

La synthèse des connaissances : une introduction aux méta-analyses et revues systématiques - Metacoding -

Mardi 4/10/22 - Montpellier

Dakis-Yaoba Ouédraogo – PatriNat (OFB-CNRS-MNHN)

dakis-yaoba.ouedraogo@mnhn.fr



Metacoding

Décrire le corpus de littérature répondant à la question

- quantité
- nature

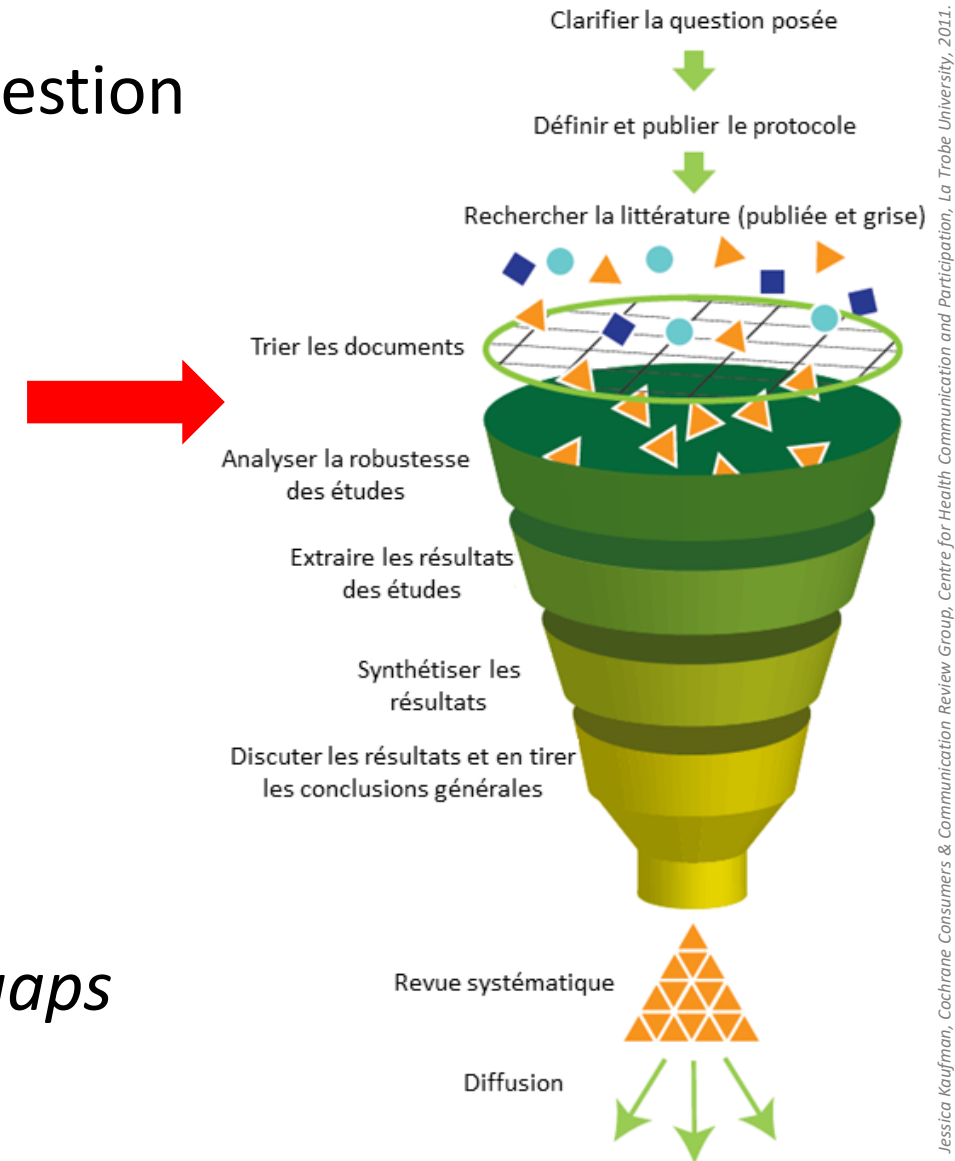
ex. quelles sont les populations étudiées ?

ex. quels sont les types d'intervention étudiés ?

ex. quelles sont les réponses mesurées ?

+ combien d'études pour chaque catégorie ?

