A systematic mapping approach to reviewing the residency construct with focus on odontocetes; Preliminary results

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Problem

No unified approach to defining or assessing residency. However, such assessments are critical for defining management units & developing conservation plans.

Purpose

1. Conceptually map the development of assessing residency patterns and site fidelity in odontocetes
2. Identify trends and inconsistencies in how residency and site fidelity have been defined and implemented in odontocete literature.
3. Compare and contrast conceptual framework of assessing residency, site fidelity, occupancy, home range, and territory in odontocetes to identify overlap and disjuncture.

Systematic Mapping Approach

Open framed approach to systematic mapping using PO question type:

- **Population (P)**: All Odontocetes excluding extinct ancient species
- **Outcome (O)**: the records address/provide information on one or more of the following issues:
  1. Conceptual definition of residency, site-fidelity or occupancy, home range, or territory
  2. Operational definition of residency, site-fidelity or occupancy
  3. Measured or offered quantitative metrics of residency and/or site-fidelity
  4. Described or characterized data in terms of residency patterns or site-fidelity
  5. Offered new or integrative conceptual framework for residency, site-fidelity, occupancy, home range, or territory

Methods

- Scoping exercise to examine suitability of key terms against a test library of 102 articles.
  - 94% success rate across search engines (Web of Science, Science Direct, and ProQuest).
- Tested screening reliability among 3-4 raters
  - Title/abstract: Fleiss's Kappa (K) = 0.73 - 0.79
  - Full text: K = 0.73 - 0.82
- 10% of full text screened by 2 raters

Preliminary Conceptual Themes

- Residency & site fidelity strongly associated with descriptive & social dynamics terms at the individual-, group-, and community-levels
- Occupancy more closely associated with density-, habitat use-, & distribution- related terms at the population level
- Assessments of transience & residence times are more closely associated with demographic modeling terms

References:
1. CADIMA 2017. Quedlinburg, Germany: Julius Kühn-Institut; https://www.cadima.info
2. Thomas et al. 2020. EPPI-Reviewer: advanced software for systematic reviews, maps and evidence synthesis [Computer software]. EPPI-Centre Software. UCL Social Research Institute. London. https://eppi.ioe.ac.uk/cms/Default.aspx?alias=eppi.ioe.ac.uk/cms/er4
3. Van Eck & Waltman 2011. Text mining and visualization using VOSviewer. ISSI Newsletter, 7(3), 50–54.

What is Residency?

- Conceptual definitions?
- Operational definitions?
- How is it measured?

How does residency differ from similar concepts like site fidelity, occupancy, home range, or territory?
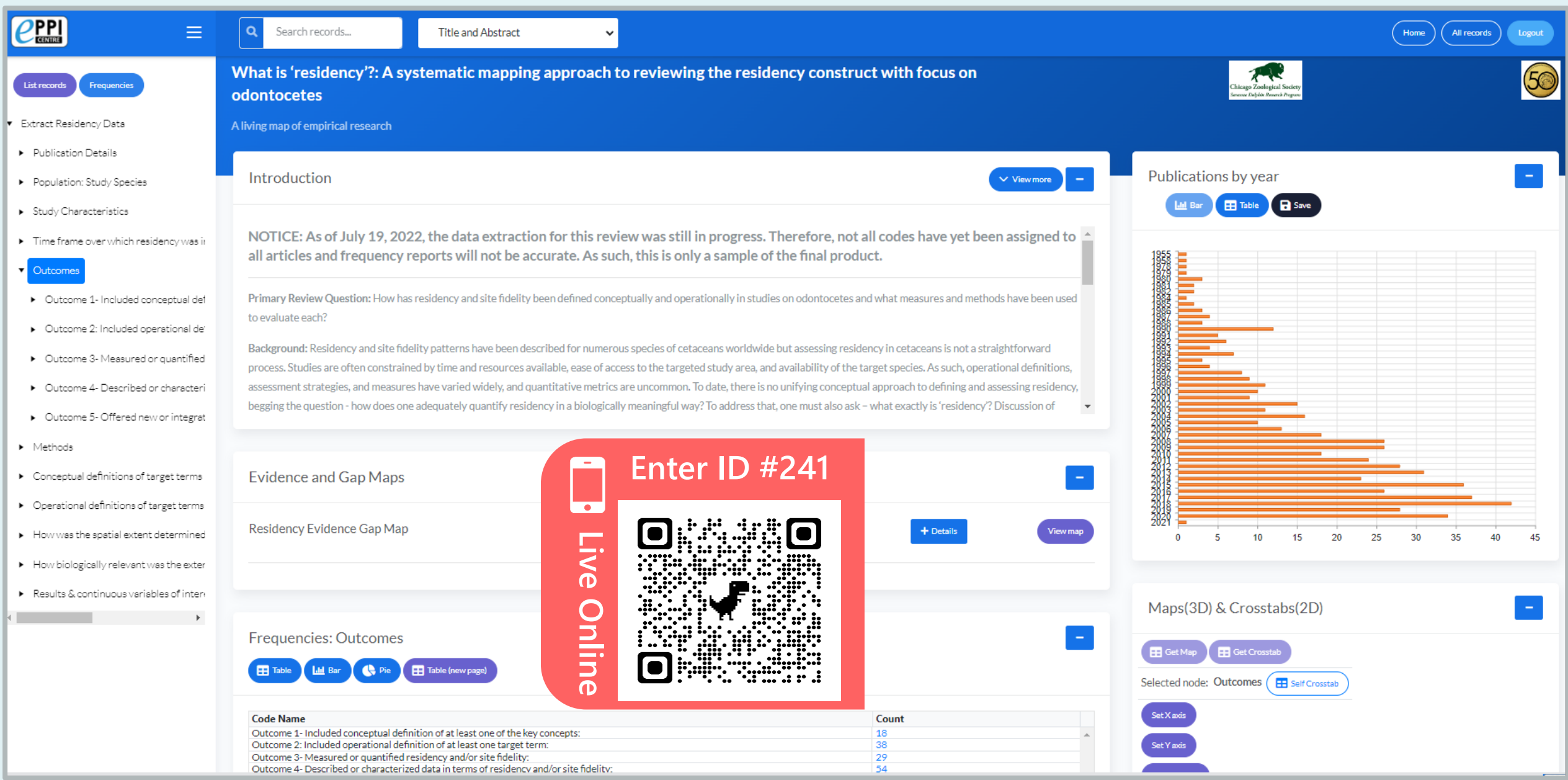
Residency is commonly discussed in terms of long-term presence in a given geographic space. *But…*

