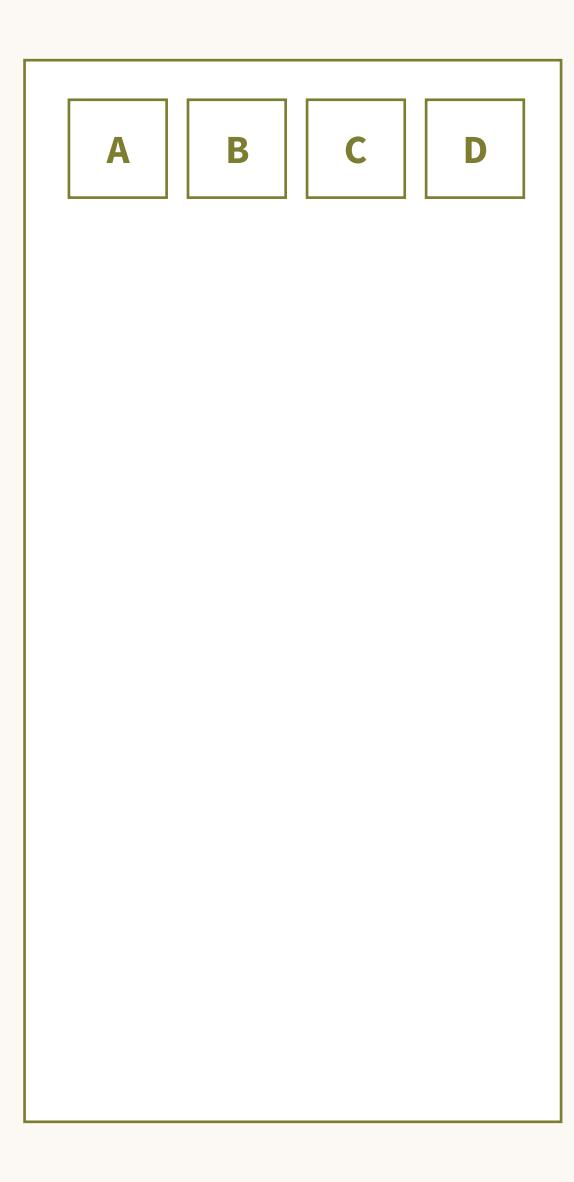
9 Notifications

Quietly serve without continuous distraction

Manageable, concise, polite, and actionable

Contextual to time, place, and learned routine

Consider levels of urgency, and alternatives to sound

If a notification doesn't improve quality of life, kill it

10 Context

This is everything!

OS

OS

Default apps

| A | B | C | D |

OS

| A | B | C | D |

OS

Third party apps

| A | B | C | D |

| 1 | 2 | 3 | 4 |

| 5 | 6 | 7 | 8 |

| 9 | 10 | 11 |

OS

A	B	C	D
1	2	3	4
5	6	7	8
9	10	11	

OS

OS

A	B	C	D
1	2	3	4
5	6	7	8
9	10	11	

Spaces

Work	Home	Study	Social

OS

A	B	C	D
1	2	3	4
5	6	7	8
9	10	11	

Spaces

Work

A	D
1	3
6	10

Home

A	D
1	3

Study

B	D
1	9
10	

Social

D	1

OS

A	B	C	D
1	2	3	4
5	6	7	8
9	10	11	

Spaces

Work

A	D
1	3
6	10

Home

A	D
1	3

Study

B	D
1	9
10	

Social

D	1

OS

Spaces

Work

Home

Study

Social

OS

A	B	C	D
1	2	3	4
5	6	7	8
9	10	11	

Spaces

Work

...
...
...
...
...
...

A	D
1	3
6	10

Home

...
...
...
...

A	D
1	3

Study

...
...
...
...
...

B	D
1	9
10	

Social

...
...
...
...
...
...

D	1

OS

A	B	C	D
1	2	3	4
5	6	7	8
9	10	11	

Spaces

Work

Home

Study

Social

< Welcome >

Settings	1Password	Wallet	Browser
App	App	App	App
App	App	App	App
App	App	App	App
App	App	App	App

Fitness

Explore mode enabled

Indoor

Explore mode enabled

Data

Cameras

Spaces compatibility

Guides app contains modules that enhance appropriate Spaces. You control which Spaces the app will enhance.

