The Power of Where.

Gloucestershire Wildlife Trust

Back to basics monitoring that delivers cost-effective quantitative and repeatable auditing of nature reserve condition.

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The Challenge

GWT core operational need: affordable, targeted, repeatable, consistent ecological survey work that captures change in nature reserve condition in a way that is communicable to a wide audience of non-specialists. This is now also a pre-requisite of new environmental policy to demonstrate biodiversity gain in a time of ecological emergency.

Long term monitoring is virtually un-fundable in NGO sector. Limited core resources (0.6 Full Time Equivalent Staff Member periodically supported by volunteers) oblige a sustainable low-tech auditing approach robust against changes in core funding that is enhanced rather than dependent on, technology.

The Solution

- A simple methodology of proportional change in the value of habitat and species indicators ***in question*** based on frequency in a OSGR referenced grid scaled to site size.
- Recognition that a lack of ***time appropriate question-led analysis*** of field data had weakened the organisational value of ecological data.
- Emphasis on fast turn around of meaningful interpretation accessible to a wide audience of non-specialist stakeholders, but especially land managers.
- Two different map reports are presented to illustrate the utility of the approach.

Case Study 1. Heathland restoration at Woorgreens, Forest of Dean.

Grid squares used to map habitat and score abundance of key species. Bracken is presented as an example.

1. First assessment after clear fell, 2012. Extensive areas of brash and bare ground .

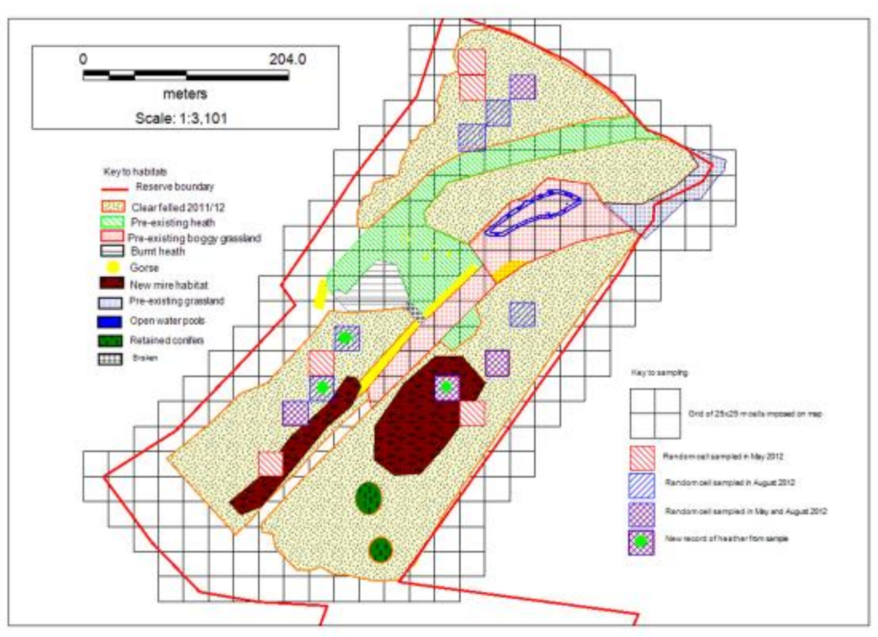


Fig 1.1 Baseline vegetation survey following clear fell.

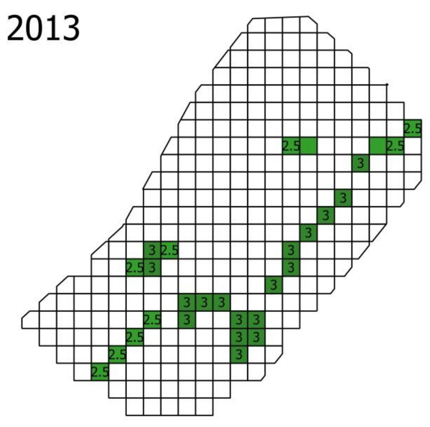
Step 1. Baseline Study

Walkover survey using grid squares to map vegetation and ground conditions following clear fell expansion.

