

# Re-connecting Communities in Biodiverse Places to their Biological Heritage

## The case of iguanas on Grand Cayman

Sofie Meeus<sup>1</sup>, Jodey Peyton<sup>2</sup>, Louise Boelens<sup>1</sup>, Catherine Childs<sup>3</sup>, Sarita Francis<sup>4</sup>, Alan Gray<sup>2</sup>, Luke Harding<sup>3</sup>, Annick Jackman<sup>3</sup>, Rebecca Machin<sup>5</sup>, Mike Pienkowski<sup>6</sup>, Delmaude C. Ryan<sup>4</sup>, Eulyñ Silcott-Greaves<sup>4</sup>, Sabina Vlad<sup>7</sup>, Catherine Wensink<sup>6</sup> & Quentin Groom<sup>1</sup>

- 1 – Meise Botanic Garden, Meise, Belgium |sofie.meeus@plantentuinmeise.be| @SofieMeeus | 0000-0003-0715-8647
- 2 – UK Centre for Ecology & Hydrology, Wallingford, United Kingdom
- 3 – National Trust for the Cayman Islands, Grand Cayman, Cayman Islands
- 4 – Montserrat National Trust, Olveston, Montserrat
- 5 – Leeds Museums and Galleries, Leeds, United Kingdom
- 6 – UK Overseas Territories Conservation Forum, Peterborough, United Kingdom
- 7 – Ovidius University of Constanta, Constanta, Romania

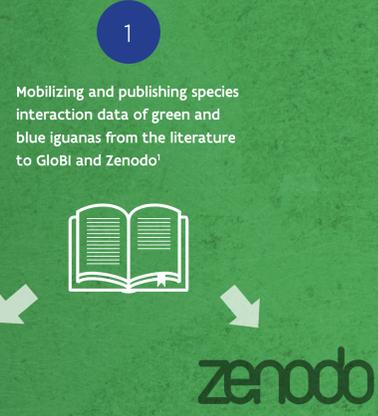


The From Blue Iguanas to Blue Vervain project aims to connect the biodiverse Caribbean UK Overseas Territories of Montserrat and the Cayman Islands with natural science collections and data on the local biodiversity that is spread around the world. The project addresses issues of access and benefit-sharing, particularly how residents of these biodiverse places can benefit from the data, specimens and research originating in their islands and how visiting researchers can build capacity and consult with the local communities around their needs for conservation.

### Species interaction network

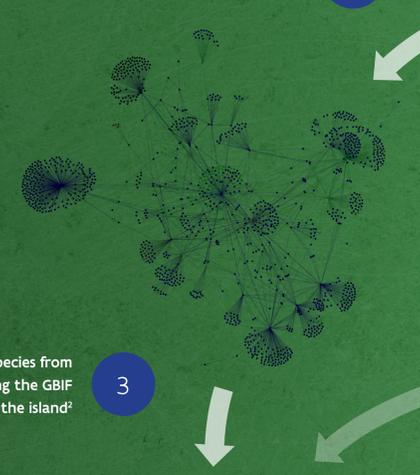
*Cyclura lewisi* (blue iguana) is an endangered, endemic flagship species of Grand Cayman. In 2001, with just 30 individuals left, a captive breeding programme was started. Now there are estimated to be between 800-1000 in the wild. Invasive species that have contributed to its population decline, include cats, dogs and notably the green iguana (*Iguana iguana*). **Species interaction networks are a great tool to visualize ecosystems and create awareness with the public on the impact of humans on the whole ecosystem either directly or indirectly by releasing invasive species.** These networks can be used both for education as in impact assessments for the management of invasive species. The diagram below shows how to construct a species interaction network based on real scientific data extracted from the literature, the Global Biotic Interactions database (GloBI) and the Global Biodiversity Information Facility (GBIF.org).

For centuries, naturalists from the Global North have traveled southwards to conduct research on species from regions where there were many. One legacy of this is that the large natural history collections are often distant from the biodiverse regions of the world. The unique and often disappearing species and ecosystems in these regions need conservation, yet much of the data on this biodiversity resides in collections and with the experts that work in them, are locked up in closed-access journal articles or hidden away in machine-unreadable text.



Extracting all the primary and secondary interactions of green iguanas from GloBI