→ Permet d'identifier les *knowledge clusters* (futures *reviews* / méta-analyses) et *knowledge gaps*



Les cartes systématiques

Méthodologie développée par EPPI-Centre (sciences sociales)

© The Policy Press • 2005 • ISSN 0547 4378



RESEARCH REPORT

May 1996

EPPI-Centre

A DESCRIPTIVE MAPPING OF HEALTH
PROMOTION STUDIES IN YOUNG PEOPLE

Greet Peersman



Evidence for Policy and Practice
Information and Co-ordinating Centre

The EPPI-Centre is part of the Social Science Research Unit, Institute of Education, University of London

© EPPI-Centre 1996

The politics of evidence and methodology: lessons from the EPPI-Centre

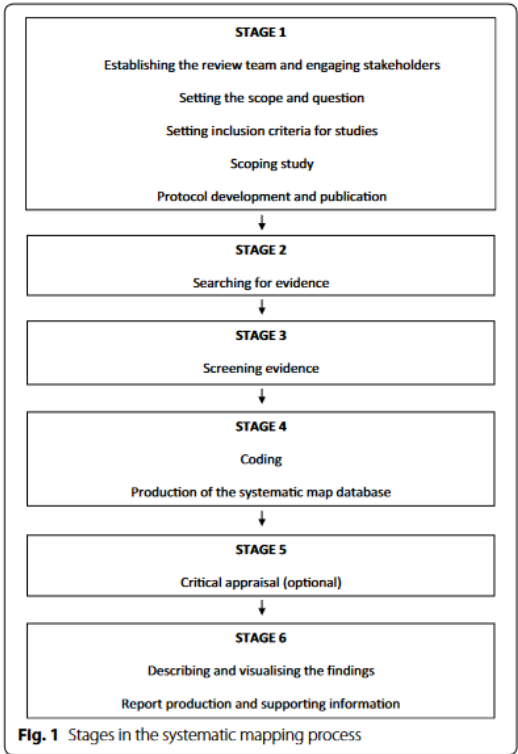
Ann Oakley, David Gough, Sandy Oliver and James Thomas

These challenges of synthesising social science research have led over time to a number of pragmatic adaptations in the technology of systematic reviews. Building on the mapping report commissioned by the DH in 1996 (Peersman, 1996), EPPI-Centre reviews increasingly use a two-stage model of systematic reviews. In stage one, the relevant literature is located and described in order to provide a 'map' of research activity in the area. 'Mapping' the literature is a useful product in itself, and it also helps to counter the objection that too much literature is found and discarded. It also helps researchers and policy makers to see what kinds of questions the research can be used to answer. One implication of a two-stage model is that some reviews may consist simply of a mapping stage; for example, a map of research on the effects of travel on children as a scoping study for further research on children's travel to school (Gough et al, 2001). In the second stage of a review, a smaller subset of studies is used to answer a more focused question. Criteria used to select the smaller

Les cartes systématiques

En sciences environnementales :

Même rigueur que pour les revues systématiques (protocole, etc.)



James et al. *Environ Evid* (2016) 5:7
DOI 10.1186/s13750-016-0059-6

Environmental Evidence

METHODOLOGY Open Access



A methodology for systematic mapping in environmental sciences

Katy L. James¹, Nicola P. Randall^{1*} and Neal R. Haddaway²

Table 1 Differences between a systematic map and systematic review

Stage in 'evidence synthesis'	Systematic map	Systematic review
Objective	Describes the state of knowledge for a question or topic	Aims to answer questions with a quantitative or qualitative answer
Question formulation	Question can be open-framed or closed-framed. Topic can be broad or narrow	Question is usually closed-framed
Search strategy	No limitation on research evidence that can be included (e.g. primary and secondary research)	Evidence is limited to primary qualitative or quantitative research. For example comparative, prevalence or occurrence type studies
Article screening	Articles not obtainable at full text (where the full document is not available) or studies with limited data may be included	Article full text is usually required to extract relevant data
Data extraction	Information describing the study and its methods are extracted. Study results may not be extracted	Information describing the study and its methods and studies' qualitative and or quantitative results extracted
Critical appraisal	Critical appraisal optional	All included studies critically appraised for study internal and external validity
Synthesis	Trends in the literature, knowledge gaps and clusters identified but no 'synthesis of study results' carried out	Qualitative or quantitative synthesis of study results where possible using appropriate methodology (e.g. meta-analysis). Knowledge gaps identified
Report	Describes and catalogues available evidence relating to a topic of interest, identifying knowledge gaps and knowledge clusters. Implications for policy, practice and research made	Narrative and qualitative or quantitative synthesis study results (e.g. meta-analysis) to answer the question (where feasible). Implications for policy and practice, and identification of knowledge gaps for future research

Les cartes systématiques

Environmental Evidence

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

Mining can directly and indirectly affect social and environmental systems in a range of positive and negative ways, and may result in societal benefits, but may also cause conflicts, not least in relation to ...

