Visualisation des métadonnées

Formation FRB/CESAB sur les cartes et revues systématiques
Mardi 3 octobre, Montpellier

Romain Sordello
Coordinateur de cellule « cartes/revues systématiques »

PatriNat
CENTRE D'EXPERTISE ET DE DONNÉES
OFB·MNHN·CNRS·IRD

L’étape de la visualisation

Lorsque la base de données (carte systématique) est finalisée, énormément de possibilités de représentations existent

Il va falloir :

⇒ Faire des choix sur les données les plus pertinentes (vue d’ensemble du corpus, données particulières à mettre en avant)

⇒ Faire des choix sur les formes de visualisation les plus adaptées pour représenter les données sélectionnées

CEE Guidelines

https://environmentalevidence.org/information-for-authors/9-data-synthesis-page/

9.2.2 Mapping and data visualization

The process of mapping and presentation of data **can take many forms** and (see James et al 2016 for a detailed discussion of methodologies for the production of Systematic Mathis guidance does not wish to be overly prescriptive in what is a fast moving field ps).

Presentation of maps can range **from a simple spreadsheet format to innovative forms of data visualisation** that make the evidence base easier to interrogate and extract information of interest to the user. Good examples of data visualisation are McKinnon et al. (2016) and Haddaway et al. (2014).

Recording of **key characteristics of each study** included in a narrative synthesis is vital if the Systematic Map is to be useful in summarising the evidence base. **Key characteristics stated in the Protocol** must be fully presented in at least tabular form.

Below is a minimum list of characteristics that will normally be enhanced through data coding of other variables of interest.

- **Subject population**
- **Intervention/exposure variable**
- **Setting/context**
- **Outcome measures**
- **Methodological design**

EEJ Guidelines

https://environmentalevidencejournal.biomedcentral.com/submission-guidelines/preparing-your-manuscript/systematic-map

Mapping the quantity of studies relevant to the question

Present here **a figure or a database**, showing how the relevant literature is organised (categories, coding…) according to transparent, replicable criteria. This map should be **readily updatable**.

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 (or of a representative sample of studies).

This section should include an explanation of how the map can be used to find appropriate studies and observations on the **distribution of articles and relative quantity and quality of available evidence** with respect to the broad question and how the question might be broken down to enable full systematic review(s) to be conducted in future.

Describe **knowledge gaps** (unrepresented or underrepresented subtopics that warrant further primary research) and **knowledge clusters** (well-represented subtopics that are amenable to full synthesis via systematic review)

Quelles données représenter ?

- Des données incontournables :
    - Données bibliométriques de base : chronologie des publications, localisation des études, types de documents, types de contenus
    - Population
    - Exposition
    - Outcomes

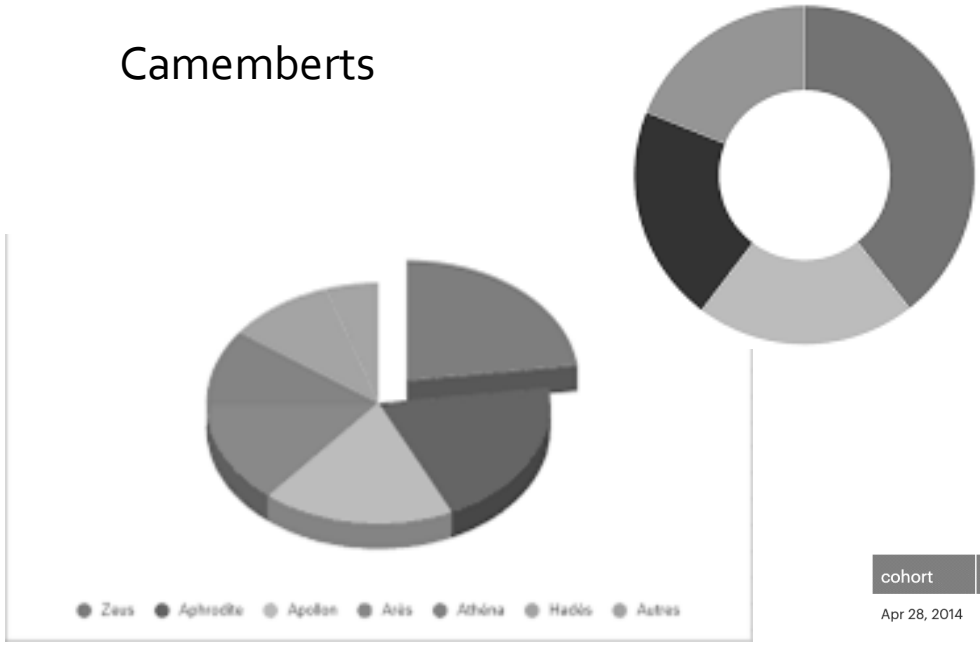
- Des données liés aux design des études (observationnelles/expérimentales, types de protocoles expérimentaux, *in situ*/*ex situ*, etc.)

- Des données spécifiques qui mettent en avant des résultats forts

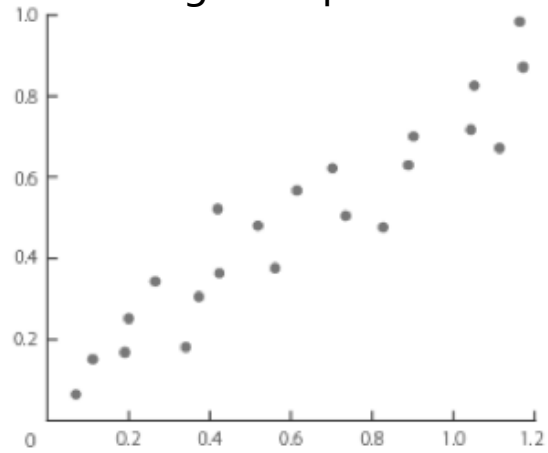
Quelle représentation choisir ?

- Une grande liberté laissée par la CEE, à vous d'innover…..
- Des graphiques lisibles, propres, « sexy »
- Adaptée aux données à représenter
- Une diversité de graphiques sur l'ensemble du manuscrit
- Des schémas/figures « maisons »

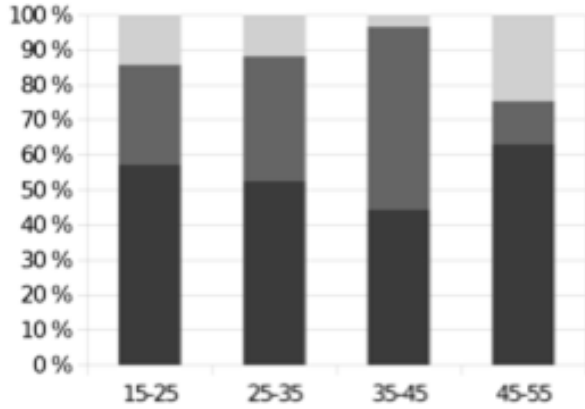
Camemberts



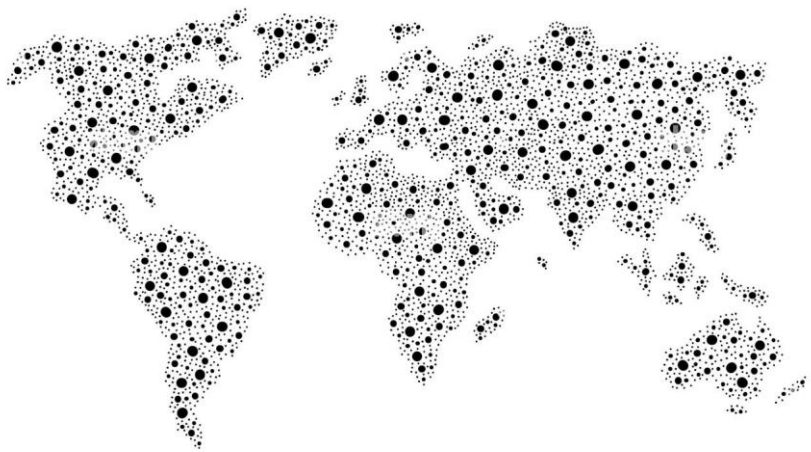
Nuages de points



Histogrammes



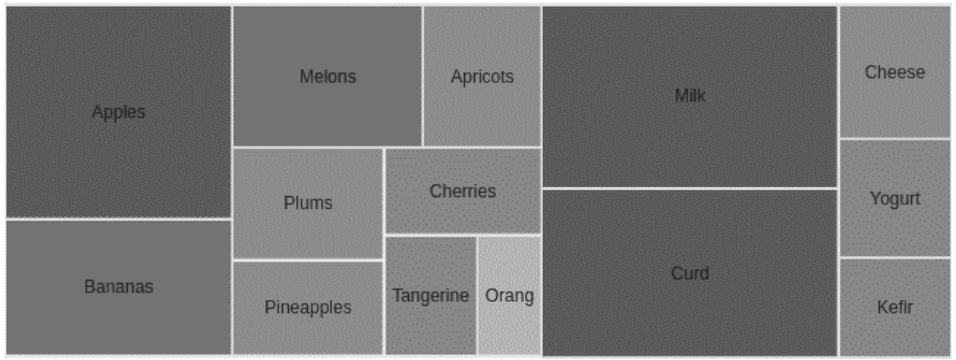
Mappemondes



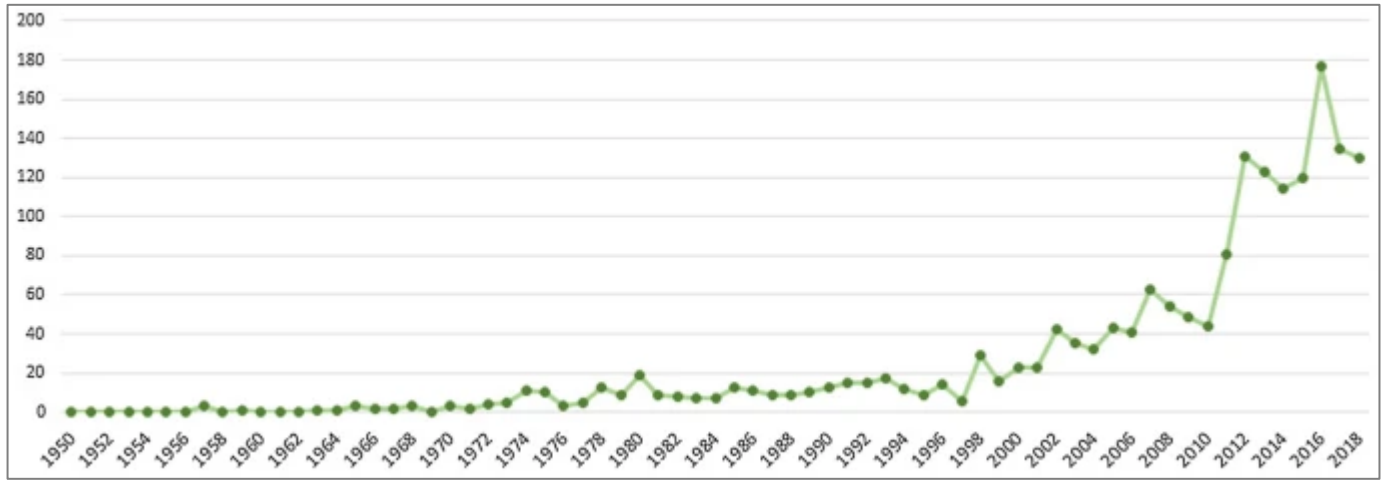
HeatMaps

cohort	first_period	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
Apr 28, 2014	79	22%	19%	13%	19%	16%	23%	19%	20%	11%	14%	16%	10%	10%	10%	9%	6%	6%
May 5, 2014	168	23%	21%	21%	24%	24%	29%	24%	18%	22%	14%	14%	12%	13%	10%	10%	7%	
May 12, 2014	188	19%	19%	13%	21%	19%	20%	24%	21%	16%	14%	13%	10%	9%	9%	7%		
May 19, 2014	191	23%	21%	22%	22%	26%	27%	29%	26%	21%	21%	17%	15%	10%	6%			
May 26, 2014	191	21%	16%	20%	24%	27%	23%	20%	19%	15%	15%	12%	12%	6%				
Jun 2, 2014	184	24%	24%	24%	24%	21%	21%	18%	20%	16%	15%	18%	7%					
Jun 9, 2014	182	19%	16%	25%	19%	23%	28%	22%	18%	13%	10%	5%						
Jun 16, 2014	209	24%	20%	24%	22%	23%	17%	18%	15%	13%	7%							
Jun 23, 2014	217	22%	19%	19%	20%	20%	17%	19%	18%	12%								
Jun 30, 2014	221	18%	18%	24%	24%	23%	19%	20%	8%									
Jul 7, 2014	203	24%	23%	18%	16%	24%	22%	16%										
Jul 14, 2014	188	24%	18%	20%	18%	21%	10%											

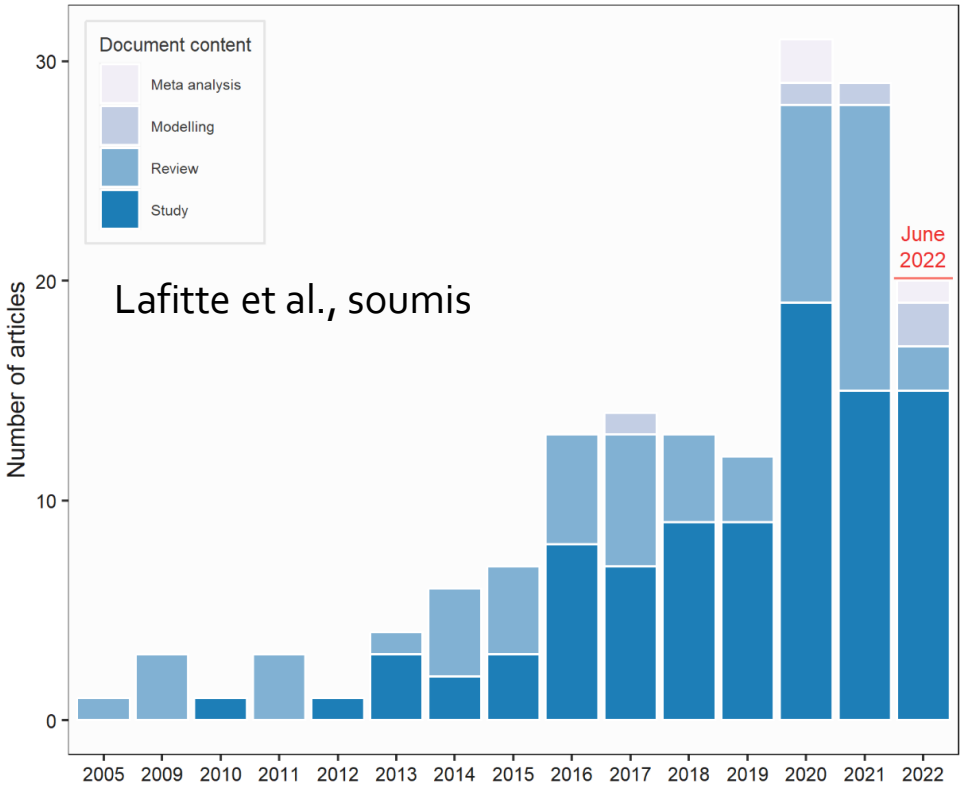
TreeMaps



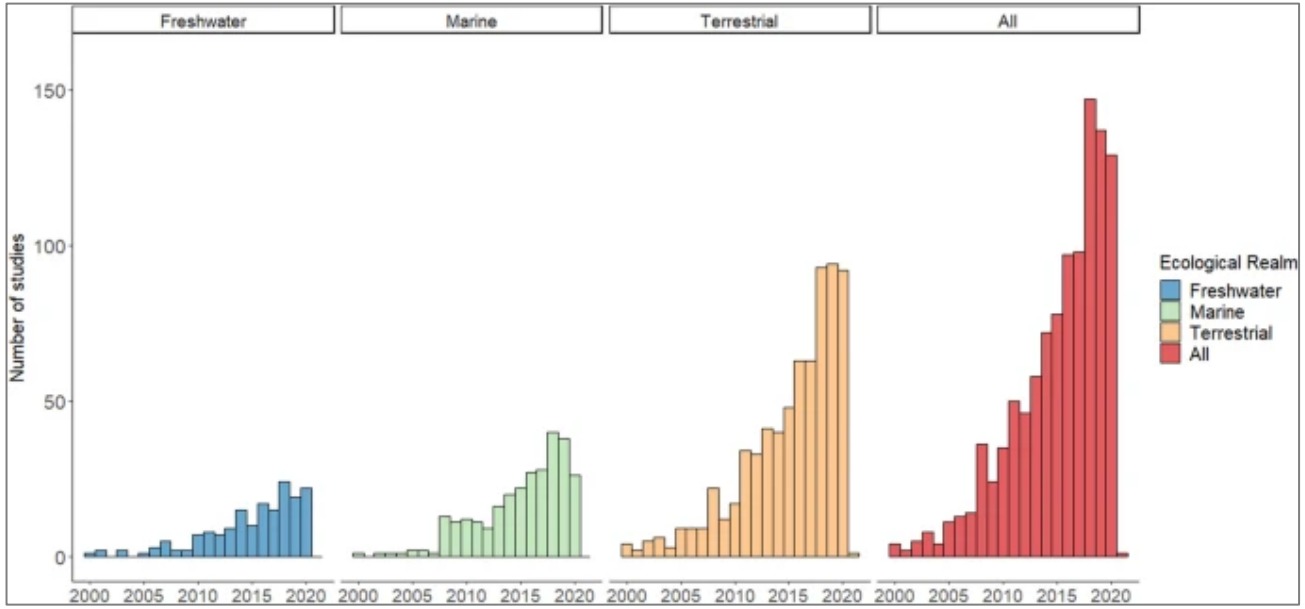
Données bibliométriques de base : distribution chronologique

