




***Important Invertebrate Areas:
Harnessing Data and Building the Network.***

Images © Ed Phillips, Matt Eastham

Tom L Thomson, Project Technical Lead.

Tom.Thomson@Buglife.org.uk  @Envirotech_RND

www.buglife.org.uk Tel: 01733 201210  @buzz_dont_tweet

What are Important Invertebrate Areas (IIAs)?

- **Nationally significant places for the conservation of invertebrates and the habitats upon which they rely.**
- The UK and its diverse habitats support nearly 40,000 invertebrate species.
- Phase 1 of the project aimed to complete a “broad-scale” (Hectad) map of IIAs for England, Wales and Scotland.
 - **National focus - Completely data led.**
 - **Completed in 2018.**
- Phase 2 of the project aims to “fine-scale” map each IIA and produce with supporting documents and files.
 - **Landscape scale focus - Local knowledge and data led.**
 - **This is where is are now.**

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The First Phase

Over 40 Million Records
of invertebrates used in our database to identify and map Important Invertebrate Areas initially across Great Britain.

From ~100 Data providers
Ranging from small study groups to national recording schemes and statutory authorities.

Processed and analysed
Using custom spatial data infrastructure in an open source and scientifically rigorous process.

Building a framework
to direct, focus and practise invertebrate conservation in the UK and develop a set of new spatial planning tools.

To our data providers, we could not do this without you!

Data Treatment:

Overall data treatment follows that used by the NBN, BRC and GBIF systems, using a modified set of the same templates and verification rules used to import incoming data.

Data treatment methods were developed in the test phase of the project and criteria finalised using the results of analysing key national datasets with a large species range and covering a broad range of habitat types.

- Taxon names are verified using the UK Species Inventory (UKSI).
- Records are linked to conservation status and habitat data via taxon version keys (pTVK).
- The data is classified on how species qualify for each category and by the age of records.
- Records qualifying species are linked to Hectads and clipped to country coastal outlines.
- A data cut off of 1990 is used to best reflect the current state of habitats and populations.

The First Phase

The IIA selection criteria:

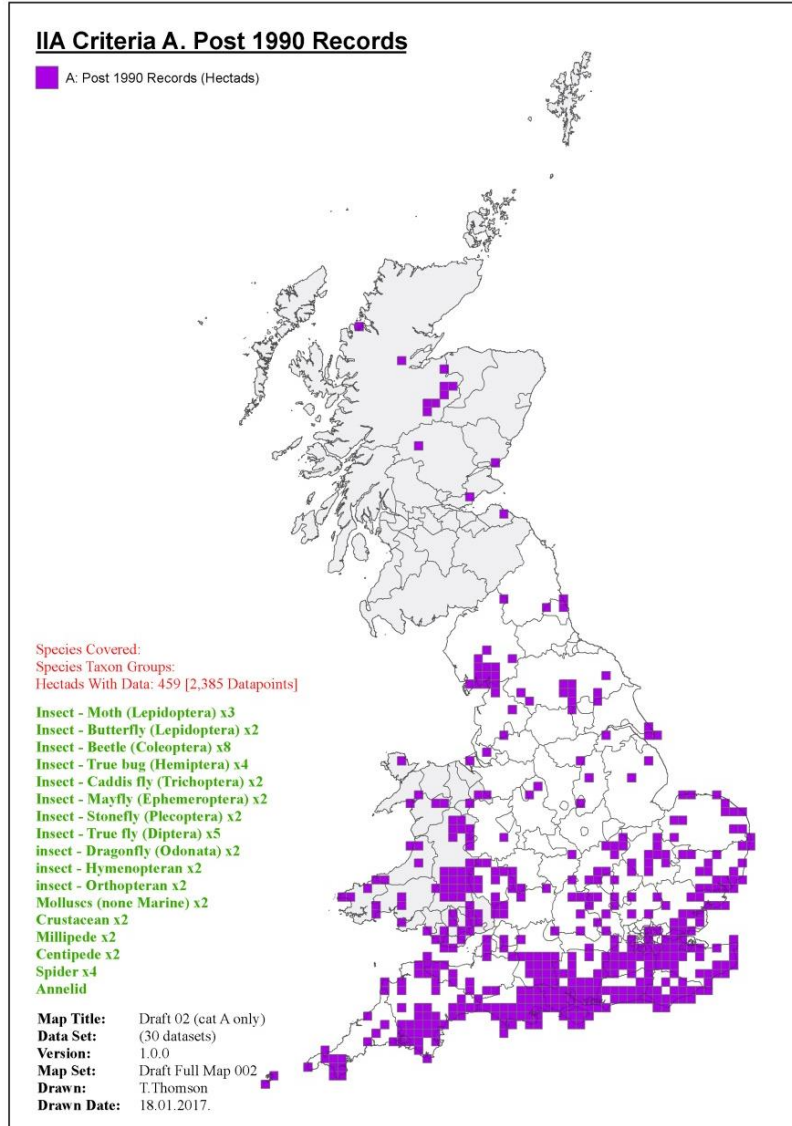
Criterion	Description
A(i) Area supports globally endangered species.	Species listed as Critically Endangered (CR), Endangered (EN) or Vulnerable (VU) on IUCN global red lists.
A(ii) Area supports European endangered species.	Species listed as Critically Endangered (CR) or Endangered (EN) on IUCN European red lists.
A(iii) Area supports nationally Critically Endangered species.	Species listed as Critically Endangered (CR) on national red lists.
A(iv) Area supports endemic species.	Species recognised as endemics, only found in the UK.
B Area supports a nationally important assemblage of rare or threatened invertebrates.	<p>A single score for each hectad - calculated as total number of species recorded from the area (each species scores 1).</p> <p>Qualifying species:</p> <ul style="list-style-type: none"> Species listed as Vulnerable (VU) on IUCN European red lists, or listed on Habitats Directive Annexes IIa and IVa, or Bern Convention Appendix II or III. Species listed as Endangered (EN) on national red lists. Species listed as nationally rare (GB NR or equivalent).

