

Biodiversity knowledge synthesis: an introduction to meta-analyses and systematic reviews

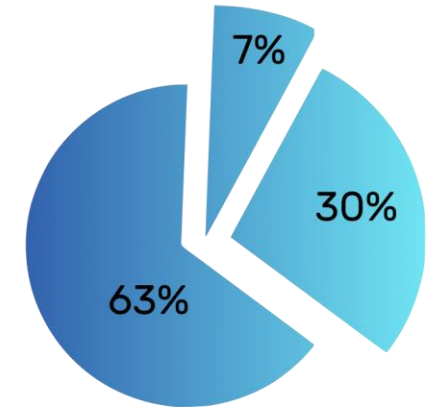
Metadata visualisation



Léa Terray & Romain Sordello
Cellule Cartes et Revues systématiques, PatriNat

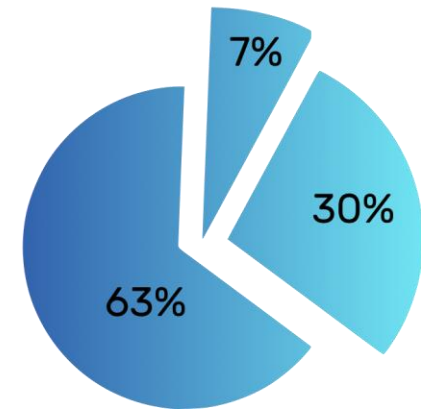
Objective

| population | exposition | outcome | study_context | study_design | research_lab_location | study_location |
|-----------------------|------------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|
| NA:review-metanalysis | NA:review-metanalysis | NA:review-metanalysis | NA:review-metanalysis | NA:review-metanalysis | NA:review-metanalysis | NA:review-metanalysis |
| Birds | Urban | Communication | In-situ | Observational | USA | USA |
| NA:review-metanalysis | NA:review-metanalysis | NA:review-metanalysis | NA:review-metanalysis | NA:review-metanalysis | NA:review-metanalysis | NA:review-metanalysis |
| NA:review-metanalysis | NA:review-metanalysis | NA:review-metanalysis | NA:review-metanalysis | NA:review-metanalysis | NA:review-metanalysis | NA:review-metanalysis |
| Birds | Industrial | Behaviour | In-situ | Experimental | POL | POL |
| NA:review-metanalysis | NA:review-metanalysis | NA:review-metanalysis | NA:review-metanalysis | NA:review-metanalysis | NA:review-metanalysis | NA:review-metanalysis |
| Birds | Transportation | Behaviour | In-situ | Experimental | CHN | CHN |
| Mammals | Transportation | Behaviour | Modeling | NA | CAN | NA |
| Amphibians | Urban Transportation | Communication | In-situ | Observational | ARG | ARG |
| | Transportation | Reproduction | In-situ | Experimental | USA | USA |
| | Transportation | Communication | In-situ | Experimental | COL | COL |
| | Transportation | Ecosystem | In-situ | Observational | CHN | CHN |
| | Urban | Space use | In-situ | Observational | USA | USA |
| analysis | NA:review-metanalysis | NA:review-metanalysis | NA:review-metanalysis | NA:review-metanalysis | NA:review-metanalysis | NA:review-metanalysis |
| | Recreational | Behaviour | In-situ | Observational | GBR | GBR |
| | Urban | Communication | In-situ | Observational | MEX | MEX |
| | Urban | Ecosystem | In-situ | Observational | CHN | CHN |
| | Recreational | Behaviour | Ex-situ | Observational | GBR | IRL(zoo) |
| | Industrial | Space use | In-situ | Observational | CAN | CAN |
| ts Amphibian: | Transportation Urban R | Ecosystem | In-situ | Observational | CHN | CHN |
| | Transportation | Communication | In-situ | Observational | USA | USA |
| | Recreational | Behaviour | In-situ | Observational | AUS | AUS |
| | Urban | Reproduction | In-situ | Observational | CHN | CHN |
| | Recreational | Behaviour | Ex-situ | Observational | AUS | AUS(zoo) |



Objective

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| Birds | Industrial | Behaviour | In-situ | Experimental | POL | POL |
| NA:review-metanalysis | NA:review-metanalysis | NA:review-metanalysis | NA:review-metanalysis | NA:review-metanalysis | NA:review-metanalysis | NA:review-metanalysis |
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| | Transportation | Ecosystem | In-situ | Observational | CHN | CHN |
| | Urban | Space use | In-situ | Observational | USA | USA |
| analysis | NA:review-metanalysis | NA:review-metanalysis | NA:review-metanalysis | NA:review-metanalysis | NA:review-metanalysis | NA:review-metanalysis |
| | Recreational | Behaviour | In-situ | Observational | GBR | GBR |
| | Urban | Communication | In-situ | Observational | MEX | MEX |
| | Urban | Ecosystem | In-situ | Observational | CHN | CHN |
| | Recreational | Behaviour | Ex-situ | Observational | GBR | IRL(zoo) |
| | Industrial | Space use | In-situ | Observational | CAN | CAN |
| ts Amphibian: | Transportation Urban R | Ecosystem | In-situ | Observational | CHN | CHN |
| | Transportation | Communication | In-situ | Observational | USA | USA |
| | Recreational | Behaviour | In-situ | Observational | AUS | AUS |
| | Urban | Reproduction | In-situ | Observational | CHN | CHN |
| | Recreational | Behaviour | Ex-situ | Observational | AUS | AUS(zoo) |



All the features mentioned in the systematic overview protocol must be represented

Mapping the **quantity** of studies relevant to the question

Present here a figure or a database, showing **how the relevant literature is organized** (categories, coding...) according to transparent, replicable criteria.

Mapping the **quality** of studies relevant to the question

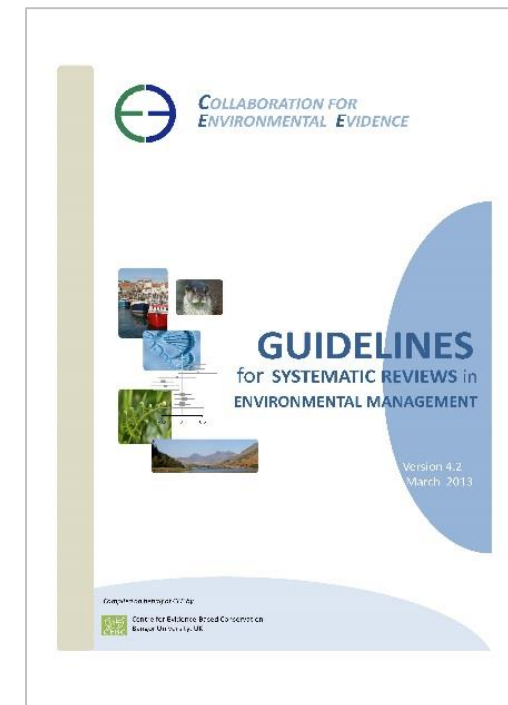
The map should provide some preliminary **estimate of the quality of the available evidence**. This may involve providing a **description of the design of each study**.

The visualizations presented should make it easier to navigate through the collected literature and **identify avenues for future systematic reviews**.

Must be identified and described:

Knowledge gaps, unrepresented or underrepresented subtopics that warrant further primary research.

Knowledge clusters, well-represented subtopics that are amenable to full synthesis via systematic review.



Which data should be represented?

Key data

- Bibliometric data: chronological distribution of publications, locality of studies, documents types, documents contents
- Population
- Exposition
- Outcomes

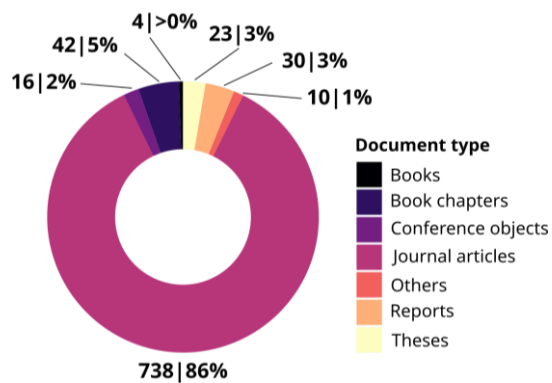
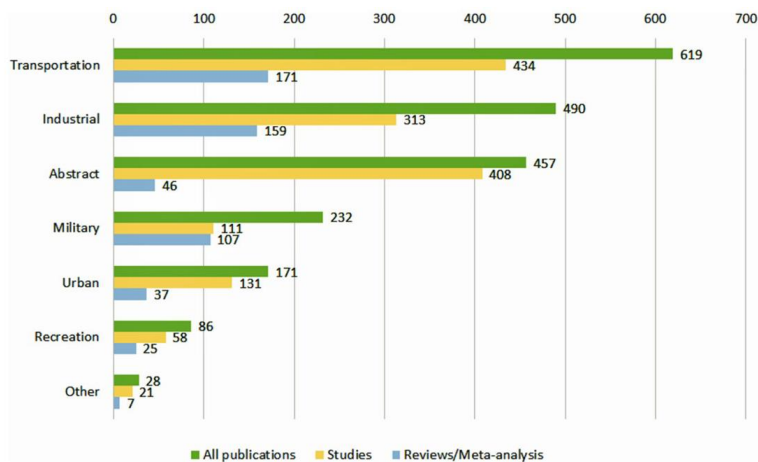
Data related to study design

- observational/experimental
 - types of experimental protocols
 - *in situ/ex situ*
- etc

Key data highlighting strong results

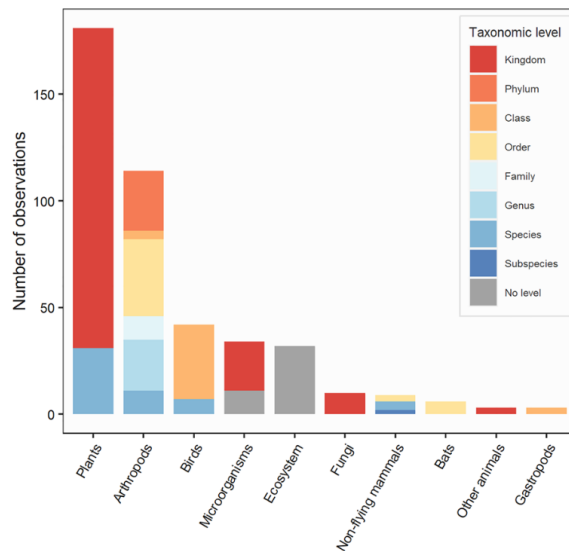
Endless possibilities

Sordello et al. 2020

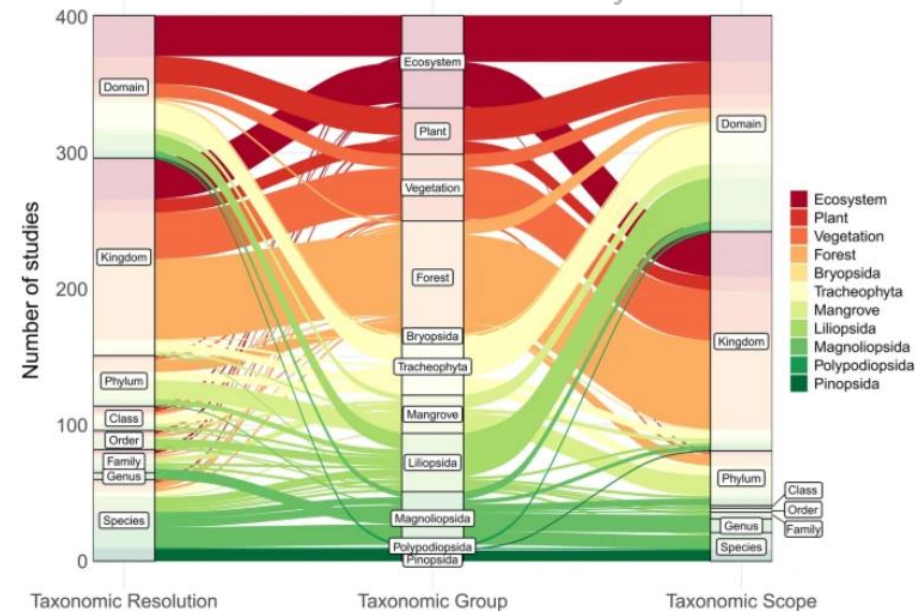


Terray et al. *in prep*

Lafitte et al. 2023



Ridley et al. 2022



| | Abstract | Industrial | Transportation | Military | Urban | Recreation | Other |
|---------------------|----------|------------|----------------|----------|-------|------------|-------|
| Mammals | 181 | 145 | 145 | 73 | 12 | 27 | 11 |
| Fishes | 86 | 104 | 97 | 14 | 2 | 11 | 5 |
| Birds | 74 | 60 | 142 | 25 | 109 | 20 | 3 |
| Amphibians | 23 | 4 | 31 | 0 | 5 | 2 | 0 |
| Insects | 19 | 2 | 10 | 0 | 2 | 2 | 1 |
| Crustaceans | 9 | 18 | 8 | 1 | 0 | 0 | 2 |
| Mollusks | 9 | 9 | 6 | 1 | 0 | 0 | 0 |
| Other invertebrates | 2 | 3 | 5 | 0 | 0 | 0 | 0 |
| Reptiles | 1 | 7 | 7 | 3 | 0 | 1 | 0 |
| Other vertebrates | 1 | 1 | 2 | 0 | 0 | 2 | 0 |
| Arachnids | 1 | 1 | 1 | 0 | 1 | 0 | 0 |

Sordello et al. 2020

Endless possibilities

To sort out the possibilities, you need to :

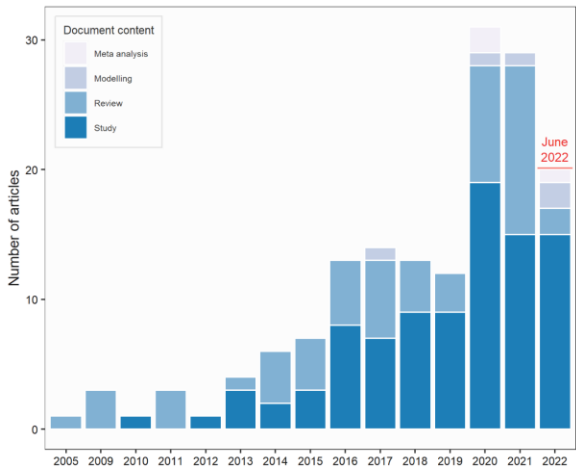
Choose the right data to represent

The data chosen must be the most relevant, and present both an overview of the corpus and the data that responds specifically to the question(s) on the map.

