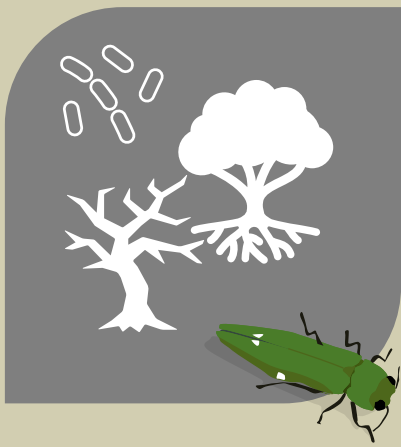# Monitoring Oak:

Long term condition records and the potential for volunteer recording
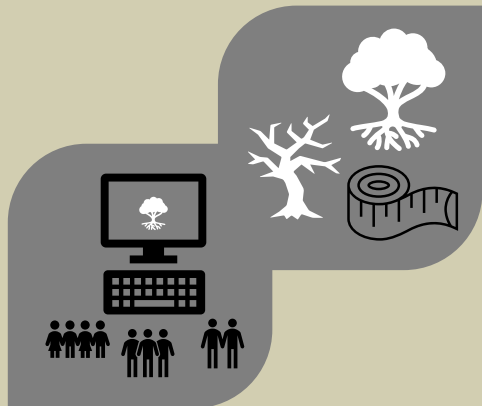
Forest Research

AOD predisposition

Oak Condition Survey

Volunteer Observations

Aims:

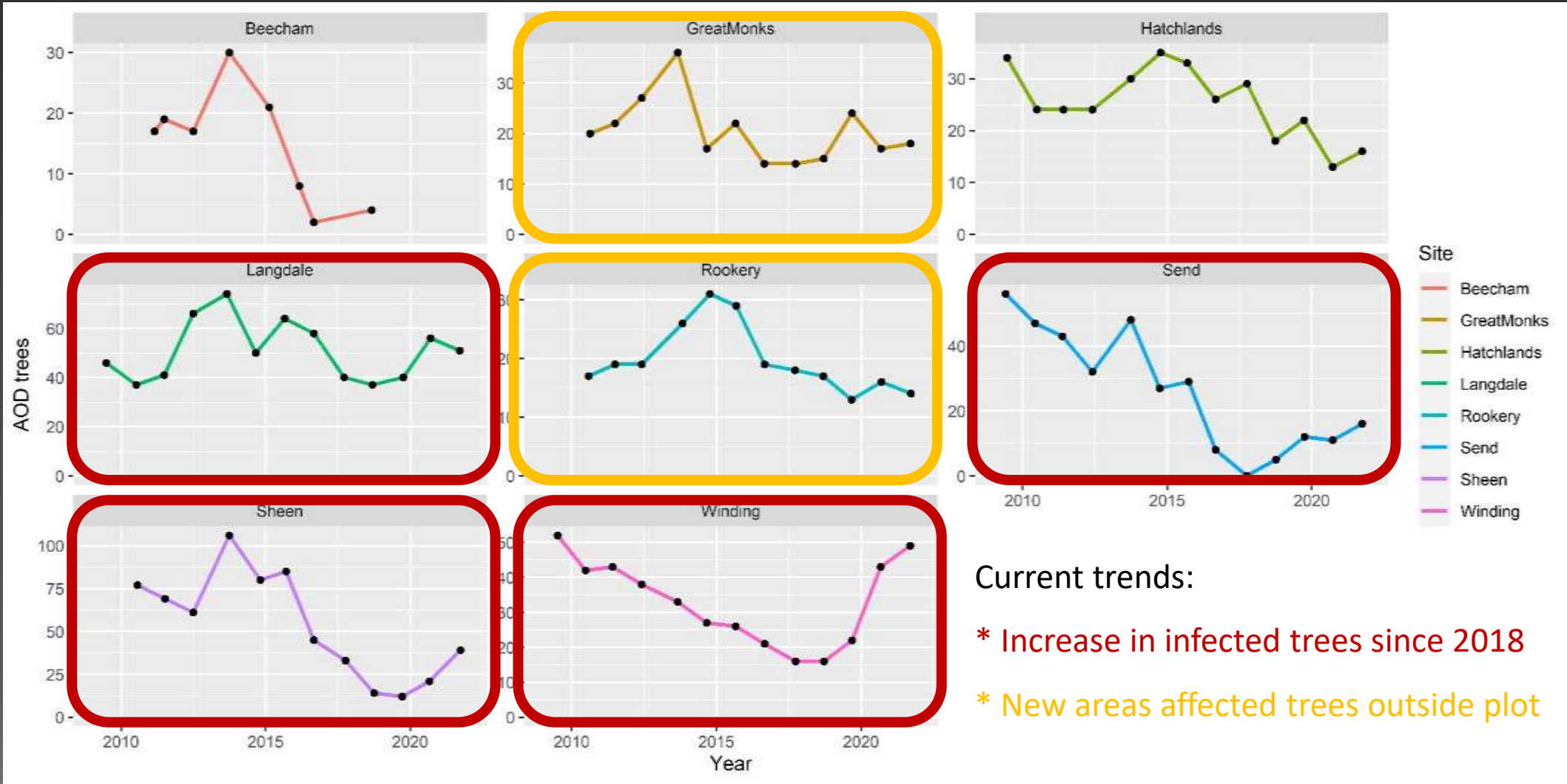**To focus on the underlying health of oak trees.**

We hope that this will help reveal why some trees are predisposed to decline

To discuss how tree condition has been monitored in the past.