The IIA selection criteria:

- **What are the species statuses we have used based on?**
 - ✓ IUCN Global Red Lists: **A(i).**
 - ✓ European geographic area Red Lists. **A(iii) & B.**
 - ✓ European legislative annexes – Bern convention annex 2&3 and Habitat regulations annex 2&4. **B.**
 - ✓ GB status reviews - New Series Reviews : **A(iii) & B.**
 - ✓ Generated Rarity indices from source datasets and species lists informed by literature and expert advice. **B.**
- **How they work in practise to build the network?**

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The First Phase



The Hectads selected via:

Criteria A.

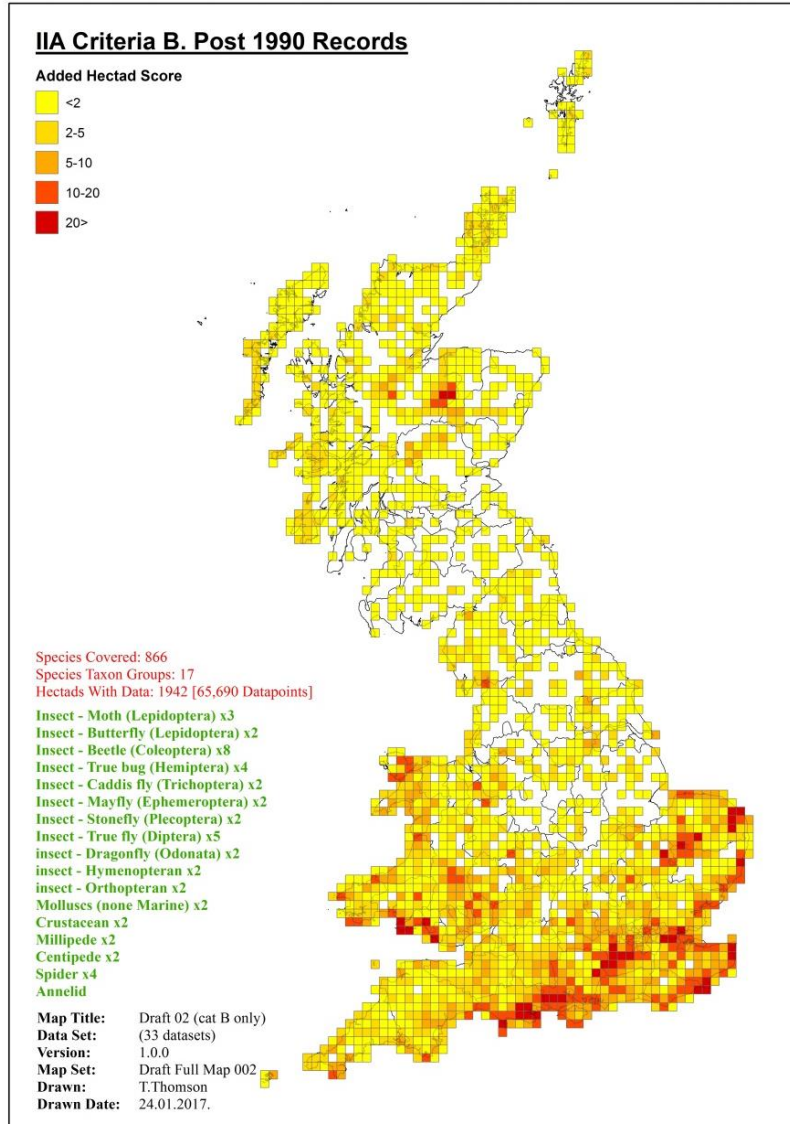
- Create a map highlighting the areas known to support populations of our rarest and most threatened species.