Neal R. Haddaway, Adrienne Smith, Jessica J. Taylor, Christopher Andrews, Steven J. Cooke, Annika E. Nilsson and Pamela Lesser

Environmental Evidence 2022 11:30

Systematic Map | Published on: 8 September 2022

Existing evidence on the impacts of within-field farmland management practices on the flux of greenhouse gases from arable cropland in temperate regions: a systematic map

Reducing the emissions of greenhouse gases (GHGs) is vital for mitigating climate change and meeting commitments to international agreements such as the COP 21 Paris Agreement of 2015. Agriculture is reported ...

Alexandra Mary Collins, Neal Robert Haddaway, James Thomas, Nicola Peniston Randall, Jessica Jean Taylor, Albana Berberi, Jessica Lauren Reid, Christopher Raymond Andrews and Steven James Cooke

Environmental Evidence 2022 11:24

Systematic Map | Published on: 23 June 2022

The scope and extent of literature that maps threats to species globally: a systematic map

Human activities are driving accelerating rates of species extinctions that continue to threaten nature's contribution to people. Yet, the full scope of where and how human activities threaten wild species wor...

Francesca A. Ridley, Emily J. Hickinbotham, Andrew J. Suggitt, Philip J. K. McGowan and Louise Mair

Environmental Evidence 2022 11:26

Systematic Map | Published on: 9 July 2022

Scientific evidence of sustainable plant disease protection strategies for oilseed rape (*Brassica napus*) in Sweden: a systematic map

Oilseed rape (OSR; *Brassica napus* L.) is a highly valued crop for food, feed and industrial use. It is primarily grown in temperate climates, and over recent decades, its area of production and profitability have...

Ann-Charlotte Wallenhammar, Elisa Vilvert, Sanna Bergqvist, Åke Olson and Anna Berlin

Environmental Evidence 2022 11:22

Systematic Map | Published on: 21 June 2022

Les cartes systématiques

Bernes et al. *Environ Evid* (2017) 6:24
DOI 10.1186/s13750-017-0103-1

Environmental Evidence

Jakobsson et al. *Environ Evid* (2018) 7:17
<https://doi.org/10.1186/s13750-018-0129-z>

Environmental Evidence

SYSTEMATIC MAP

Open Access



How are biodiversity and dispersal of species affected by the management of roadsides? A systematic map

Claes Bernes^{1*}, James M. Bullock², Simon Jakobsson³, Maj Rundlöf⁴, Kris Verheyen⁵ and Regina Lindborg³

Population: Roadsides
Intervention: Roadside management, e.g. mowing, removal of shrubs and saplings, pruning, coppicing, control of invasive/nuisance species, herbicide use, sowing or planting, burning, grazing by livestock, tillage and other forms of soil cultivation, mulching, topsoiling, use of erosion-control mats or blankets, fertiliser addition, liming, irrigation, ditching and maintenance of ditches
Comparator: Non-intervention or alternative forms of roadside management
Outcomes: (1) Measures of local or regional diversity of animals, plants, fungi or bacteria, e.g. alpha/beta/gamma species diversity, genetic diversity, abundance of individual species, or abundance of functional/taxonomic groups of organisms (including measures of the total abundance of vegetation). (2) Measures of species dispersal along roads or roadsides, e.g. species distribution patterns or movement rates of individuals or propagules.