Detail a new project that will develop methods for volunteer groups.
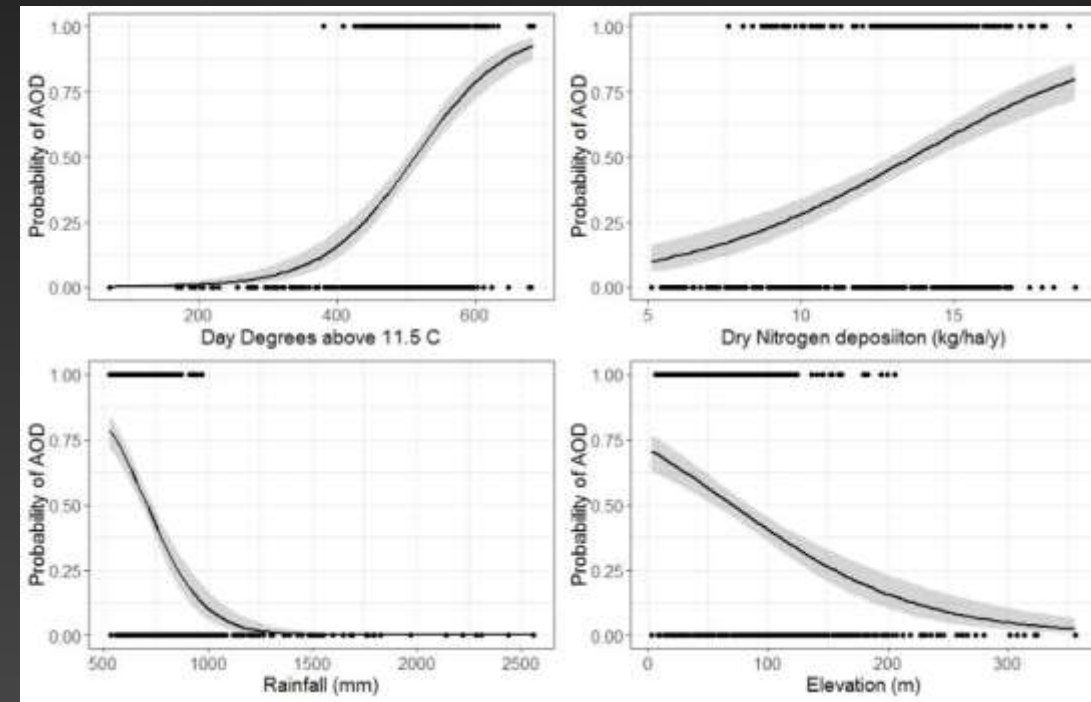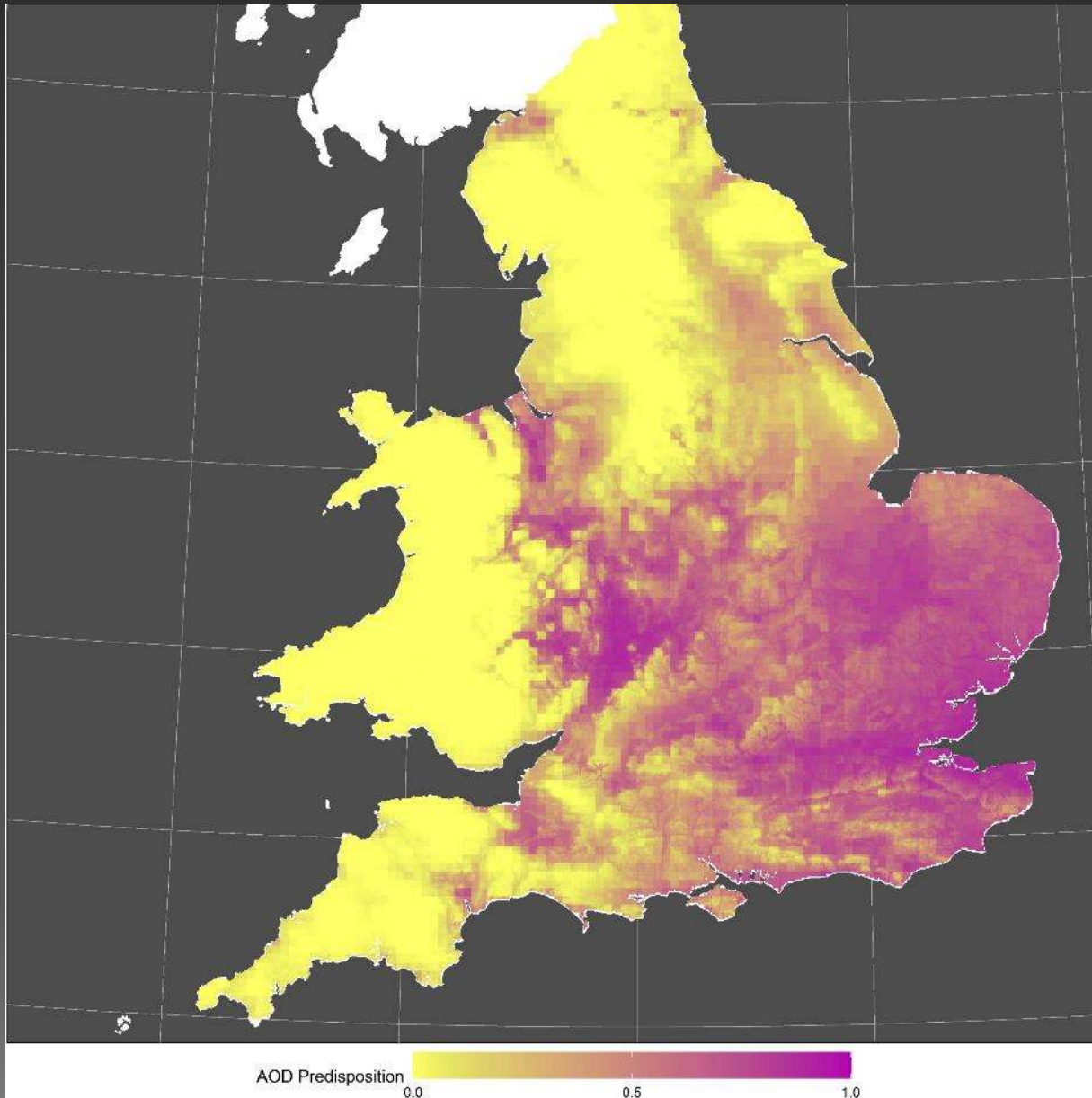
Predisposition to decline (Acute Oak Decline)