Choose the right visualisations

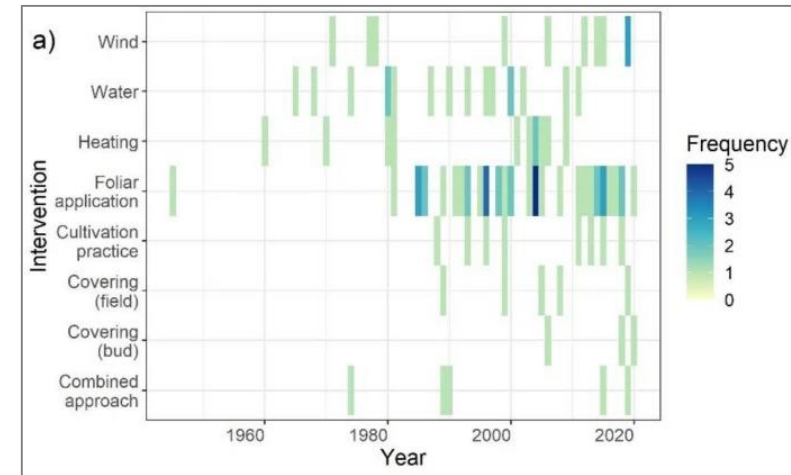
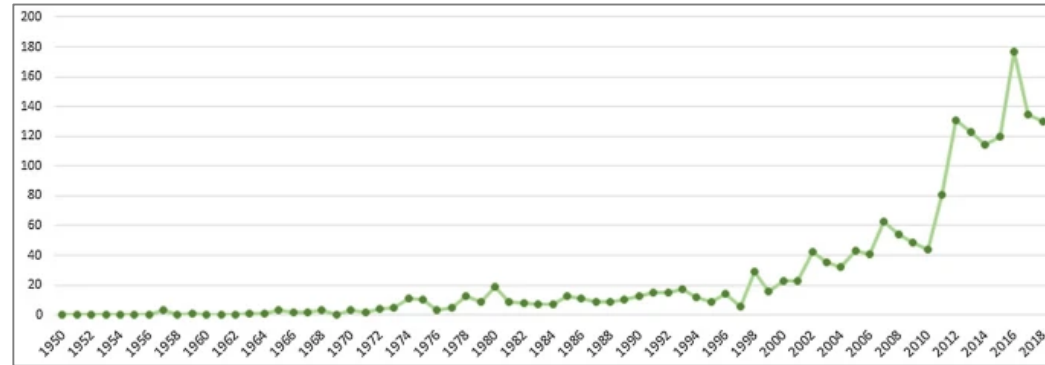
The visualisations chosen must be the most appropriate for representing the data selected