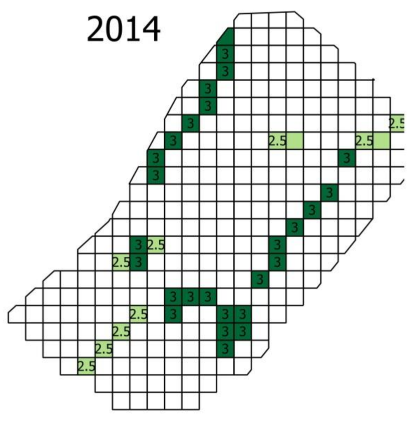
Step 2: Annual updates

Methodology: Whole square assessment of the indicator vegetation of each square using GPS to navigate. Mapped directly onto field map.

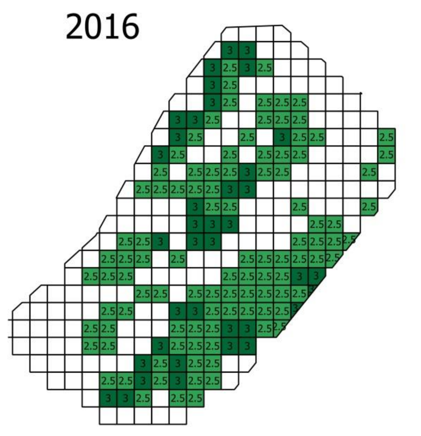
2013



2014



2016



2017

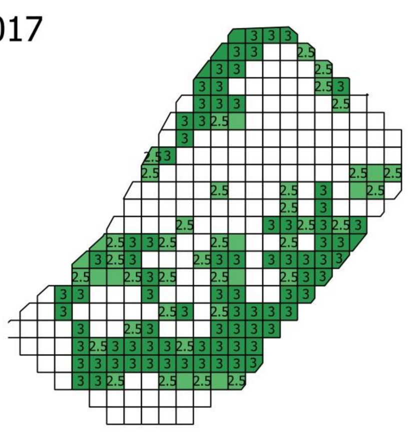


Fig 1.2. Update distribution maps of key species (heathers, gorse, bracken, rushes, grasses, trees) which score abundance produced in the field. Entered into QGIS if time allows. Maps for bracken presented.