Current trends:

* Increase in infected trees since 2018

* New areas affected trees outside plot

Environmental Predisposition

Correlations between locations of AOD affected sites and environmental variables:

- **Temperature**
- **Rainfall**
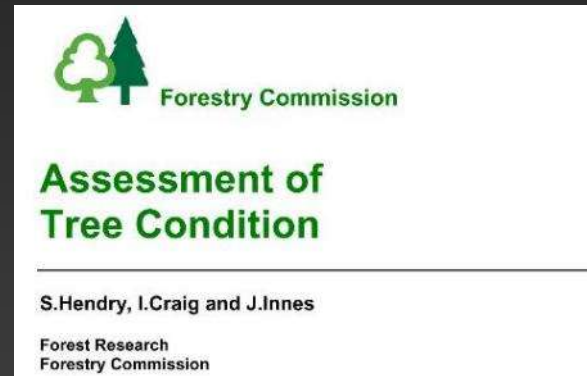- **Elevation**
- **NOx Deposition**

Forest Condition Survey

1989 - 2007

- 5 species monitored
- Linked to ICP forests
- 86 oak plots
- Recording growth and Crown Condition

2019 - 2021

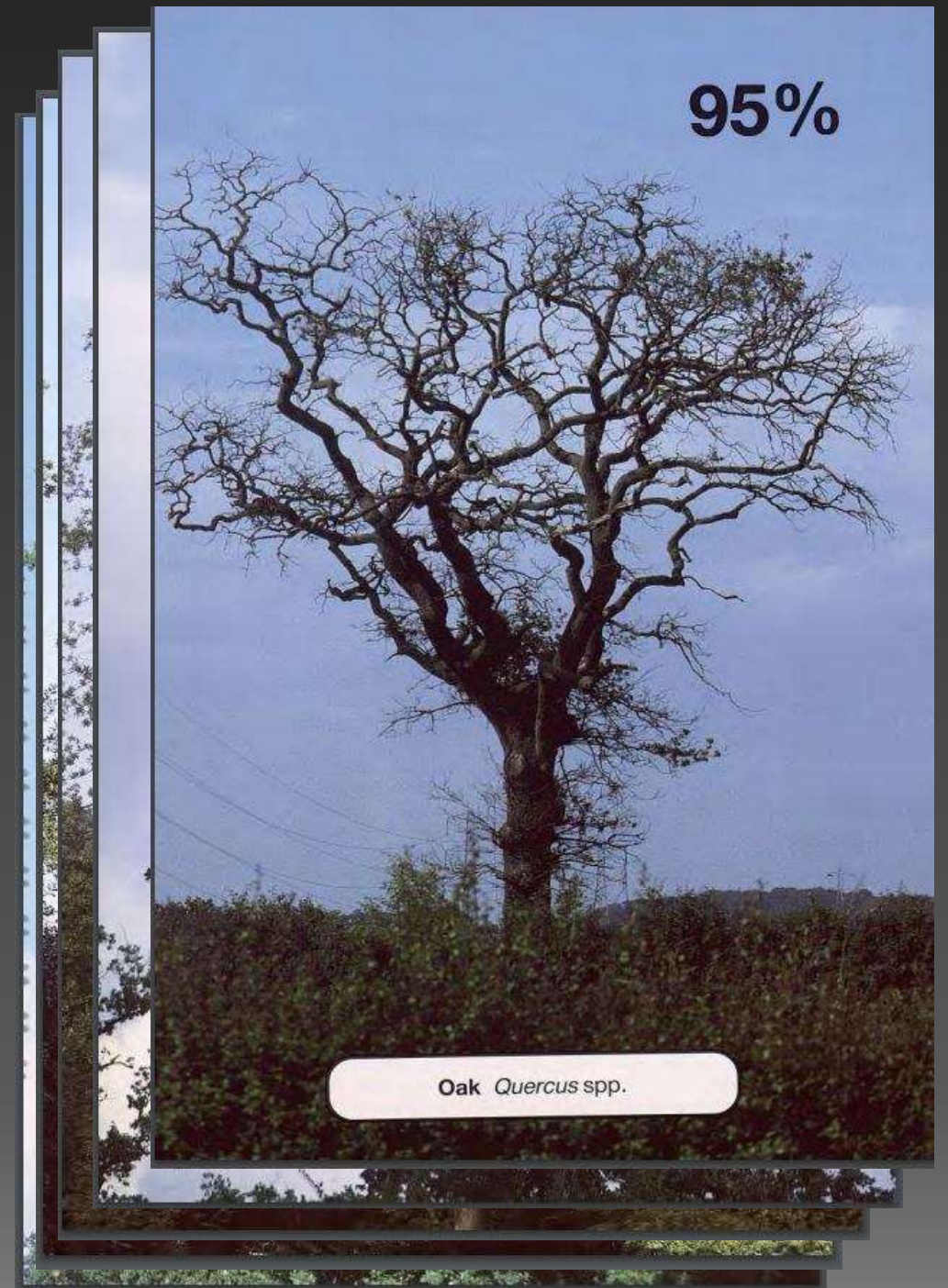- 84 plots re-established
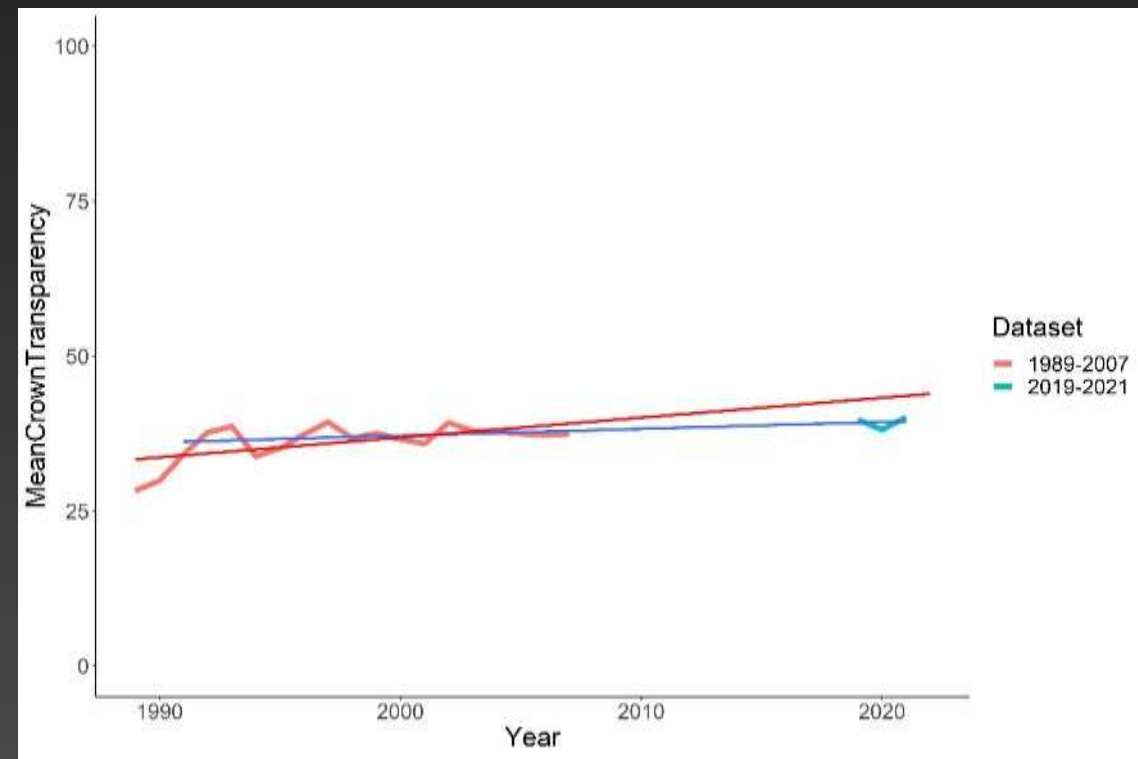- Trees relocated, mapped and monitored

Extended through:

Leaves sampled for genomics (Kew)

Microbiome sampling (Future oak)

Link to Volunteer monitoring (BacStop)

What is crown condition?

- Simply a score of how green the tree is:

  - The more leaves
  - The more photosynthesis
  - The more energy for growth and defence