This Selection is:

- ✓ Based on very few species (65).
- ✓ Makes sure that sites for single important species do not fall through the gaps where the sites does not also support a diverse fauna.
- ✓ Includes Endemic species that otherwise have no status.

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The First Phase



The hectads selected via:

Criteria B – (Stage one).

- Initially create a map showing assemblages of rare or threatened species from which “Hot Spots” and “Not Spots” can be ascertained and further refined in the next stage.

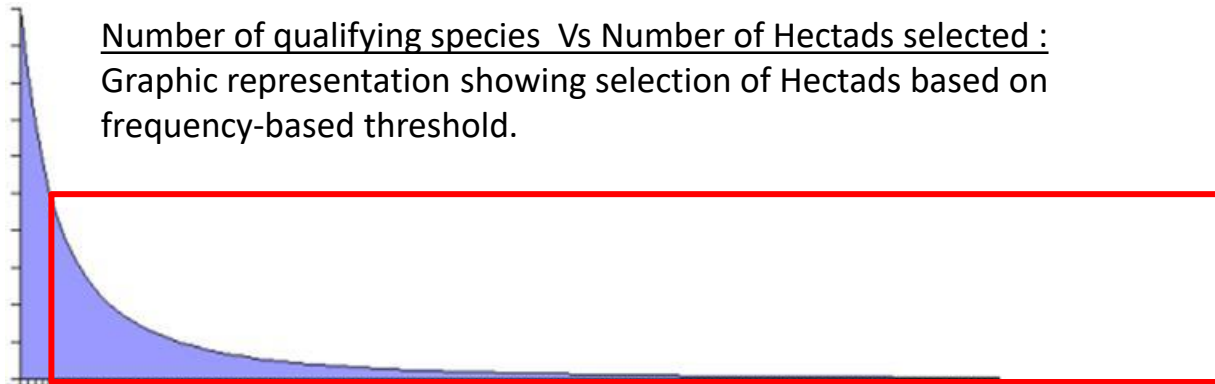
This Selection is:

- ✓ Based on a large number of species (866) covering all major taxon groups.
- ✓ Makes sure that sites with no exceptional rarities but **which** contain an important assemblage of less threatened species are selected.

Criteria B – Thresholds.

- The calculation of the threshold value used to prevent low scoring hectads from solely creating new IIA units is based on selection the top 15% of hectads in terms of number of qualifying species in criteria B.

Number of qualifying species Vs Number of Hectads selected :
Graphic representation showing selection of Hectads based on frequency-based threshold.