Chronological distribution of studies



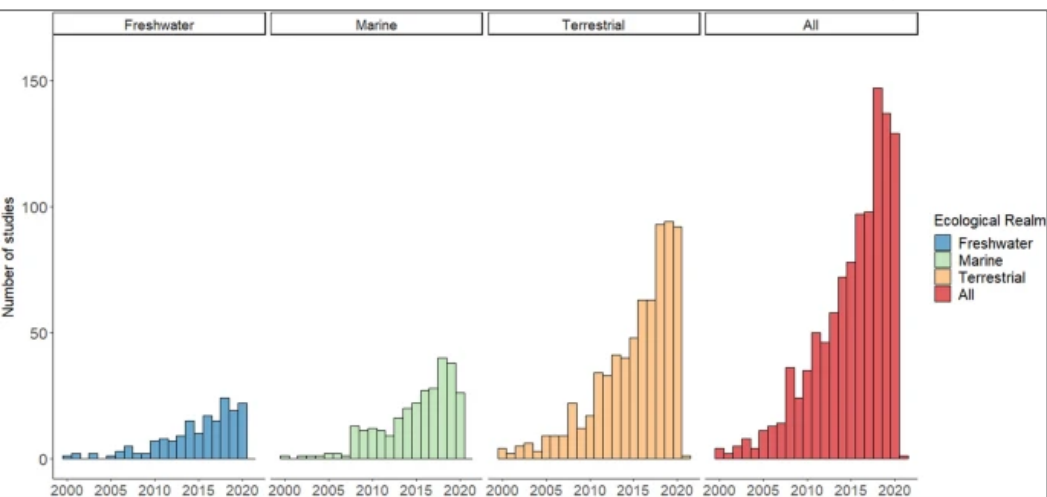
Lafitte et al. 2023

Sordello et al. 2020

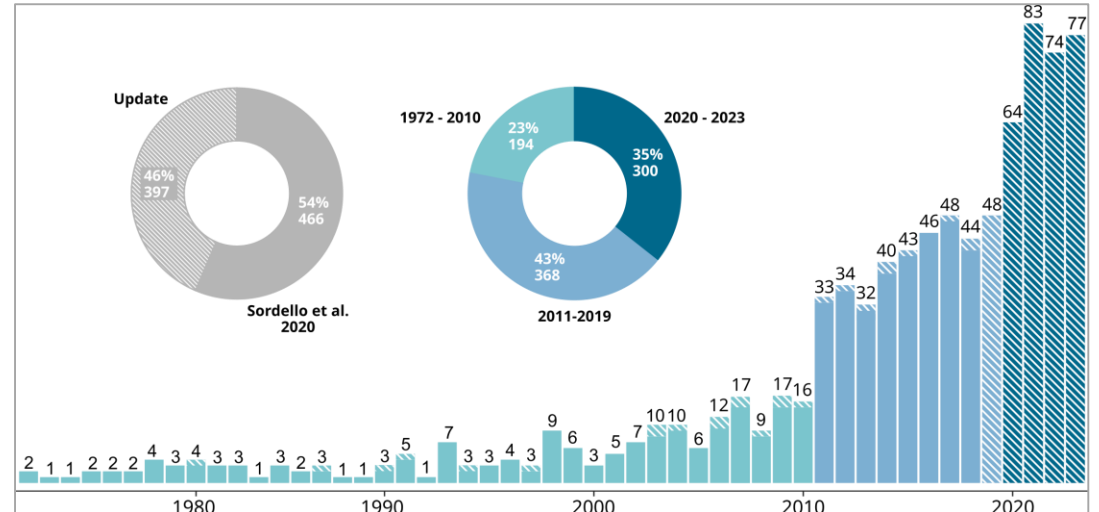


Drepper et al. 2020

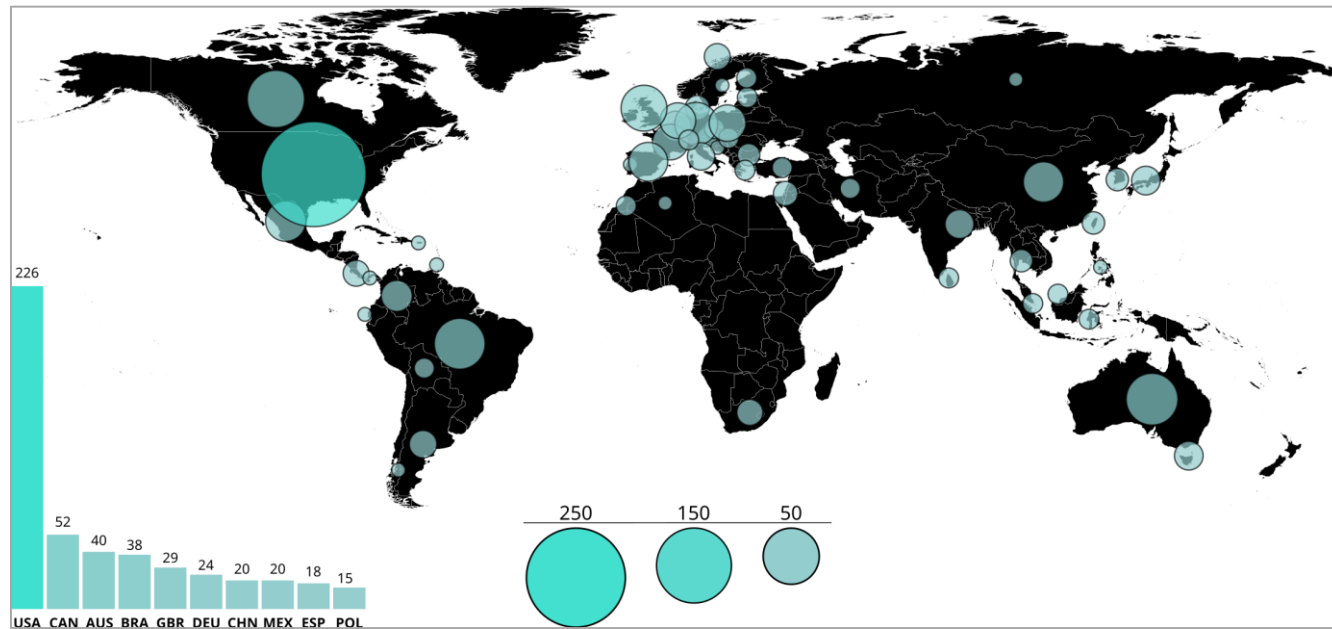
Ridley et al. 2022



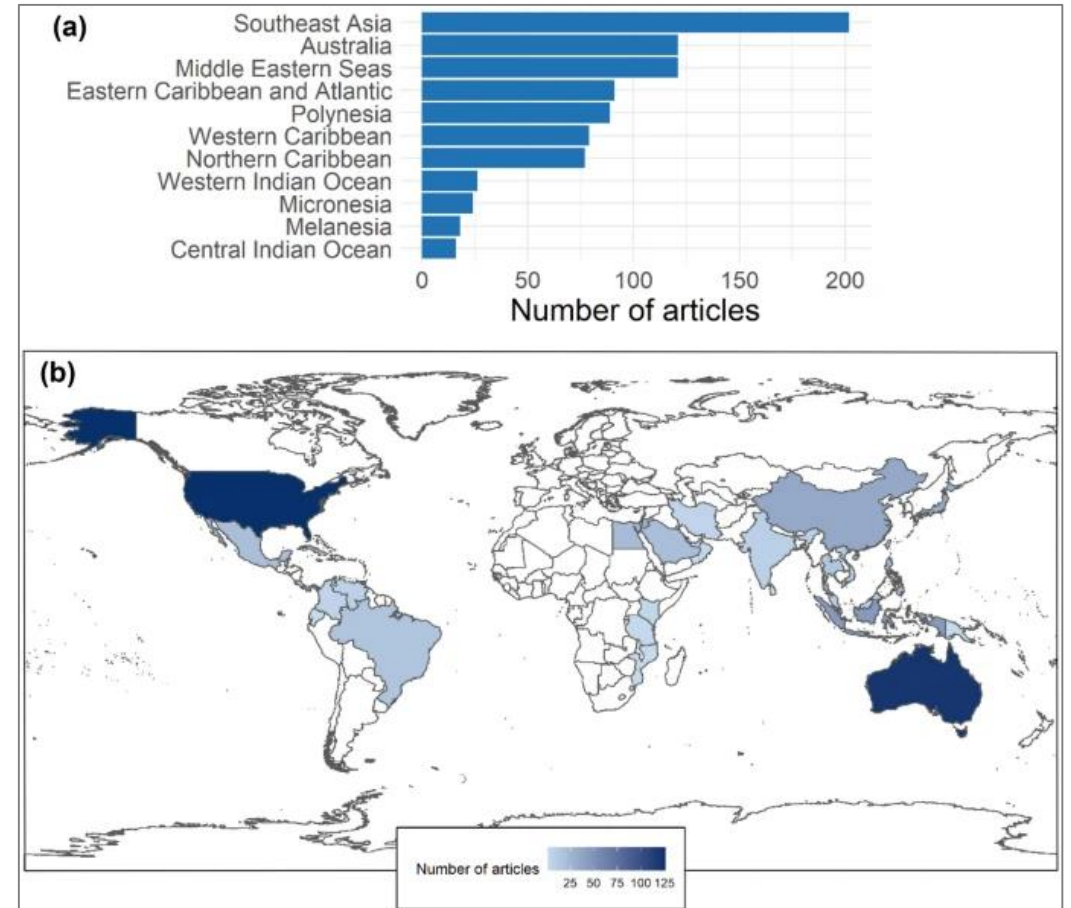
Terray et al. *in prep*



Spatial distribution of studies



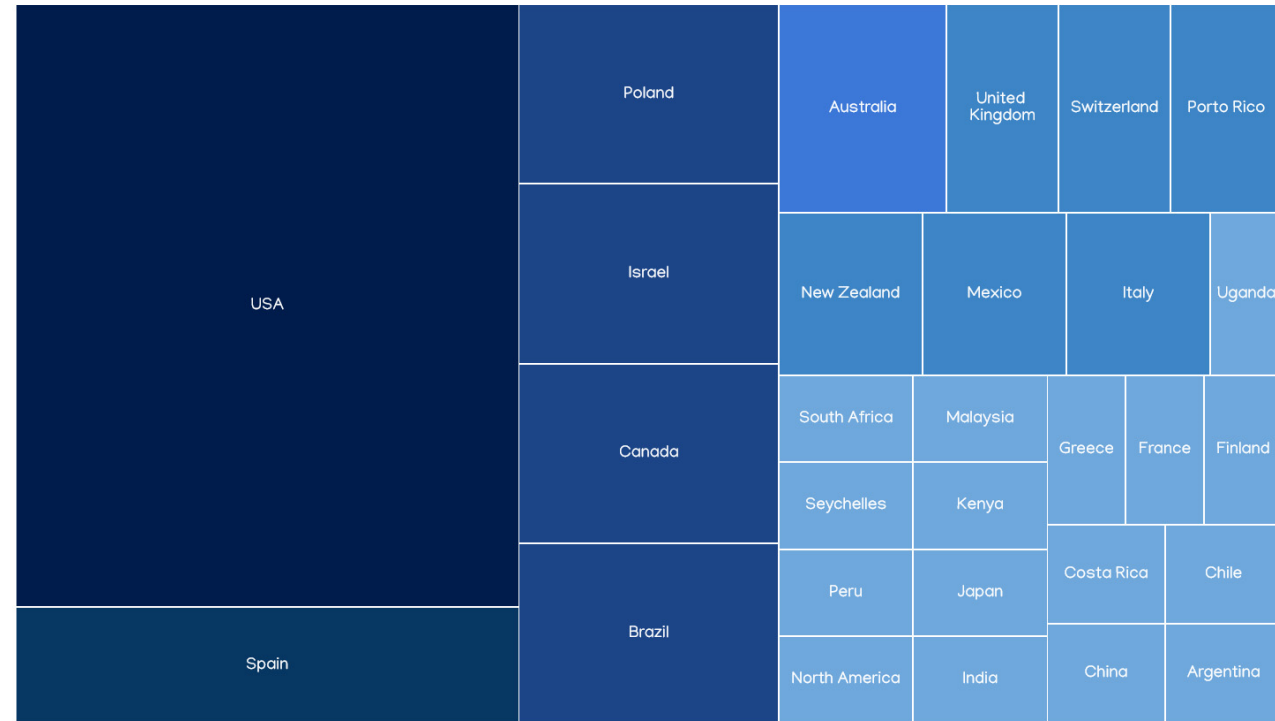
Terray et al. *in prep*



Ouédraogo et al. 2021

Spatial distribution of studies

TreeMap, online tool: <https://online.visual-paradigm.com/>

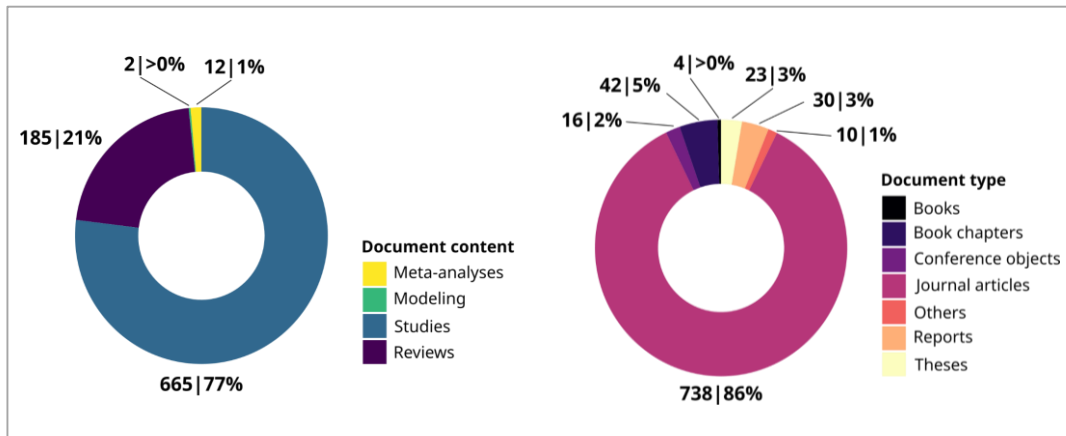


Sordello et al. 2023

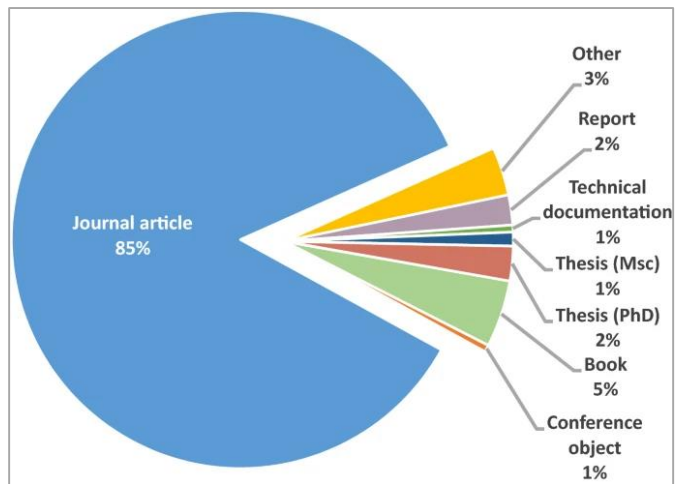


Sordello et al. 2020

Documents types and contents

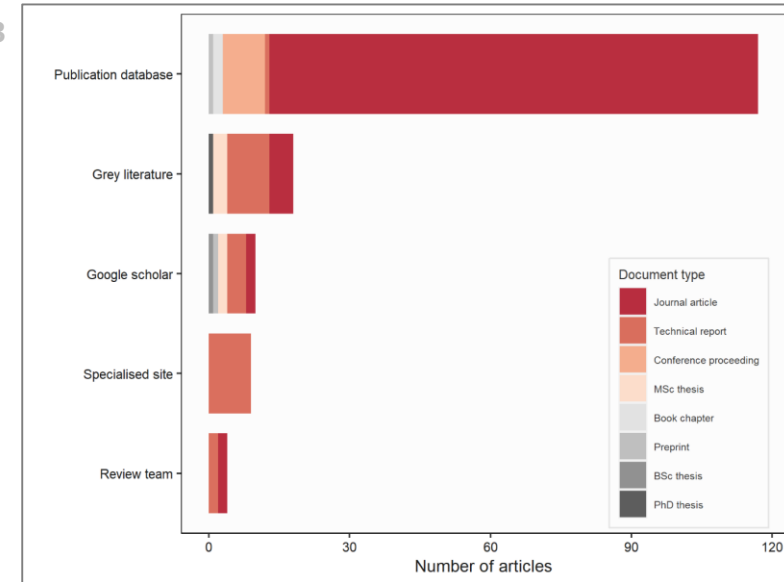


Terray et al. *in prep*

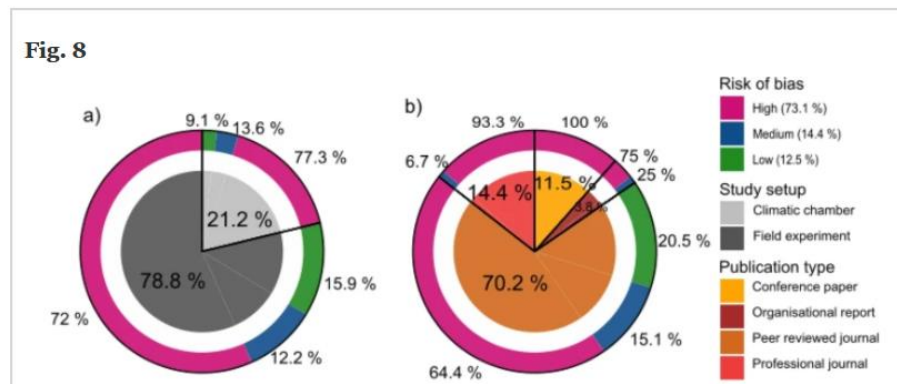


Langridge et al. 2021

Lafitte et al. 2023

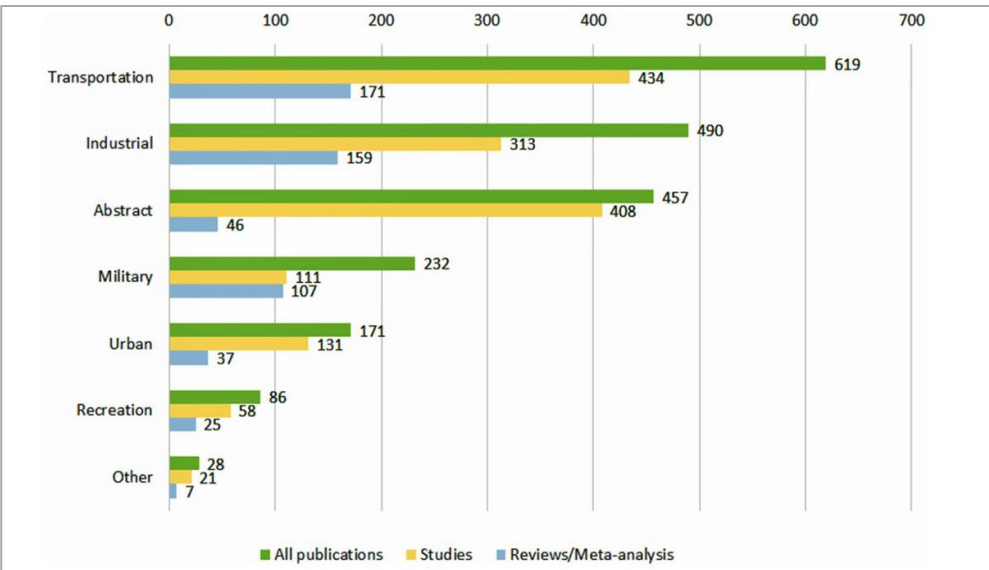


Drepper et al. 2022



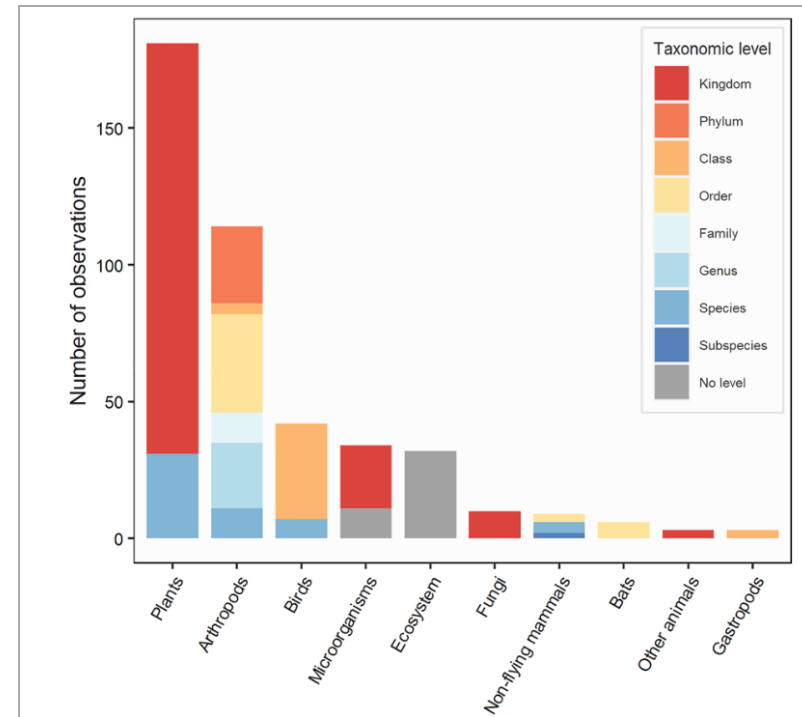
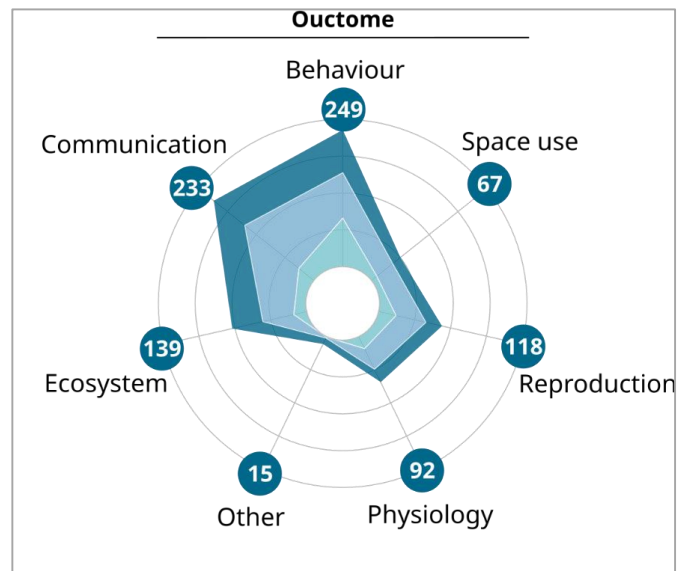
Share of articles judged as having a low, medium or high risk of bias by (a) type of study (controlled or field environments) and (b) type of publication

Population, exposition, outcomes



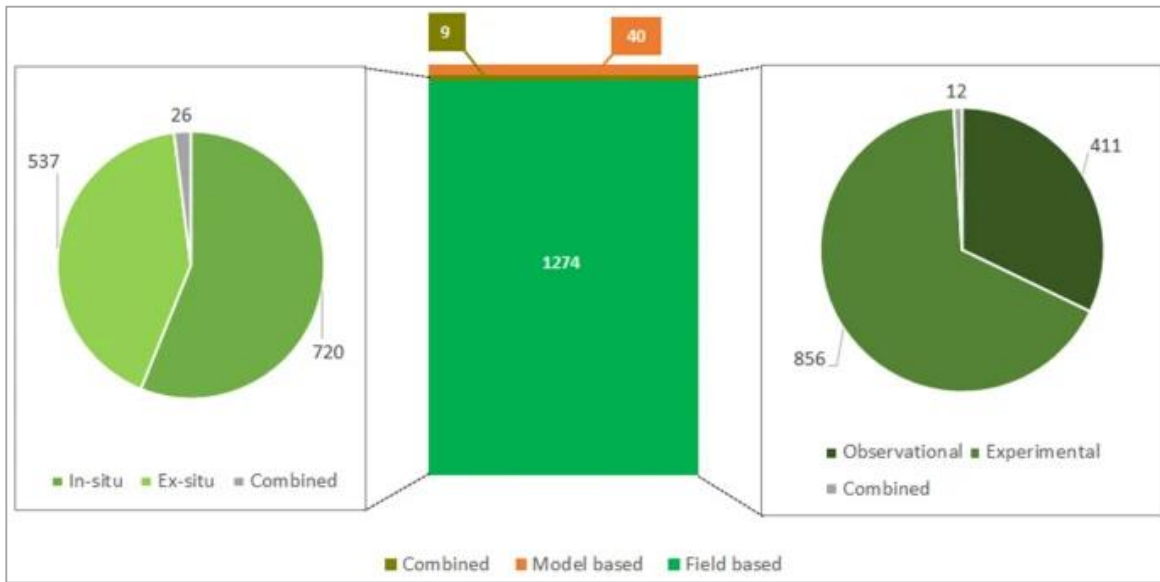
Sordello et al. 2020

Terray et al. *in prep*

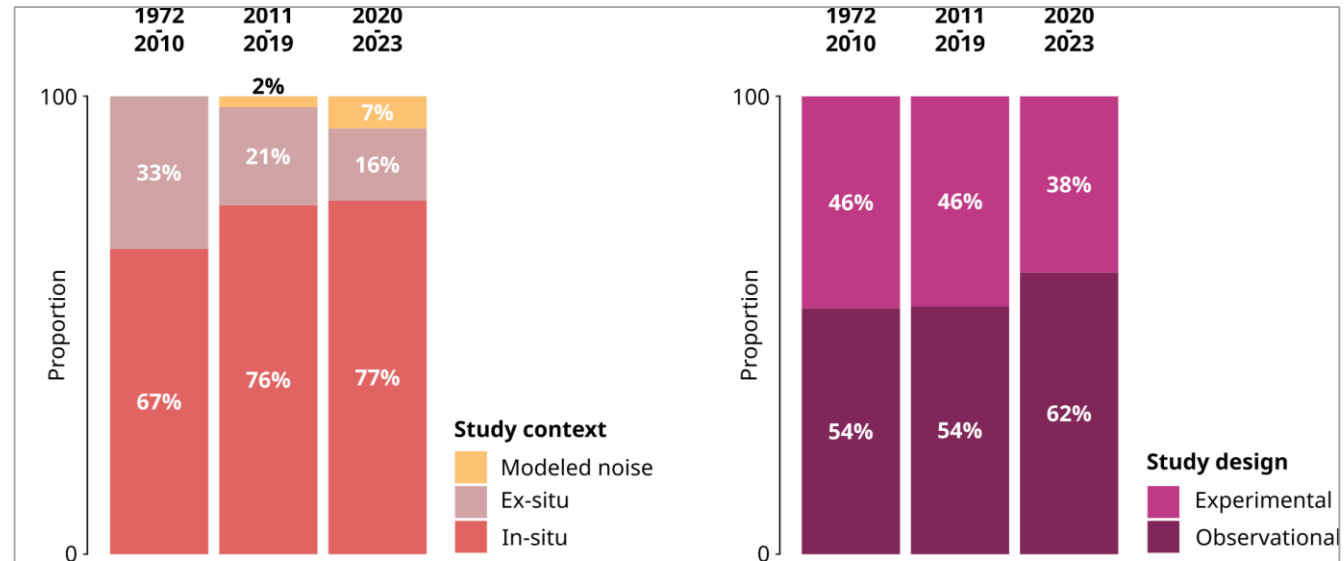


Lafitte et al. 2023

Context and methodology



Sordello et al. 2020



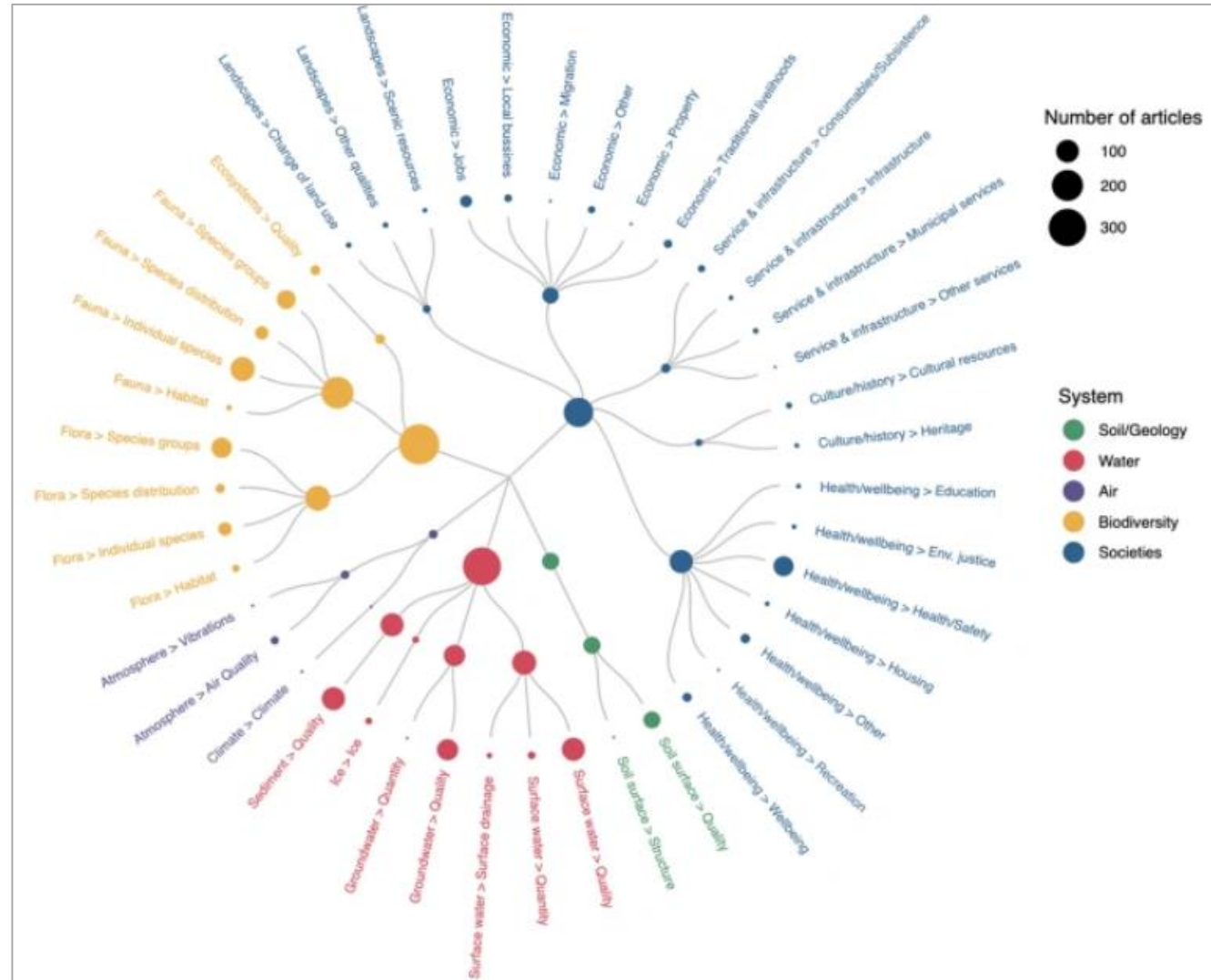
Context and methodology

From: [Evidence on the impacts of chemicals arising from human activity on tropical reef-building corals: a systematic map](#)