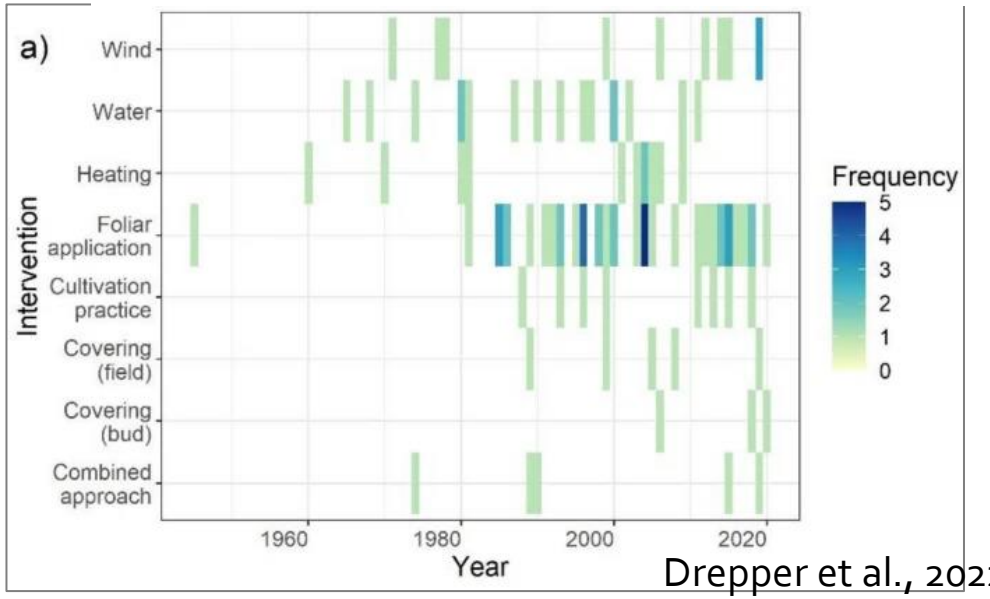


Sordello et al., 2020



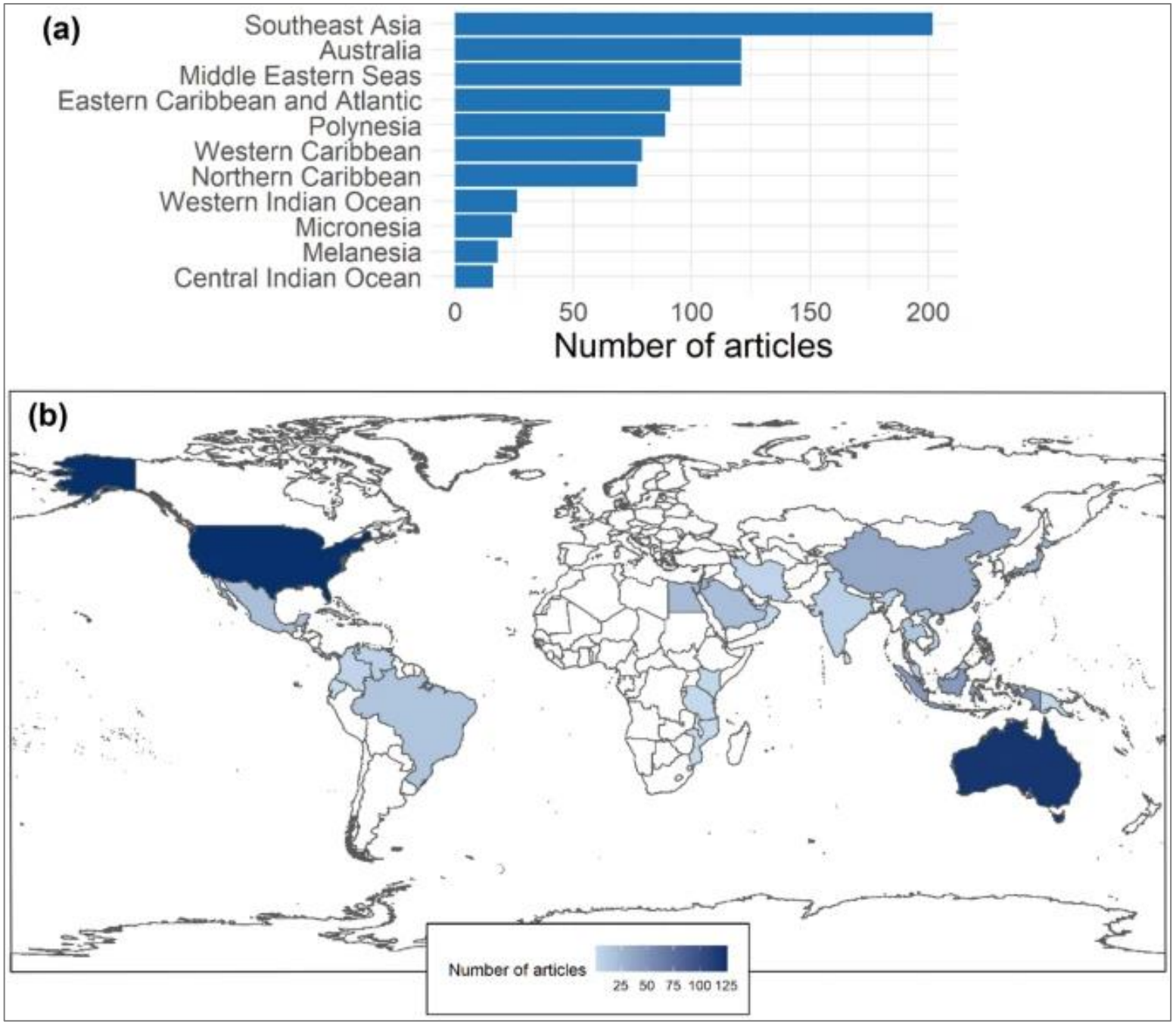
Ridely et al., 2022





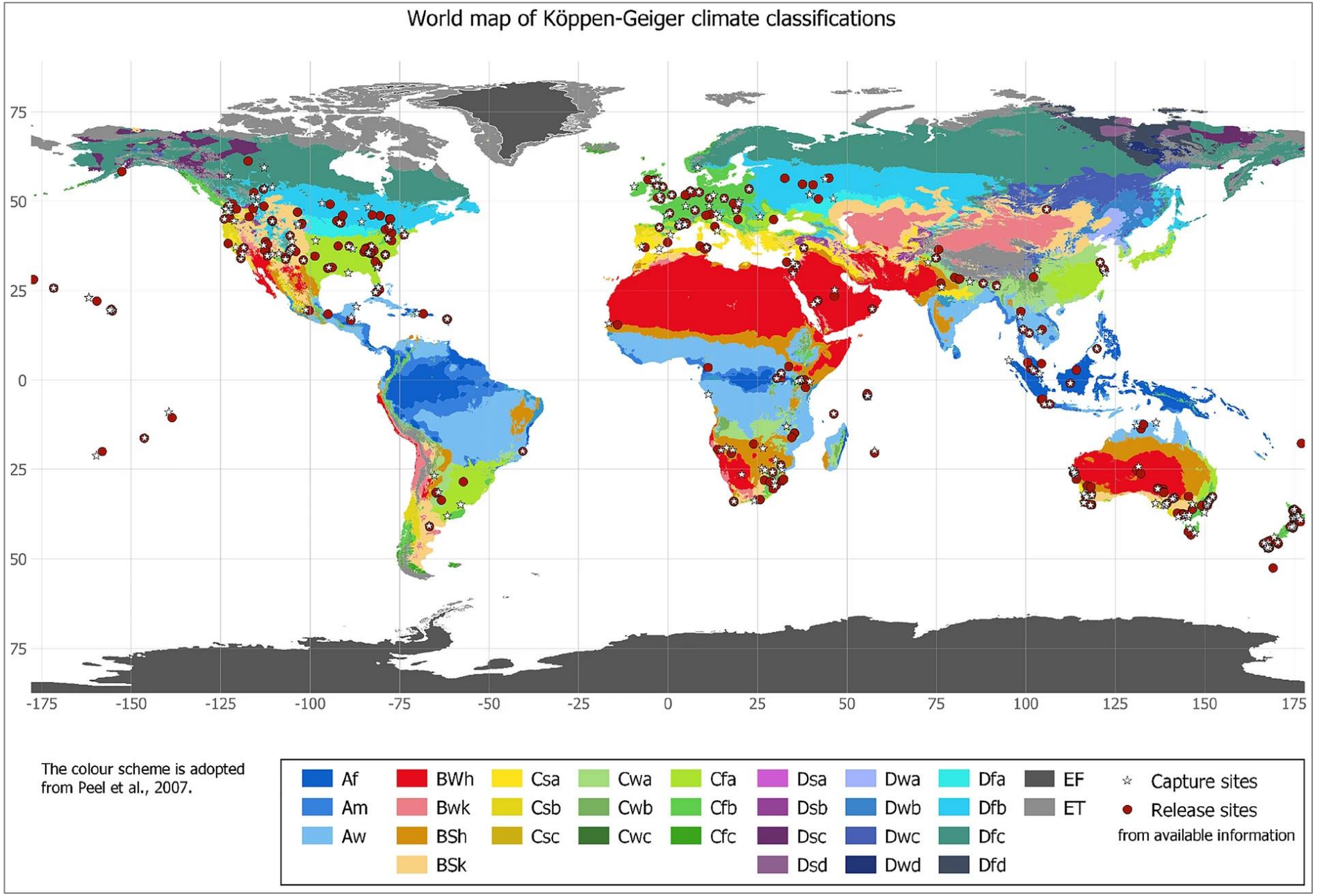
Drepper et al., 2022

Données bibliométriques de base : distribution spatiale des études



Ouédraogo et al., 2021

Données bibliométriques de base : distribution spatiale des études



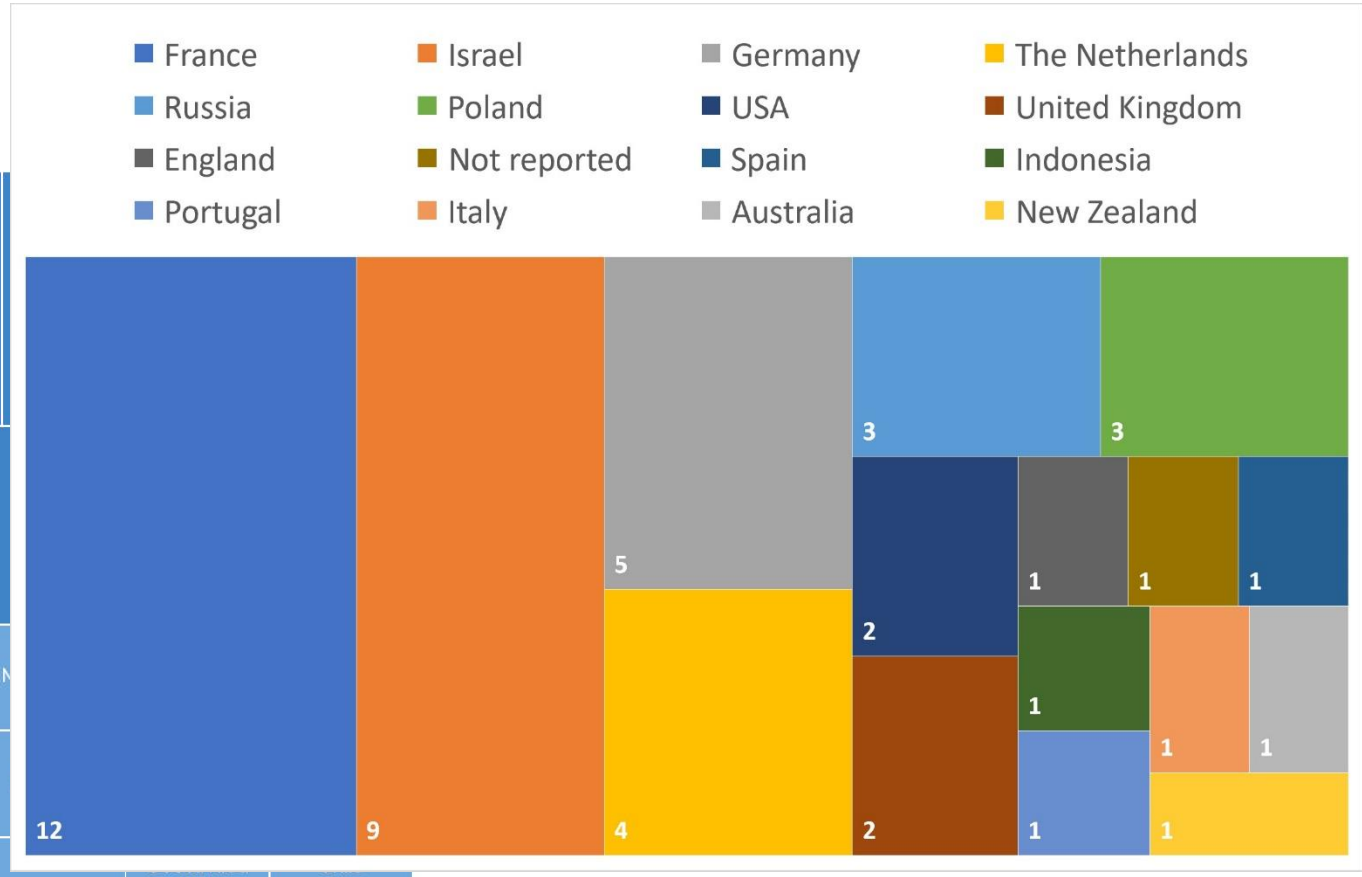
Langridge et al., 2021

Capture sites (white stars) and release sites (red points) from available information plotted against Köppen-Geiger climate classification zones. N.B., The release site coordinates are not a comprehensive illustration because not all publications gave geographic coordinates and/or sufficiently described release locations. Köppen-Geiger climate zones are detailed here in [67, 68]: https://doi.org/10.1127/0941-2948/2006/0130 or https://doi.org/10.1038/sdata.2018.214