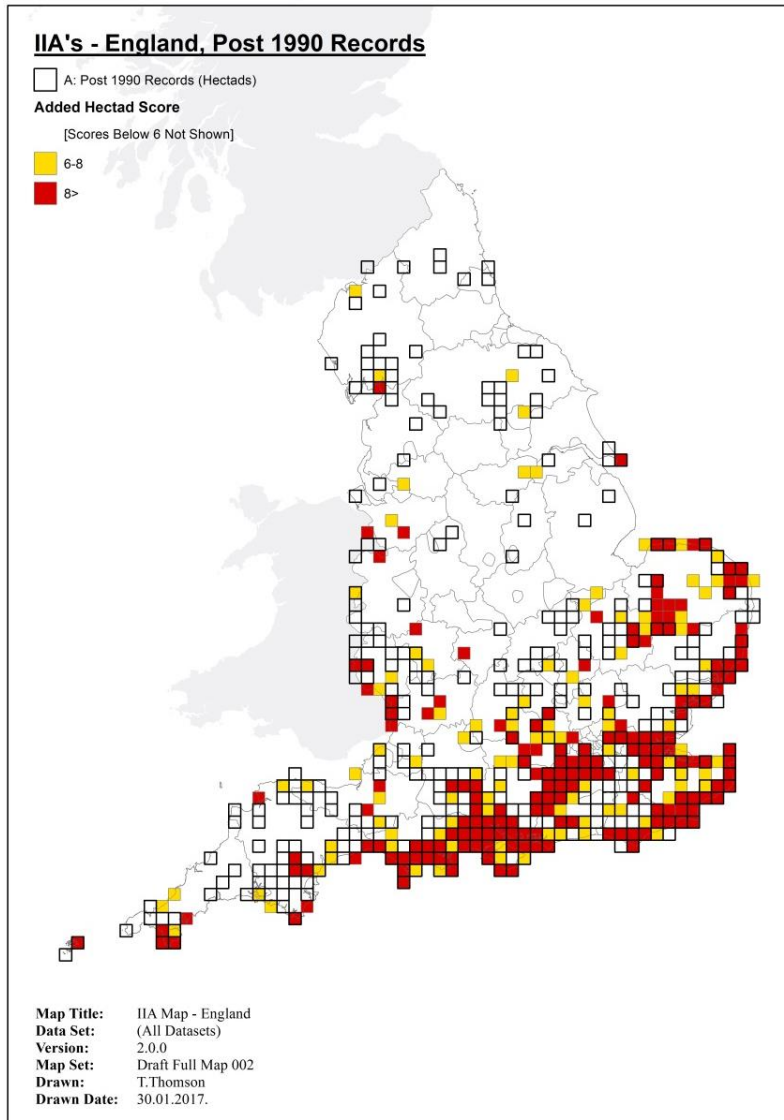
<u>Top Percentage of Hectads (rounded)</u>	England	Scotland	Wales
Threshold generated At 10%	12	4.2	10.5
Threshold generated At 15%	8.5	3.7	7.7
Threshold generated 20%	6.5	2.9	6.7
Threshold generated At 25%	6	2.4	6.3

The threshold analysis process:

Selection ceilings to include the Top 10% to Top 25% of species
Scored Hectads were tested with 15% being the most representative.

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The First Phase



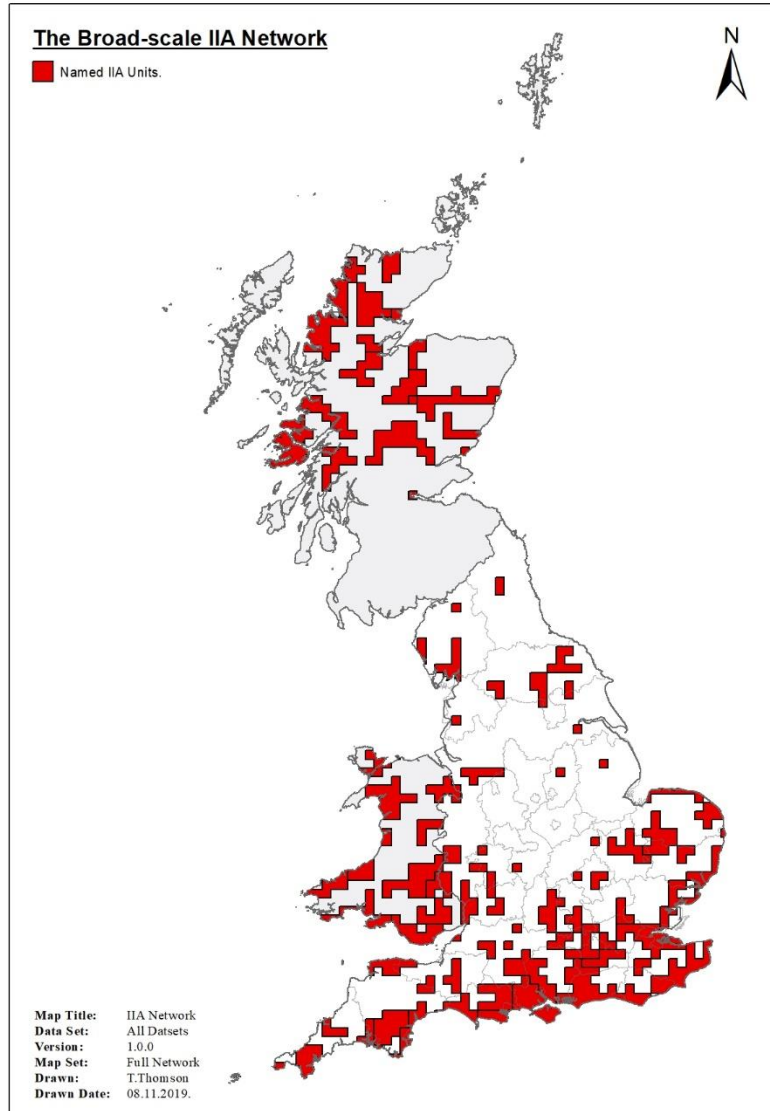
The Hectads selected via:

Criteria B – (Stage two).