| Taxa | Total | | Experimental | | Observational | |
|-------------------------------|-------|--------|--------------|---------|---------------|---------|
| <i>Pocillopora damicornis</i> | 719 | (9.1%) | 546 | (14.2%) | 173 | (4.2%) |
| <i>Stylophora pistillata</i> | 603 | (7.6%) | 537 | (14%) | 66 | (1.6%) |
| Coral | 555 | (7%) | 33 | (0.9%) | 522 | (12.8%) |
| <i>Porites</i> | 255 | (3.2%) | 18 | (0.5%) | 237 | (5.8%) |
| Scleractinia | 218 | (2.7%) | 20 | (0.5%) | 198 | (4.8%) |
| <i>Acropora tenuis</i> | 207 | (2.6%) | 148 | (3.8%) | 59 | (1.4%) |
| <i>Acropora muricata</i> | 199 | (2.5%) | 154 | (4%) | 45 | (1.1%) |
| <i>Porites astreoides</i> | 197 | (2.5%) | 109 | (2.8%) | 88 | (2.2%) |
| <i>Porites lutea</i> | 190 | (2.4%) | 32 | (0.8%) | 158 | (3.9%) |
| <i>Acropora</i> | 184 | (2.3%) | 58 | (1.5%) | 126 | (3.1%) |
| <i>Orbicella annularis</i> | 169 | (2.1%) | 101 | (2.6%) | 68 | (1.7%) |
| <i>Acropora cervicornis</i> | 152 | (1.9%) | 146 | (3.8%) | 6 | (0.1%) |
| <i>Acropora millepora</i> | 149 | (1.9%) | 140 | (3.6%) | 9 | (0.2%) |
| <i>Siderastrea siderea</i> | 125 | (1.6%) | 64 | (1.7%) | 61 | (1.5%) |
| <i>Pocillopora verrucosa</i> | 122 | (1.5%) | 59 | (1.5%) | 63 | (1.5%) |
| <i>Porites porites</i> | 110 | (1.4%) | 89 | (2.3%) | 21 | (0.5%) |
| <i>Porites lobata</i> | 105 | (1.3%) | 34 | (0.9%) | 71 | (1.7%) |
| <i>Turbinaria reniformis</i> | 101 | (1.3%) | 100 | (2.6%) | 1 | (0%) |
| <i>Acropora valida</i> | 100 | (1.3%) | 34 | (0.9%) | 66 | (1.6%) |
| <i>Orbicella faveolata</i> | 99 | (1.2%) | 49 | (1.3%) | 50 | (1.2%) |

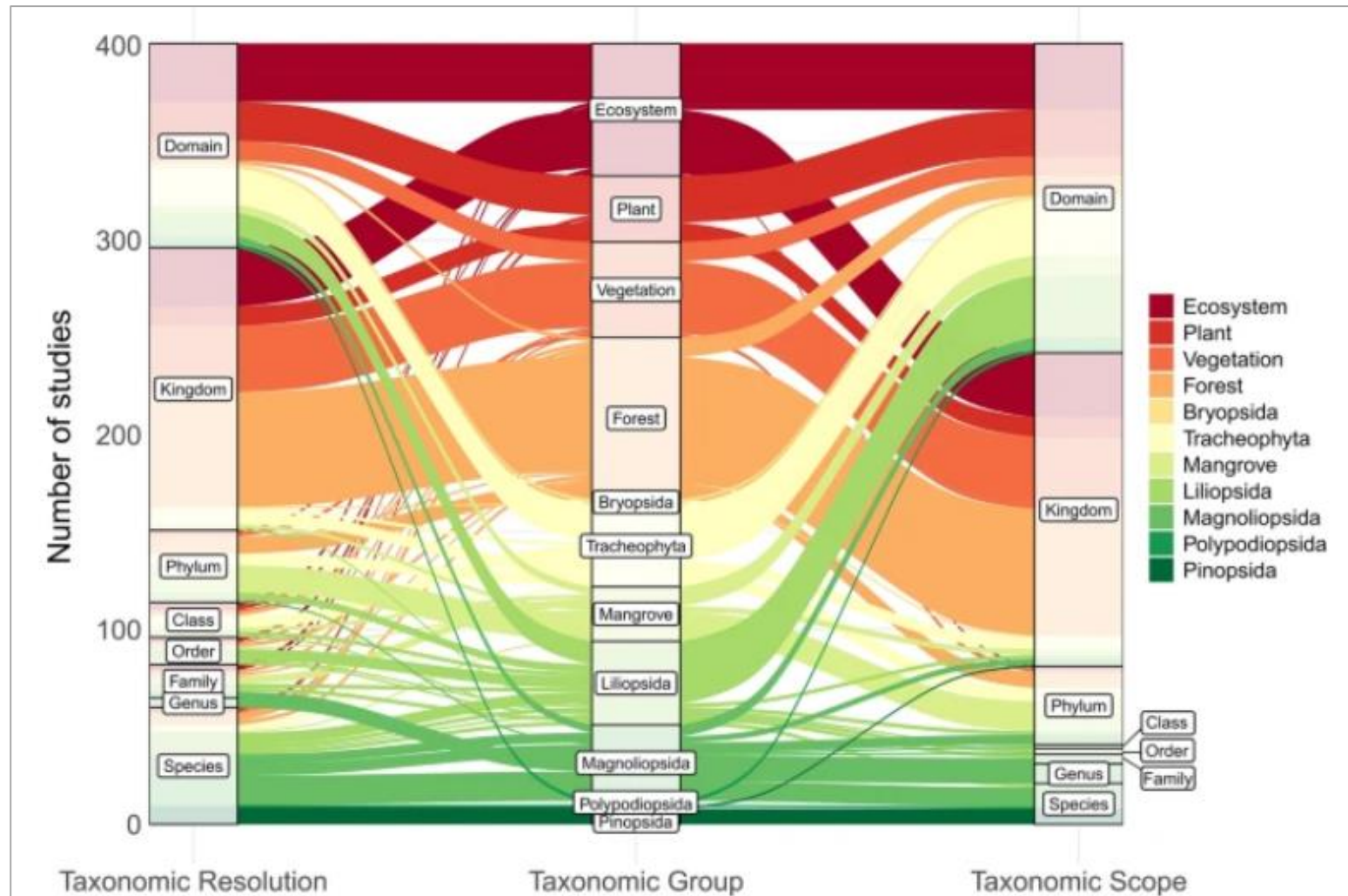
Complex representations

Dendrogram



Complex representations

Taxonomic tree



Knowledge gaps and clusters

The purpose of the map is to identify :

- **Knowledge gaps** to prioritise future primary studies (calls for projects, for example)
- **Knowledge clusters** for future systematic reviews

Knowledge gaps and clusters

- Different methods exist:
 - Based on the volumes of the P, E, O elements
 - Based on functional grouping (design types, etc.)
 - ...
- **Heatmap** are particularly relevant
- The process can - and should - extend to identifying clear issues that can be addressed in reviews

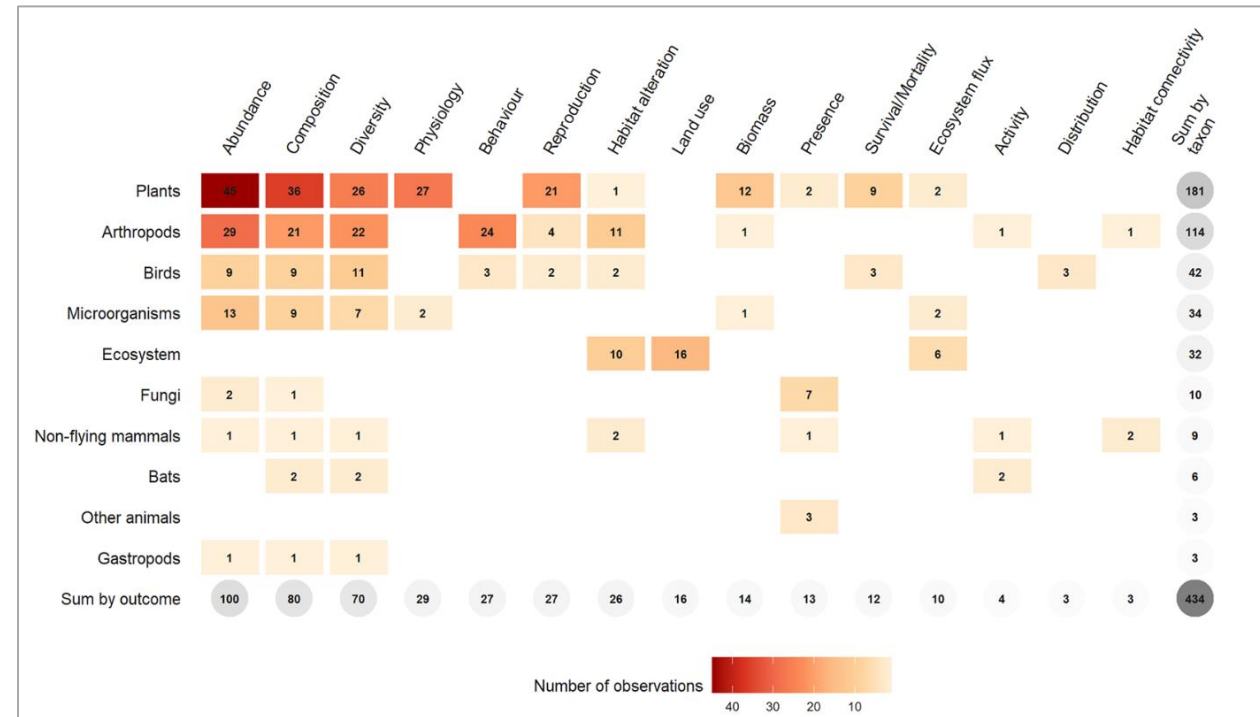
Knowledge gaps and clusters

Crossing of PEO elements

| Taxonomic kingdom X Programme motivation | Intervention type | | | | | | | Total |
|--|-------------------|--------------|---------------|----------------|-----------------|------------|------------|-------|
| | Intro+suppl | Introduction | Reintro+suppl | Reintroduction | Supplementation | Unknown | | |
| Animalia | 6 | 6 | 176 | 158 | 158 | 182 | 686 | |
| Conservation (improving status of focal species) | 6 | 4 | 158 | 123 | 110 | 88 | 489 | |
| Experimental or trial translocations | | 1 | 4 | 12 | 13 | 16 | 46 | |
| Human-wildlife conflict | | | | 5 | 11 | 17 | 33 | |
| Rewilding (restoring natural functions) | | | 3 | 3 | | 2 | 8 | |
| Unknown | | 1 | 9 | 11 | 9 | 33 | 63 | |
| Wildlife rescue operation | | | 2 | 4 | 15 | 26 | 47 | |
| Fungi | | | | 4 | 3 | | 7 | |
| Wildlife rescue operation | | | | 4 | 3 | | 7 | |
| Plantae | | 4 | 10 | 11 | 41 | 82 | 148 | |
| Conservation (improving status of focal species) | | 3 | 10 | 9 | 39 | 72 | 133 | |
| Experimental or trial translocations | | 1 | | 2 | 2 | 5 | 10 | |
| Unknown | | | | | | 1 | 1 | |
| Wildlife rescue operation | | | | | | 4 | 4 | |
| Total | 6 | 10 | 186 | 173 | 202 | 264 | 841 | |

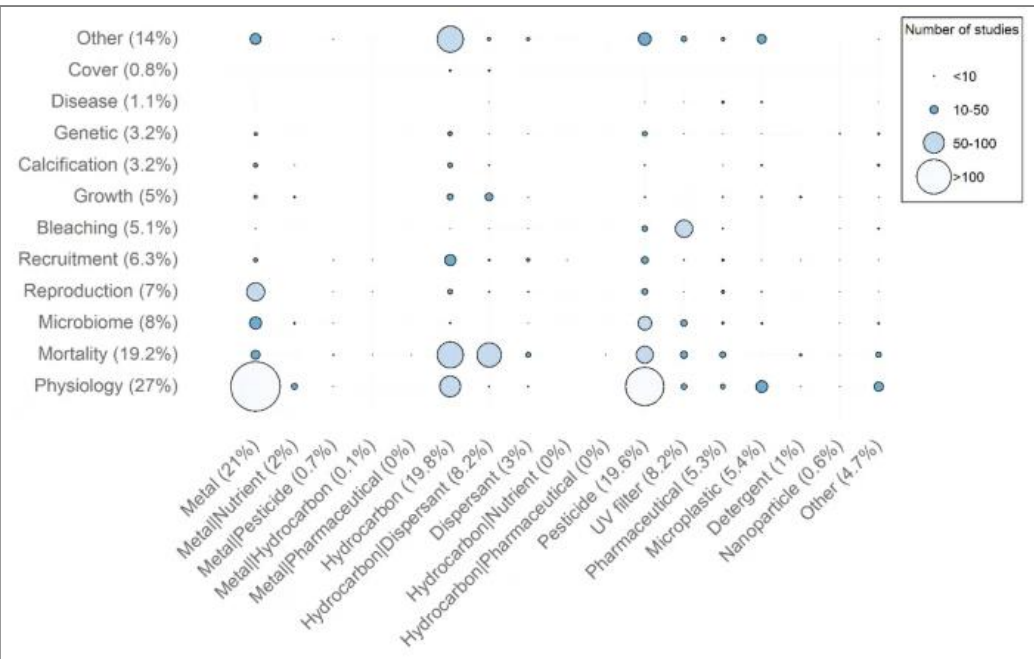
Langridge et al. 2021

Lafitte et al. 2023



Knowledge gaps and clusters

Crossing of PEO elements



Sordello et al. 2020

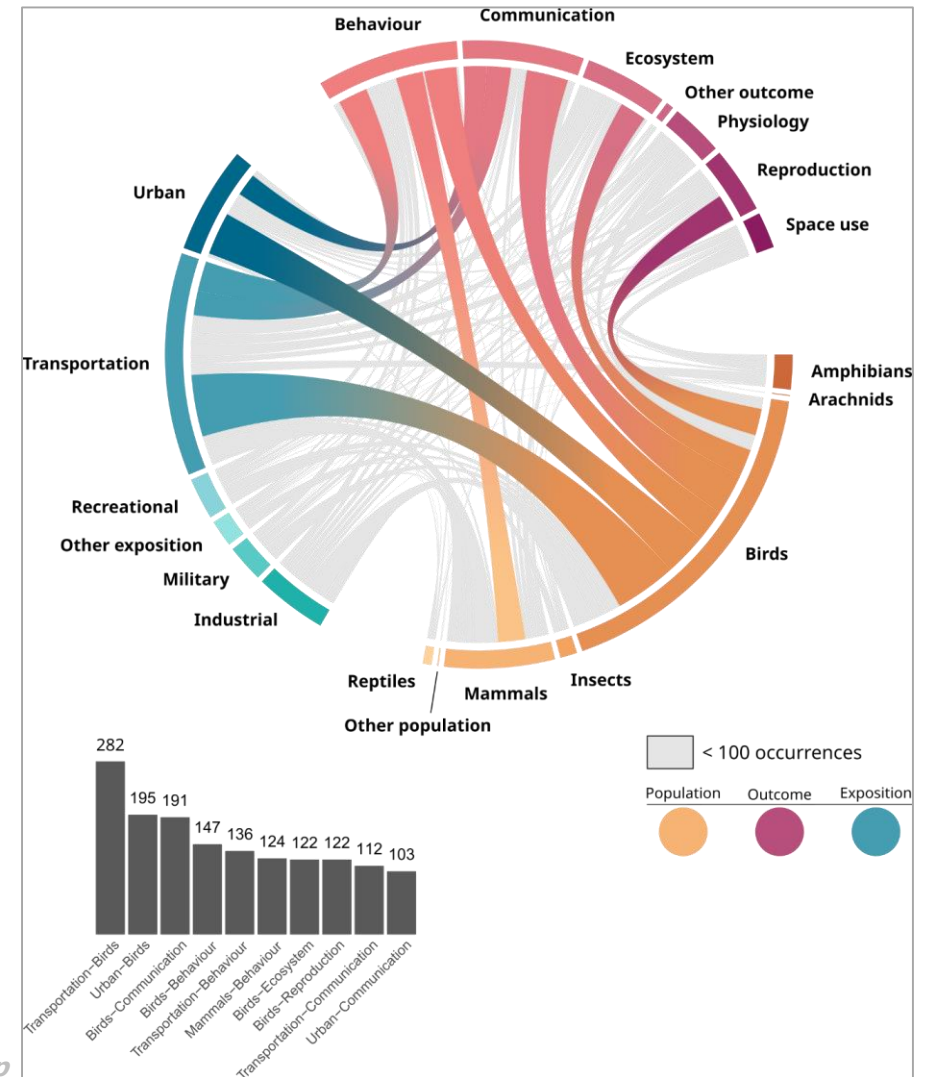
From: [Evidence of the impact of noise pollution on biodiversity: a systematic map](#)