95%

Oak *Quercus* spp.
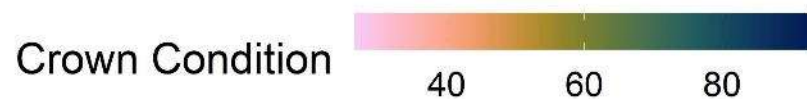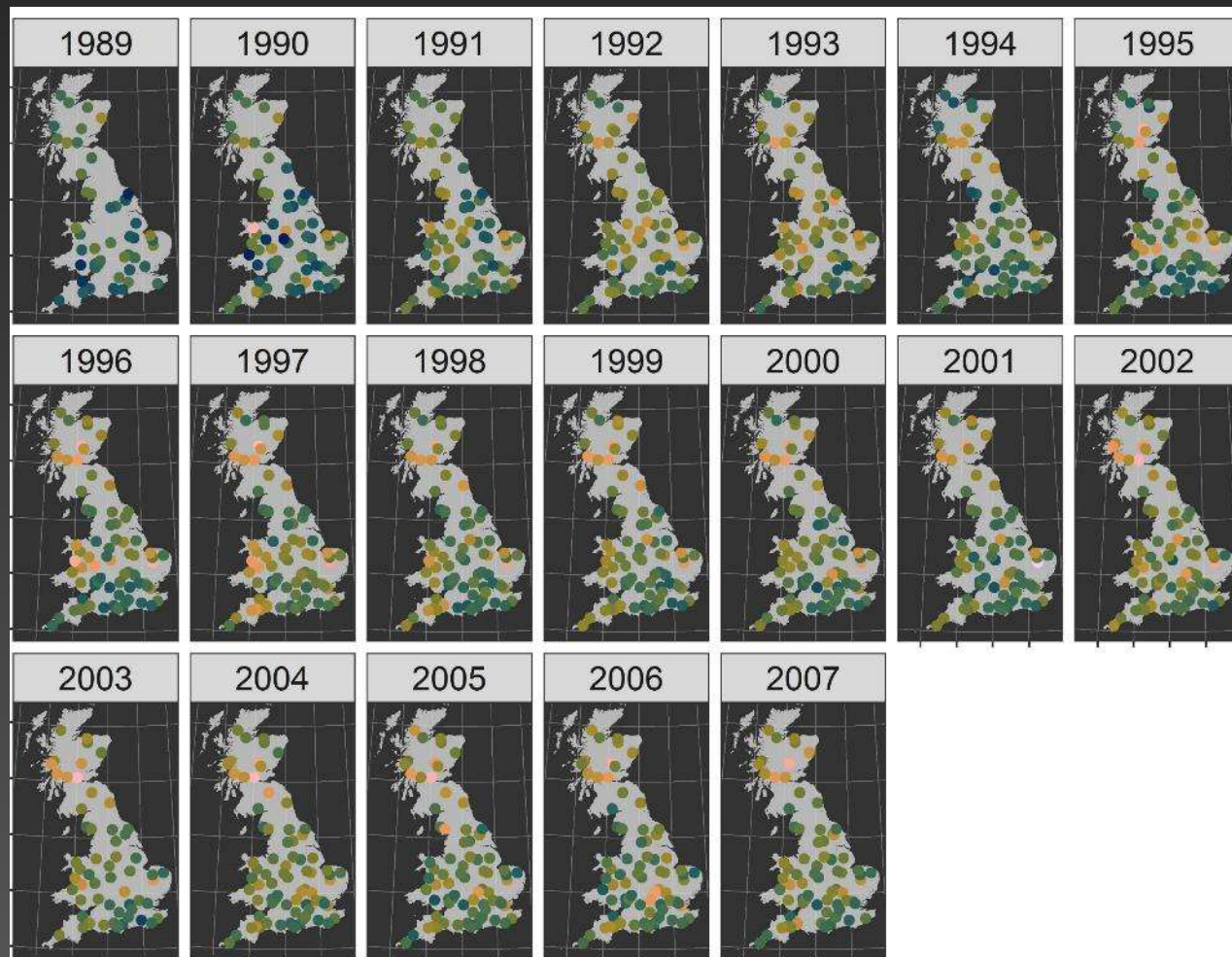
- The overall trend shows a slight worsening of crown health
- Individual sites can change rapidly