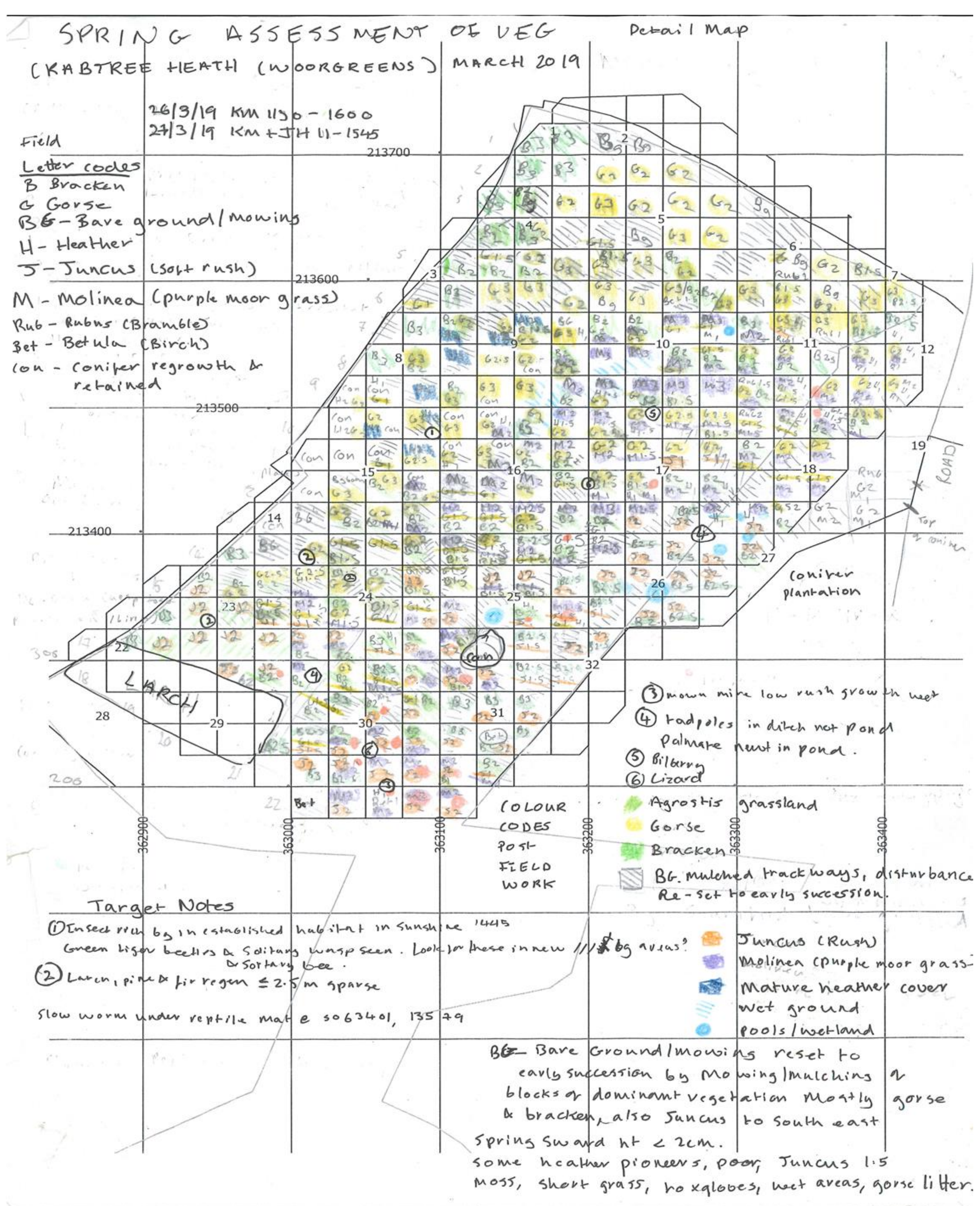


Fig 1.3 Example field distribution map showing multiple key species scores and distributions from 2019 audit.

Field map is scanned and sits on file pending transcription into software but is sufficient for operational needs as it stands.

Delivery

Fieldwork 13.5 hours. 2019 updated graph from field report 1.5 hours.

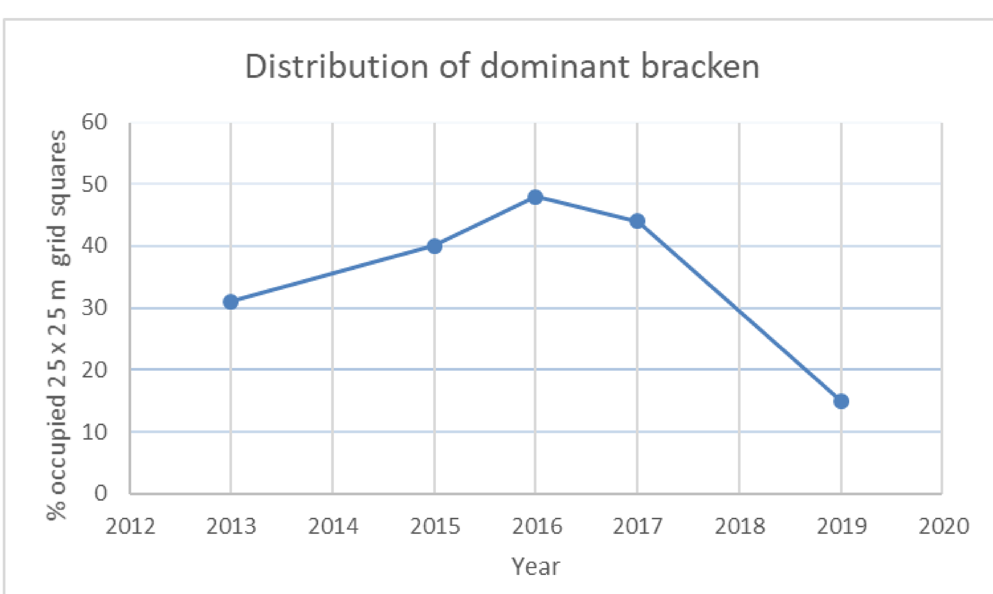


Fig 1.4 Graph showing change in the distribution of dominant bracken is the key output and can be updated directly from the field map. Further analysis can wait until it is needed.