| Cluster | Number of studies | Combinations | | |
|--|-------------------|--------------|---|---|
| | | P | E | O |
| Behavioural impacts of noise on mammals | 355 | x | | x |
| Impacts of transportation noise on behaviour | 216 | | x | x |
| Impacts of abstract noises on biophysiology | 208 | | x | x |
| Impacts of abstract noise on behaviour | 202 | | x | x |
| Impacts of industrial noises on behaviour | 187 | | x | x |
| Impacts of abstract noise on mammals | 181 | x | x | |
| Biophysiological impacts of noise on mammals | 181 | x | | x |
| Behavioural impacts of noise on fishes | 159 | x | | x |
| Biophysiological impacts of noise on fishes | 149 | x | | x |
| Impacts of industrial noise on mammals | 145 | x | x | |
| Impacts of transportation noise on mammals | 145 | x | x | |
| Impacts of transportation noise on birds | 142 | x | x | |

Knowledge gaps and clusters

Crossing of PEO elements

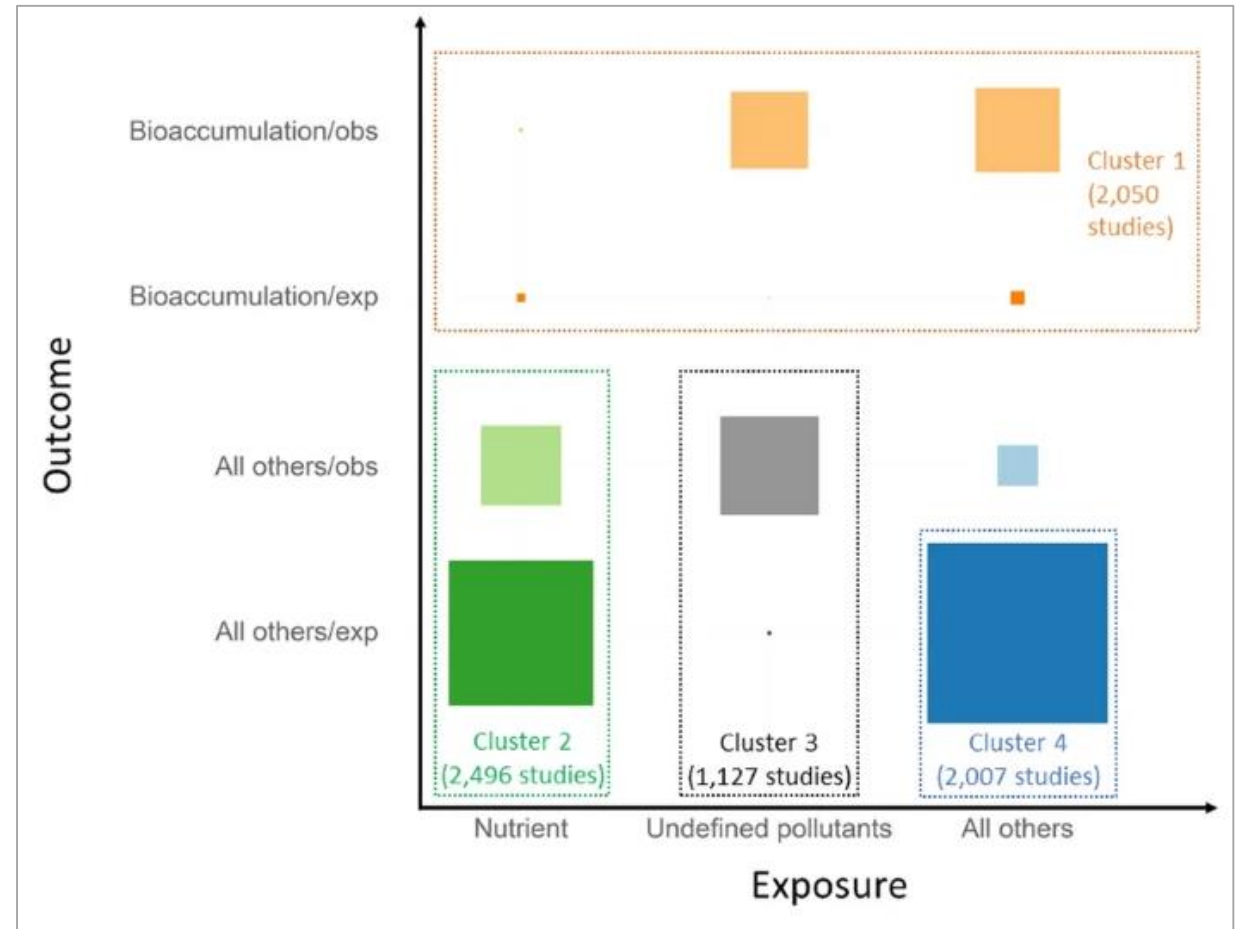
→ The 3 elements presented on a single figure



Knowledge gaps and clusters

Clusters on more than 2 criteria

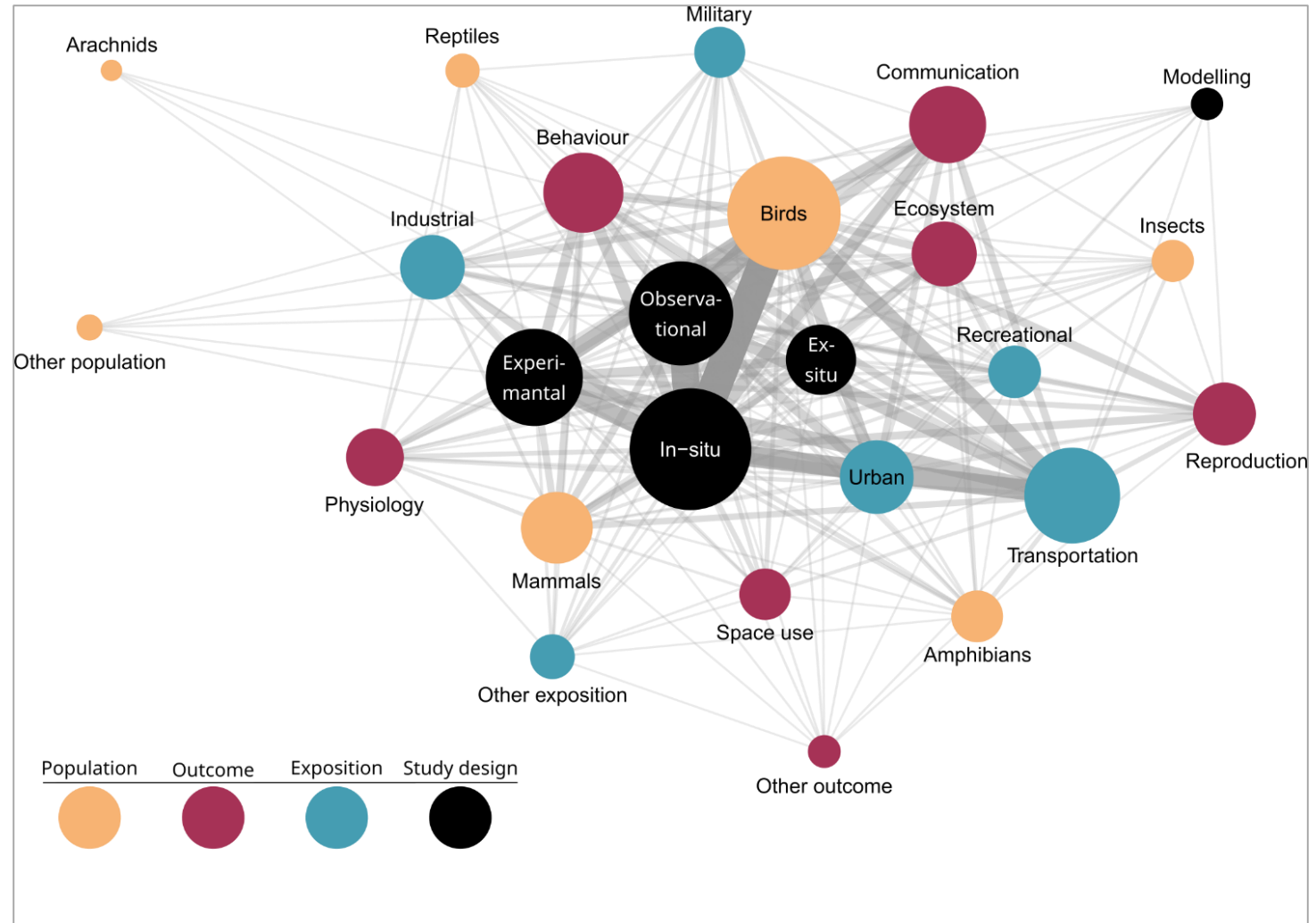
- Outcome
- Exposure
- Study design



Knowledge gaps and clusters

Clusters on more than 2 criteria

- Outcome
- Exposure
- Population
- Study design
- Study context



Compare existing syntheses to our map

From: [Existing evidence on the outcomes of wildlife translocations in protected areas: a systematic map](#)

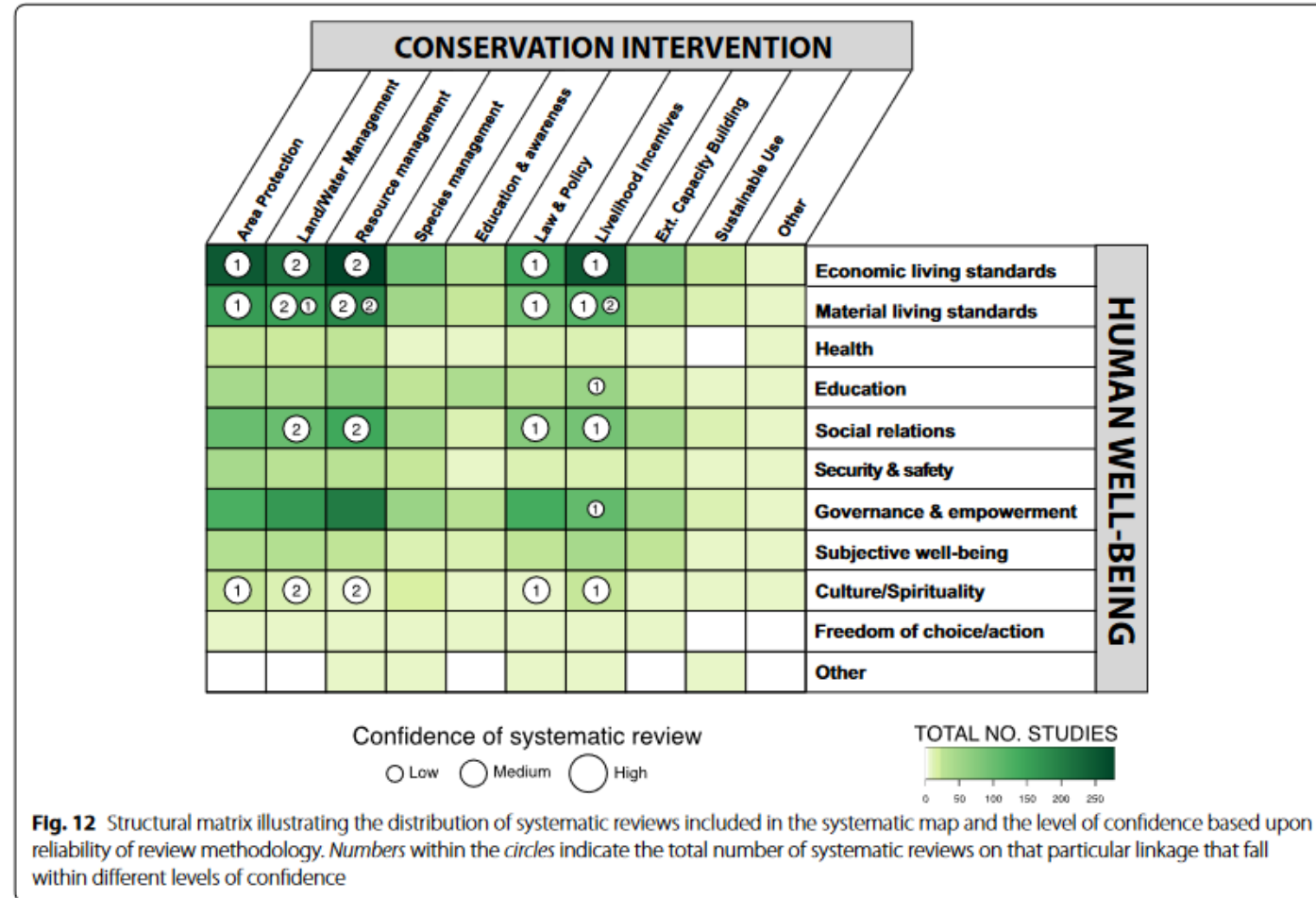
| Citation | Scope of review | Nature of synthesis | Search databases | No. of other literature sources | Publication data range of included articles | No. of included publications |
|--|---|-----------------------|---|---|---|------------------------------|
| <i>Our map (translocation synthesis)</i> | <i>P: all biodiversity worldwide I: reintroductions, introductions, Supplementations C: protected areas</i> | <i>Systematic map</i> | <i>2 databases: WOS, SCOPUS</i> | <i>12 (+2 grey literature calls)</i> | <i>1969 to 2020</i> | <i>498</i> |
| Fischer J, Lindenmayer DB. An assessment of the published results of animal relocations. <i>Biological Conservation</i> . 2000; 96: 1–11 | P: animals worldwide I: reintroductions, supplementations, introductions | Map-like | 0 databases | A search for articles across 12 major journals only | 1979 to 1998 | 124 |
| Hale SL, Koprowski JL. Ecosystem-level effects of keystone species reintroduction: a literature review. <i>Restoration Ecology</i> . 2018; 26: 439–45 | P: key-stone species I: reintroductions only | Map-like | 1 database: WOS | 0 | 1995 to 2016 | 69 |
| Tetzlaff SJ, Sperry JH, DeGregorio BA. Effects of antipredator training, environmental enrichment, and soft release on wildlife translocations: a review and meta-analysis. <i>Biol Cons</i> . 2019; 236: 324–31 | P: all biodiversity ^a I: translocations ^a C: antipredator training, soft release, or environmental Enrichment | Meta-analysis | 0 databases (Search in google scholar only) | 0 | 1981 to 2018 | 41 |
| Resende, P., Viana-Junior, A., Young, R., Azevedo, C., 2020. A global review of animal translocation programs. <i>Anim. Biodivers. Conserv.</i> 221–232. https://doi.org/10.32800/abc.2020.43.0221 | P: animals I: introduction, reintroduction, translocations ^a | Map-like | 2 databases: WOS, SCOPUS | 1 | 1986 to 2017 | 145 |