Table 2 Combinations of interventions and organism groups studied (No. of studies)

Intervention	Organism group														All species
	Graminoids	Herbs/forbs	Woody plants	Bryophytes	Lichens	Fungi	Mammals	Birds	Reptiles	Insects	Other arthropods	Other invertebrates	Bacteria		
Vegetation disturbance															
Mowing	54	61	28	1	0	1	5	7	0	12	1	1	0	85	
Pruning	1	1	1	0	0	0	0	0	0	0	0	0	0	7	
Removal of shrubs/saplings	2	3	4	0	0	0	3	2	1	1	0	1	0	9	
Grazing	3	3	6	0	0	0	0	0	0	0	0	0	0	6	
Burning	11	12	4	0	0	0	0	1	0	1	0	0	0	14	
Hoisting	1	1	1	0	0	0	0	0	0	0	0	0	0	1	
Herbicide use	67	72	21	0	0	0	0	0	0	1	0	1	0	86	
Biological amendment															
Sowing	63	76	21	2	1	0	0	1	0	3	0	1	3	86	
Planting	11	12	10	1	1	0	0	2	1	1	0	0	0	19	
Mycorrhizal treatment	4	2	4	0	0	0	0	0	0	0	0	0	0	7	
Soil amendment															
Fertiliser addition	31	31	13	0	0	1	0	0	0	0	0	0	1	39	
Liming	9	17	1	0	0	0	0	0	0	0	0	0	0	18	
Topsoiling	11	11	7	0	0	0	0	0	0	0	0	0	0	11	
Mulching or compost application	32	33	17	0	0	1	0	0	0	0	0	0	3	41	
Use of erosion-control mats/blankets	11	10	7	0	0	0	0	0	0	0	0	1	0	11	
Irrigation	6	5	4	0	0	0	0	0	0	0	0	0	1	7	
Soil cultivation (e.g. tillage)	13	19	6	1	1	0	0	0	0	0	0	0	0	23	
Ditching or ditch maintenance	3	3	3	1	0	0	0	0	0	0	0	0	0	3	
Control of invasive/nuisance species	43	52	18	0	0	0	0	0	0	1	0	0	0	61	
Other interventions	5	6	3	0	0	0	0	0	0	2	0	0	0	11	
All interventions	207	232	105	5	2	2	5	10	1	17	1	2	3		

SYSTEMATIC REVIEW

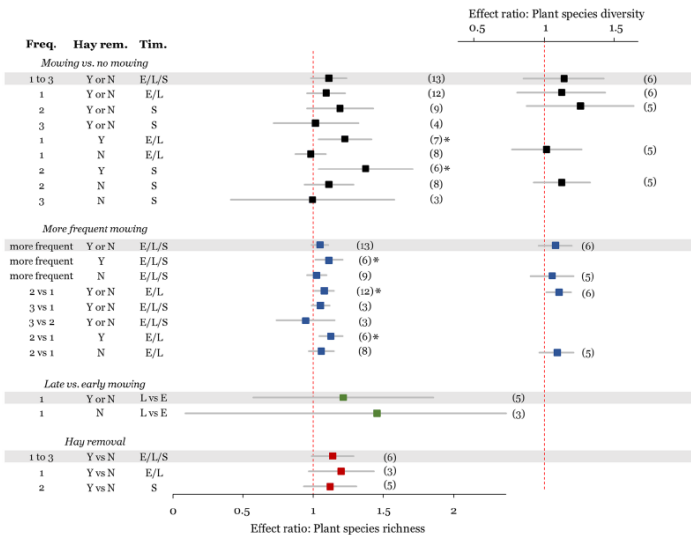
Open Access



How does roadside vegetation management affect the diversity of vascular plants and invertebrates? A systematic review

Simon Jakobsson^{1*}, Claes Bernes², James M. Bullock³, Kris Verheyen⁴ and Regina Lindborg¹

Population: roadside habitats and the species of vascular plants and invertebrates found within them.
Intervention: maintenance or restoration of roadside habitats based on non-chemical vegetation removal such as mowing, grazing, burning, clearance of shrubs and saplings, coppicing, pruning, or mechanical removal of invasive plants.
Comparator: non-intervention or alternative forms of the interventions.
Outcomes: measures of functional/taxonomic diversity (including abundance) of vascular plants or invertebrates.



Metacoding

Extraction des meta-données = extraction des informations décrivant **l'étude** et ses méthodes

Coding = processus consistant à attribuer des **catégories** à chaque **étude** pour une série de variables décrivant le cadre et la conception de l'étude

- Définir l'étude (un article peut contenir plusieurs études)
- Définir les variables à extraire/coder et les catégories (*code book*)

Metacoding

James KL, Randall NP, Haddaway NR. A methodology for systematic mapping in environmental sciences. Environ Evid. 2016;5:7.