Données bibliométriques de base : distribution spatiale des études

TreeMap: Taille des carrés proportionnelle aux volumes d'articles

Sordello et al., soumis



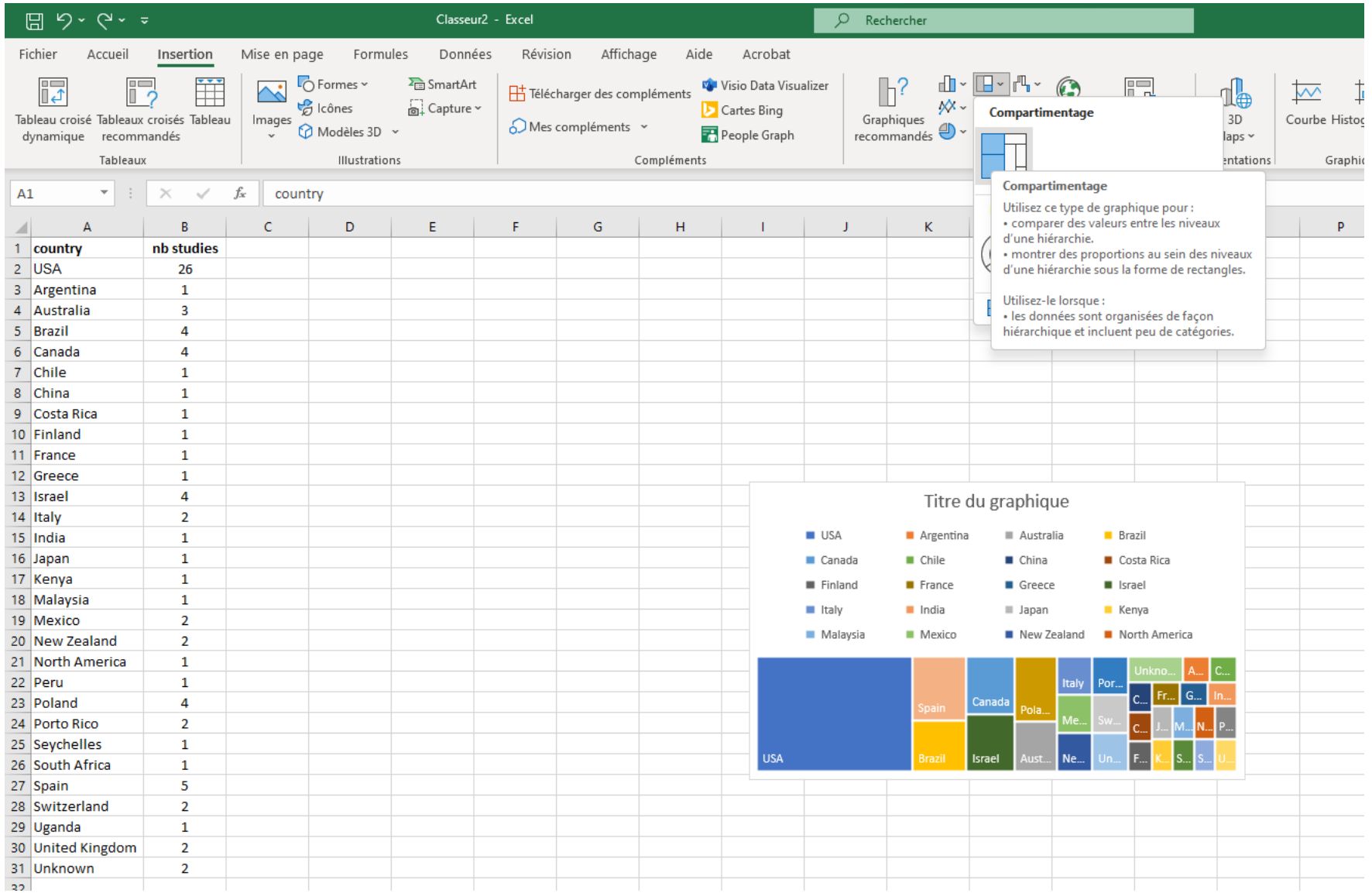
Sordello et al., in progress

Excel

Outil gratuit en ligne: https://online.visual-paradigm.com/

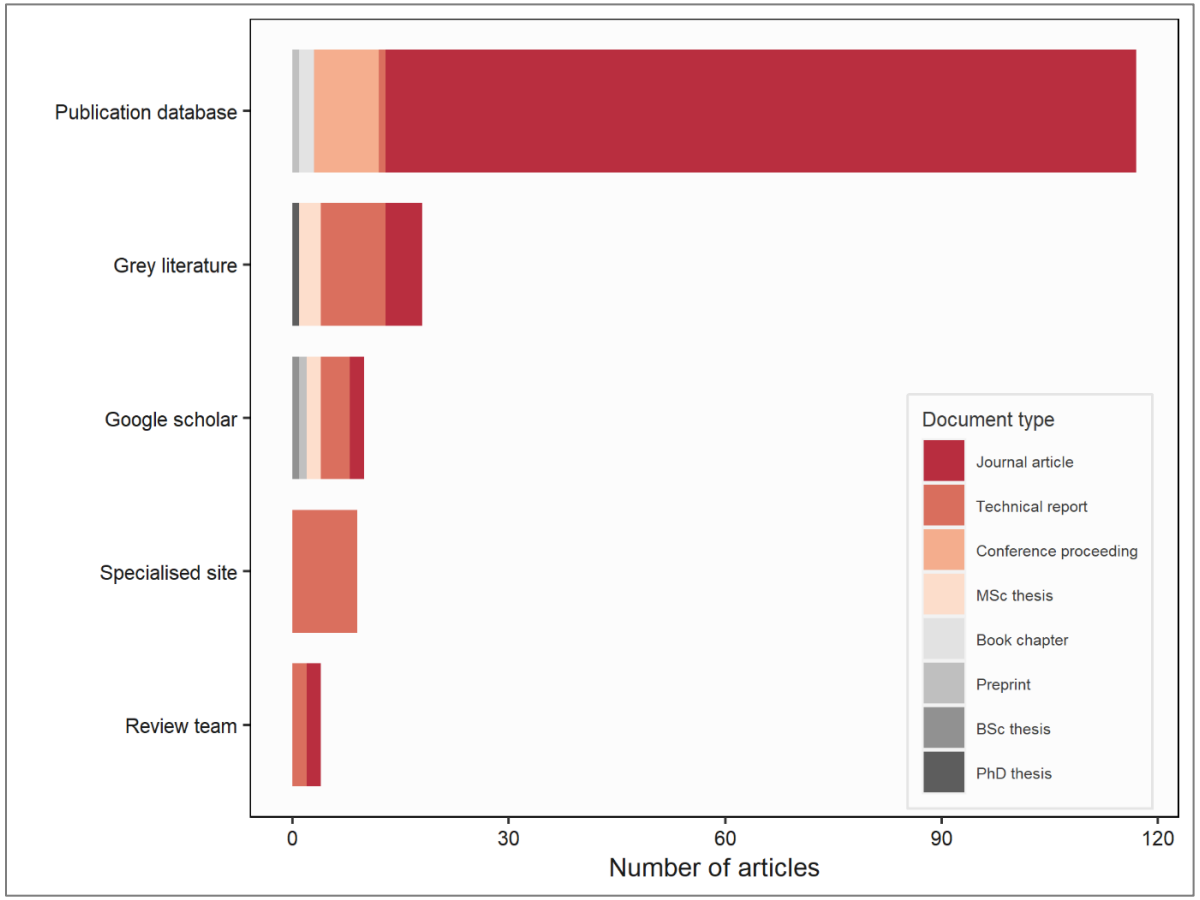
Données bibliométriques de base : distribution spatiale des études

TreeMap: Taille des carrés proportionnelle aux volumes d'articles

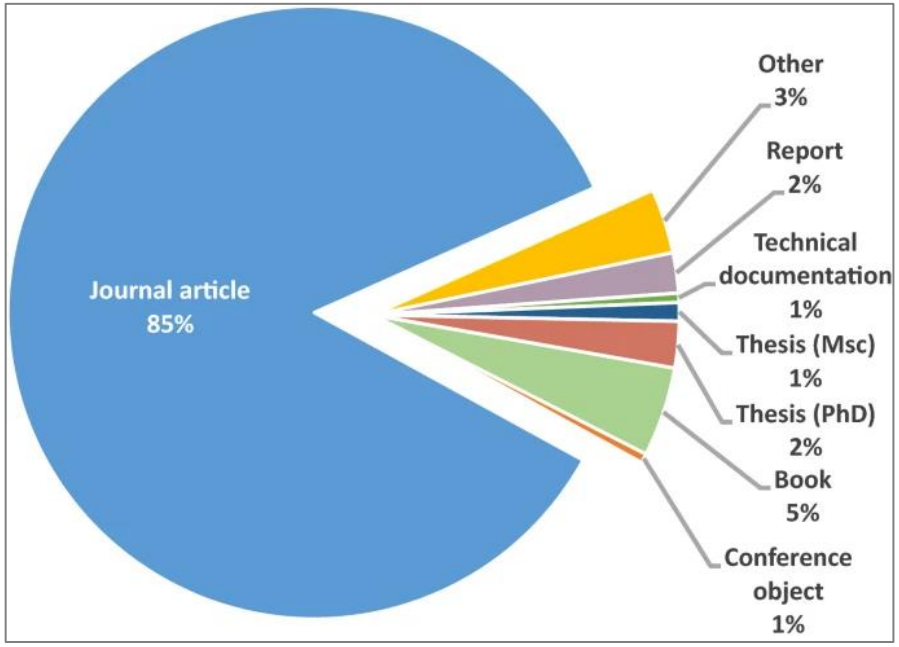


	A	B
1	**country**	**nb studies**
2	USA	26
3	Argentina	1
4	Australia	3
5	Brazil	4
6	Canada	4
7	Chile	1
8	China	1
9	Costa Rica	1
10	Finland	1
11	France	1
12	Greece	1
13	Israel	4
14	Italy	2
15	India	1
16	Japan	1
17	Kenya	1
18	Malaysia	1
19	Mexico	2
20	New Zealand	2
21	North America	1
22	Peru	1
23	Poland	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

Données bibliométriques de base : Types de documents et contenus

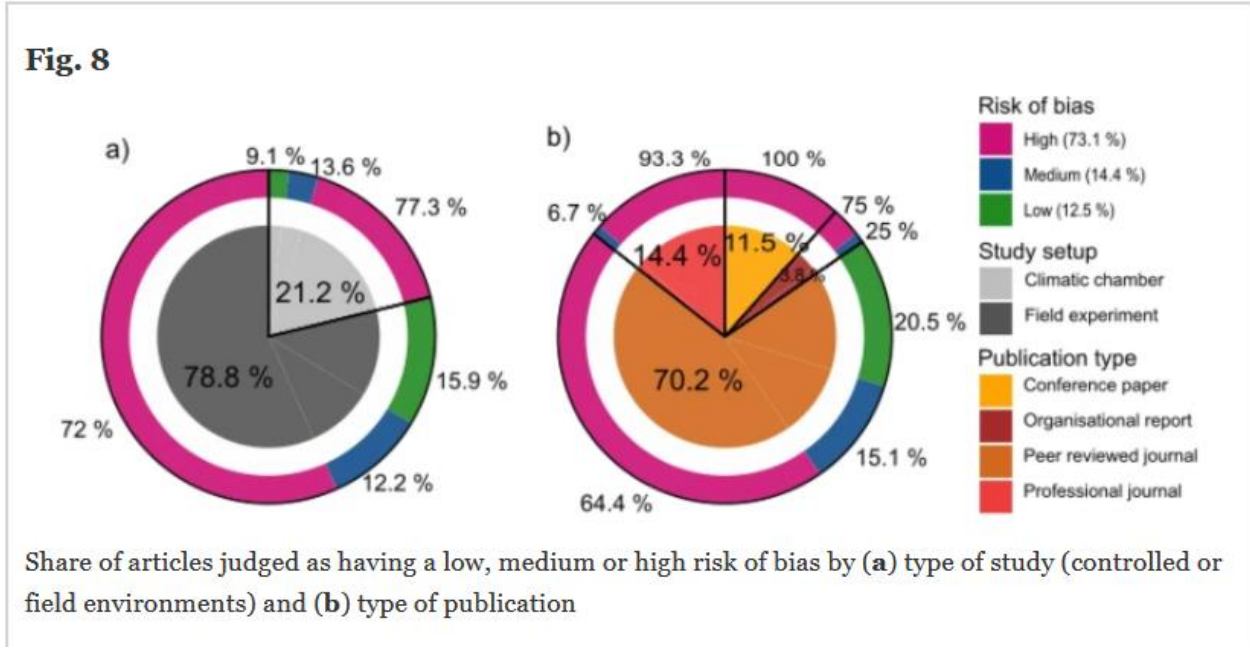


Lafitte et al., soumis



Langridge et al., 2021

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

Visualisation de la population

	Aves			Actinopterygii			Insecta		Mammalia		Plankton
Types of outcome	**L**	**M**	**H**	**L**	**M**	**H**	**M**	**H**	**M**	**H**	**M**
Phototactic behaviour	3	9	2	•	7	1	4	4	1	•	2
Activity level	•	•	3	1	•	•	•	•	2	•	•
Behaviour	•	4	•	•	1	•	•	•	•	1	•
Cortisol level	•	4	•	•	•	•	•	•	•	•	•
Haematocrit	•	1	•	•	•	•	•	•	•	•	•
Memory	•	1	•	•	•	•	•	•	•	•	•
Neuronal activity	•	•	•	•	•	•	•	•	•	1	•
Ocular physiology	•	•	•	•	•	•	•	•	1	•	•
Weight	•	1	•	•	•	•	•	•	•	•	•

Figure 4. Summary of the number of observations by outcomes and risks of bias for all taxa. 'L' low risk of bias, 'M' medium risk of bias, 'H' high risk of bias, '•' no data.

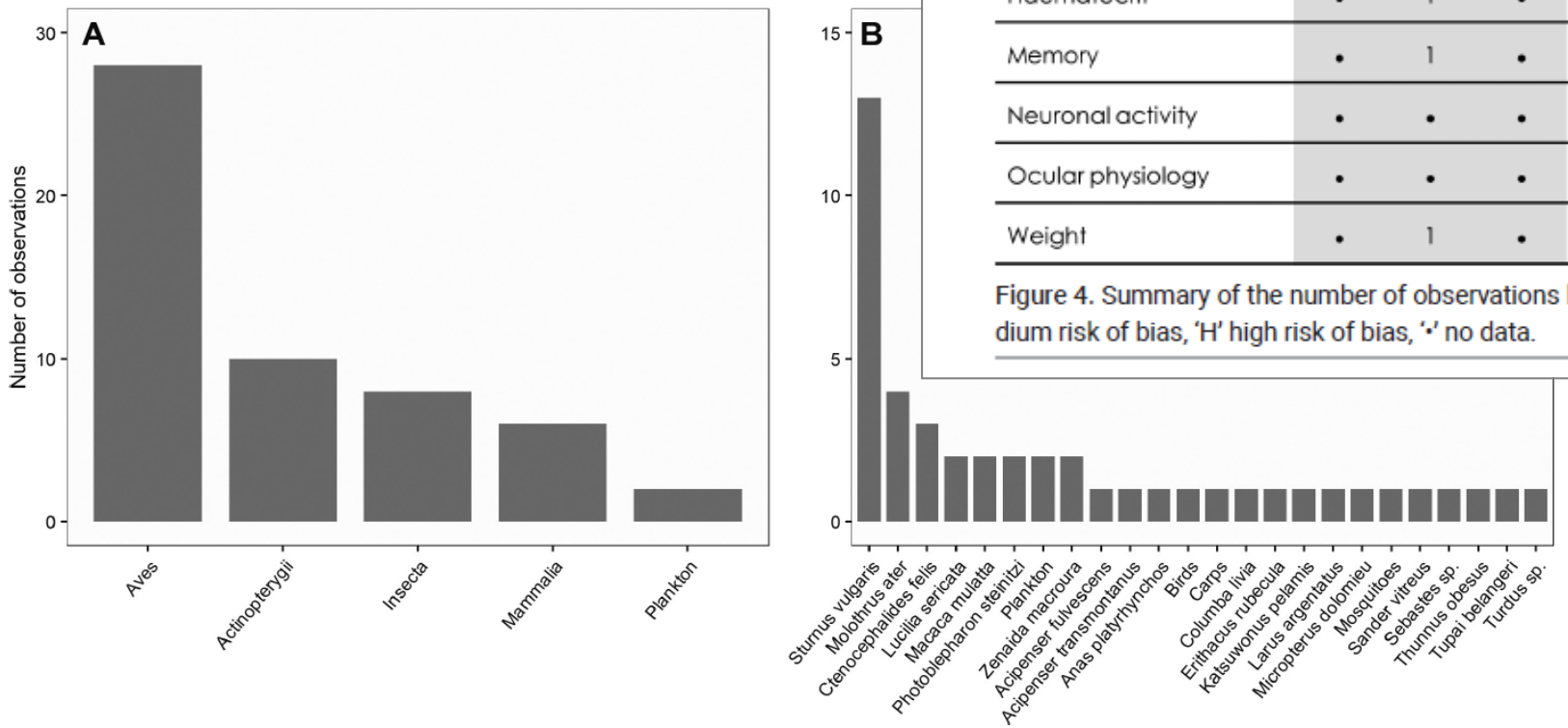
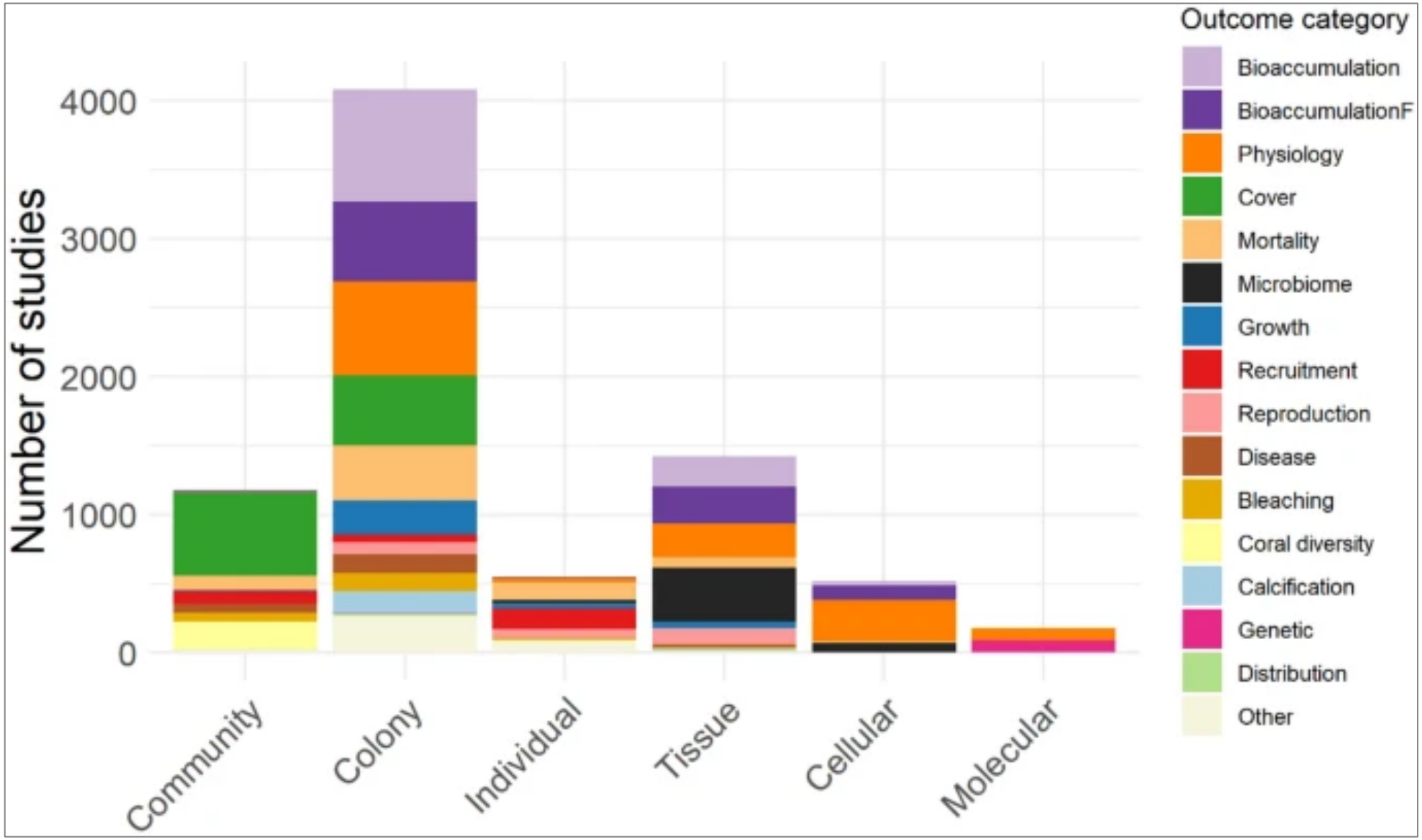


Figure 3. Proportion of included observations by taxa **A** total number of included observations by taxonomic classes and **B** number of included observations by detailed taxa.