P population, *I* interventions, *C* context

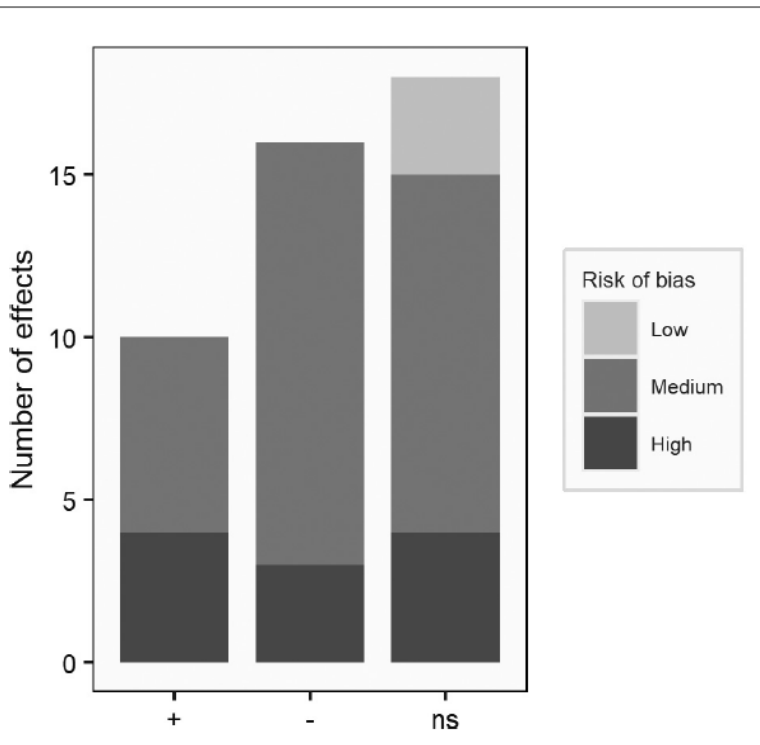
^aMethods unclear and exclusion criteria difficult to ascertain. The first line in italics corresponds to this map

Representing existing syntheses

Add those syntheses to our visualisations



Narrative synthesis



Lafitte et al. 2022

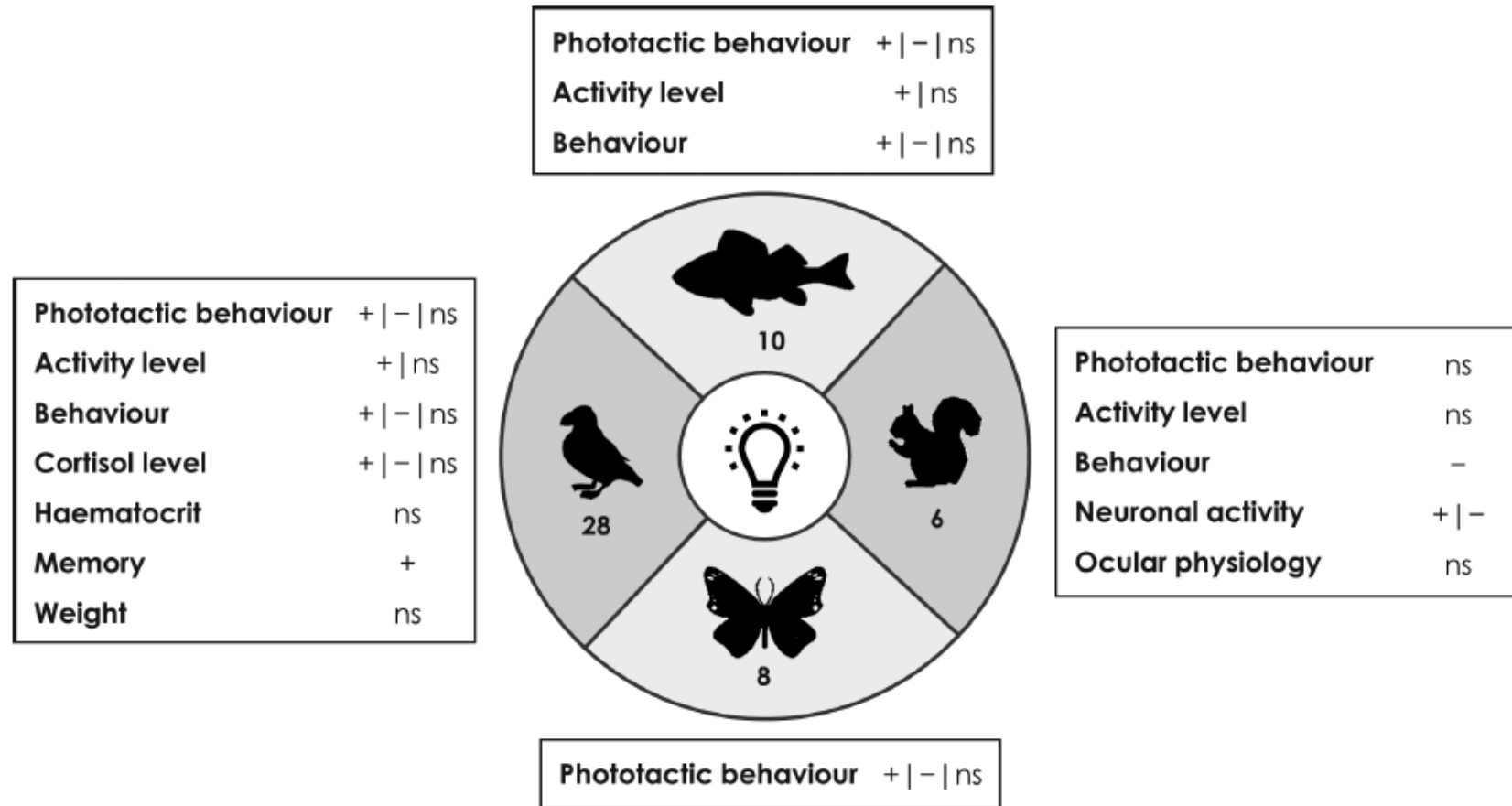
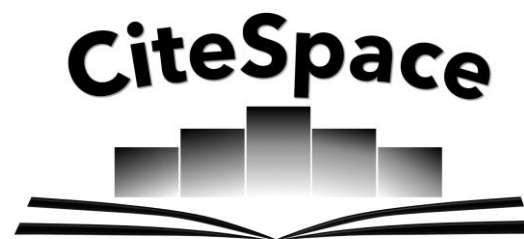
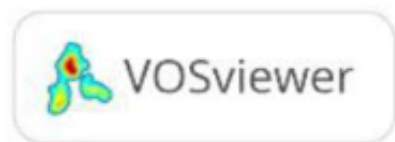


Figure 7. Summary of results for the four main studied taxonomic classes. '+' flashing light increases the outcome compared to continuous light, '-' flashing light decreases the outcome compared to continuous light, 'ns' no significant effect. For clarity, the two observations on plankton phototactic behaviour are not shown but were both found to be non-significant.

Tools





Excel: TreeMaps

Classeur2 - Excel

Rechercher

Fichier Accueil Insertion Mise en page Formules Données Révision Affichage Aide Acrobat

Tableau croisé dynamique Tableaux croisés recommandés Tableau

Images Icônes Modèles 3D

Formes SmartArt

Télécharger des compléments Mes compléments

Visio Data Visualizer Cartes Bing People Graph

Graphiques recommandés

Compartimentage

3D

Courbe Historique

entations Graphique

Compartimentage

Utilisez ce type de graphique pour :

- comparer des valeurs entre les niveaux d'une hiérarchie.
- montrer des proportions au sein des niveaux d'une hiérarchie sous la forme de rectangles.

Utilisez-le lorsque :

- les données sont organisées de façon hiérarchique et incluent peu de catégories.

| | A | B | C | D | E | F | G | H | I | J | K | |
|----|----------------|------------|---|---|---|---|---|---|---|---|---|--|
| 1 | country | nb studies | | | | | | | | | | |
| 2 | USA | 26 | | | | | | | | | | |
| 3 | Argentina | 1 | | | | | | | | | | |
| 4 | Australia | 3 | | | | | | | | | | |
| 5 | Brazil | 4 | | | | | | | | | | |
| 6 | Canada | 4 | | | | | | | | | | |
| 7 | Chile | 1 | | | | | | | | | | |
| 8 | China | 1 | | | | | | | | | | |
| 9 | Costa Rica | 1 | | | | | | | | | | |
| 10 | Finland | 1 | | | | | | | | | | |
| 11 | France | 1 | | | | | | | | | | |
| 12 | Greece | 1 | | | | | | | | | | |
| 13 | Israel | 4 | | | | | | | | | | |
| 14 | Italy | 2 | | | | | | | | | | |
| 15 | India | 1 | | | | | | | | | | |
| 16 | Japan | 1 | | | | | | | | | | |
| 17 | Kenya | 1 | | | | | | | | | | |
| 18 | Malaysia | 1 | | | | | | | | | | |
| 19 | Mexico | 2 | | | | | | | | | | |
| 20 | New Zealand | 2 | | | | | | | | | | |
| 21 | North America | 1 | | | | | | | | | | |
| 22 | Peru | 1 | | | | | | | | | | |
| 23 | Poland | 4 | | | | | | | | | | |
| 24 | Porto Rico | 2 | | | | | | | | | | |
| 25 | Seychelles | 1 | | | | | | | | | | |
| 26 | South Africa | 1 | | | | | | | | | | |
| 27 | Spain | 5 | | | | | | | | | | |
| 28 | Switzerland | 2 | | | | | | | | | | |
| 29 | Uganda | 1 | | | | | | | | | | |
| 30 | United Kingdom | 2 | | | | | | | | | | |
| 31 | Unknown | 2 | | | | | | | | | | |
| 32 | | | | | | | | | | | | |

Titre du graphique

- USA
- Canada
- Finland
- Italy
- Malaysia
- Argentina
- Chile
- France
- India
- Mexico
- Australia
- China
- Greece
- Japan
- New Zealand
- Brazil
- Costa Rica
- Israel
- Kenya
- North America



Excel: Tableau croisés dynamiques

| biblio_id | biblio_authors | biblio_contai | biblio_title |
|---------------------------|--|--|--------------------------|
| 1098-2361 | Carlstead, K., Fraser, J., Bennett, C., a | ZOO BIOLOGY | Black rhinoceros (Dic |
| 83 | Friedlaender, AS, Hazen, EL, Goldob | ECOLOGICAL AP | Prey-mediated behav |
| 189 | Cubero-Pardo, P., Herron, P., and Gon | AQUATIC CONS | Shark reactions to sc |
| 190 | Jung, CA, and Swearer, SE | AQUATIC CONS | Reactions of temper |
| 355 | La Manna, G., Manghi, M., Pavan, G., | AQUATIC CONS | Behavioural strategy |
| 668 | Osterrieder, SK., Kent, CS., and Robin | AQUATIC CONS | Responses of Austr |
| 10.1002/aqc.2693 | Jain-Schlaepfer, SMR., Biouin-Demer | AQUATIC CONS | Do boating and bask |
| 10.1002/aqc.2915 | Maxwell, RJ., Zoldero, AJ., de Bruijn | AQUATIC CONS | Does motor noise fro |
| 10.1002/aqc.941 | Graham, AL., and Cooke, SJ | AQUATIC CONS | The effects of noise |
| 10.1002/eap.1437 | Kleist, NJ., Guralnick, RP., Cruz, A., and | ECOLOGICAL AP | Sound settlement: no |
| 10.1002/ecs3.2357 | Dominoni, DM., Greif, S., Nemeth, E. | ECOLOGICAL AP | Airport noise predic |
| 10.1002/ecs3.2608 | Long, AM., Colon, MR., Bosman, JL, R | ECOLOGICAL AP | A before-after contro |
| 10.1002/ecs3.2622 | Nelson, DV., Klinck, H., Carbaugh-Rut | ECOLOGICAL AP | Calling at the highw |
| 10.1002/ecs3.2698 | Bunkley, JP., McClure, CJW., Kawahara | ECOLOGICAL AP | Anthropogenic noise |
| 10.1002/ecs3.3037 | Derryberry, EP., Gentry, K., Derryberry, | ECOLOGICAL AP | White-crowned sparr |
| 10.1002/ecs3.4002 | Mensinger, AF., Putland, RL., and Rad | ECOLOGICAL AP | The effect of motorbo |
| 10.1002/ecs2.1259 | Kleist, NJ., Guralnick, RP., Cruz, A., and | ECOSPHERE | Anthropogenic noise |
| 10.1002/ecs2.1793 | Graham, IM., Pirotta, E., Merchant, N | ECOSPHERE | Responses c |
| 10.1002/ecs2.1916 | Gentry, KE., Derryberry, EP., Danner, R | ECOSPHERE | Immediate s |
| 10.1002/ecs2.2044 | Isojunno, S., Sadykova, D., DeRuiter, | ECOSPHERE | Individual, e |
| 10.1002/ecs2.2127 | Rosa, F., and Koper, N | ECOSPHERE | Integrating multiple |
| 10.1002/ecs2.2440 | Phillips, JN., Gentry, KE., Luther, DA, | ECOSPHERE | Surviving in the city: h |
| 10.1002/ecy.1770/suppl | McMahon, TA., Rohr, JR., and Bernal, | ECOLOGICAL AP | Light and noise pollu |
| 10.1002/jez.1965 | Potvin, DA., and Macdougall-Shackel | JOURNAL OF EX | Traffic noise affects e |
| 10.1002/jwmg.467 | Bennett, VJ., and Zurcher, AA | JOURNAL OF W | When corridors collid |
| 10.1002/jwmg.925 | Hillman, MD., Karpanty, SM., Fraser, | JOURNAL OF W | Effects of Aircraft an |
| 10.1002/wmon.3 | DeLaney, DK., Pater, LL., Carlille, LD., S | WILDLIFE MON | Response of Red-Coc |
| 10.1002/wsb.6 | Lackey, MA., Morrison, ML., Loman, Z | WILDLIFE SOCI | Effects of Road Const |
| 10.1002/wsb.777 | Long, AM., Colon, MR., Bosman, JL, M | WILDLIFE SOCI | Effects of Road Const |
| 10.1002/zoo.10124 | Owen, MA., Swaisgood, RR., Czekala, | ZOO BIOLOGY | Monitoring stress in |
| 10.1002/zoo.20098 | Powell, DM., Carlstead, K., Tarou, LR, | ZOO BIOLOGY | Effects of constructio |
| 10.1002/zoo.20412 | Gorecki, MT., Juszkiewicz, A., Graclik, | ZOO BIOLOGY | Exposure to Humans |
| 10.1002/zoo.21355 | Serres, A., and Delfour, F | ZOO BIOLOGY | Environmental chang |
| 10.1002/zoo.21357 | Woolvay, EE., and Goodenough, AE | ZOO BIOLOGY | Effects of visitor num |
| 10.1006/anbe.1998.0879 | Langemann, U., Gauger, B., and Klum | ANIMAL BEHAV | Auditory sensitivity ir |
| 10.1006/anbe.2001.1968 | Brumm, H., and Todt, D | ANIMAL BEHAV | noise-dependent sor |
| 10.1006/anbe.2003.2093 | Lohr, B., Wright, TF., and Dooling, RJ | ANIMAL BEHAV | Detection and discr |
| 10.1006/jmsc.2000.1025 | Ross, BP., Lien, J., and Furness, RW | ICES JOURNAL | Use of underwater pl |
| 10.1006/jmsc.2001.1136 | Morton, AB., and Symonds, HK | ICES JOURNAL | Displacement of Orci |
| 10.1006/jsvi.2001.3899 | Niu, X., and Canon, B | JOURNAL OF SC | Protecting against no |
| 10.1007/978-1-4419-7311-1 | Advances in es | Slabbekoon, H. | The Complexity of no |
| 10.1007/978-1-4419-7311-1 | Advances in es | Hanna, BW., Cott, PA., Joynt, AA., and | Managing Anthropol |
| 10.1007/978-1-4419-7311-1 | Advances in es | Erbe, C. | Effects of Underwate |
| 10.1007/978-1-4419-7311-1 | Advances in es | Ketten, D.R. | Marine Mammal Aud |
| 10.1007/978-1-4419-7311-1 | EFFECTS OF no | Spiga, I., Fox, J., and Benson, R | Effects of Short-and L |
| 10.1007/978-1-4419-7311-1 | EFFECTS OF no | Spiga, I., Fox, J., and Benson, R | Potential Effects of L |
| 10.1007/978-1-4419-7311-1 | Advances in es | Parks, SE., Johnson, MP., nowacek, DR | Changes in Vocal Bef |
| 10.1007/978-1-4419-7311-1 | Advances in es | De Robertis, A., Wilson, CD., and Wil | Do Silent Ships See N |

Champs de tableau croisé dy...