Table 2 Examples of coding variables for systematic maps

Coding variable	Example of information that may be recorded
Full reference	Author(s), title, date, publisher
Year of publication	Date of publication in years
Publication type	Academic journal, book, conference paper or thesis
Language	Article language
Study country	Name of country
Linked study	Other articles reporting the same study
Data source	e.g. Primary or secondary research
Data type	e.g. Quantitative or qualitative
Study design	e.g. Experimental, quasi-experimental, observational, survey
Population(s)	e.g. Species, group
Intervention(s)	Type(s) of intervention investigated
Exposure(s)	Type(s) of exposure investigated
Comparator(s)	Type(s) of comparator used
Outcome(s) assessed	Types of outcome assessed
Sampling strategy	e.g. None specified, randomised, systematic
Length/period of study	e.g. Number of days, weeks, months, years or time period over which study was undertaken

Metacoding

! Attention !

Le *metacoding* prend du temps : compromis à trouver entre la quantité de détails sur l'étude (utilité) et les ressources disponibles

→ Quelles sont les informations les plus pertinentes pour la question ?

Importance de **tester** le *coding book* sur un échantillon d'articles pour vérifier l'adéquation avec le contenu des études

Documenter le travail (transparence, répétabilité)

Décider quoi faire en cas d'**information manquante** (« Not stated », contacter les auteurs, compléter via les études liées)

Coding book : exemple

Haddaway et al. *Environmental Evidence* (2022) 11:30
https://doi.org/10.1186/s13750-022-00282-y

Environmental Evidence

Variables

SYSTEMATIC MAP

Open Access

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

Neal R. Haddaway^{1,2,3*}, Adrienne Smith⁴, Jessica J. Taylor⁴, Christopher Andrews⁴, Steven J. Cooke⁴, Annika E. Nilsson⁵ and Pamela Lesser⁶

	Column	Description	Dropdown/Meta-data	Example
Publication	Reviewer ID	Name of the reviewer who is extracting the meta-data	Meta-data	
	EPPI ID	Unique document ID	Meta-data	
	Citation	As Written	Meta-data	
	Authors	As Written	Meta-data	
	Title	As Written	Meta-data	
	Year	As Written	Meta-data	
	Journal	As Written	Meta-data	
	Pub Type	Type of article	Dropdown	
Mine description	Country	Country where mine is located	Dropdown	
	Region	Region or state where mine is located	Meta-data	
	Location	Specific name of the locality where the impact is being measured (site name)	Meta-data	City, impacted site name, etc.
	Mine/project name	Name of the mine or project	Meta-data	
	Latitude	Decimal degree location of site where research occurred	Meta-data	If not reported, retrieve external to paper based on closest available location or maps provided
	Longitude	Decimal degree location of site where research occurred	Meta-data	If not reported, retrieve external to paper based on closest available location or maps provided
	Key metals/ore extracted	The main ore extracted from the mine	Dropdown	
	Multiple metals list	If multiple selected in previous, List multiple metals extracted at the mine separate by semi colon	Meta-data	Separate metas by semi colon (eg. Gold; Silver; Iron)
	Type or mine	Type of mining activity, expand the drop-down as necessary	Dropdown	e.g. open pit
	Prospecting	Y/N/NR/NS	Dropdown	
	Exploration	Y/N/NR/NS	Dropdown	
	Construction	Y/N/NR/NS	Dropdown	
	Operation	Y/N/NR/NS	Dropdown	
	Decommissioning & Closure	Y/N/NR/NS	Dropdown	
	Post-closure	Y/N/NR/NS	Dropdown	
	Remediation	Y/N/NR/NS	Dropdown	
	Abandonment	Y/N/NR/NS	Dropdown	
	Expansion	Y/N/NR/NS	Dropdown	
	Comment		Meta-data	
Study description	Study Design	CI, BA, BACI, RCT, correlative, other	Dropdown	
	Study Design comments		Meta-data	
	Comparator Type	Description of the comparator used in the study	Dropdown	
	Study Setting		Dropdown	
	Study Design context	In situ, mesocosm, ex situ	Dropdown	
System	Population (who/what is affected) Description	Authors description of the population/system being impacted	Meta-data	Coastal habitat, as written by the author
	Population System	Is this a social, technological, or environmental	Dropdown	What system does the population described generally fall into.
	System affected	Describe population/system impacted (See sheet Impact coding)	Dropdown	
	Component affected	Follow coding based on system chosen (See sheet Impact coding)	Dropdown	
	Factor affected	Follow coding based on factor chosen (See sheet Impact coding)	Dropdown	
Impact/Mitigation	Impacts?	Does the study empirically investigate the impacts of mining?	Dropdown	Y/N/NR/NS
	Impact pathway (what is impacting the population)	Authors' short description of the impact	Meta-data	Compaction of the soil from mine traffic
	Mitigation?	Does the study empirically investigate mitigation measures? Y/N/unclear	Meta-data	Y/N/NR/NS
	Mitigation description	Authors' short description of the mitigation measure	Meta-data	Tarpaulin covers on trucks to reduce dust
	Impact being mitigated	Name the impact being mitigated	Dropdown	
Outcome	Measured outcome	Short description from authors of the outcome measured	Meta-data	
	Data Type	Quantitative or Qualitative data	Dropdown	
	Source of the information	Page or table from which outcome meta data can be found	Meta-data	