- ☑ Nature
- ☐ Fitness
- ☐ Indoor Explorer

Data Cameras Guides

Nature

Explore mode enabled

Nearby

There's a popular park two blocks East

View popular sightings near here

Recent

Shana pinged from Southern Cuba

4 new images from your backyard camera

23 observations submitted to Movebank

| Visual ID | Sound ID | AR | Escape |

Nature

Explore mode enabled

Kestrel
84ft

Nightingale
24ft

Erewash Reserve
0.3km

< Nature >

Explore mode enabled

Nightingale
Erewash River - 24th August
○

Peregrine Falcon
Erewash River - 24th August

Chaffinch
Erewash River - 24th August

Great Spotted Woodpecker
Erewash River - 24th August

Blue Heron
Erewash River - 24th August

Kestrel
Erewash River - 24th August

Mode stats

This week

22%
Away

18%
Nature

5%
Mind

34%
Work

5   10   15   20   25
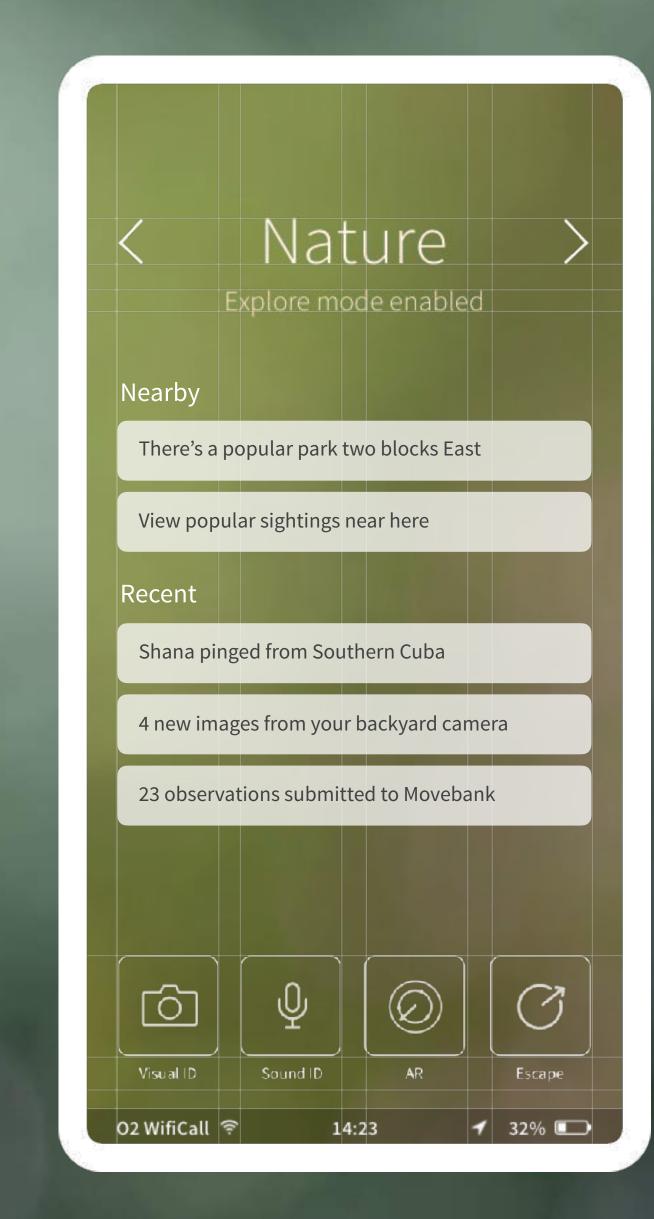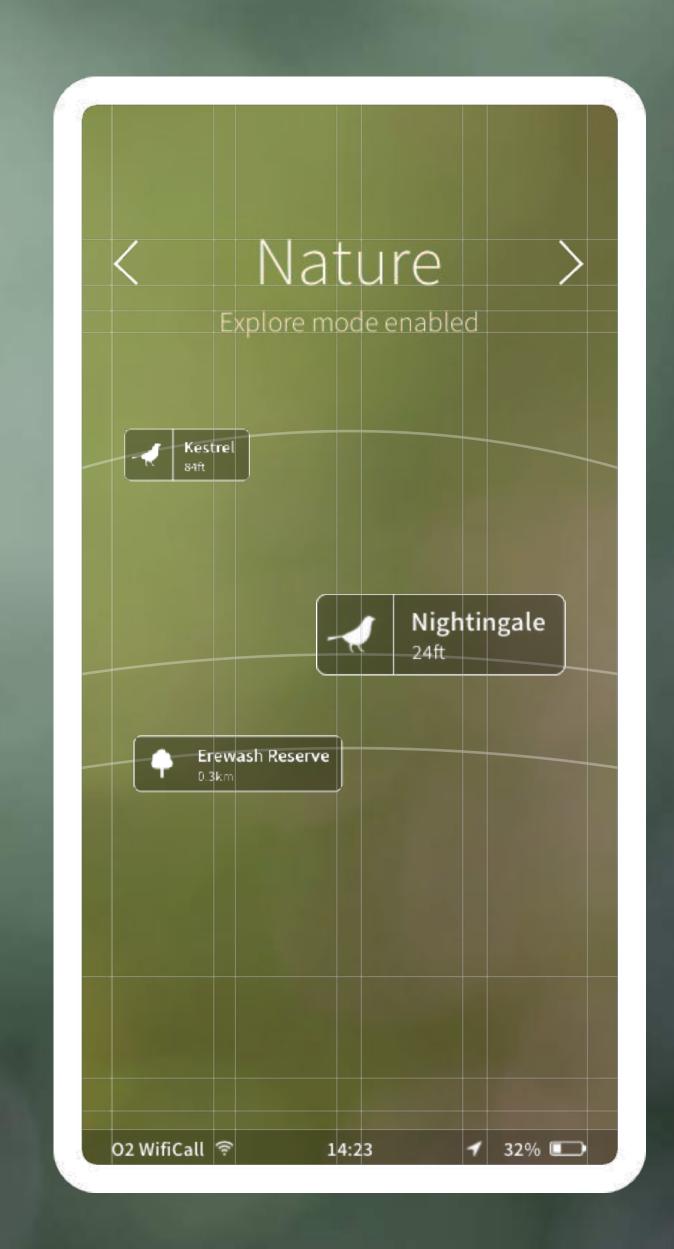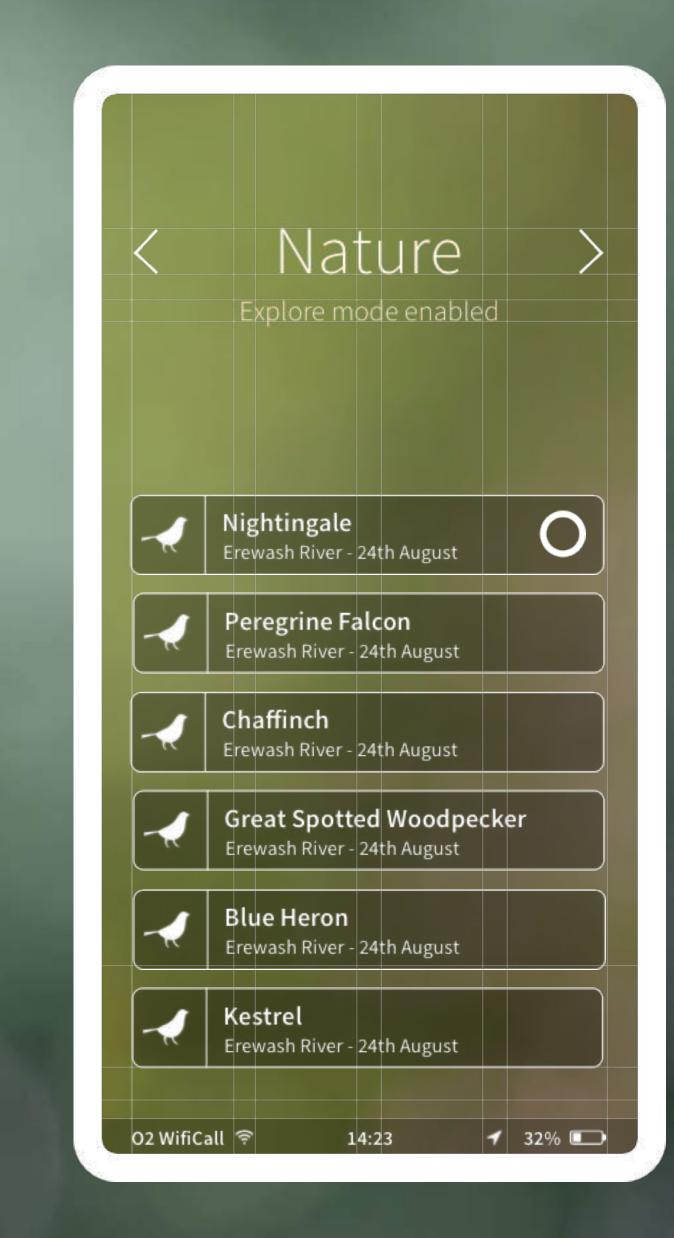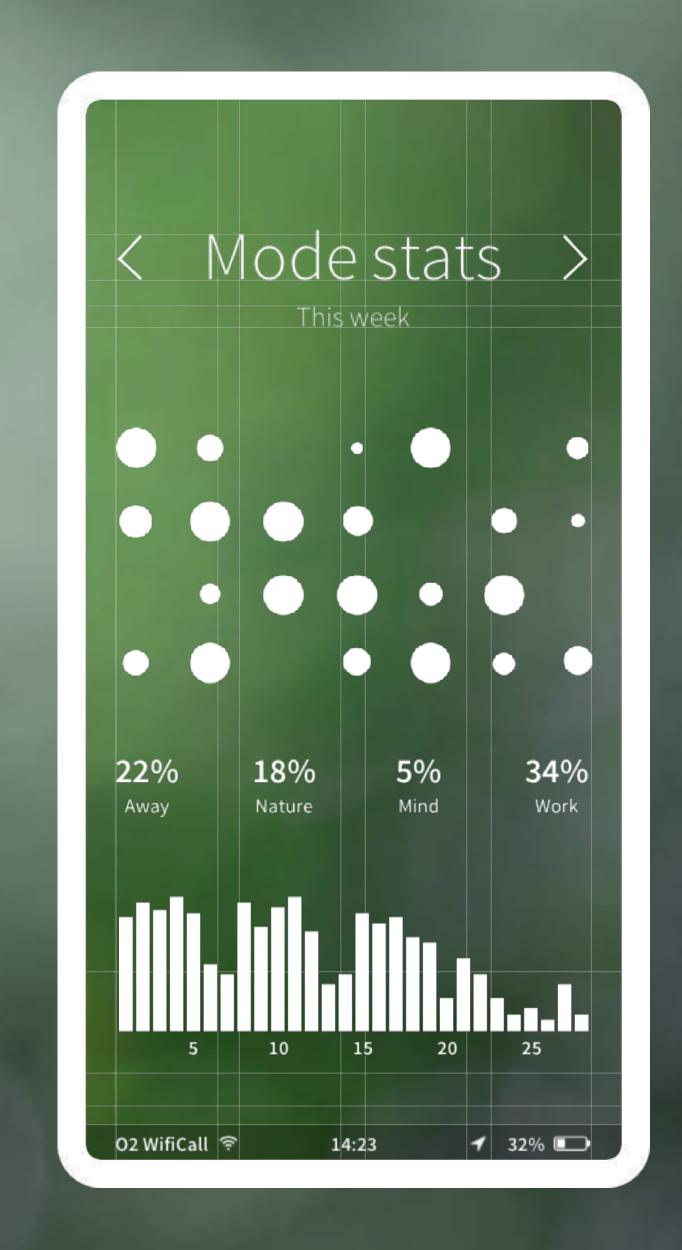
'Place-onas'

Internet of na

Internet of na

Internet of natural things
folder

https://internetofnaturalthings.com
website

IoNT
Github repository

Internet of nature
bookmark

Big questions

The future?

" Our computers should be like our childhood: an invisible foundation that is quickly forgotten but always with us, and effortlessly used throughout our lives. "

Mark Weiser   /   The World is Not a Desktop, 1993

A new environment

Thank you

@colly

— tinyletter.com/colly

— fictivekin.com