Choisissez les champs à inclure dans le rapport :

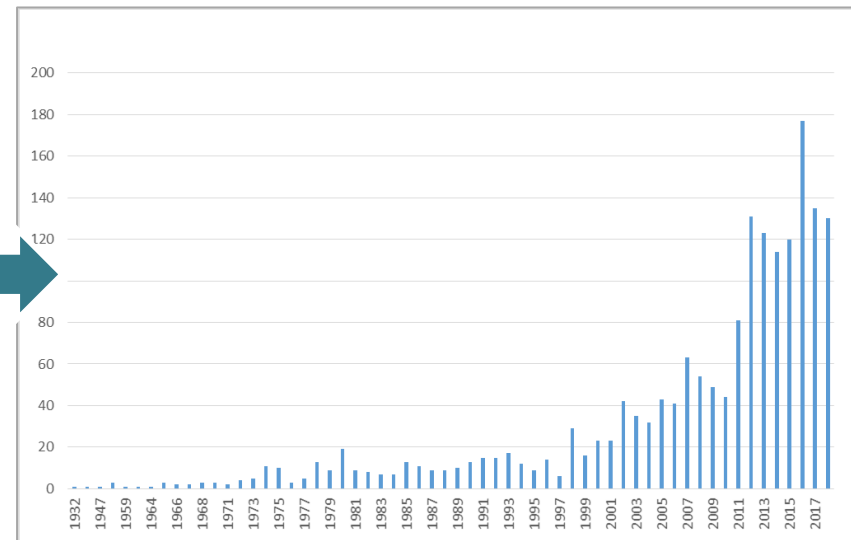
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- biblio_authors
- biblio_container
- biblio_title
- biblio_abstract
- biblio_year
- biblio_language
- biblio_dctype
- biblio_content
- population_prokaryotes
- population_invertebrates

Faites glisser les champs dans les zones voulues ci-dessous:

FILTRES: biblio_year

COLONNES: Nombre de map_id

Différer la mise à jour de la disposit... METTRE À JOUR





Excel: Heatmaps

additional.file10 avec TCD.xlsx - Excel

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Mise en forme conditionnelle Mettre sous forme de tableau Normal Neutre Satisfaisant Insatisfaisant Satisfaisant

B4 : $=NB.SI.ENS(Database!$K:$K;"study";Database!$S:$S;"yes";Database!AF:AF;"yes")$

| | A | B | C | D | E | F | G | K | L | M | N |
|----|--|-----------------|-------------------|-----------------------|-----------------|--------------|-------------------|---|---|---|---|
| 1 | Number of studies crossing taxonomic groups and sources of noise | | | | | | | | | | |
| 2 | | | | | | | | | | | |
| 3 | | <i>Abstract</i> | <i>Industrial</i> | <i>Transportation</i> | <i>Military</i> | <i>Urban</i> | <i>Recreation</i> | | | | |
| 4 | Mammals | 178 | 143 | 142 | 72 | 12 | 27 | | | | |
| 5 | Fishes | 85 | 101 | 96 | 13 | 2 | 11 | | | | |
| 6 | Birds | 74 | 59 | 136 | 22 | 109 | 19 | | | | |
| 7 | Amphibians | 23 | 4 | 31 | 0 | 5 | 2 | | | | |
| 8 | Insects | 18 | 2 | 10 | 0 | 2 | 2 | | | | |
| 9 | Crustaceans | 9 | 18 | 8 | 1 | 0 | 0 | | | | |
| 10 | Shellfishes | 9 | 9 | 6 | 1 | 0 | 0 | | | | |
| 11 | Other invertebrates | 2 | 3 | 5 | 0 | 0 | 0 | | | | |
| 12 | Reptiles | 1 | 7 | 7 | 3 | 0 | 1 | 0 | | | |
| 13 | Other vertebrates | 1 | 1 | 2 | 0 | 0 | 2 | 0 | | | |
| 14 | Arachnids | 1 | 1 | 1 | 0 | 1 | 0 | 0 | | | |
| 15 | | | | | | | | | | | |
| 16 | | | | | | | | | | | |
| 17 | | | | | | | | | | | |
| 18 | | | | | | | | | | | |
| 19 | | | | | | | | | | | |

Règles de mise en surbrillance des cellules

Règles des valeurs plus/moins élevées

Barres de données

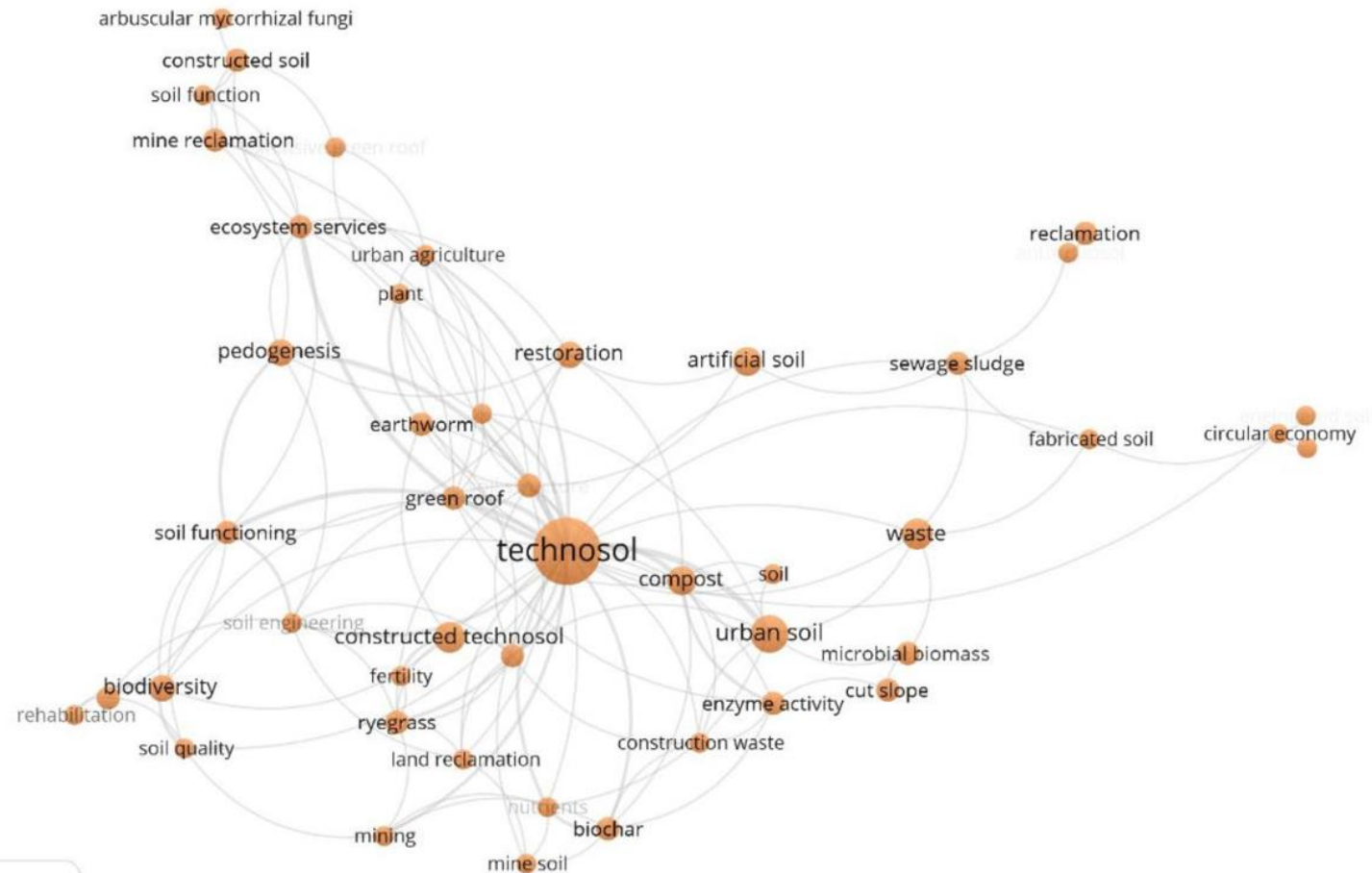
Nuances de couleurs

Échelle de couleur Vert - Jaune - Rouge

Afficher un dégradé de couleur dans une plage de cellules. La couleur indique l'emplacement de chaque valeur de cellule dans cette plage.