Coding book : exemple

Haddaway et al. *Environmental Evidence* (2022) 11:30
<https://doi.org/10.1186/s13750-022-00282-y>

Environmental Evidence

Catégories

Codes	Notes	Codes	Notes
Publication Type		Country	
Article	journal articles	Canada	
Thesis	thesis (Masters or PhD)	USA	Alaska only
Conf	conference proceeding	Greenland	
Book	book	Iceland	
Book Chap	chapter in a book	Norway	including Svalbard
Report	report (government, consultant)	Sweden	
Other/Unlear	e.g., news article, presentation etc.	Finland	
		Russia	
Key metals/ore extracted		The Faroe Islands	
Gold			
Iron		Type of mine	
Copper		Open pit	
Nickel		Strip mine	
Zinc		Quarry	
Silver		Underground mine	
Molybdenum		Surface mine	
Lead		Placer mine	
NR		Unclear	
Multiple		Expand as necessary	
Study design		Comparator Type	
BACI	Before-After-Control-Impact i.e.,	Same site/pop- Before	BA designs; no control site only before and after
BA	Before-after i.e., measured outcome	Reference site/population	Different unimpacted site/population; reference site;
CI	Control-impact i.e., measures outcome	Control	Where there are only two possible outcomes, e.g. positive
RCT	Randomized Controlled Trial; A study	Background values	Impacted sites/populations are compared to standard or
Correlative	Statistical relationship between	No control	No comparator; after impact only or correlative
I/A only	No comparator; after impact only	BACI (reference/control/before/after)	
		Expand as necessary	
Study Setting		Study design context	
Field	Experimental, descriptive field study	In situ	Situated in the original, natural, or existing place or
Field+Lab analysis	Field work done and samples analyzed	ex situ	Outside, off site, or away from the natural location. For
Lab Experiment	Including indoor/outdoor facilities/app	mesocosm	Bounded and partially enclosed outdoor experiment
Lab Exp + Field test	Prototype studied in lab/facility and tes		
Lab analysis	Sample analysis only		
Modelling			
Social Science	Interviews, surveys		

SYSTEMATIC MAP

Open Access

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

Neal R. Haddaway^{1,2,3*}, Adrienne Smith⁴, Jessica J. Taylor⁴, Christopher Andrews⁴, Steven J. Cooke⁴, Annika E. Nilsson⁵ and Pamela Lesser⁶



Coding book : exemple

Haddaway et al. *Environmental Evidence* (2022) 11:30
<https://doi.org/10.1186/s13750-022-00282-y>

Environmental Evidence

Feuille d'extraction

SYSTEMATIC MAP

Open Access

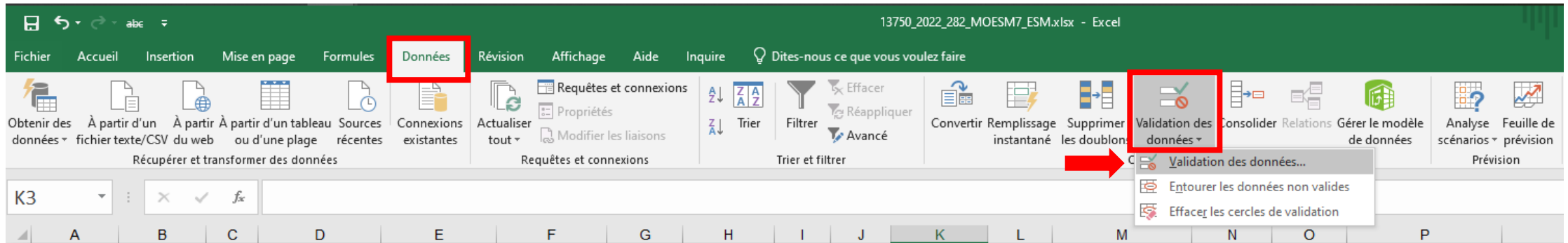
Evidence of the impacts of metal mining and the effectiveness of mining mitigation measures on social–ecological systems in Arctic and boreal regions: a systematic map