- Thresholds are applied for each country based on a simple statistical data model so only the most “important” assemblages are selected.
- Hectads selected in each country that meet the threshold are then exported to a single layer and combined with the Criteria A selections
- In many case hectads are selected under both Criteria A and B - such as much of the southeast of England.

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The First Phase



The IIA Network.

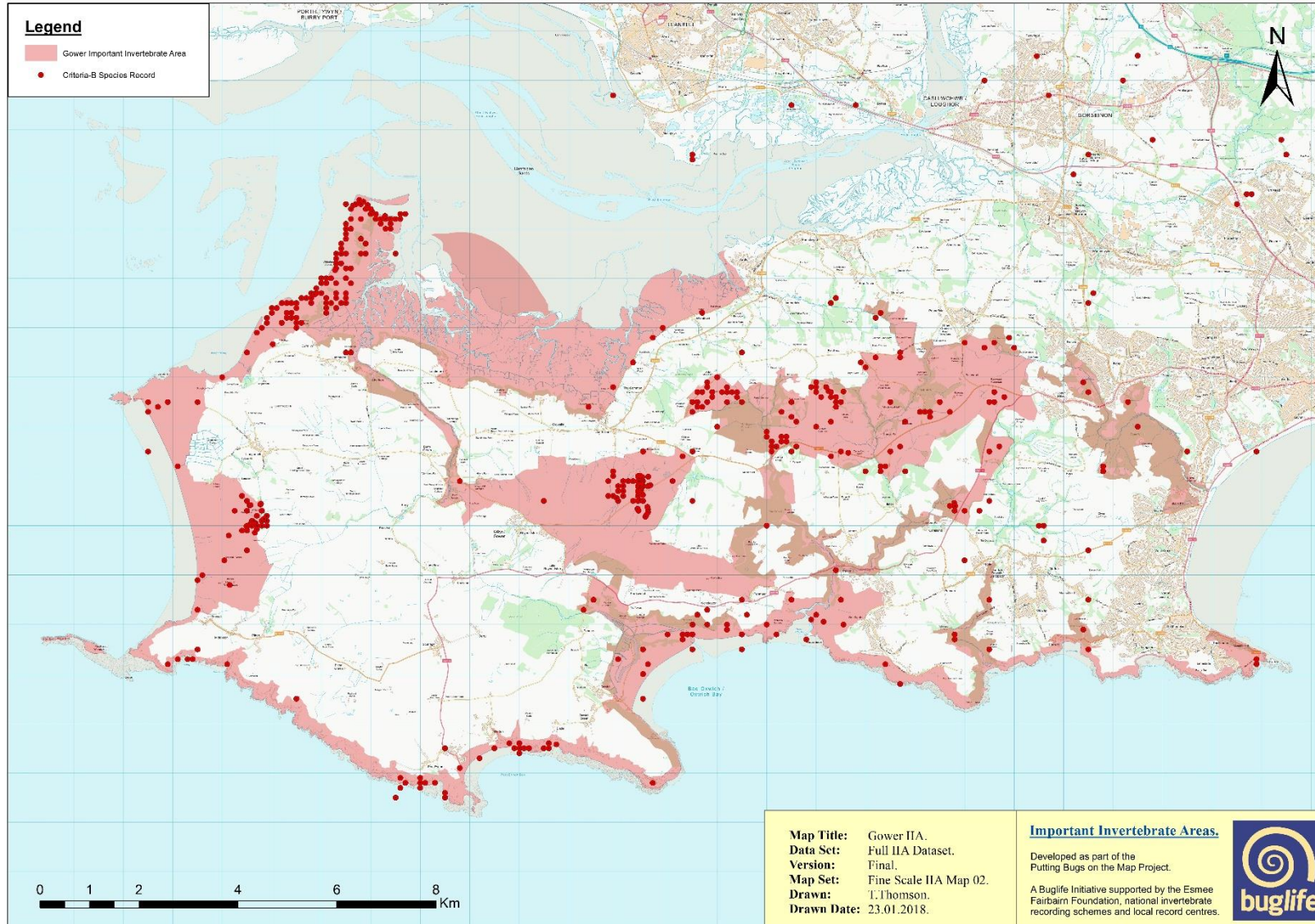
- After thresholds are applied for each country, hectads selected for both criteria are combined into a single set of named areas
- Groups of hectads combined into a unit based on landform data, habitats and where possible to coincide with known protected areas such as national parks or river catchments.
- Habitats scores from the Pantheon system developed by Natural England are used along with national species lists to link species assemblages to key habitat areas.