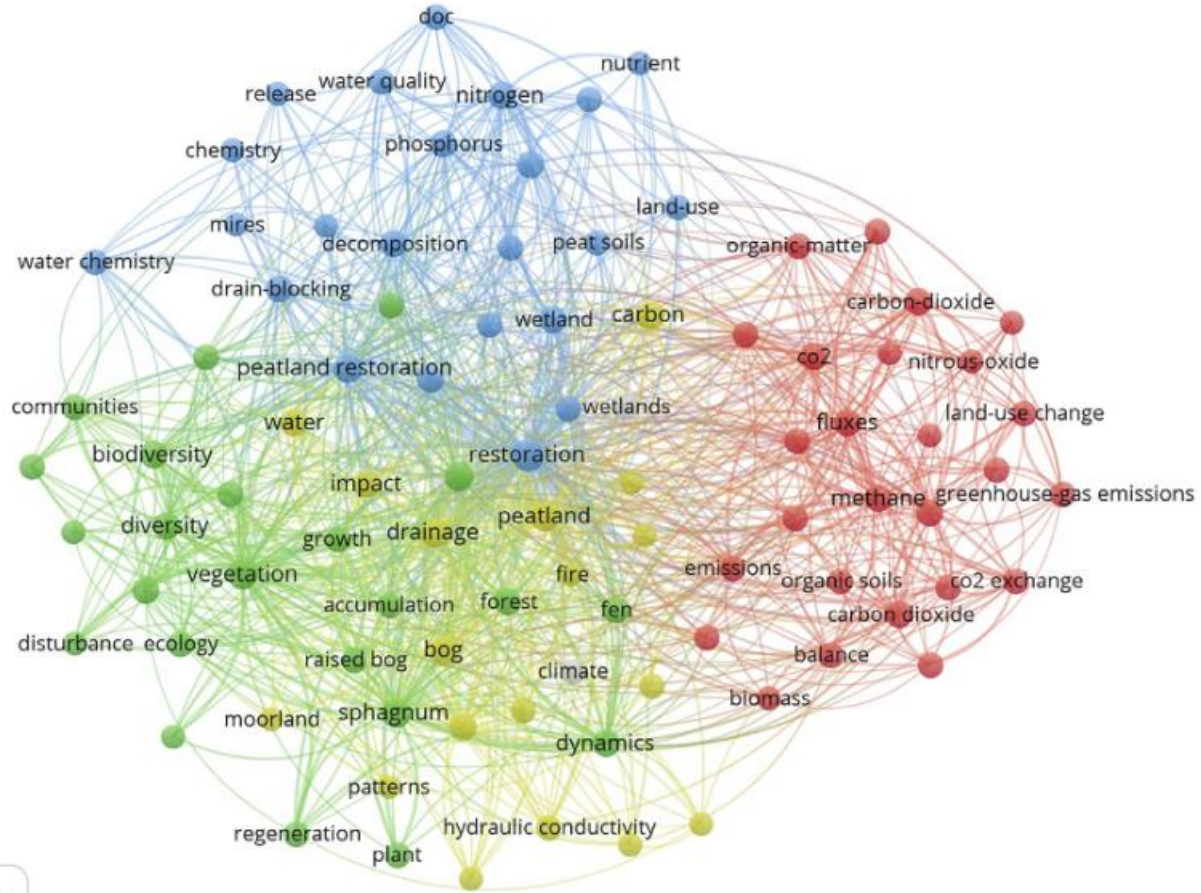
VOSviewer

Network of keywords



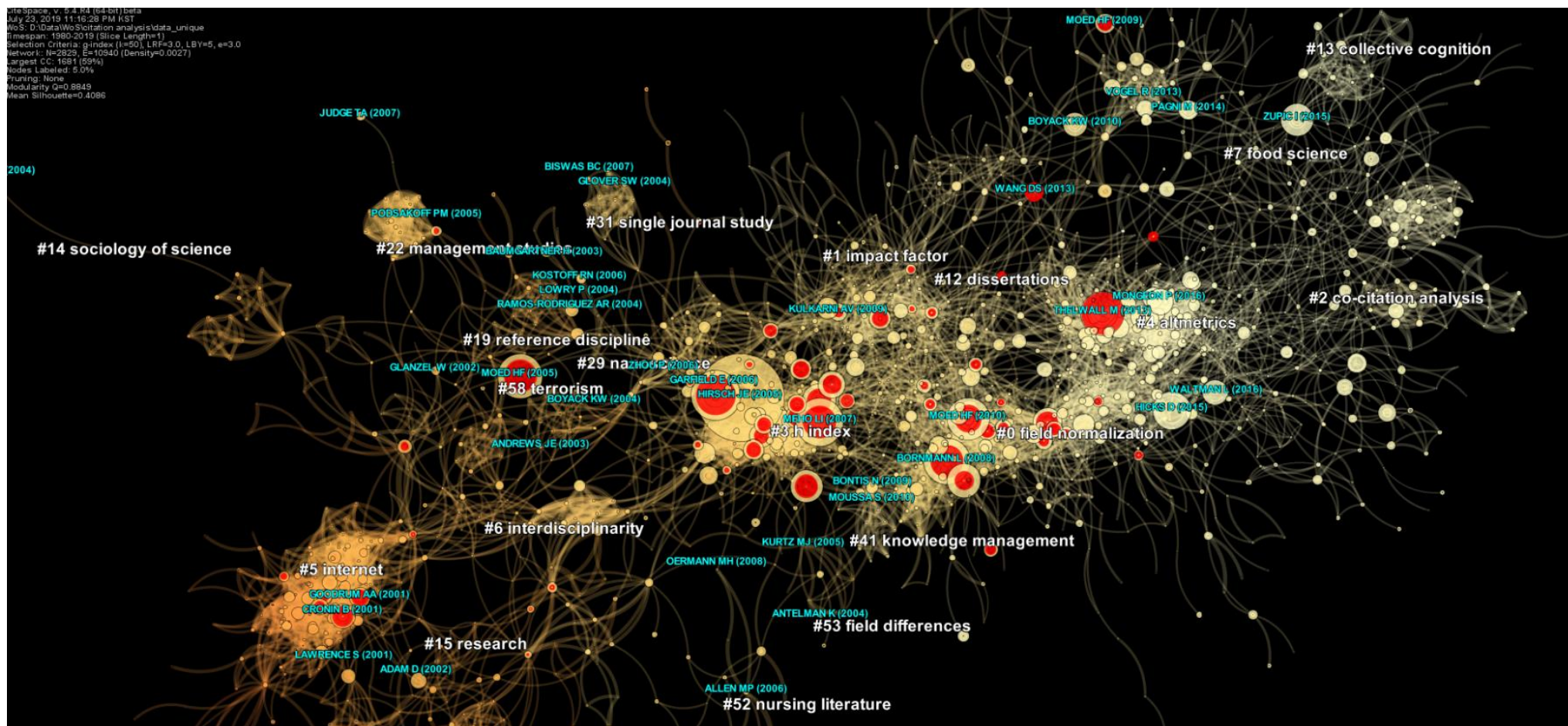
VOSviewer

Network of keywords



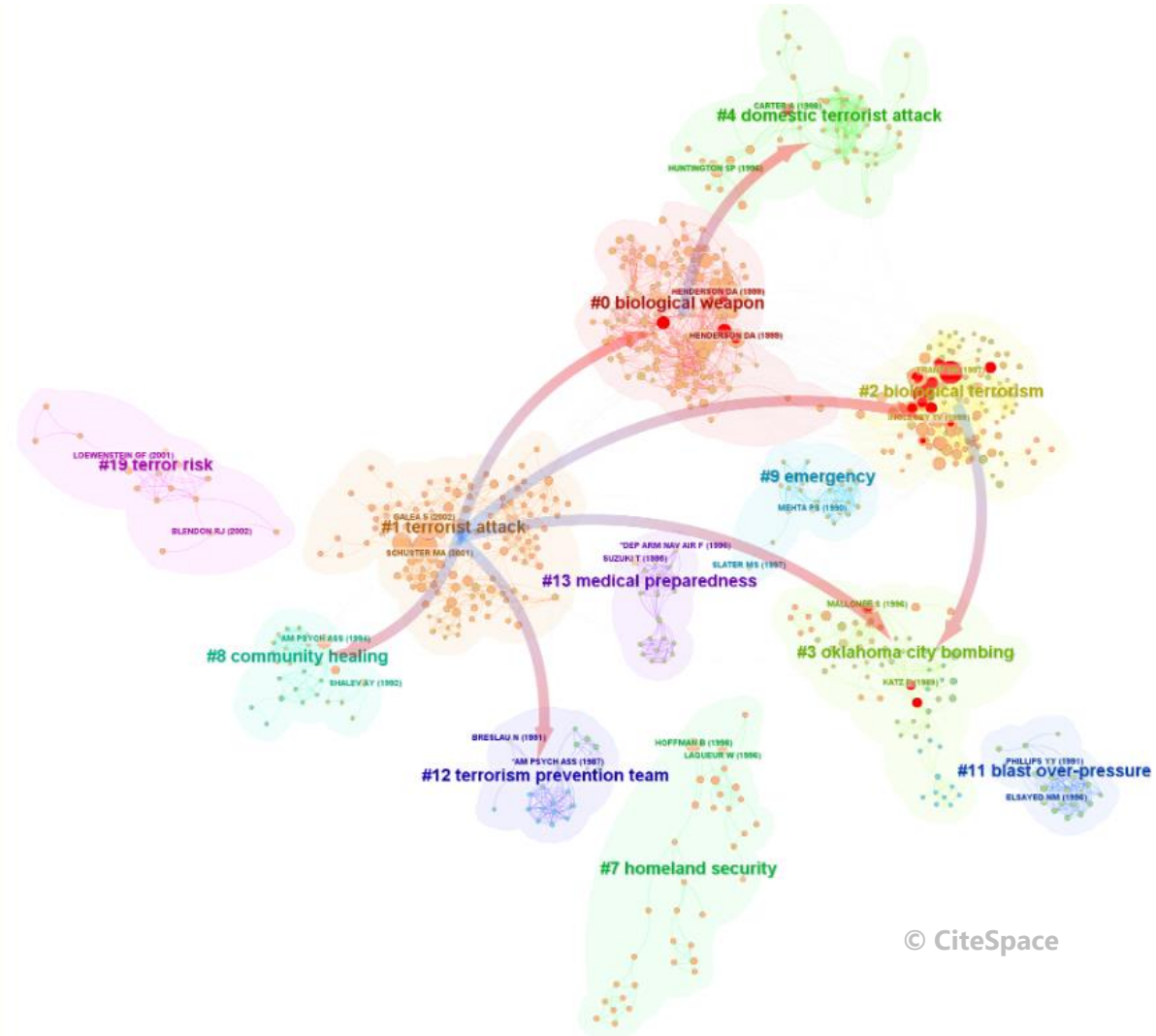
CiteSpace

Network of keywords



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Network of keywords





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Zimbra: Réception (11689) x DeepL Traduction – DeepL Trans x Evidence for the impacts of agr x Google Agenda - Semaine du 1 x EviAtlas x (5) (PDF) EviAtlas: A tool for vis x GitHub - ESHackathon/eviatlas x +

https://estech.shinyapps.io/eviatlas/

DeepL Lingue Odeurs worms Plateforme MOOC de ... BibMNHN Bureau GS ER Slack GA WOK CEE EEJ A EM Résa MNHN AFB ScholarOne Manuscri... Dico RG LI Mastodon TW CDR TVB >> Autres marque-pages

EviAtlas

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- Evidence Atlas
- Map Database
- Descriptive Plots
- Heatmap
- Resources
- View Code

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About EviAtlas

EviAtlas is an Open Source tool for creating and hosting visualisations from databases of studies created within systematic maps and systematic reviews. The tool was created as part of the ongoing Evidence Synthesis Hackathon series of events (www.evidencesynthesishackathon.com) aimed at producing free-to-use tools to support systematic reviews and maps across disciplines.

EviAtlas allows users to create a suite of visualisations from a database of studies, including Evidence Atlases (interactive geographical maps showing studies and their details over space), Heat Maps (cross tabulations of categorical variables that highlight clusters and gaps in the evidence), descriptive plots that help to visualise the evidence base (e.g. the number of publications per year), and human-readable databases that are easily filterable.

EviAtlas is built on coding written in R (<https://www.r-project.org>) and uses a Shiny App to provide a web-based user interface. As we develop the app further, we will provide source code to allow R users to further refine their visualisations.

EviAtlas is currently in a testing phase but is fully functional. We intend to add further options and functionality in the near future. If you have any feedback, please contact Neal Haddaway (Research Fellow at the Stockholm Environment Institute): neal.haddaway@sei.org.

Data Attributes

Upload a dataset using the panel to the right -->

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Which Data to Use?

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 Upload from .csv format (spreadsheet)
 Upload from .shp format (shapefile)

Choose CSV File

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CSV Properties

Header row?

Select File Encoding

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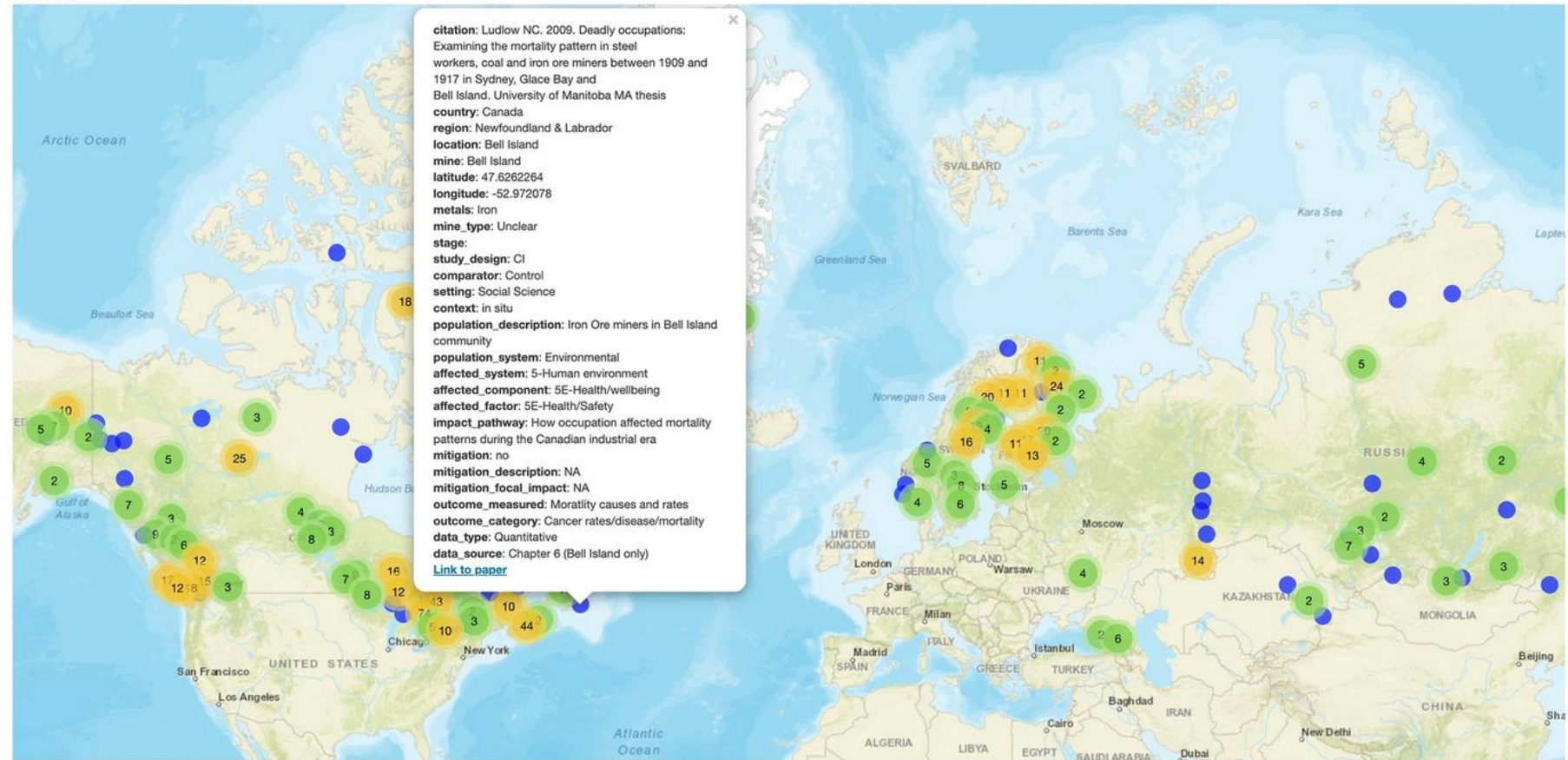
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|--------|--------------------|------------------------------------|---|-----------------------------------|-----------------------------------|-----------------------------------|-------------|-----------------|-----------------|----------------|------------------------|--------------------|
| # | All | All | All | All | All | All | All | All | All | All | All | All |
| 1 | 1 | 6 10.1002/(SIC)1098-2361(1999)1... | Carlstead, K., Fraser, J., Ben... | ZOO BIOLOGY | Black rhinoceros (Diceros bico... | The captive population of blac... | 1999 | en | journal article | study | no | no |
| 2 | 2 | 9 10.1002/15-0783 | Friedlaender, AS., Hazen, EL,.... | ECOLOGICAL APPLICATIONS | Prey-mediated behavioral respo... | Behavioral response studies pr... | 2016 | en | journal article | study | no | no |
| 3 | 3 | 34 10.1002/aqc.1189 | Cubero-Pardo, P., Herron, P., ... | AQUATIC CONSERVATION-MARINE AN... | Shark reactions to scuba diver... | 1. Worldwide, there are concer... | 2011 | en | journal article | study | no | no |
| 4 | 4 | 35 10.1002/aqc.1190 | Jung, CA., and Swearer, SE. | AQUATIC CONSERVATION-MARINE AN... | Reactions of temperate reef fi... | 1. Anthropogenic sound as a st... | 2011 | en | journal article | study | no | no |
| 5 | 5 | 37 10.1002/aqc.2355 | La Manna, G., Manghi, M., Pava... | AQUATIC CONSERVATION-MARINE AN... | Behavioural strategy of common... | Owing to the increase of boat... | 2013 | en | journal article | study | no | no |
| 6 | 6 | 42 10.1002/aqc.2668 | Osterrieder, SK., Kent, CS., and Robinson, RW | AQUATIC CONSERVATION-MARINE AN... | Responses of Australian sea li... | 1. Tourist-based activities, ... | 2017 | en | journal article | study | no | no |
| 7 | 7 | 43 10.1002/aqc.2693 | Jain-Schlaepfer, SMR., Blouin-... | AQUATIC CONSERVATION-MARINE AN... | Do boating and basking mix? Th... | 1. Basking is the primary mech... | 2017 | en | journal article | study | no | no |
| 8 | 8 | 47 10.1002/aqc.2915 | Maxwell, RJ., Zoldero, AJ., d... | AQUATIC CONSERVATION-MARINE AN... | Does motor noise from recreati... | 1. Recreational boating activi... | 2018 | en | journal article | study | no | no |
| 9 | 9 | 50 10.1002/aqc.941 | Graham, AL., and Cooke, SJ | AQUATIC CONSERVATION-MARINE AN... | The effects of noise disturban... | 1. Recreational boating contin... | 2008 | en | journal article | study | no | no |
| 10 | 10 | 74 10.1002/eap.1437 | Kleist, NJ., Cusack, BR, C... | ECOLOGICAL APPLICATIONS | Sound settlement | Birds breeding in heterogeneou... | 2017 | en | journal article | study | no | no |

From: [Evidence of the impacts of metal mining and the effectiveness of mining mitigation measures on social–ecological systems in Arctic and boreal regions: a systematic map](#)



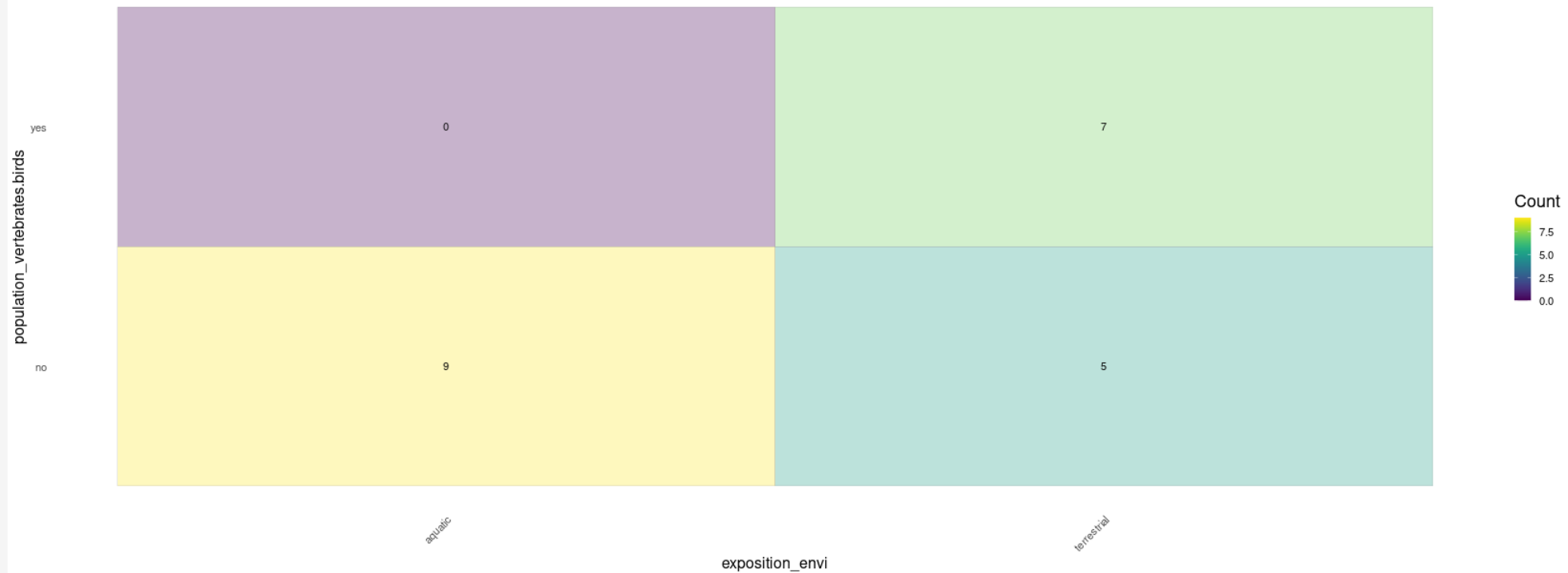
Screenshot of the interactive evidence atlas showing the location of all study systems in the 585 included studies across 902 total outcome measures. The popup contains descriptive meta-data and a link to the paper on Google Scholar. The interactive evidence atlas is available here: <https://3mkproject.github.io/research.html>



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Study Heatmap
population_vertebrates.birds by exposition_envi



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