Case Study 2: Wildflowers as indicators of limestone grassland condition.

Grid squares used to create stratified random quadrat sampling of whole grassland and map results

Step 1. A four year baseline to establish site coverage and variability.

Daneway was one of five sites used to establish baseline conditions.

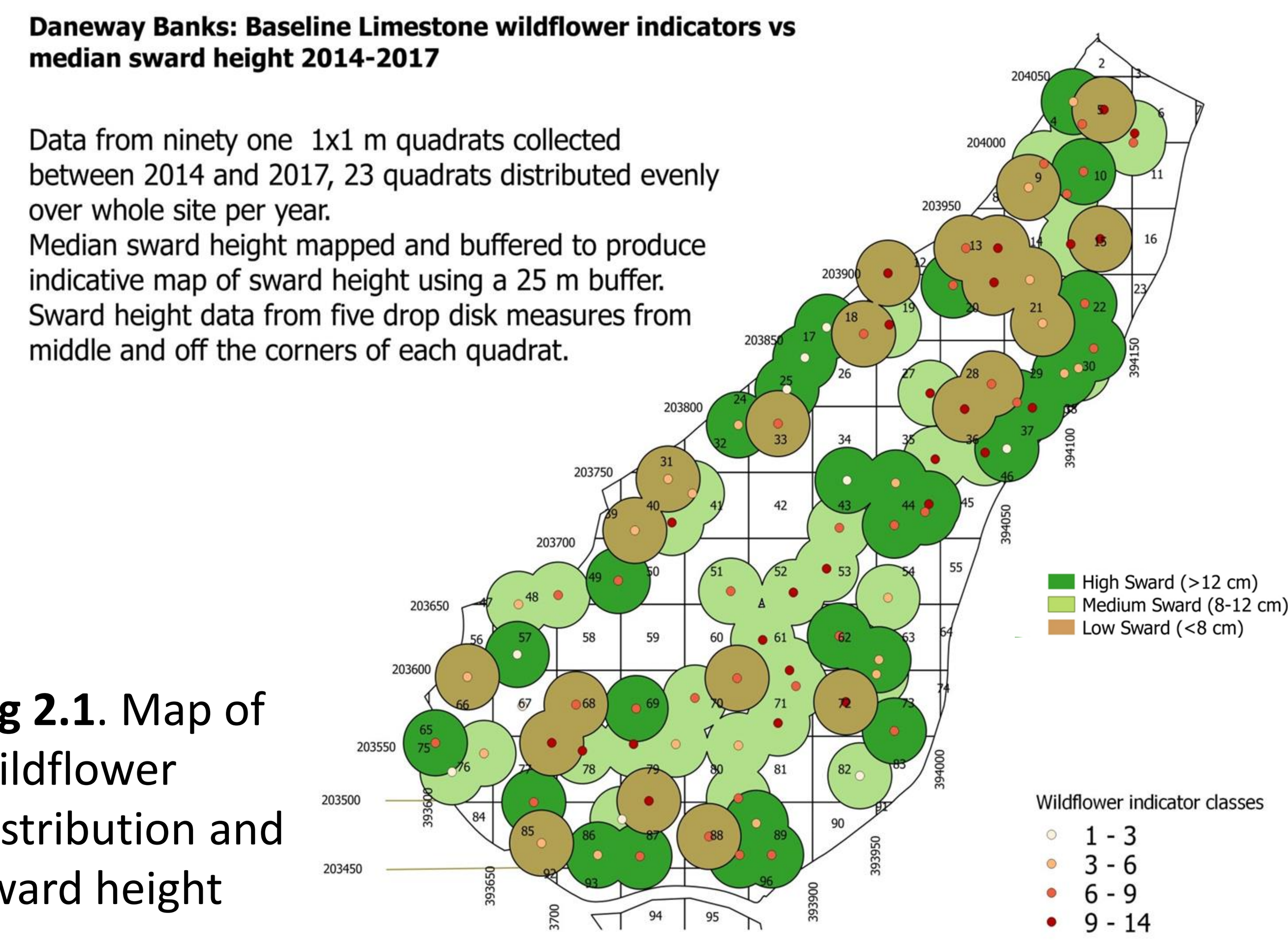
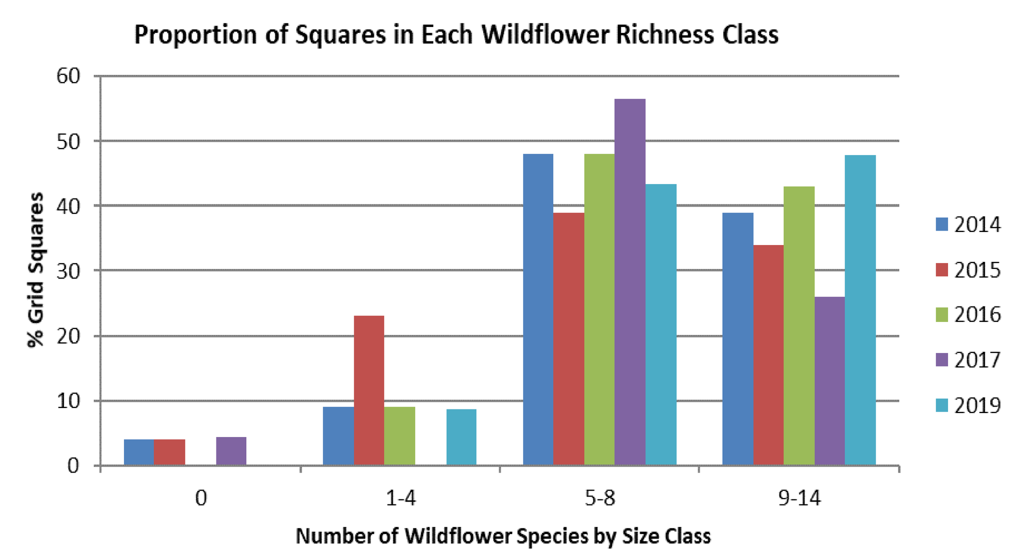