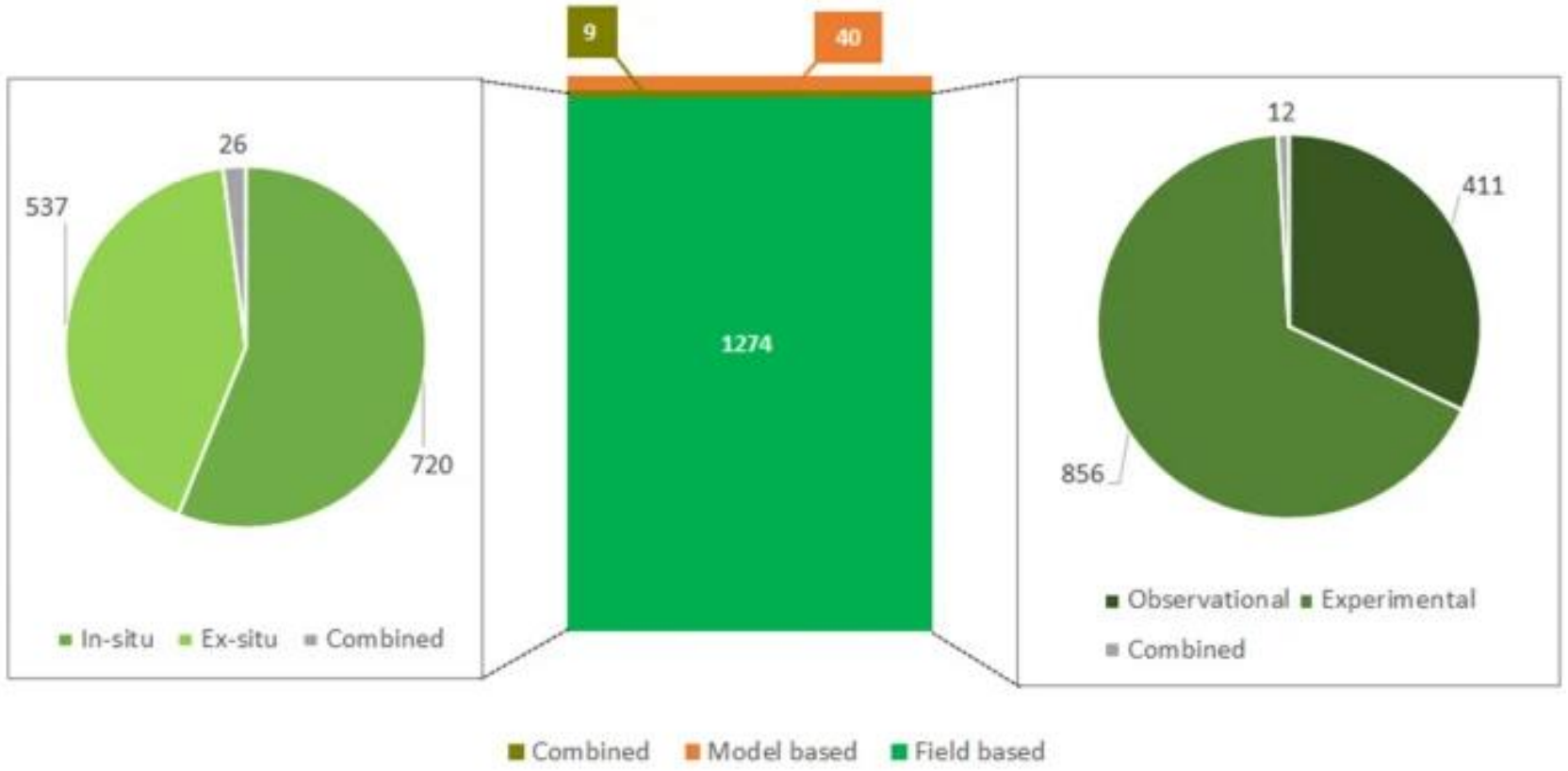
Lafitte et al., à paraitre

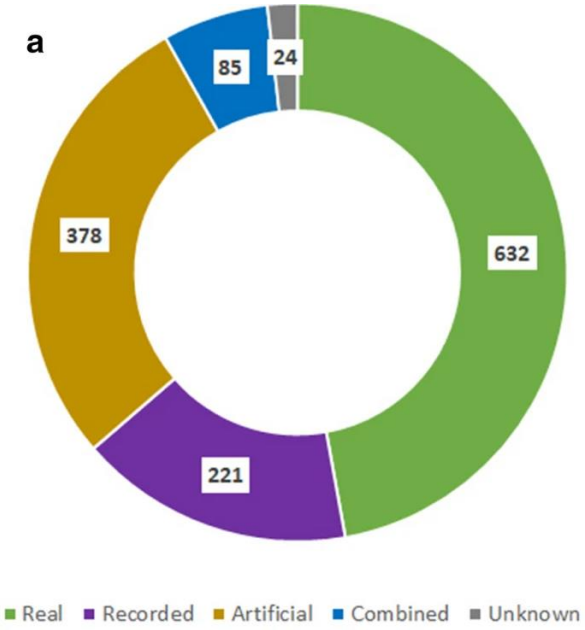
Visualisation des outcomes

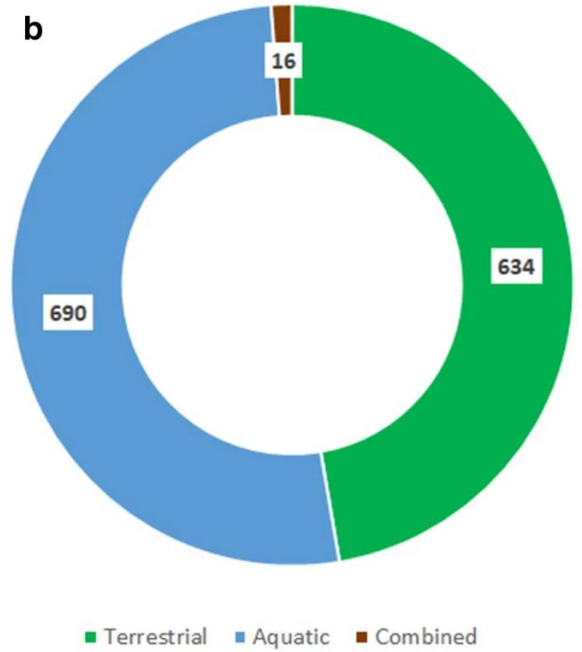


Ouédraogo et al., 2021

Données plus ciblées sur les études de la carte
Contexte des études/Méthode







Sordello et al., 2020

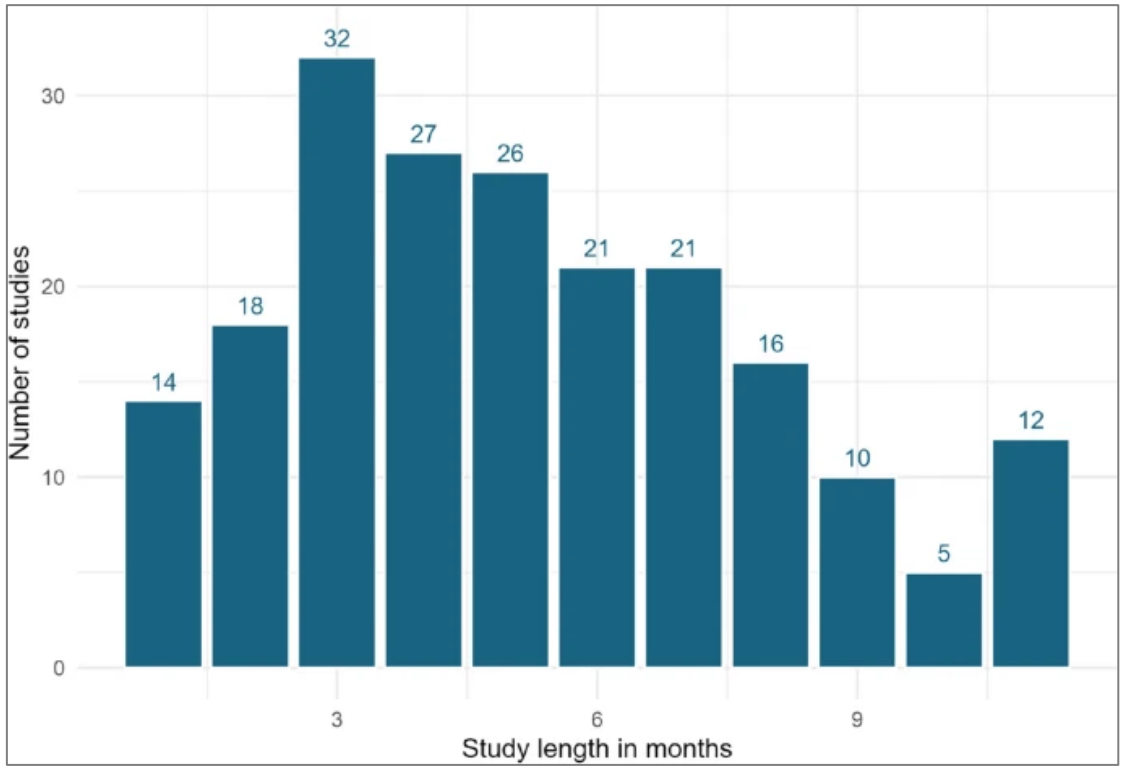
Table 4 Total number of studies, experimental studies, and observational studies for the 20 most studied taxa and the group "reef-building corals" (Coral)

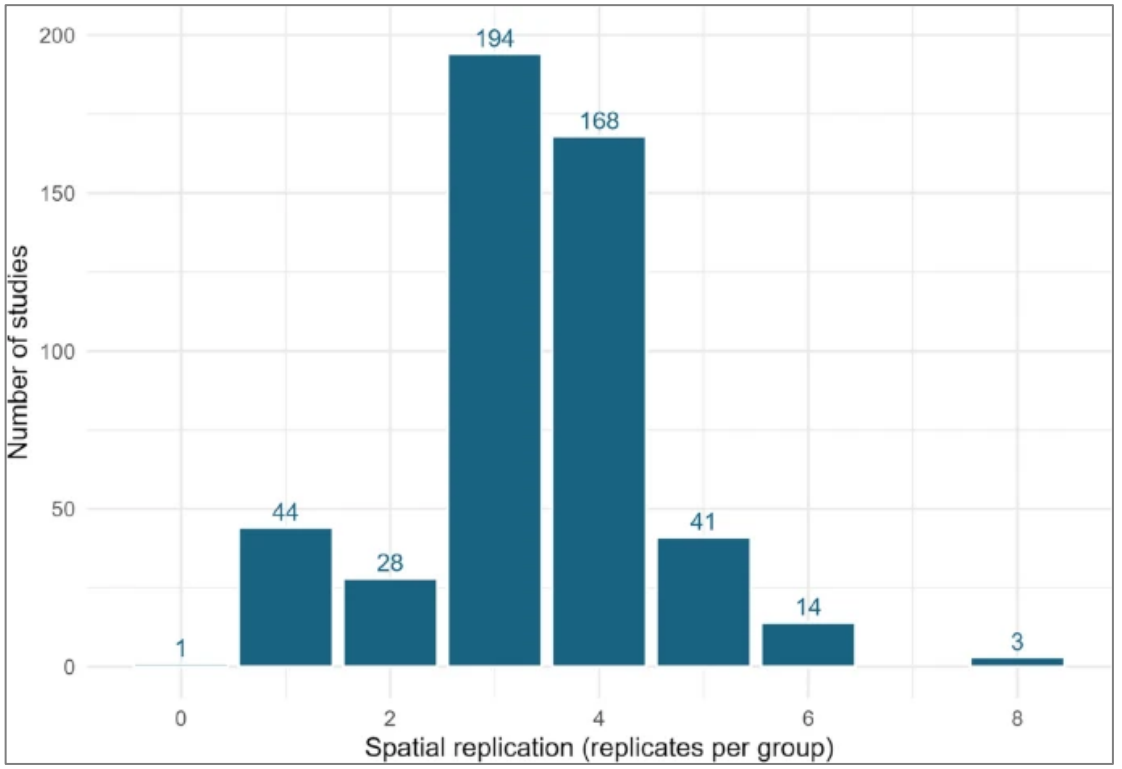
From: Evidence on the impacts of chemicals arising from human activity on tropical reef-building corals; a systematic map