- What is "long-term"?
- How is spatial extent determined?
- Are designations biologically meaningful?

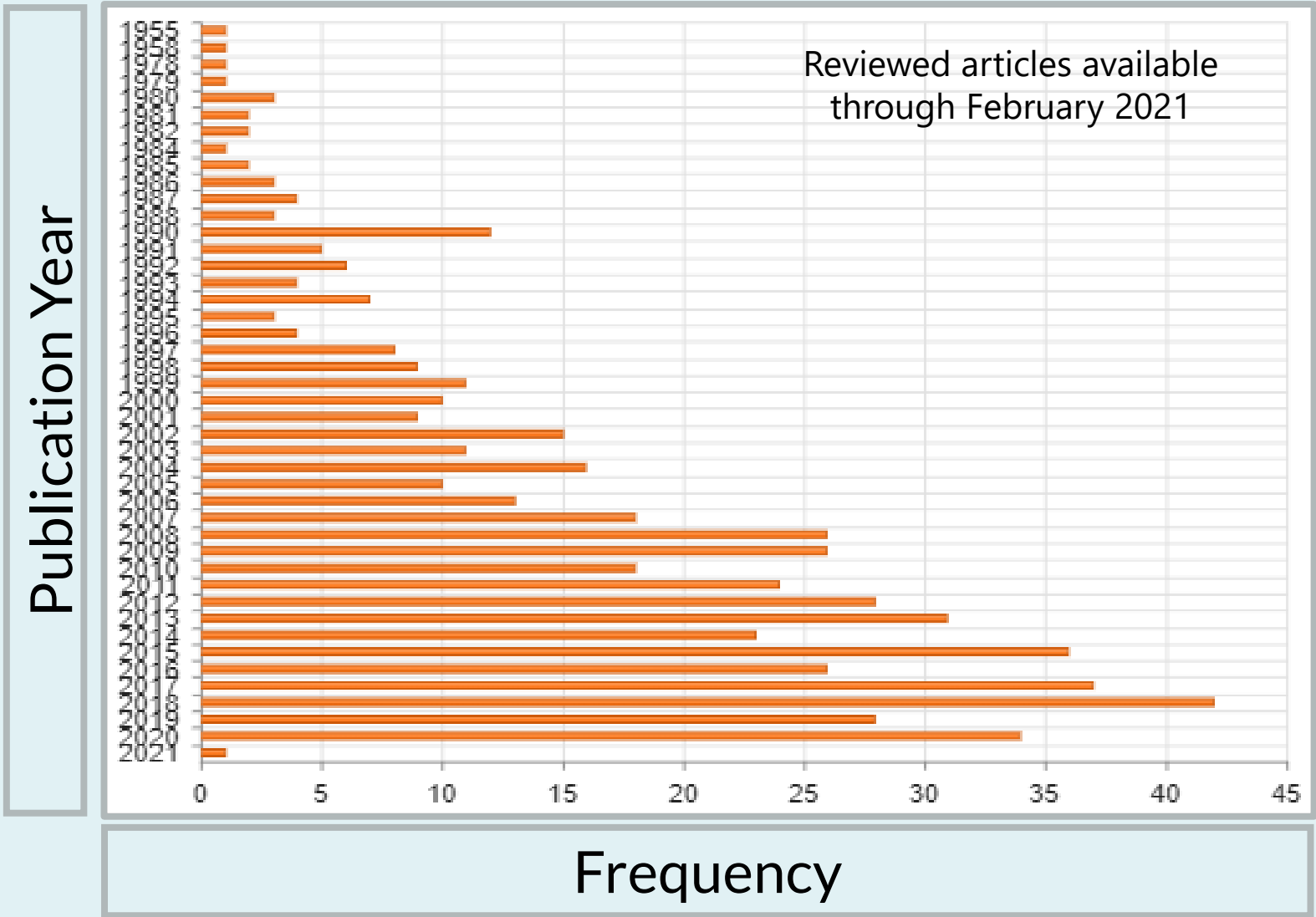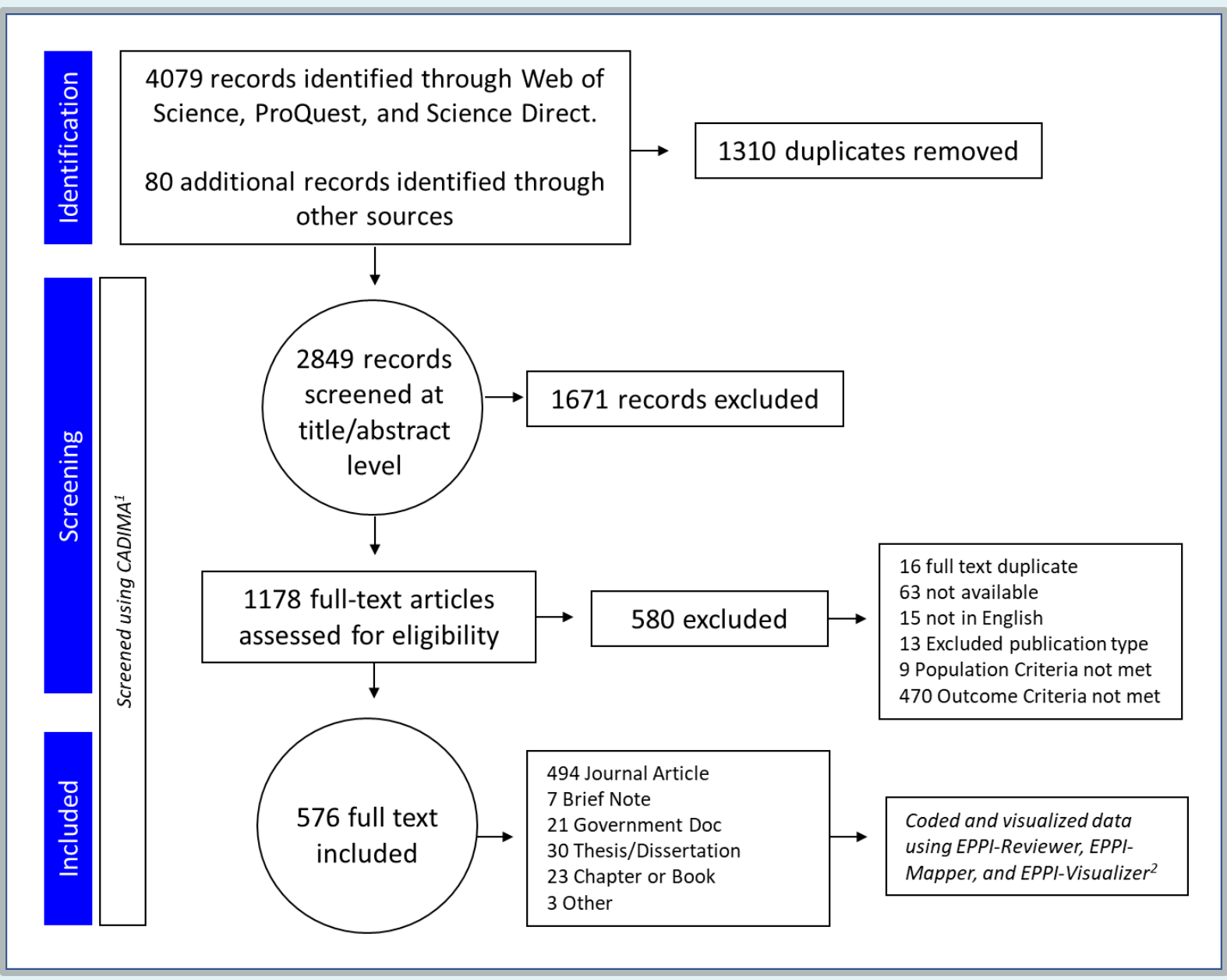## Outcome: Live Searchable Database!