Neal R. Haddaway^{1,2,3*}, Adrienne Smith⁴, Jessica J. Taylor⁴, Christopher Andrews⁴, Steven J. Cooke⁴, Annika E. Nilsson⁵ and Pamela Lesser⁶

[illegible]

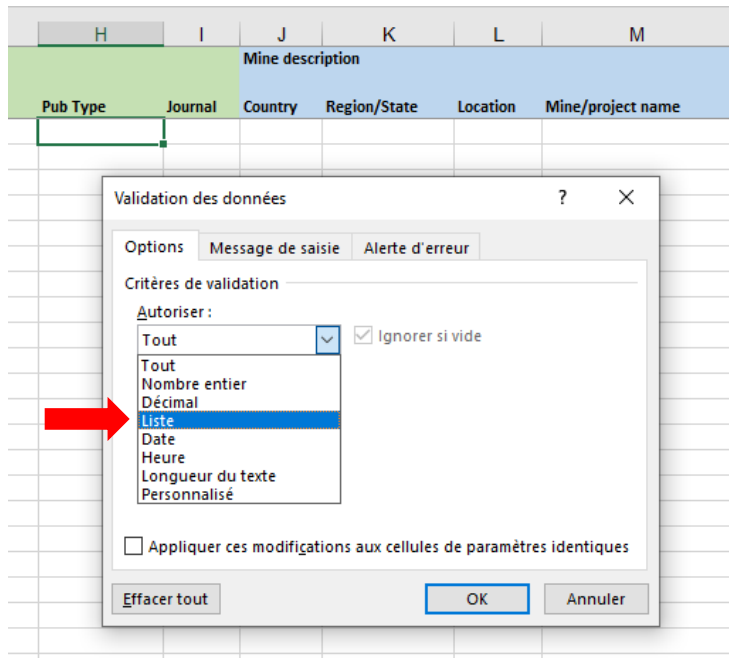
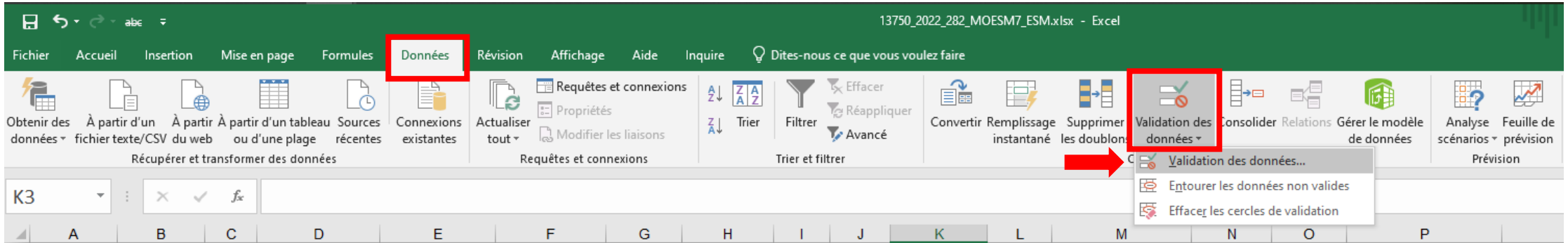
Coding : en pratique avec Excel