Data Treatment:

- Records are added from LRC's linked local recording group and projects.
- Taxon names are verified through the UKSI and linked to conservation as in phase 1.
- The records from all qualify species is plotted alongside the protected area networks.
- Local non statutory data is also used to inform the definition of boundaries for IIA polygons. These represent where the key habitats supporting the qualify species present extend.
- LWS's and Arial images play a role as well as land ownership of key stakeholders being considered eg: - National Trust, RSPB, forestry commission etc.
- Local and national recorders, land management and conservation stockholders are engaged via interactive mapping workshops, both held in person and now; online.
- The resulting polygons are digitised from draft workshop outputs and refined via feedback from workshop participants and wider engagement with stakeholders.

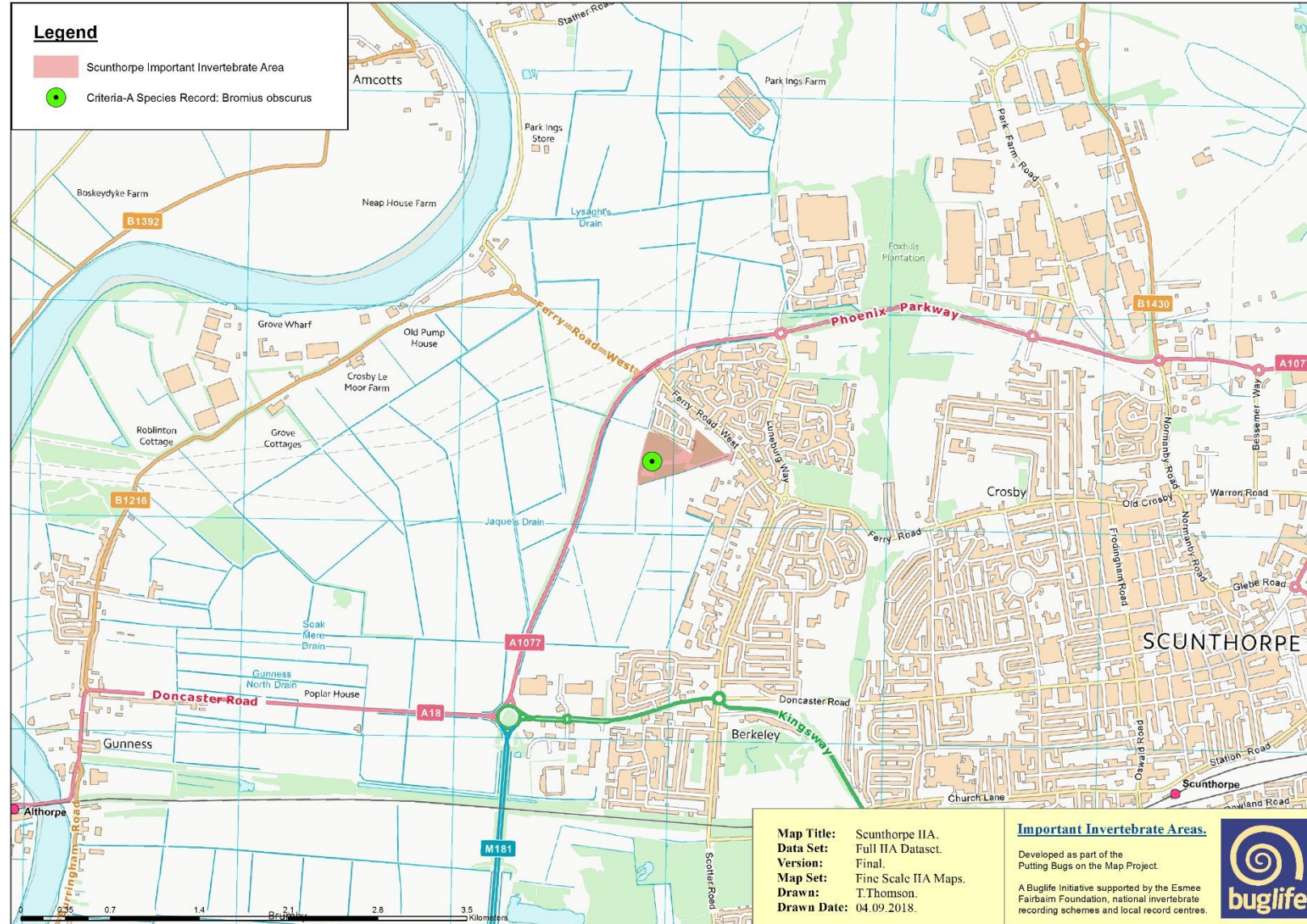
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The Second Phase