Fig 2.1. Map of wildflower distribution and sward height

Step 2: Annual update (2019).

Methodology: Twenty three stratified random quadrats are taken each year using the grid square system. In 2019 the 2015 quadrat positions were repeated. The presence of a set list of limestone wildflowers was recorded per quadrat.



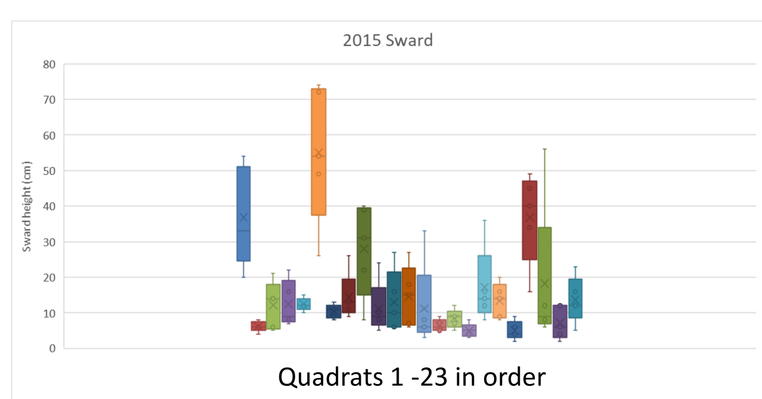
Delivery

Fieldwork 6 hours x 2 teams of 2 =24 hours, (1 staff member 3 volunteers).

Data entry & basic graph update 6 hours.

Full report additional 4 hours.

Fig 2.2 2019 audit shows recovery for wild flowers. The proportion of quadrats with nine or more species exceeds the 40% threshold set by the baseline.