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

Ouédraogo et al., 2021

Back to article page >

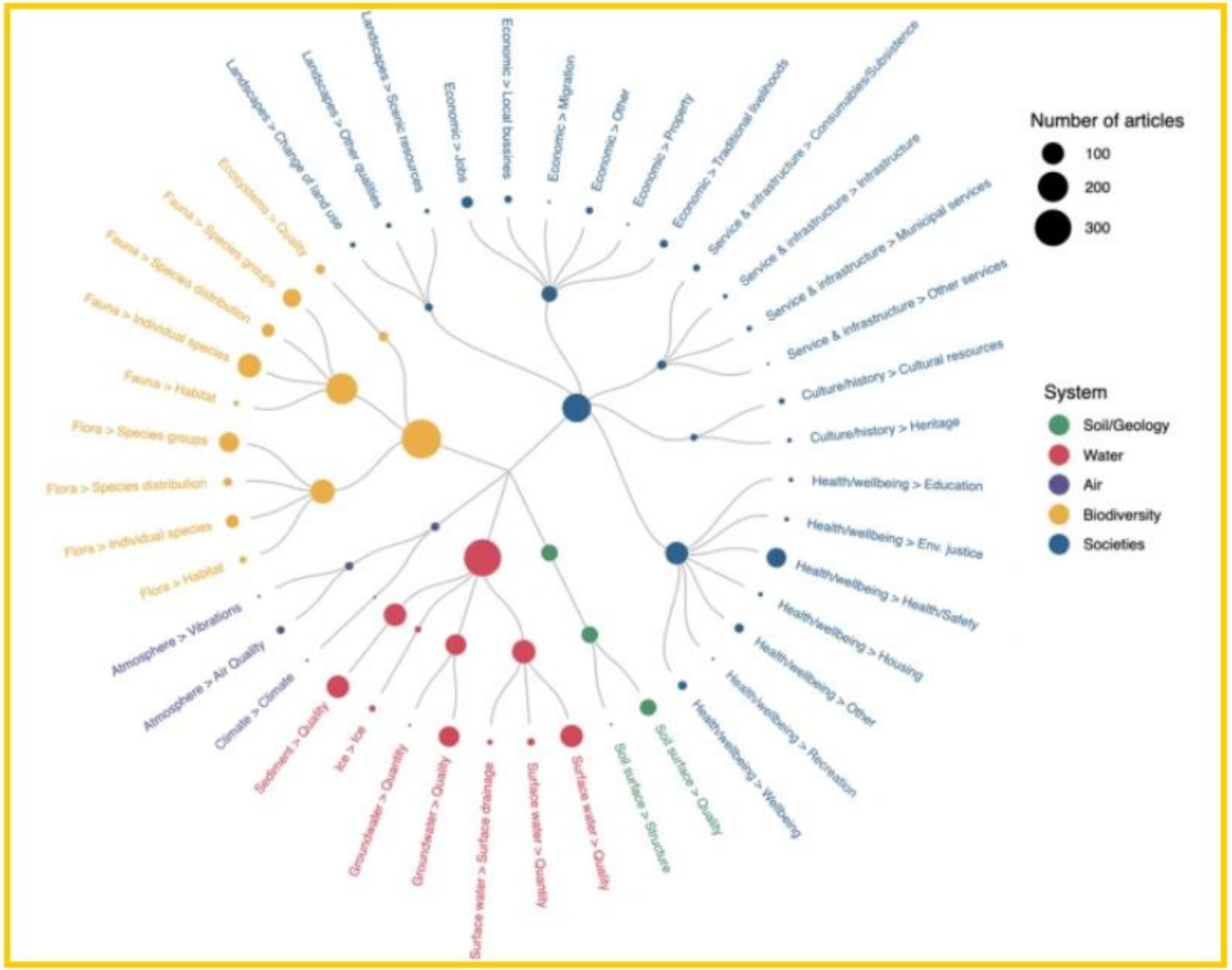




Collins et al., 2022

Représentations plus complexes

Fig. 14

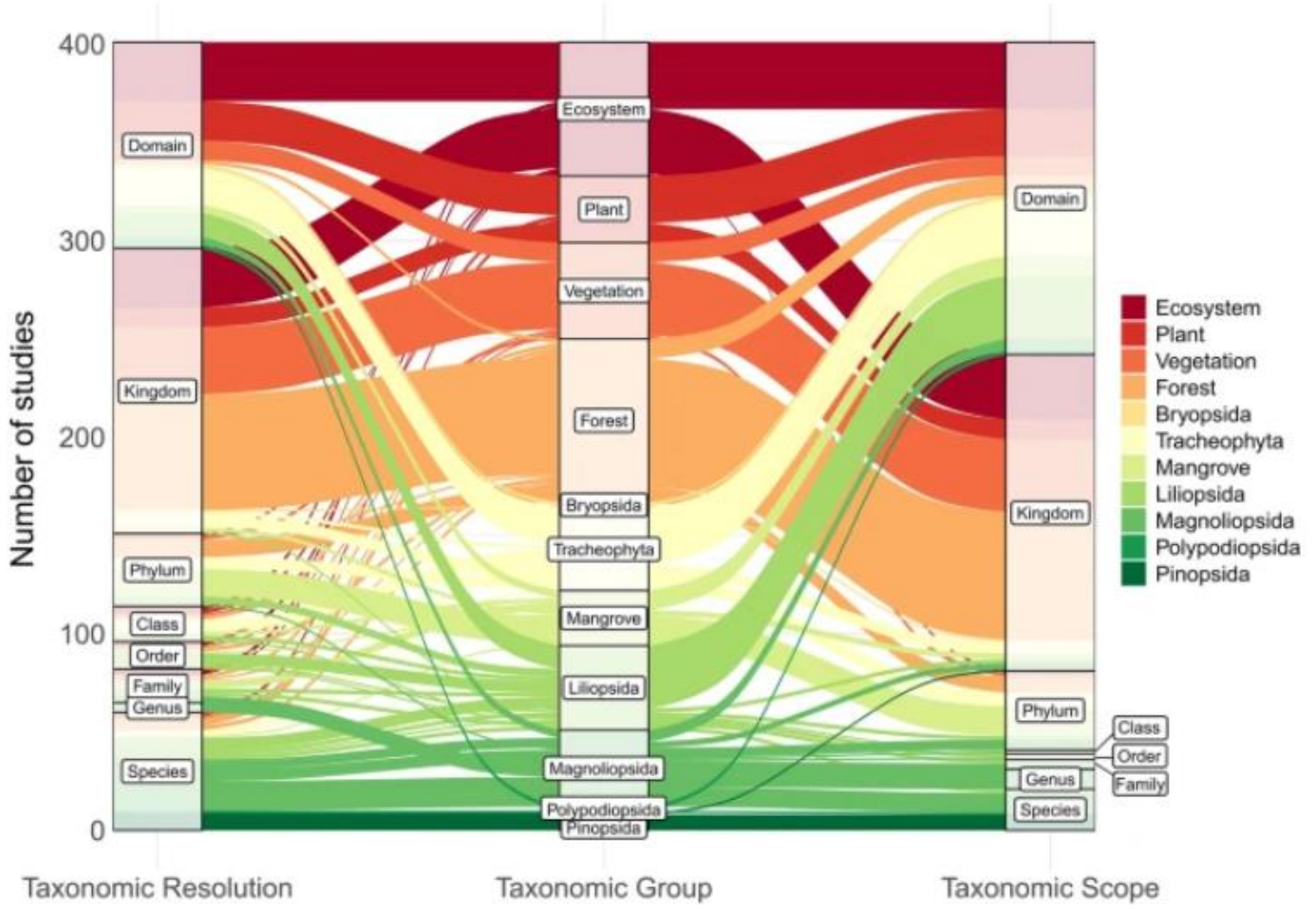


Radial bubble plot of the systems, components and factors affected across the included studies. Systems are depicted by the bubble colour. Bubble size indicates the number of articles. An interactive version is available at the project website; https://3mkproject.github.io/research.html

Haddaway et al., 2022

Représentations plus complexes

Fig. 8



The difference in taxonomic resolution and taxonomic scope of retrieved threat mapping literature among plant taxonomic groups. Taxonomic resolution is the lowest taxonomic level that was mapped as an independent population unit, thus indicative of how taxonomically detailed the threat mapping application was. Whereas, taxonomic scope is the lowest taxonomic level that includes all species for which threats were mapped within the article. The width of the flows represents the number of articles

Ridley et al., 2022

Représenter les synthèses existantes

Table 8 Comparing other evidence syntheses to our current map. N.B

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
Our map (translocation synthesis)	*P: all biodiversity worldwide* *I: reintroductions, introductions, Supplementations* *C: protected areas*	*Systematic map*	*2 databases: WOS, SCOPUS*	*12 (+2 grey literature calls)*	*1969 to 2020*	*498*
Fischer J, Lindenmayer DB. An assessment of the published results of animal relocations. *Biological Conservation*. 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. *Restoration Ecology*. 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. *Biol Cons*. 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. *Anim. Biodivers.* Conserv. 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

[a]Methods unclear and exclusion criteria difficult to ascertain. The first line in italics corresponds to this map

Langridge et al., 2021

Représenter les synthèses existantes

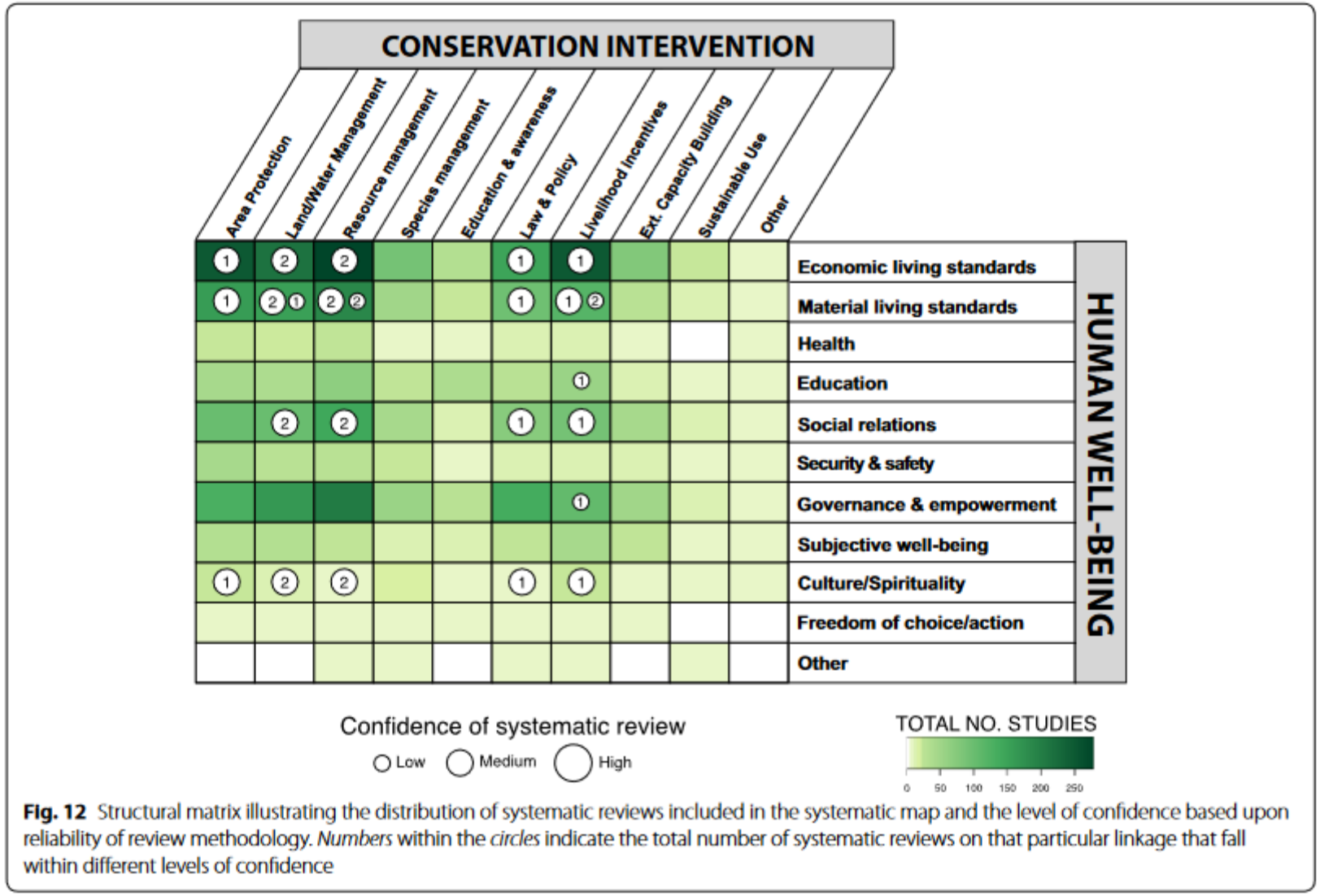


Fig. 12 Structural matrix illustrating the distribution of systematic reviews included in the systematic map and the level of confidence based upon reliability of review methodology. *Numbers* within the *circles* indicate the total number of systematic reviews on that particular linkage that fall within different levels of confidence

McKinnon et al., 2016

Identifier les knowledge gaps et les knowledge clusters

La carte a pour objectif d'identifier :

- les **manques** de connaissances en vue de prioriser de futures études primaires (appels à projet par exemple)

- les **amas** de connaissances en vue de prochaines revues systématiques

Identification des knowledge gaps et les knowledge clusters

- Plusieurs façons de faire :
- se baser sur les volumes P, E, O
- utiliser un découpage fonctionnel (types de design, etc.)
- …

- Ici les **heatmap** sont très pertinentes

- Cela peut aller (c'est même recommandé) jusqu'à identifier clairement des questions traitables en revues

Croisements 2 à 2 Population-Exposition-Outcome

Sordello et al., 2020

	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

Langridge et al., 2021

Taxonomic kingdom X Programme motivation	**Intervention type**						
	Intro+suppl	**Introduction**	**Reintro+suppl**	**Reintroduction**	**Supplementation**	**Unknown**	**Total**
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**

Croisements 2 à 2 Population-Exposition-Outcome

Cook et al., 2017

CONSERVATION INTERVENTION

Area Protection	LandWater Management	Resource management	Species management	Education & awareness	Law & Policy	Livelihood incentives	Ext. Capacity Building	Sustainable Use	Other	HUMAN WELL-BEING
247	213	278	91	34	149	248	80	22	9	Economic living standards
158	151	185	52	20	99	119	28	16	5	Material living standards
22	16	24	6	6	12	17	4	0	3	Health
49	43	68	23	41	30	56	17	5	5	Education
102	105	140	45	18	75	89	47	13	2	Social relations
45	29	33	21	5	19	16	13	3	1	Security & safety
133	162	202	58	31	134	109	54	16	6	Governance & empowerment
36	37	23	19	15	24	47	25	10	3	Subjective well-being
21	17	10	11	5	6	21	8	2	3	Culture/Spirituality
1	3	3	1	1	2	2	1	0	0	Freedom of choice/action
0	0	4	2	0	2	3	0	1	0	Other

NO. OF STUDIES

0 50 100 150 200 250

Stanton,et al., 2022

Fig. 11

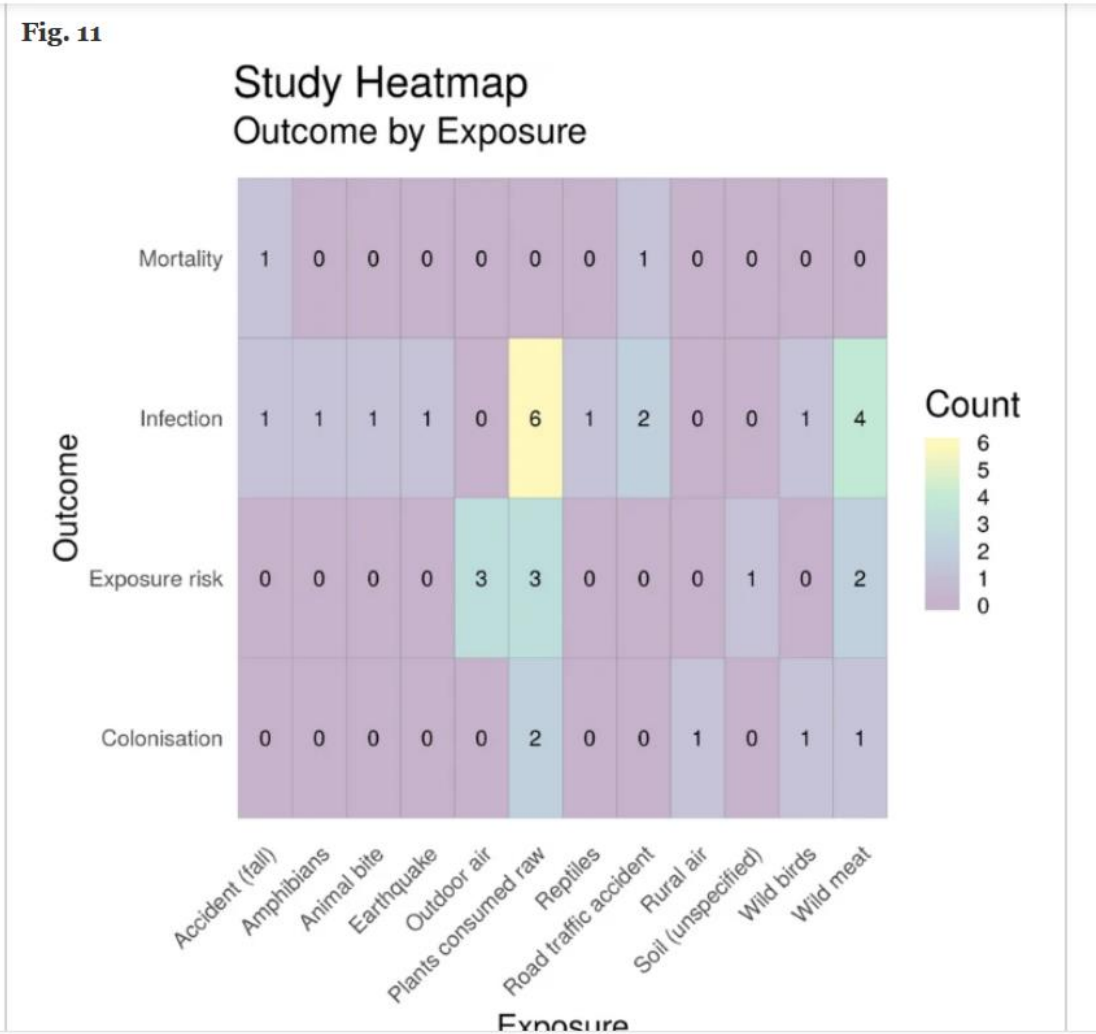
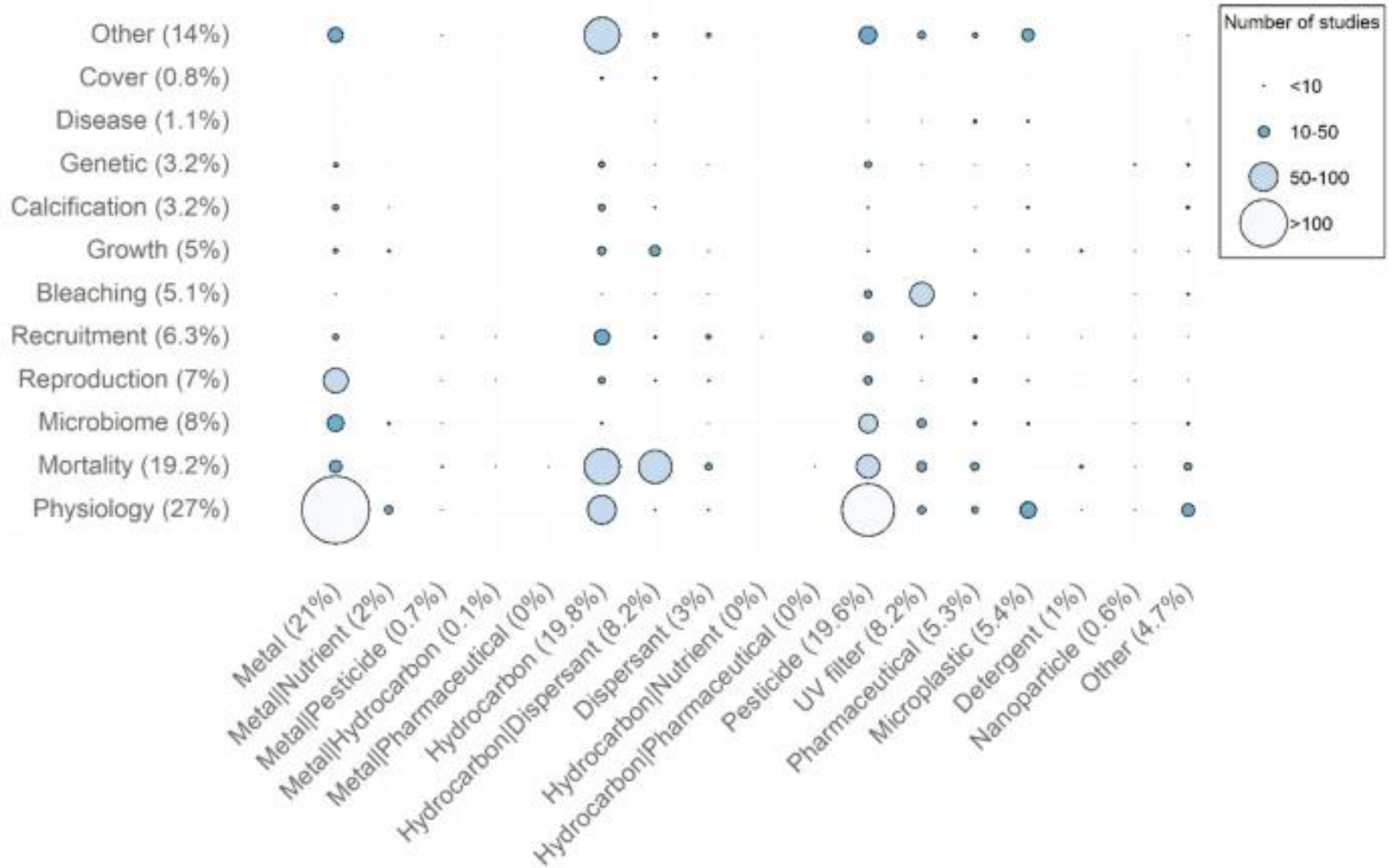