2



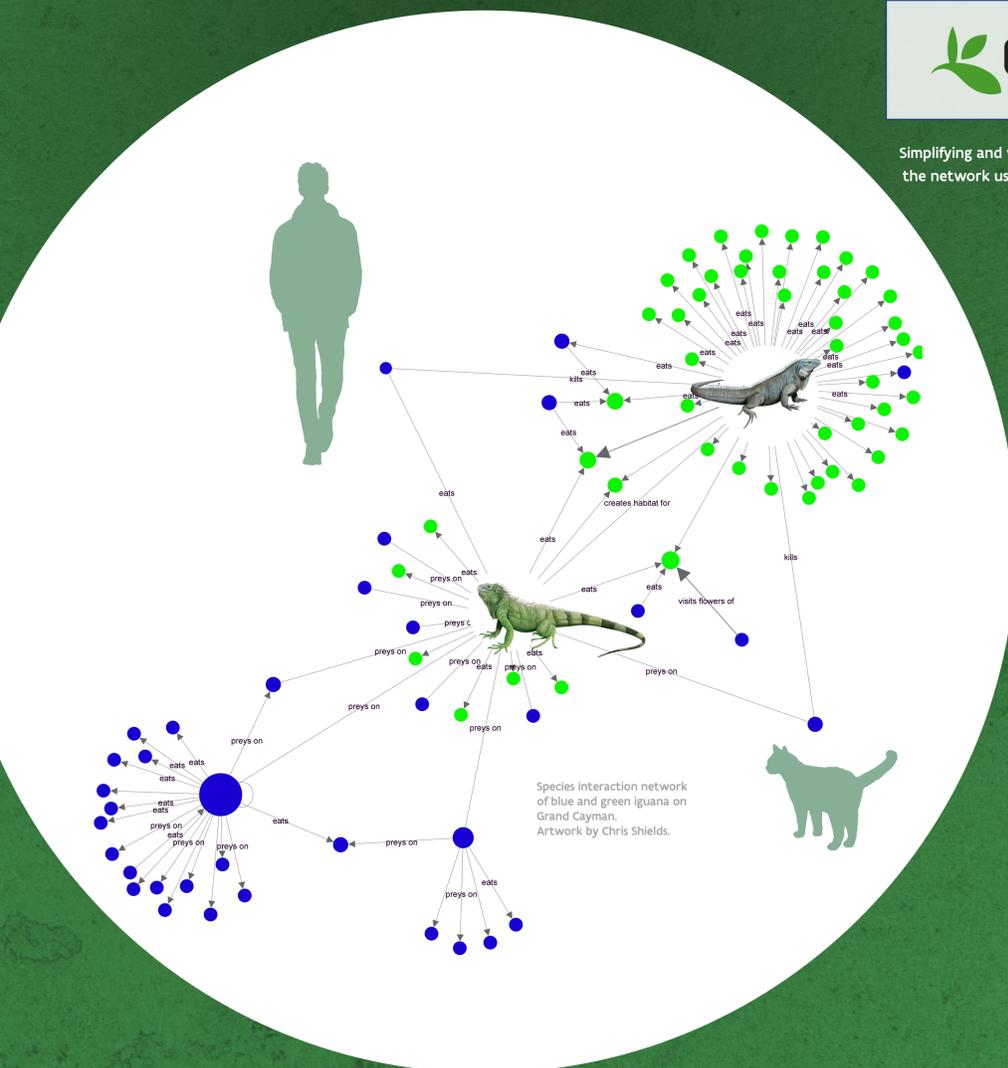
Filtering out the species from Grand Cayman using the GBIF species checklist for the island?

3



Simplifying and visualizing the network using Gephi?

4



### Bioblitz and iNaturalist

Open digital resources, such as iNaturalist and GBIF, allow communities to collect, access and manage their data without needing to establish expensive infrastructure themselves. In the summer of 2022, the project partners organized two bioblitzes with the **main aim of getting the local community and especially the young generation on the islands interested in biodiversity, to adopt the use of iNaturalist for systematic recording on the island, to connect local experts and organizations, and to build new relationships** between the project partners from the Cayman Islands, Montserrat, Belgium and the UK, and between Caribbean islands. A bioblitz is a form of place-based science and has proved to be effective in engaging a community with biodiversity recording and creating stewardship for a place<sup>4</sup>. Bioblitzes worldwide already contribute a significant number of records to iNaturalist and GBIF. Especially in these remote places where systematic recording is absent, bioblitzes can significantly contribute to the local species lists.

Photo by Jo-Diaz Tye

### Research collaboration network

Critical contributions to the conservation community are from researchers. They attempt to answer to questions of conservation importance and provide expert guidance to the broader community, including conservationists, policy makers and the general public. Here we try to understand how that research community is integrated to the community on Grand Cayman.

Specimens of biodiversity have been collected from the Cayman Islands for over two centuries. This map was constructed using specimen label data from GBIF and Wikidata, and shows where the collectors of the specimens were born or died. **The map demonstrates the strong links between collections in the Global North and tropical islands. As long as the data from these collections are open and usable by people from the islands they represent an important source of information about biodiversity for the islands.**

Research on the blue iguana really kicked-off with the description of the animal as a separate species in 2004<sup>5</sup>. We conducted a systematic literature review on Iguanidae on Grand Cayman and discovered sixteen papers on Web of Science, Scopus and Dimensions.ai using the keywords "Iguana", "Grand" and "Cayman". Using the affiliations of the authors we were able to construct this research collaboration network, where each node is an author, coloured by their country and their connections are the co-authors of a paper. Nodes are sized in proportion to the number of publications they authored on this subject. This network shows the dominance of authors from the USA on research on blue iguana. However, it does also show that some Caymanian authors are integrated in some of this research.

On collector disambiguation, see also in CO - Contributed Oral Presentation: Groom Q. et al. (2022) Collections do not have to Remain Ambiguous Forever: Seven steps to getting the correct people into your data.



1. Vlad S.E., Peyton J., & Meeus S. (2022) Interactions data on iguana iguana and other taxa from the Cayman Islands, extended with interaction data of *Cyclura lewisi* (v.1.1) (Data set). Zenodo. <https://doi.org/10.5281/zenodo.6355576>.
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The project is led by the UK Centre for Hydrology & Ecology and has partners of the National Trusts for the Cayman Islands and Montserrat in the Caribbean, the UK Overseas Territories Conservation Forum, Leeds Museums and Galleries and Meise Botanic Garden.

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