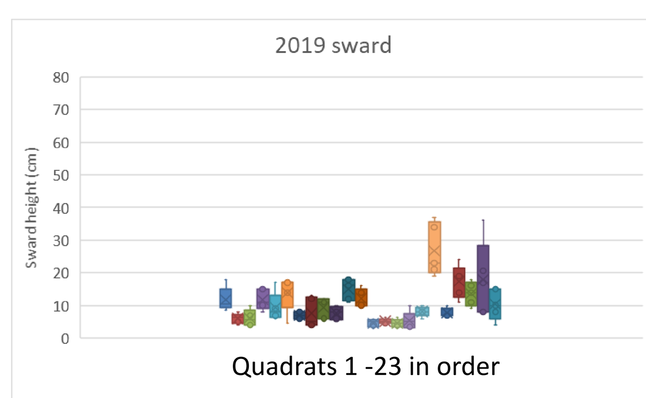
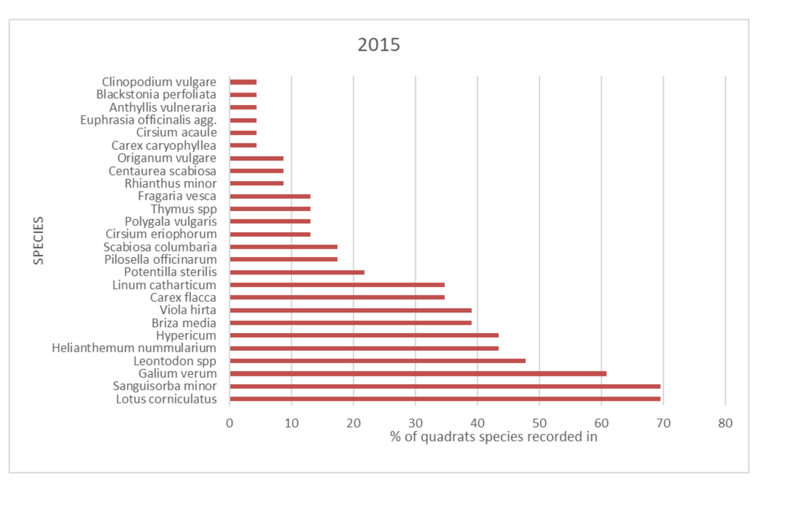


Fig 2.3 Box plots. Increase in wildflower frequency is most likely the result of a decrease in grass height (sward) in response to improved grazing. Boxplots show all sward height variation for each of the 23 annual quadrats. Five heights per quadrat. Each bar of data is in the same position and has the same colour between years so the two graphs can be read in comparison.



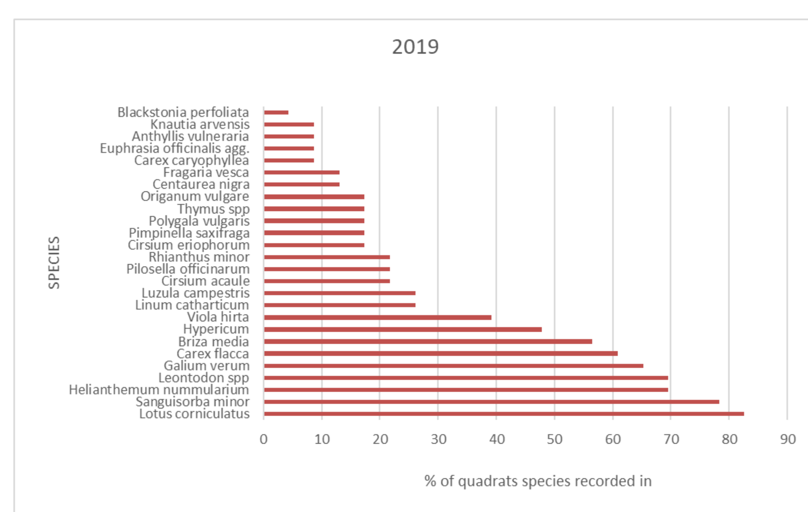


Fig 2.4. Recording species by grid square collects data on species frequency, which is more informative than a species list as it tracks change in indicator commonness and rarity.