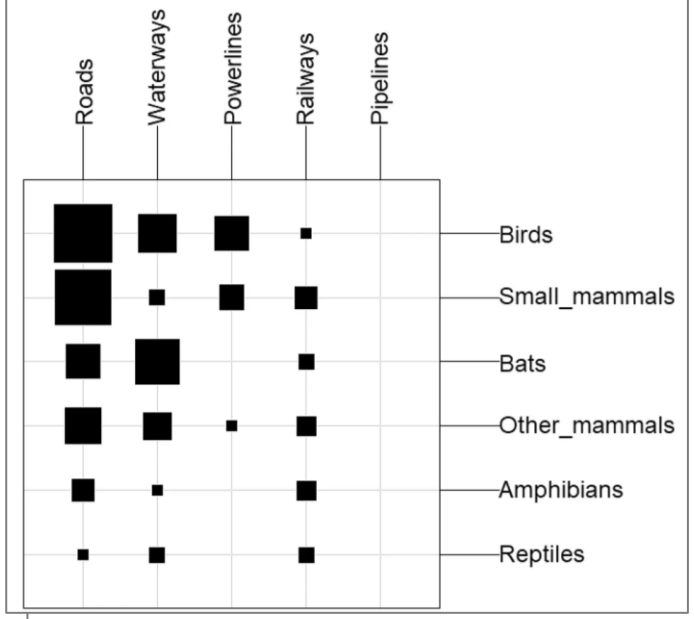
Fig. 8



Heatmap showing the distribution and frequency of experimental studies into exposure and outcomes categories. The size of the circles is function of the number of studies, and the proportion of studies in each exposure and outcome categories is indicated in parenthesis

Ouédraogo et al., 2021

c LTIs and biological groups



Ouédraogo et al., 2020

Identification des knowledge clusters

Sélection des 4 clusters les plus élevés de chacun de 3 croisements P-E-O
⇒ 12 clusters en tout

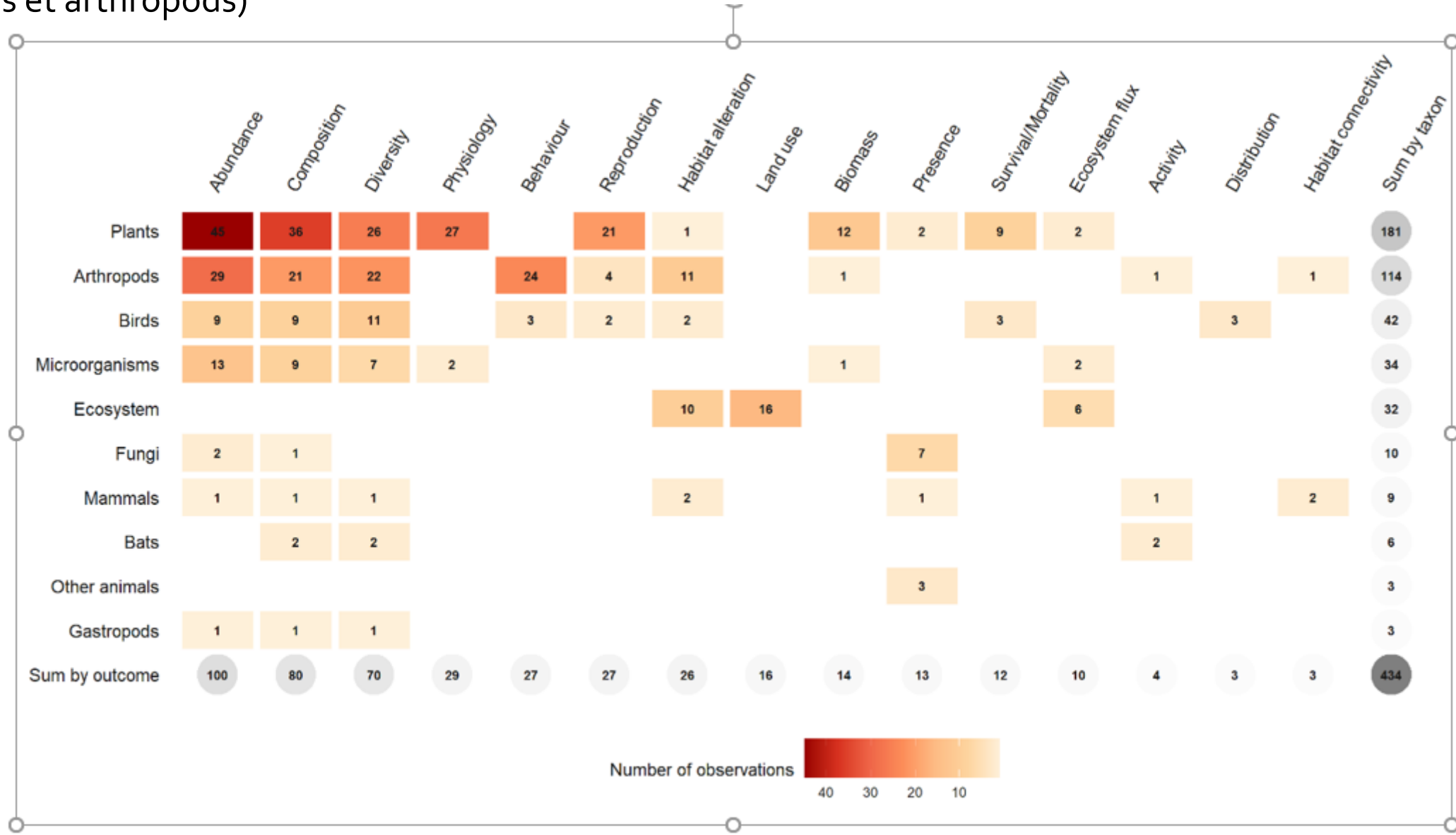
From: Evidence of the impact of noise pollution on biodiversity: a systematic map

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	

Sordello et al., 2020

Sélection des clusters regroupant plus de X observations

⇒ 2 clusters (plantes et arthropods)



Lafitte et al., soumis

Figure 11. Heat map of observations by taxa and outcome.

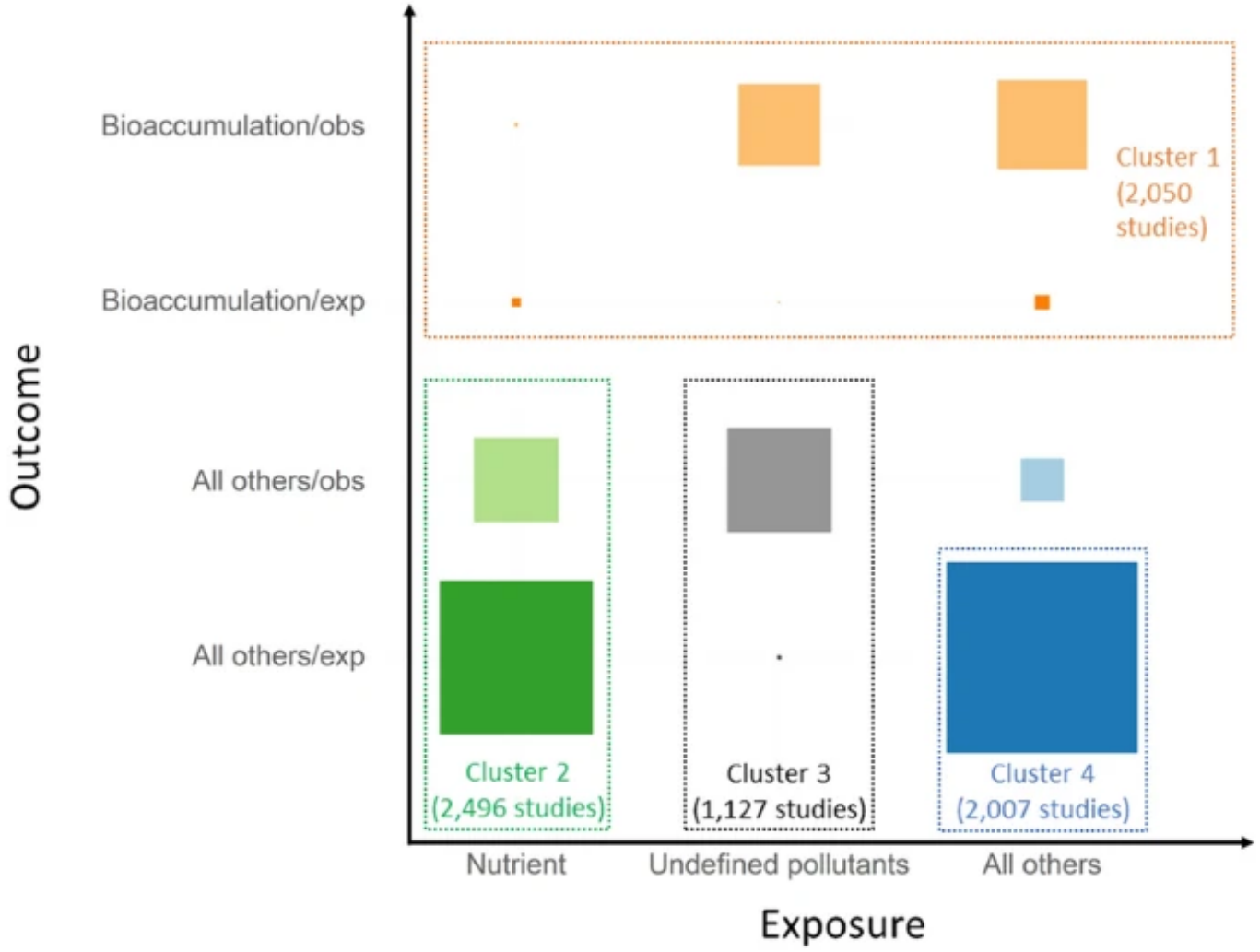
Identification de clusters en “entonnoirs”

⇒ 4 clusters :

- Bioaccumulation
  - Nutriments
    - Polluants indéfinis
      - Tout le reste (=> revue)

Ouédraogo et al., 2020

Fig. 9



Summary of the four well-represented subtopics that may be amenable to relevant full syntheses via systematic reviews (square size is function of the number of studies, “exp” and “obs” stand for experimental and observational studies, respectively). Studies reporting exposure to nutrient in combination with other chemical categories were both counted in clusters 2 and 4

Identification de clusters "thématiques"

Sordello et al., in progress

1/ Manipulating the photoperiod

Natural light/dark cycle
(e.g. L16.D8)

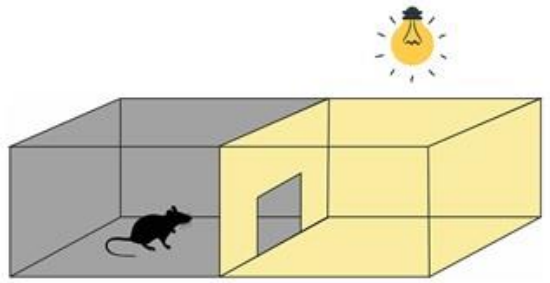
VS

Constant light L24.D0

Species: Non-wild small/large mammals
Study type/context: Experimental studies in laboratory
Modalities: Contracting/Extending photo period; Shifting photoperiod; Constant light/dark; Light pulse in the scotophase
Study design: Control-Exposed, Before/After, BACE

2/ *Ex-situ* artificial light on small mammals

Dark compartment



Illuminated compartment

Two-part study area

Species: Wild and non-wild small mammals
Study type/context: Experimental studies with artificial light in laboratory/enclosure
Study design: Control-Exposure, Before/After

3/ Impacts of outdoor lighting on wild mammals

Urban park

Lit feeders

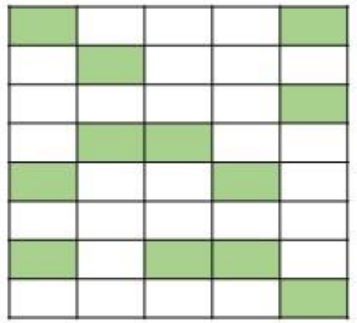
VS

Unlit feeders

Species: Wild small and large mammals
Study type/context: Experimental studies with outdoor lighting, *in-situ* or in enclosure
Study design: Control-Exposed, Before/After, BACE

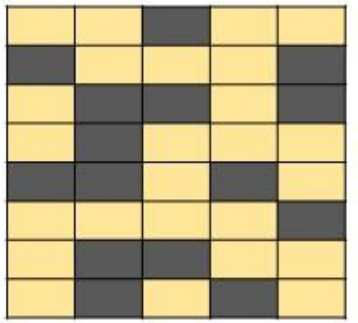
4/ Impacts of *in-situ* global light pollution

Occurrence data



X

Light data
(e.g. remote sensing)



Species: Wild large mammals
Study type/context: *In-situ* observational studies (correlation)

Dataviz de synthèses narratives

Sordello et al., soumis

Table 6 - Number of cases showing a positive, negative or neutral ALAN effect reported on owls in the 18 articles (54 cases) of our systematic review

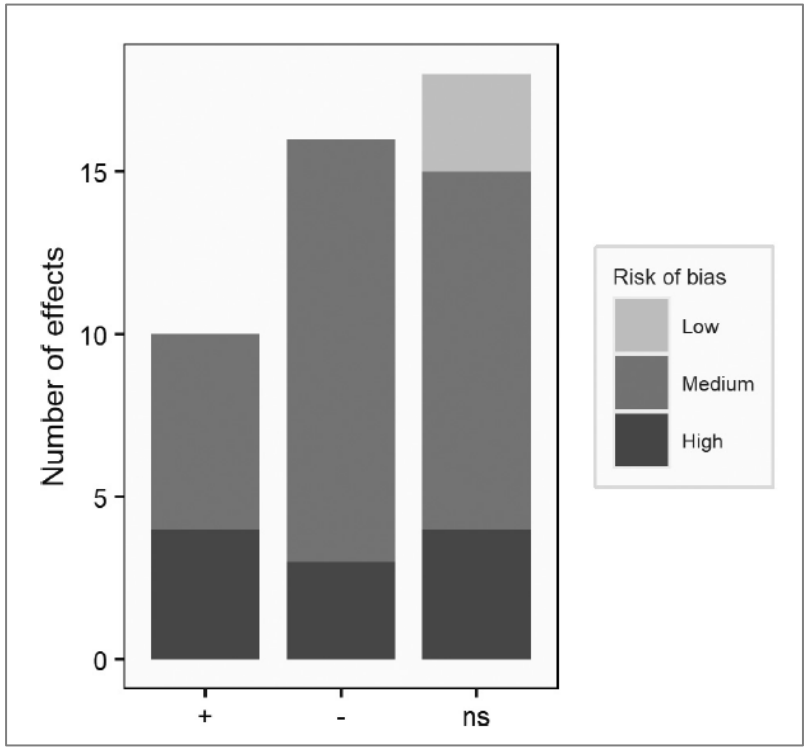
(Additional file 8)