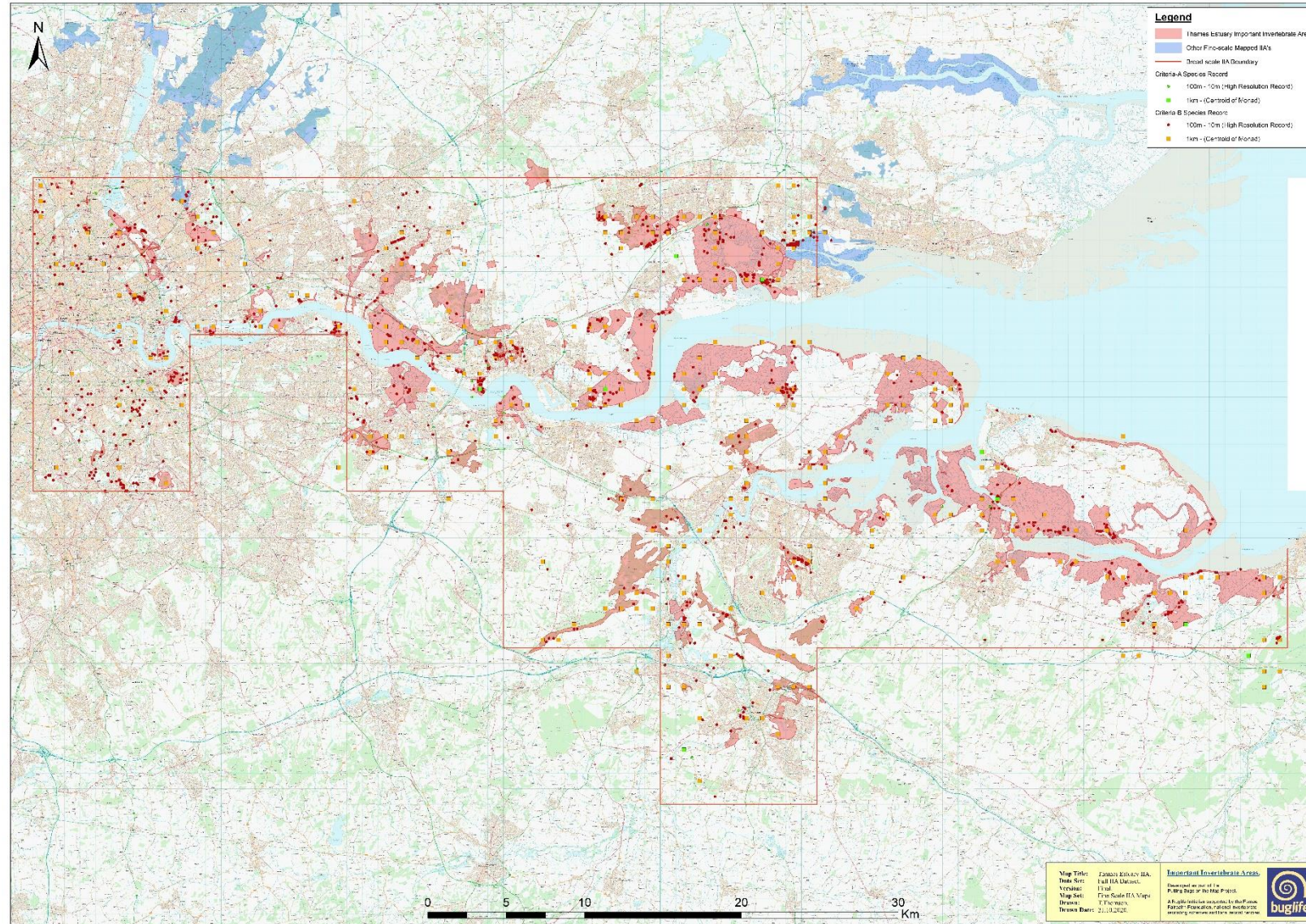
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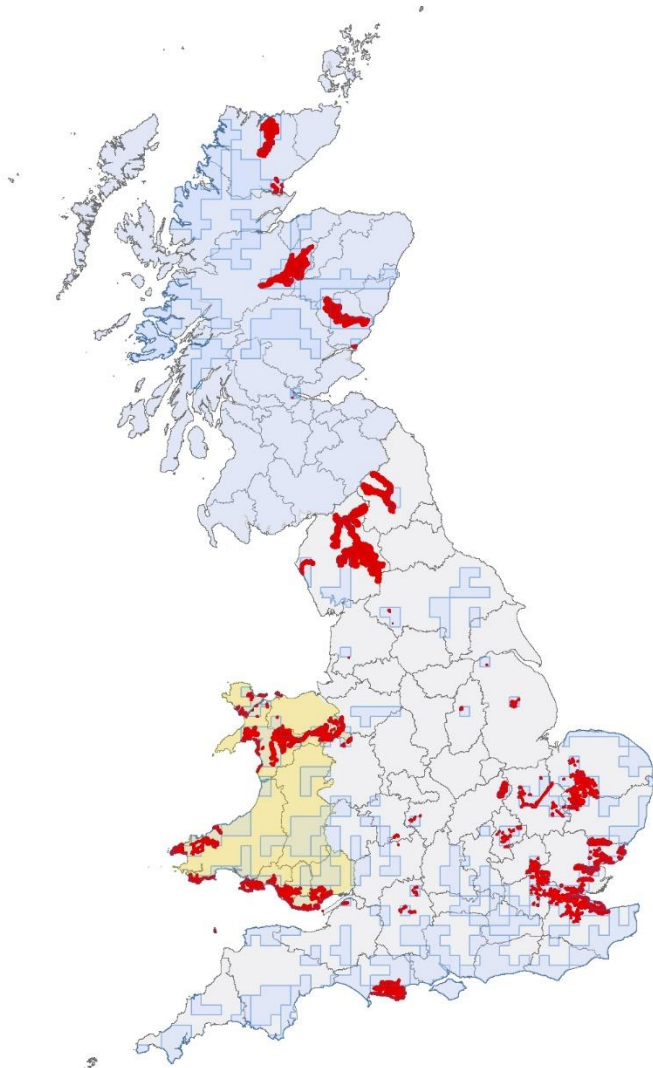
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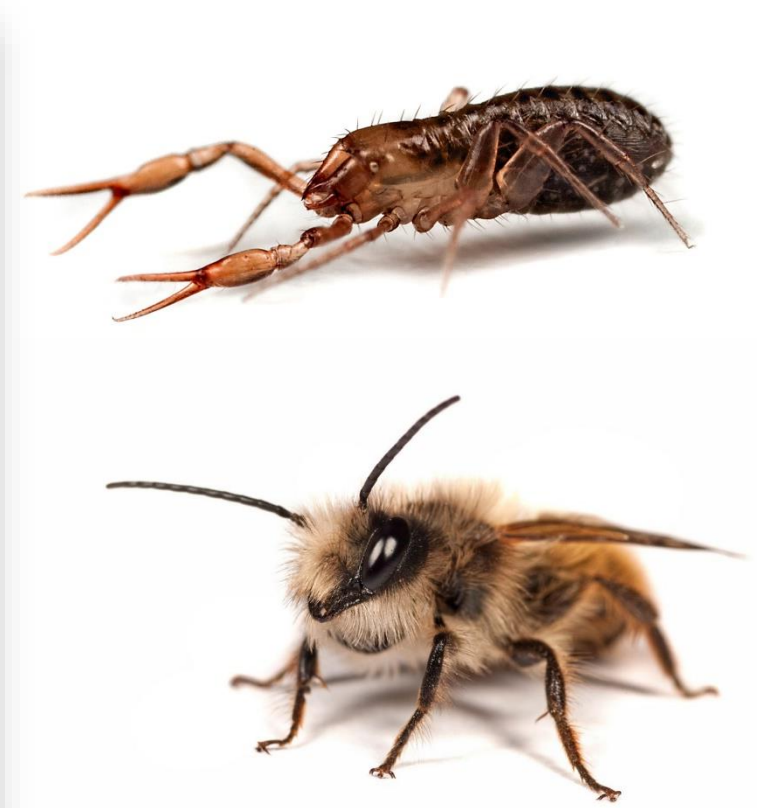
The Second Phase






What's Next ?

- Finalize the Whole Network at the site level (Fine scale).
- Develop resources on the key species and habitats in each IIA.
- Link to LRC's and help integrate IIA's into data searches
- Link to statutory bodies and their support resources.
- Integrate IIA's into the conservation workflow in GB.
- Cultivate partnerships with others working to conserve invertebrates!



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