- local patterns change between years.
- The next step is to investigate individual trees in relation to weather patterns
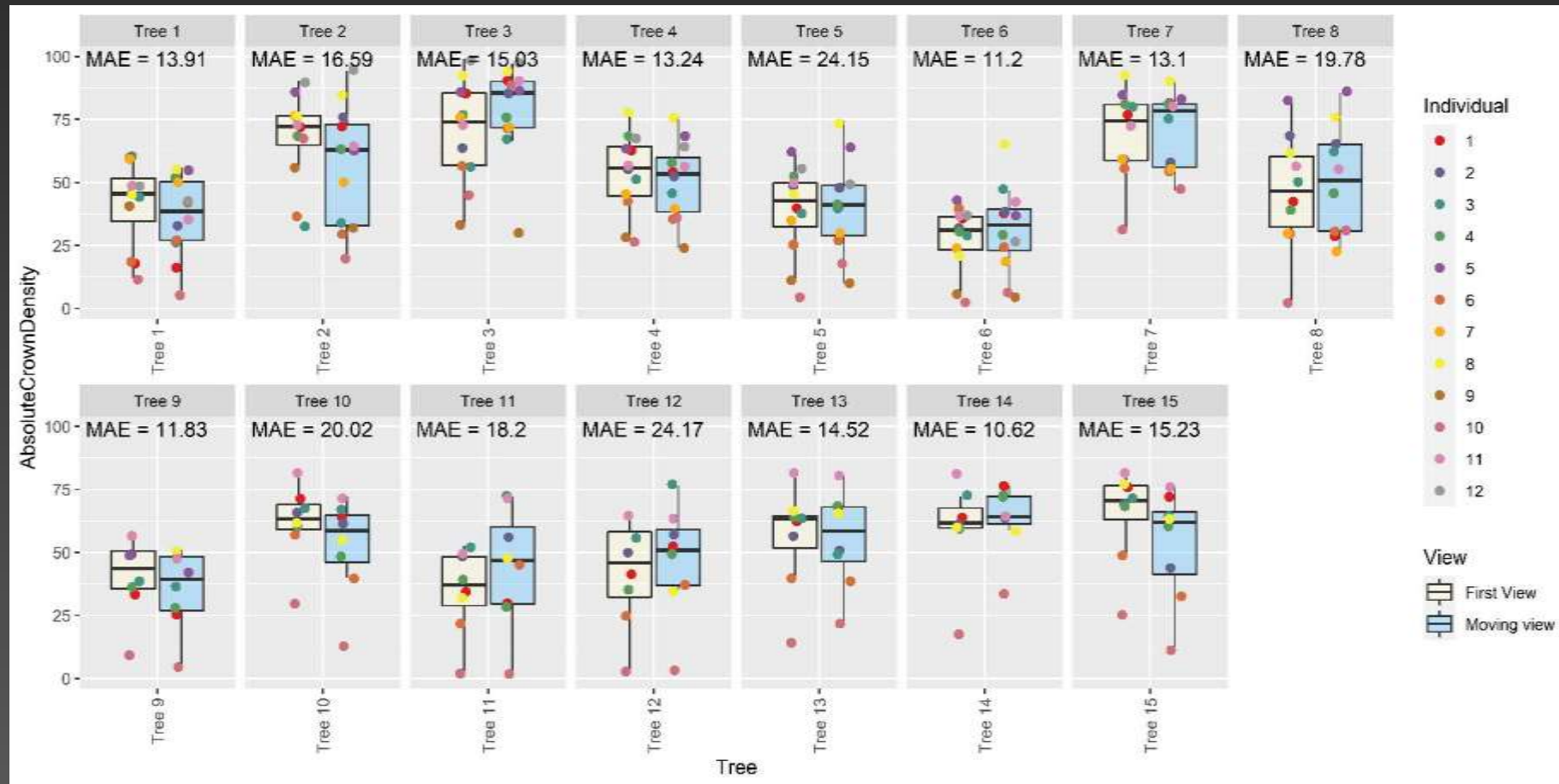
Street view
(Socially distanced condition monitoring)