Outcome category	Total	Not reported	Unclear/variable cases	Positive effect	Negative effect	No significant effect
Biology[1]	15	0	5	4	6	0
Hunting[1]	20	2	7	4	2	5
Activity[2]	1	0	0	1	0	0
Communication[2]	3	0	0	0	0	3
Feeding[2]	1	0	0	1	0	0
Mortality[2]	1	0	0	0	1	0
Occurrence[2]	9	3	0	1	5	0
Reproduction[2]	2	0	0	2	0	0
Space use[2]	2	0	0	1	0	1

[1] *Ex-situ* studies ; [2] *In-situ* studies

Dataviz de synthèses narratives

Lafitte et al., à paraitre



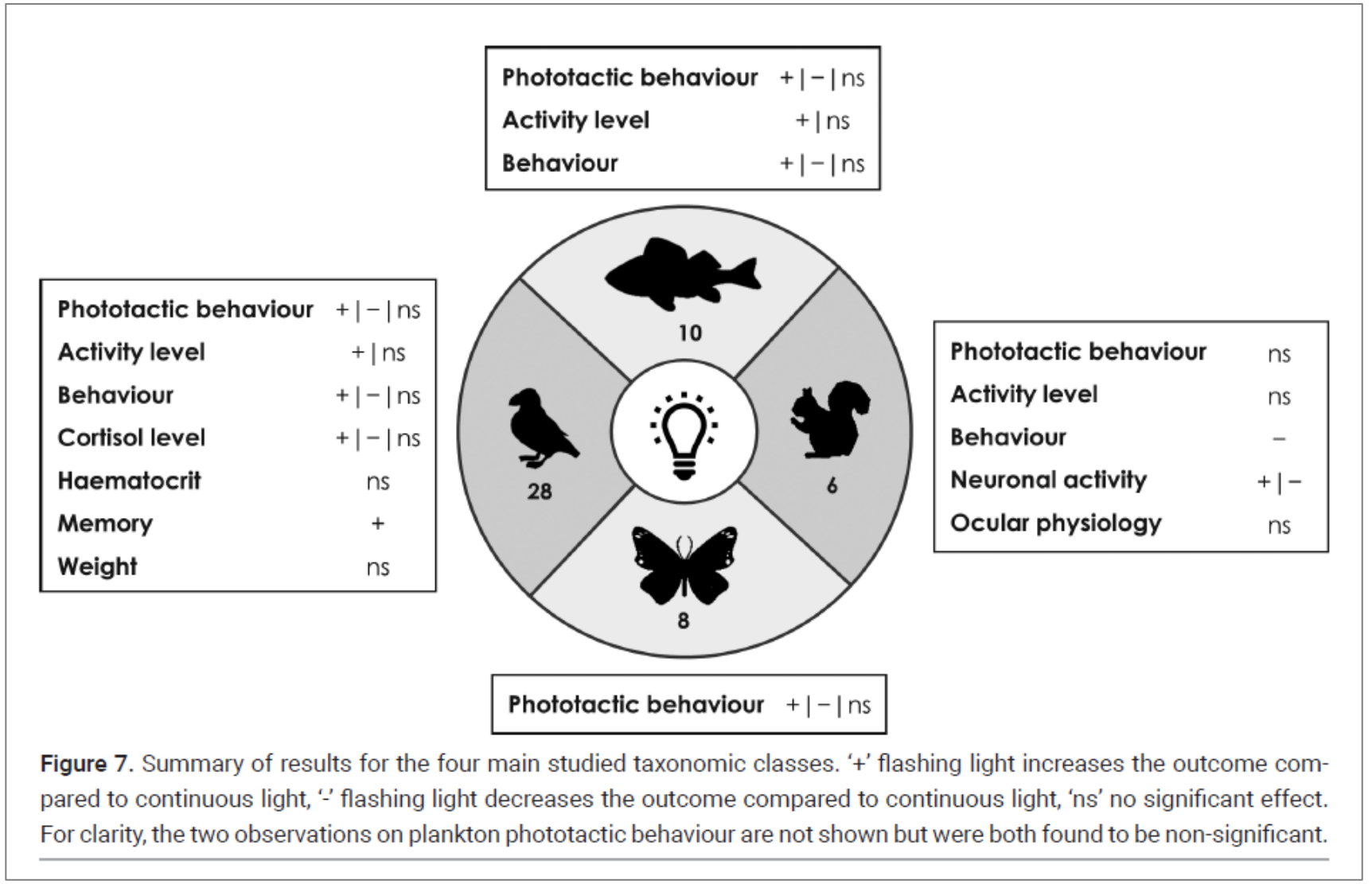
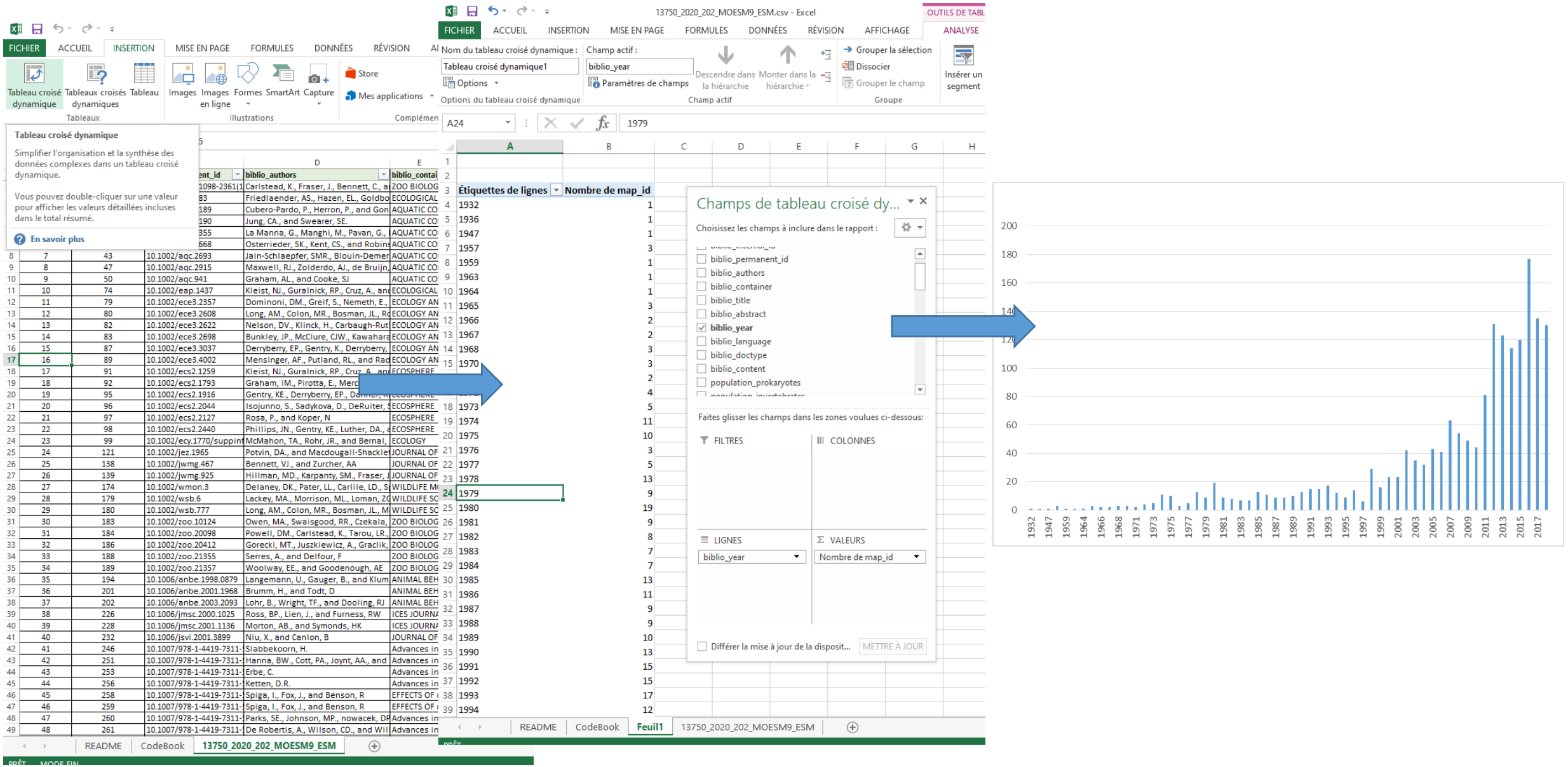


Figure 7. Summary of results for the four main studied taxonomic classes. '+' flashing light increases the outcome compared to continuous light, '-' flashing light decreases the outcome compared to continuous light, 'ns' no significant effect. For clarity, the two observations on plankton phototactic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

Quelques outils/logiciels

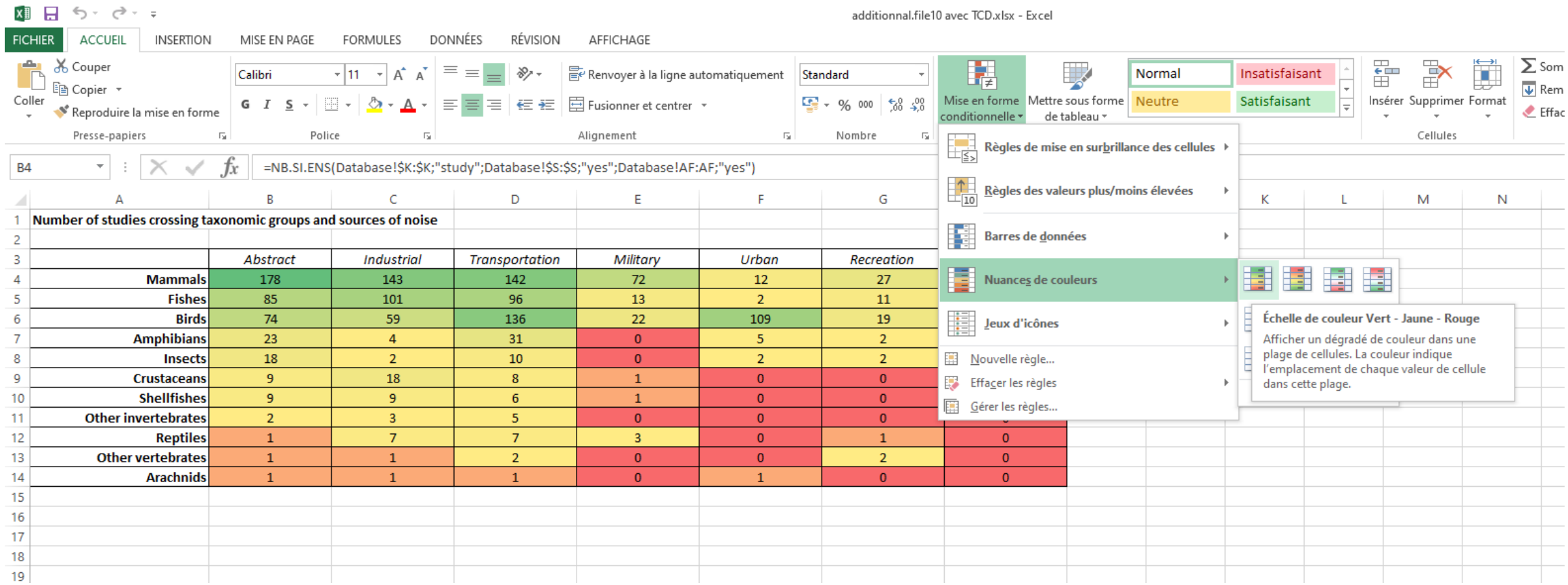
- Excel : graphiques simples (camemberts, bâtons, points), heat maps (mise en forme conditionnelle), treemaps
- EviAtlas : mappemonde, graphiques simples, heat maps
- r : possibilités très larges (ex: package tree maps)
- Nombreux outils en ligne gratuits ou payants

Excel : Tableaux croisés dynamiques



Excel : Heatmaps

1/ Utiliser la Fonction NB.SI.ENS
⇒ Permet de compter le nombre de cellules répondant à plusieurs conditions (ex: telle Population et telle Exposition)
Exemple : =NB.SI.ENS(Database!$K:$K;"study";Database!$S:$S;"yes";Database!AF:AF;"yes")
2/ Utiliser la mise en forme conditionnelle « nuances de couleurs » pour colorier automatiquement la heatmap



	A	B	C	D	E	F	G
1	**Number of studies crossing taxonomic groups and sources of noise**						
2							
3		*Abstract*	*Industrial*	*Transportation*	*Military*	*Urban*	*Recreation*
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
13	**Other vertebrates**	1	1	2	0	0	2
14	**Arachnids**	1	1	1	0	1	0

https://doi.org/10.1186/s13750-019-0167-1

Haddaway *et al. Environ Evid* (2019) 8:22
https://doi.org/10.1186/s13750-019-0167-1

Environmental Evidence

METHODOLOGY Open Access

EviAtlas: a tool for visualising evidence synthesis databases

Neal R. Haddaway[1,2*], Andrew Feierman[1], Matthew J. Grainger[3,4], Charles T. Gray[5], Ezgi Tanriver-Ayder[6], Sanita Dhaubanjar[7] and Martin J. Westgate[8]

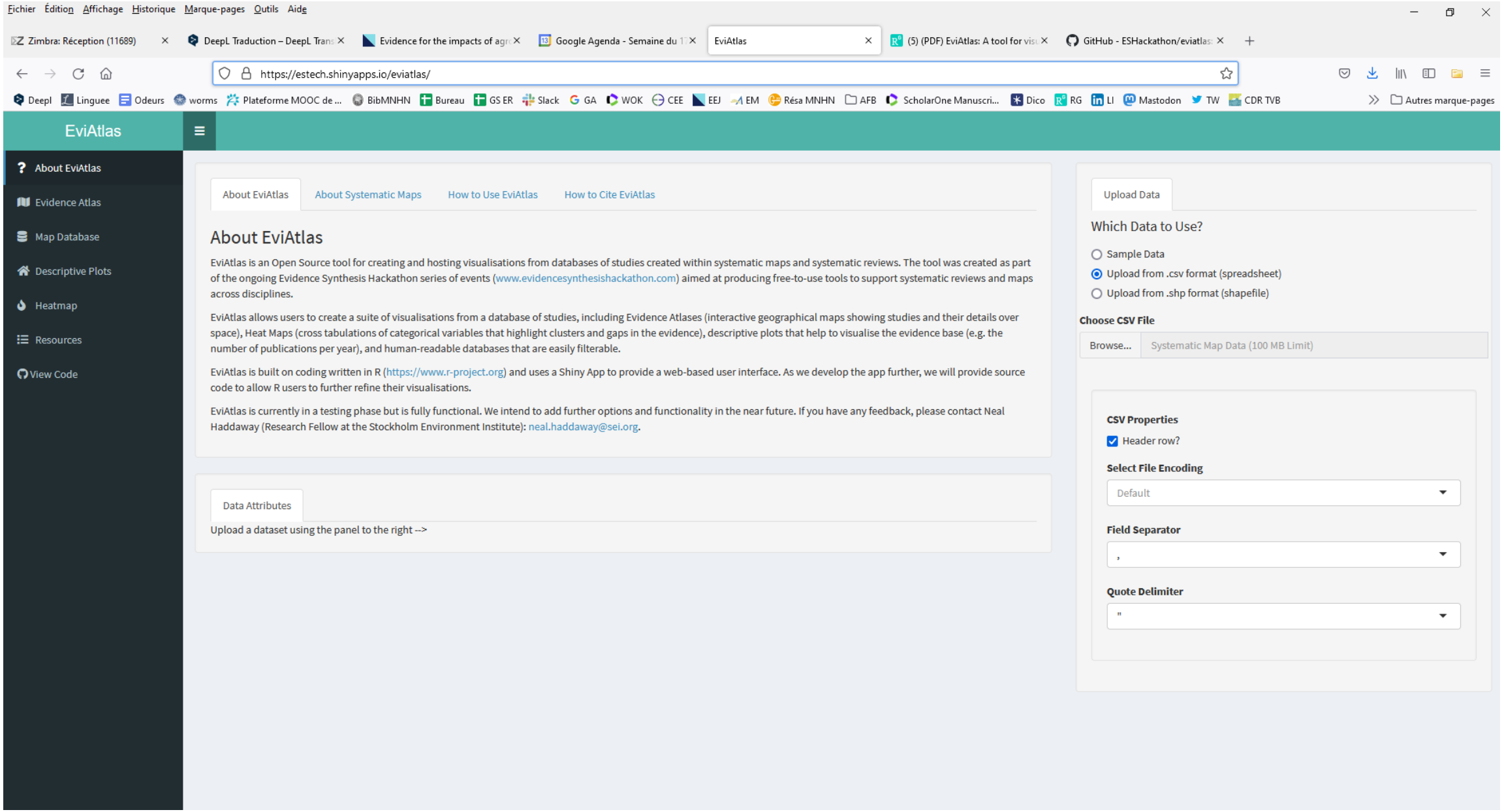
Abstract

Systematic mapping assesses the nature of an evidence base, answering how much evidence exists on a particular topic. Perhaps the most useful outputs of a systematic map are an interactive database of studies and their meta-data, along with visualisations of this database. Despite the rapid increase in systematic mapping as an evidence synthesis method, there is currently a lack of Open Source software for producing interactive visualisations of systematic map databases. In April 2018, as attendees at and coordinators of the first ever Evidence Synthesis Hackathon in Stockholm, we decided to address this issue by developing an R-based tool called *EviAtlas*, an Open Access (i.e. free to use) and Open Source (i.e. software code is freely accessible and reproducible) tool for producing interactive, attractive tables and figures that summarise the evidence base. Here, we present our tool which includes the ability to generate vital visualisations for systematic maps and reviews as follows: a complete data table; a spatially explicit geographical information system (Evidence Atlas); Heat Maps that cross-tabulate two or more variables and display the number of studies belonging to multiple categories; and standard descriptive plots showing the nature of the evidence base, for example the number of studies published per year or number of studies per country. We believe that *EviAtlas* will provide a stimulus for the development of other exciting tools to facilitate evidence synthesis.