Enter ID #241
Live Online

➤ Online catalog of reviewed articles coded with a wide range of variables:
- Species
- Methodology
- Metrics & Analyses
- Conceptual & Operational Definitions
- Score of Biological Relevance
- Reason for Studying Residency
- Time Scale
- Spatial Scale
- Ecosystem Type

➤ Searchable and exportable reference list
➤ Full coding report available for each article
➤ Create frequency and cross-tabs reports
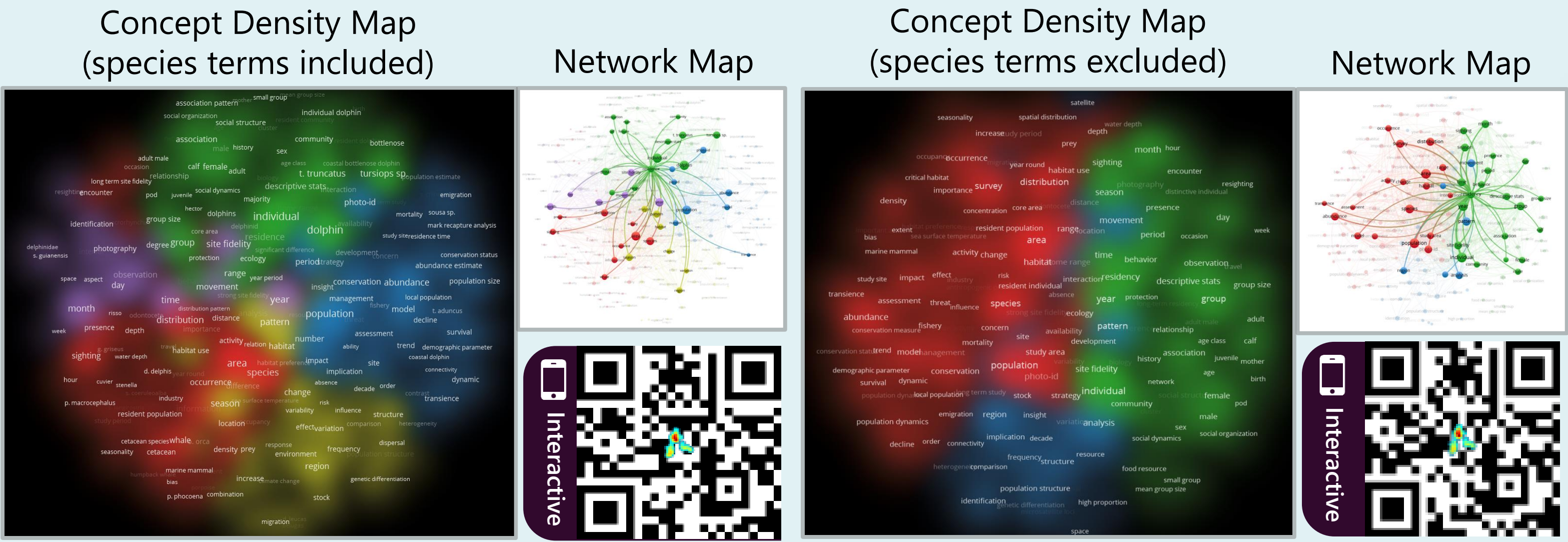➤ Can be updated in the future to extract new data and address new questions

Open access tool to guide discussions and future work*

*Data extraction in progress, but online example is live (codes available are only a selection of final code set).

Review Dataset

Concept Map of Keyword Co-occurrence from Titles & Abstracts

Concept Density Map (species terms included)

Network Map

Five concept clusters

Concept Density Map (species terms excluded)

Network Map

Three concept clusters

Check out the interactive version online for a more detailed look at network map and relationships among terms

- Terms generated using natural language processing algorithms[3]
- Terms must occur in 10+ articles
- Removed nonsense & non-informative words
- Removed terms for geographic locations

Network maps:
- Lines connect terms that co-occur in 10+ publications
- Larger circles and labels have higher 'total link strength' weights (i.e., they co-occur with more terms than terms with smaller circles)
- Terms that are closer together are more strongly associated

Heatmap of Study Locations