Aim: to see how accurately and reliably volunteers can conduct survey

- Should we encourage mass reporting of the same trees? (Average score)

- Can we calibrate to individual observers?

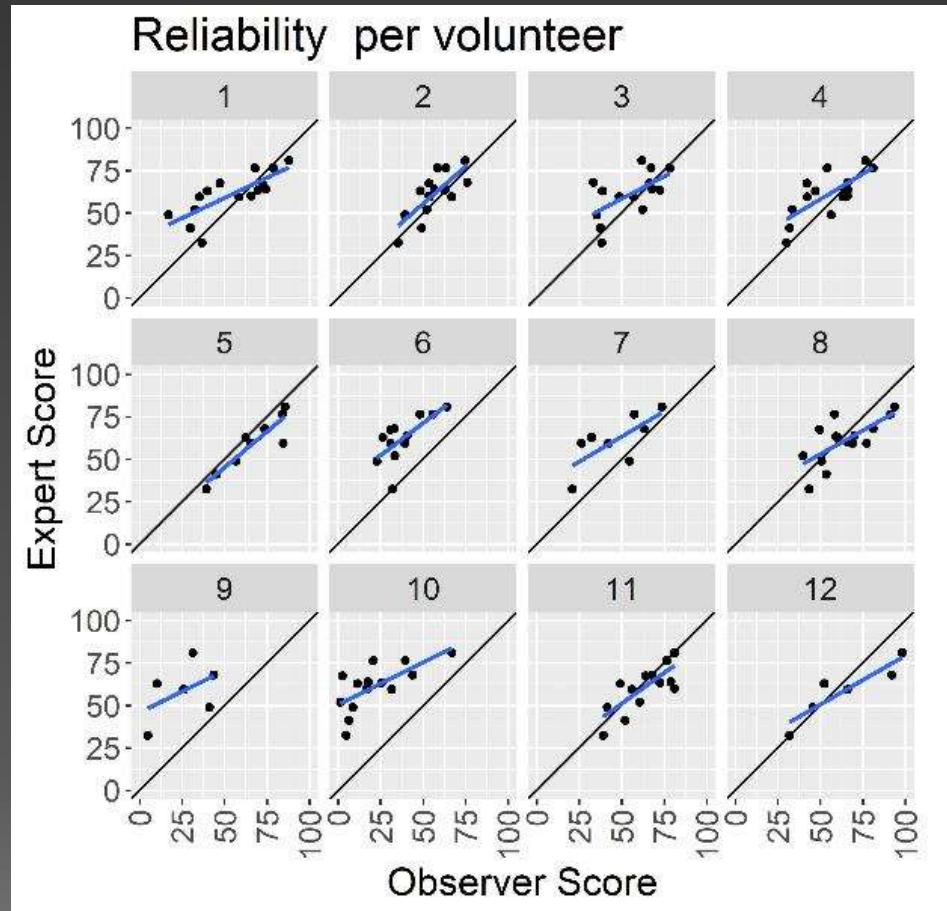- Can online scores calibrate real world observations?