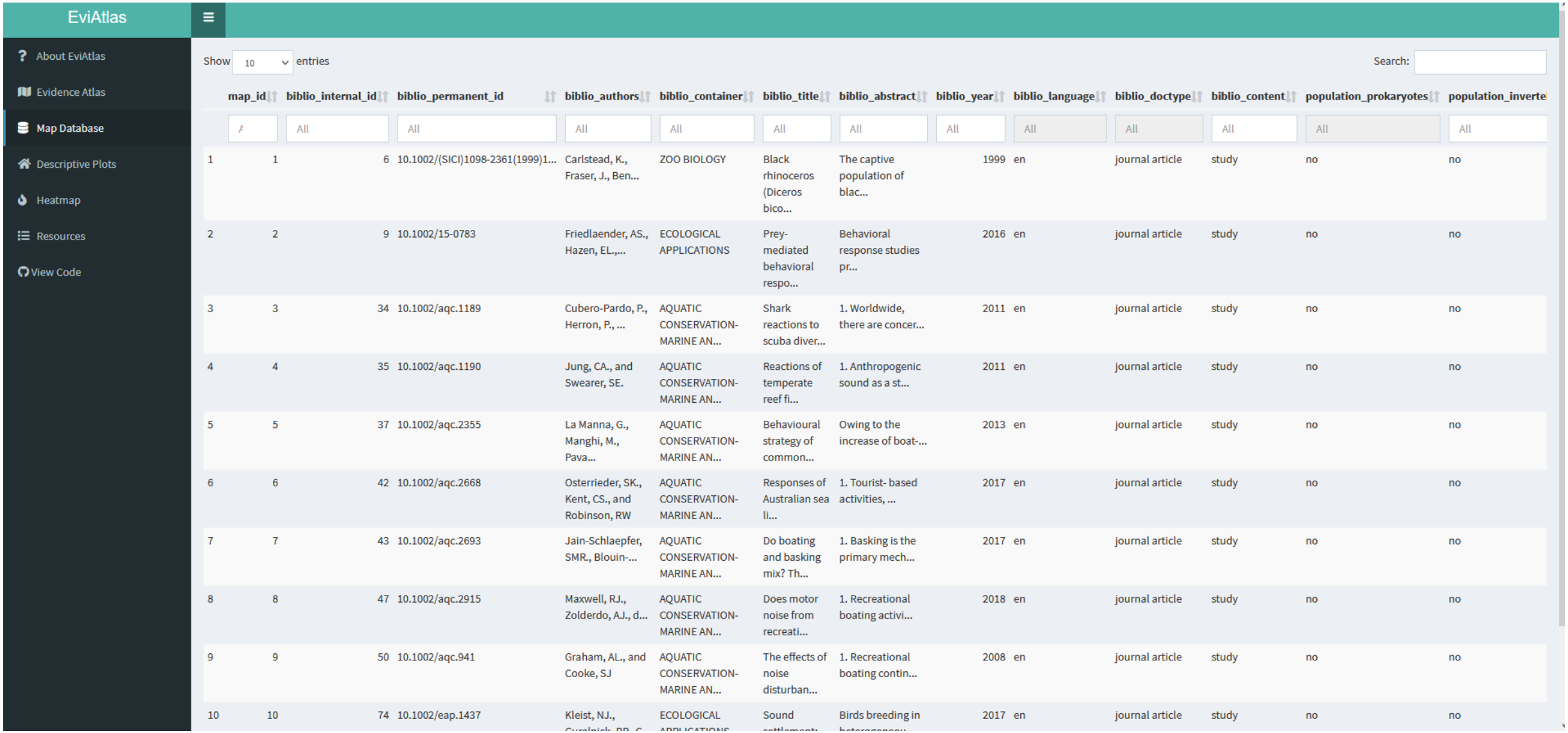
Keywords: Evidence synthesis technology, Software, Tools, Systematic mapping, Data viz

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

Charger la base de données



Visualiser la base de données en ligne



EviAtlas

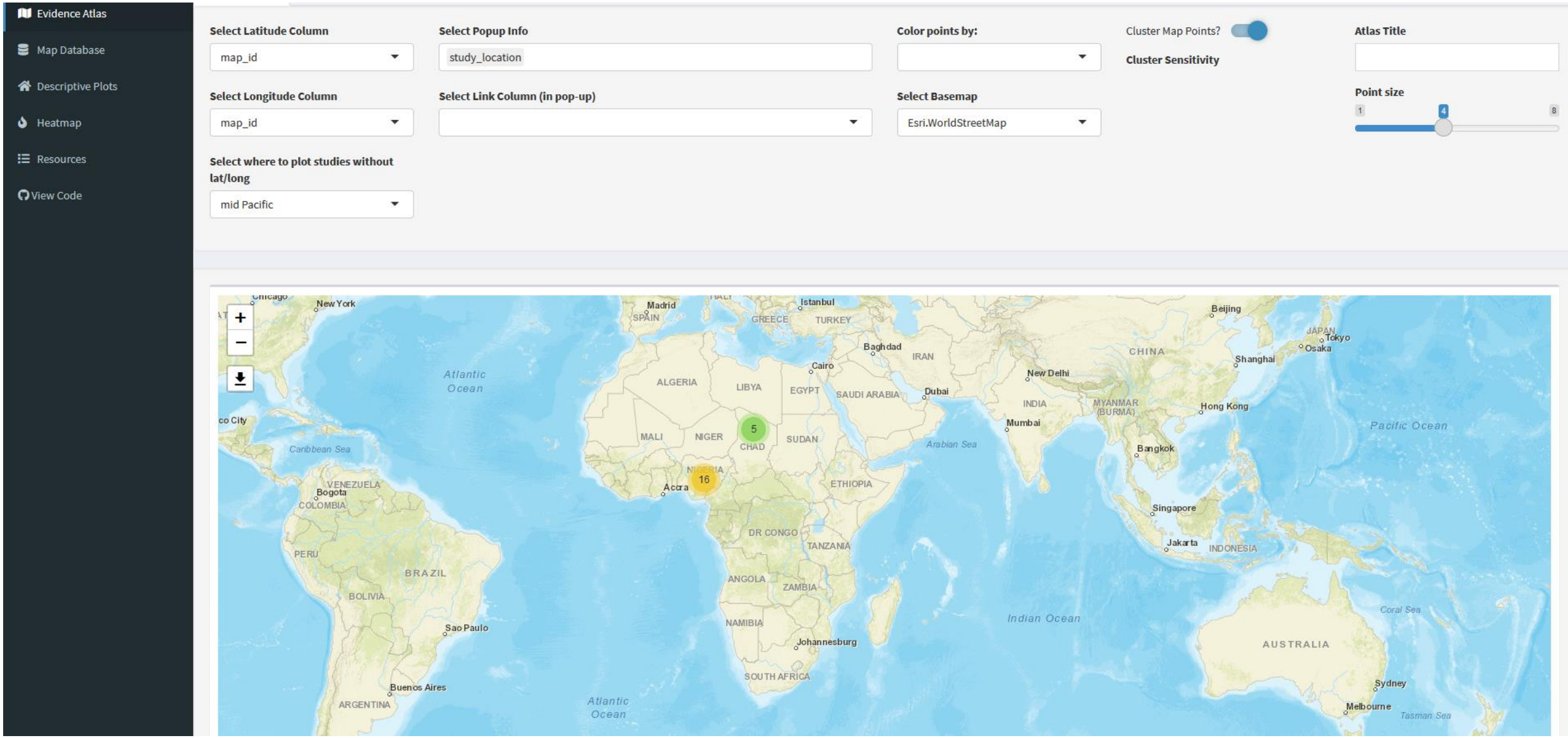
- About EviAtlas
- Evidence Atlas
- Map Database
- Descriptive Plots
- Heatmap
- Resources
- View Code

Show 10 entries

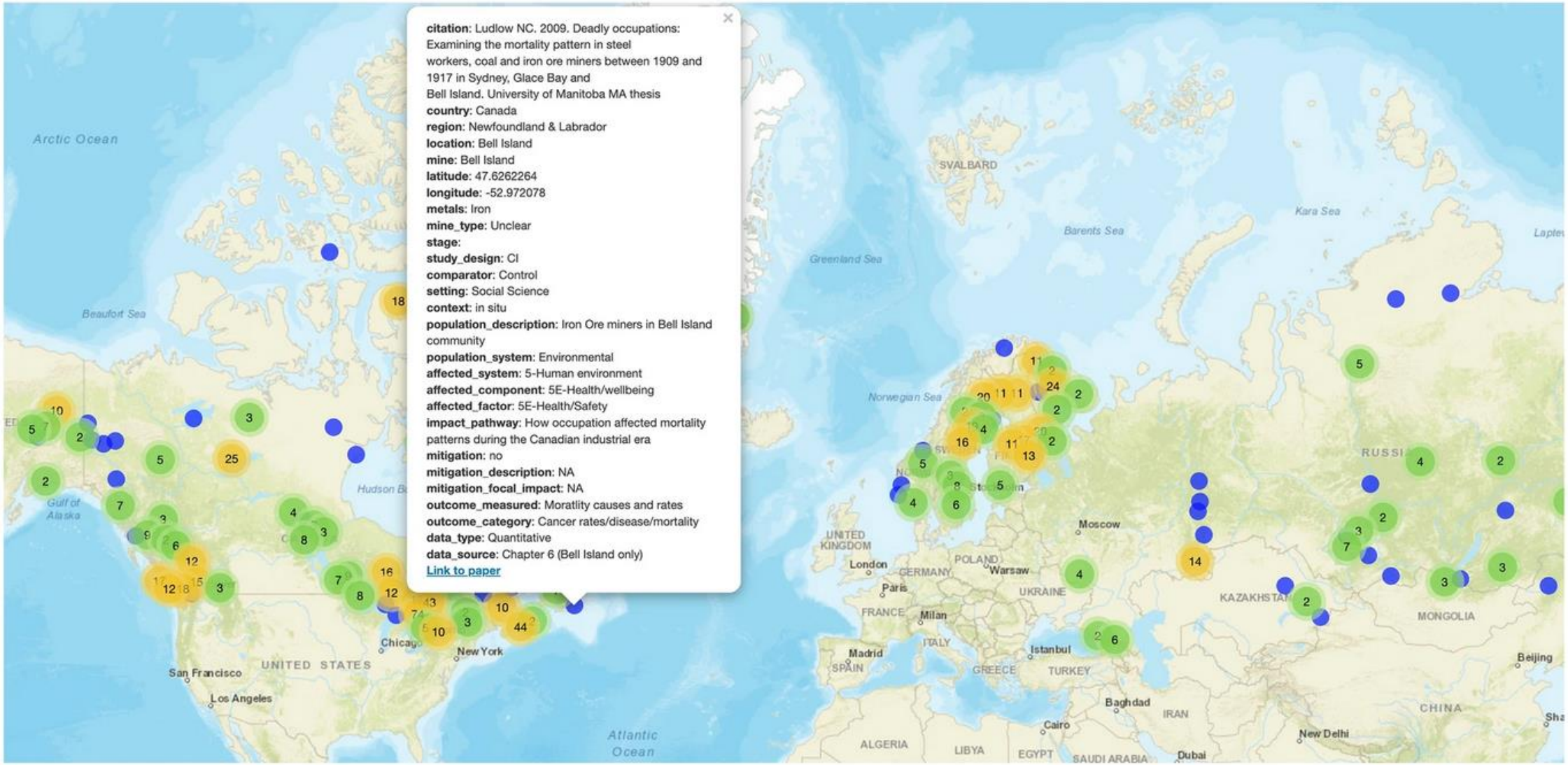
Search:

	map_id	biblio_internal_id	biblio_permanent_id	biblio_authors	biblio_container	biblio_title	biblio_abstract	biblio_year	biblio_language	biblio_doctype	biblio_content	population_prokaryotes	population_inverte
	A	All	All	All	All	All	All	All	All	All	All	All	All
1	1	6	10.1002/(SICI)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., Zolderdo, 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.,	ECOLOGICAL	Sound	Birds breeding in	2017	en	journal article	study	no	no

Atlas des études => Nécessité de disposer des coordonnées lat/lont pour chaque étude

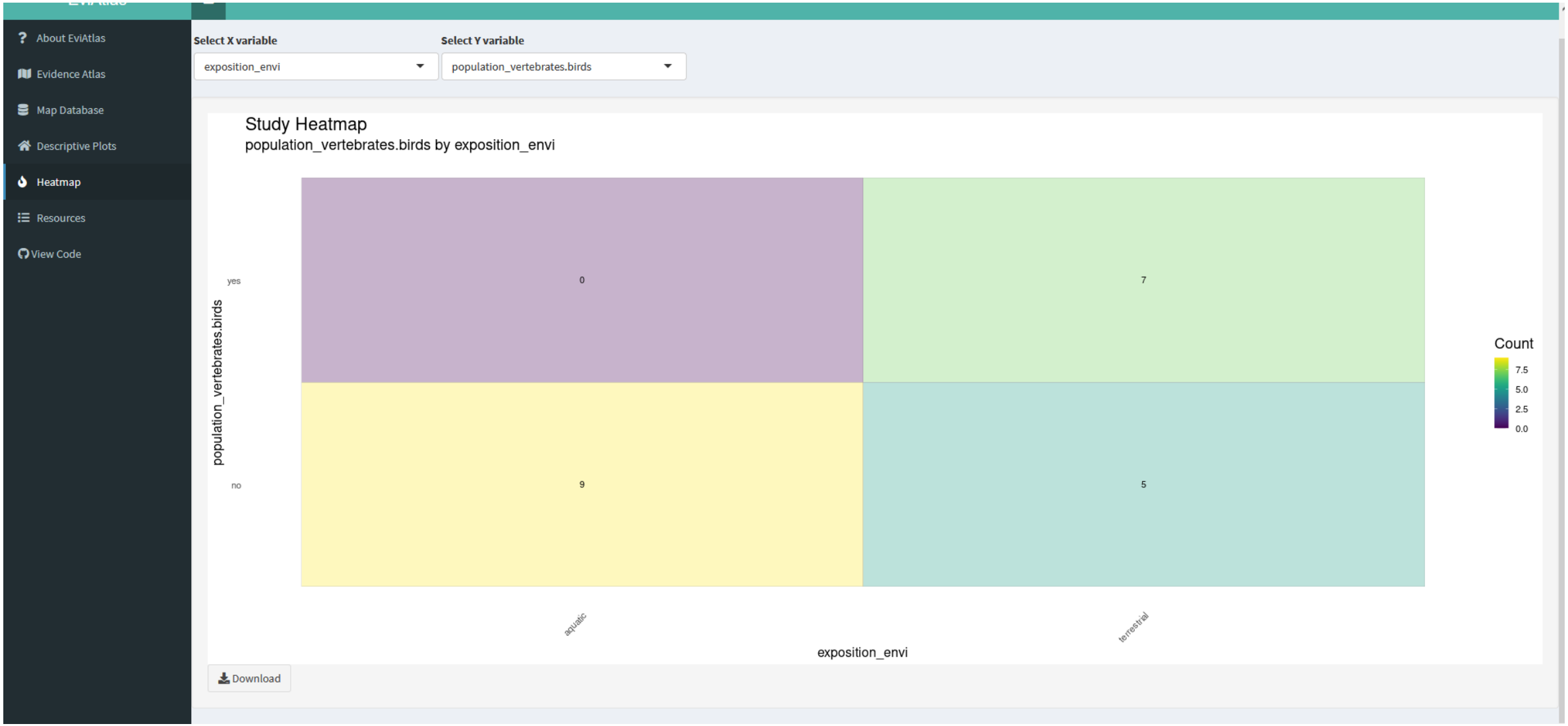


From: Evidence of the impacts of metal mining and the effectiveness of mining mitigation measures on social–ecological systems in Arctic and boreal regions: a systematic map



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

Edition de heatmaps



A vous de jouer !