# Working with volunteers

Only a small trial so far:

- **The average score matches well with expert assessment, but individual variation**
- **However, individuals seem to score consistently high or low**

Reliability

Raw Data

Individual distributions standardised then aligned with expert distribution

Reliability per volunteer

Adjusted Scores - using mean score per tree
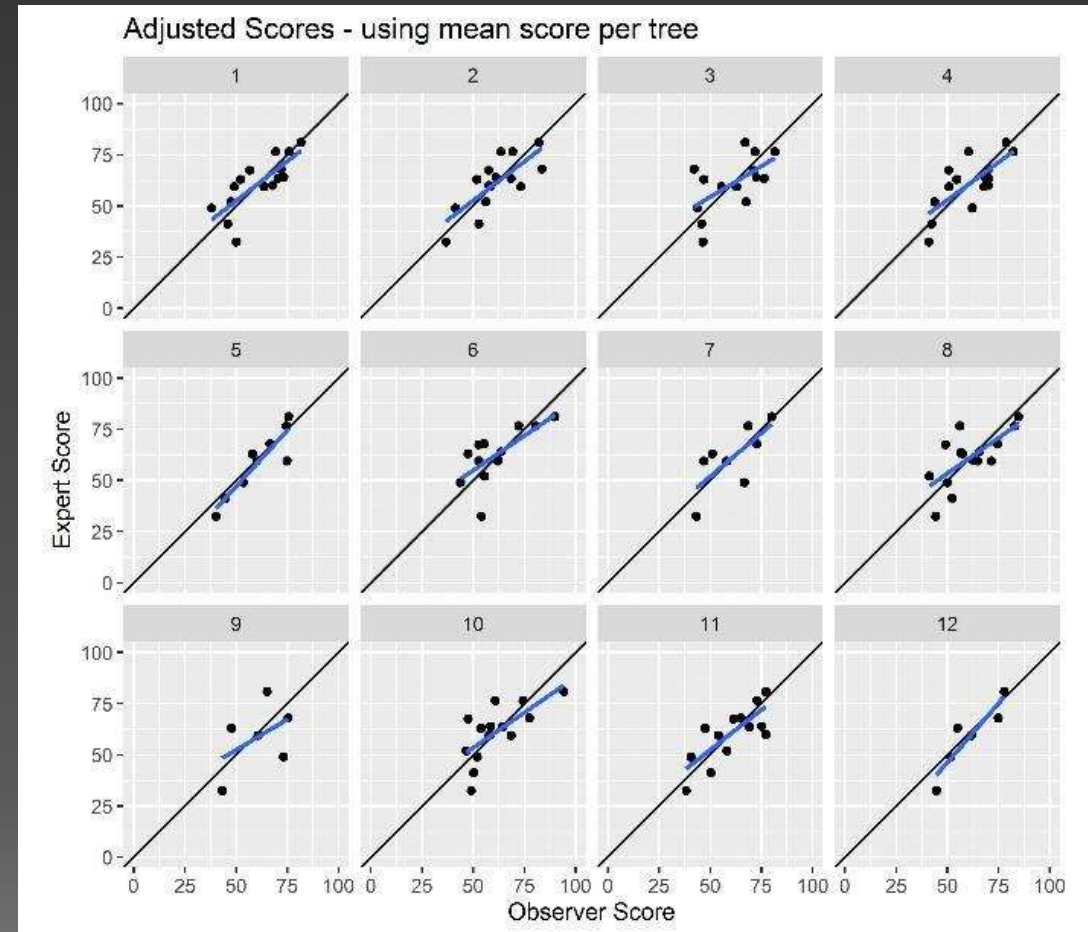
Workshop in the field

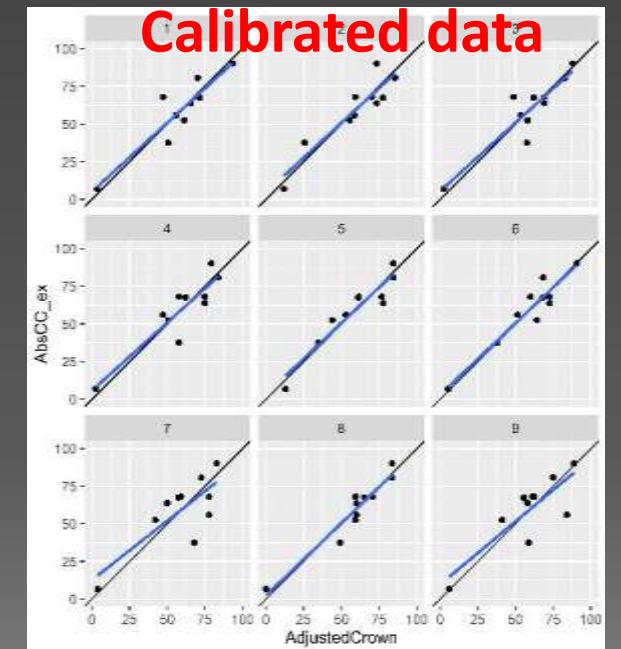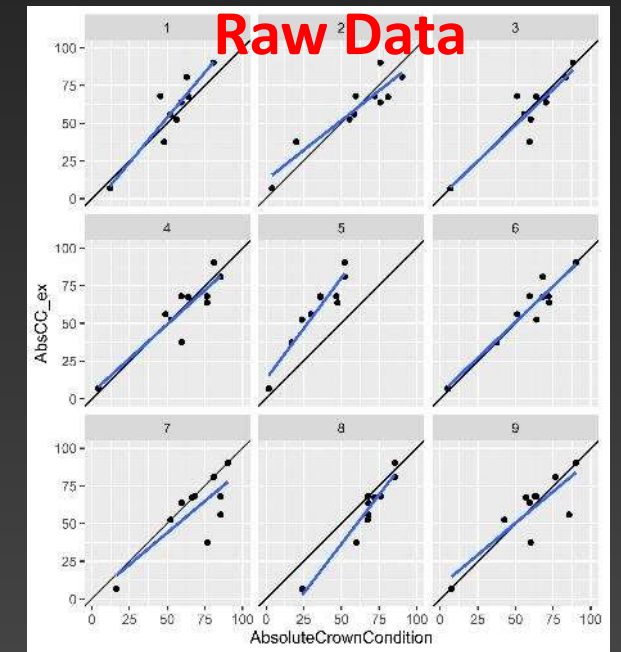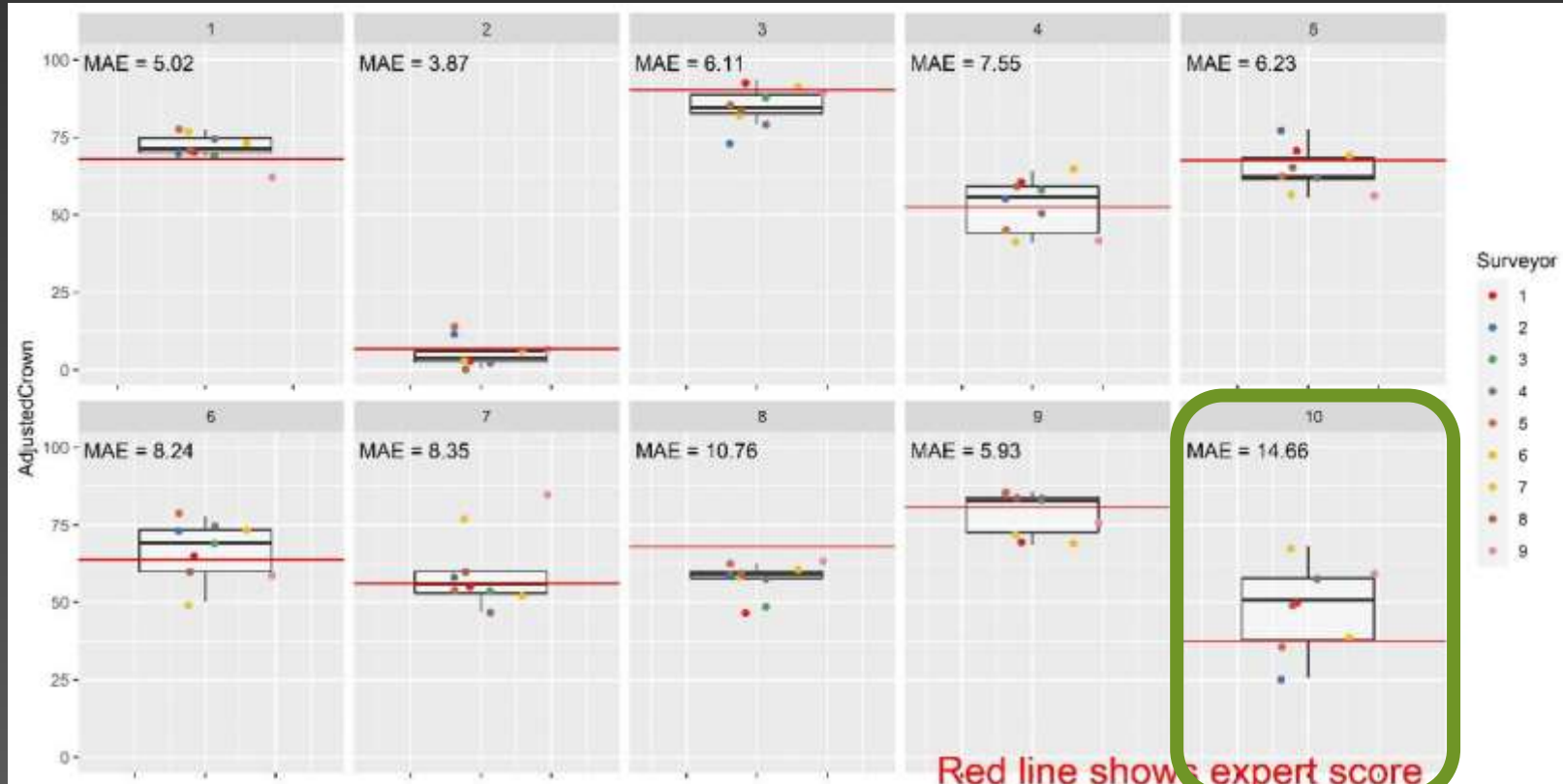**Finally, in September we could get out and look at real trees!**

- **Early results look good**
- **Scoring seems even more consistent**
- **Training more interactive in person**

Ideal method:

Training in person, but calibration online (anyone can join in)

Results following in person training

Red line shows expert score

Raw Data

Calibrated data

Next Steps…

2022

- More in person workshops
- Set up sentinel tree monitoring
- Calibrate through streetview?
- Once trained can add personal trees through a web app.

Thank you

Woodland Heritage — for the future of British woods

ActionOak — PROTECTING OUR OAK TREES

Forestry Commission

Department for Environment Food & Rural Affairs

The Scottish Government

UKRI — Biotechnology and Biological Sciences Research Council

UKRI — Natural Environment Research Council