Définir des champs constraints / listes déroulantes



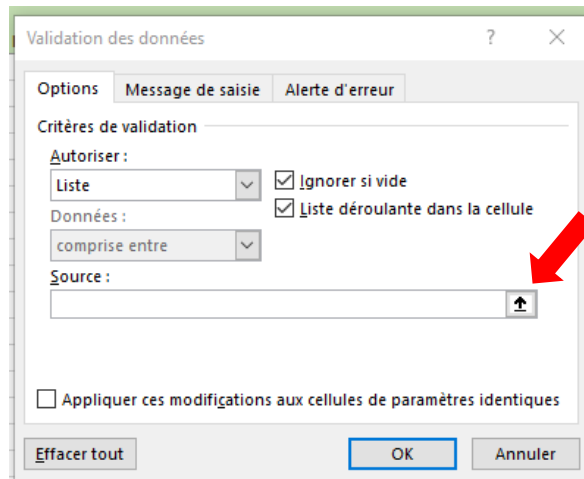
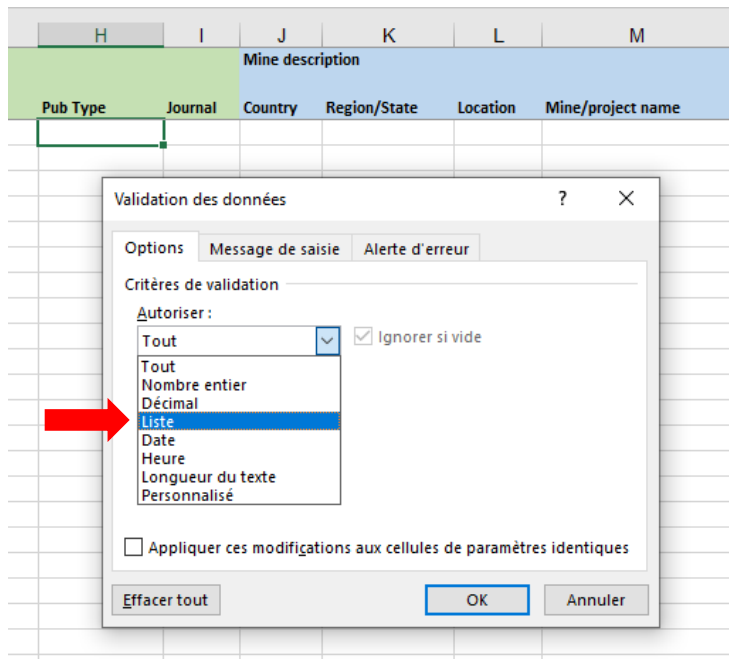
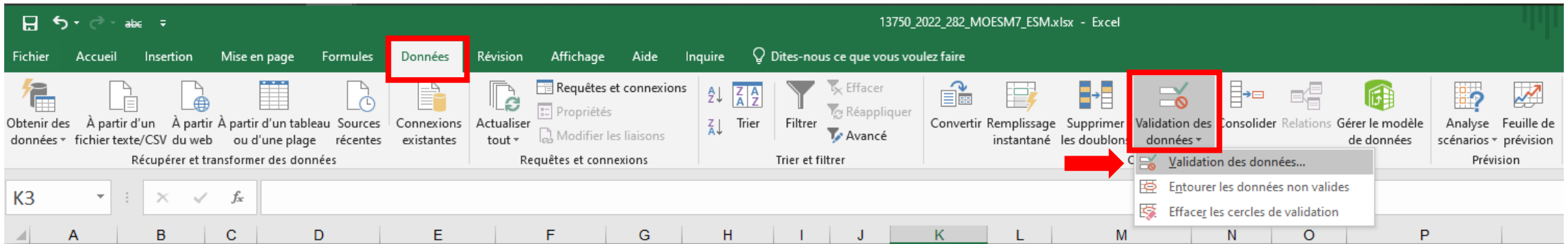
Coding : en pratique avec Excel

Définir des champs constraints / listes déroulantes



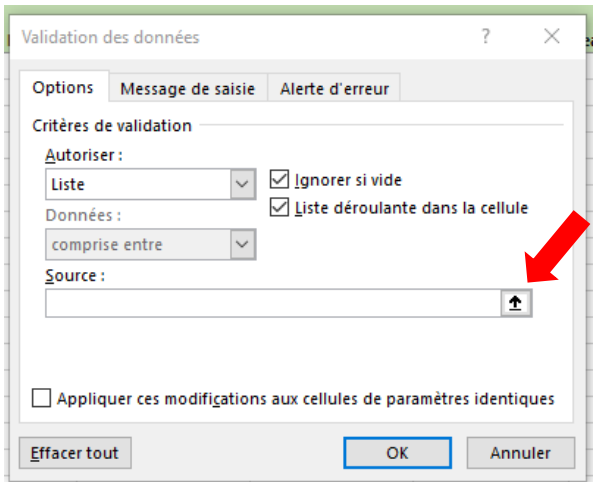
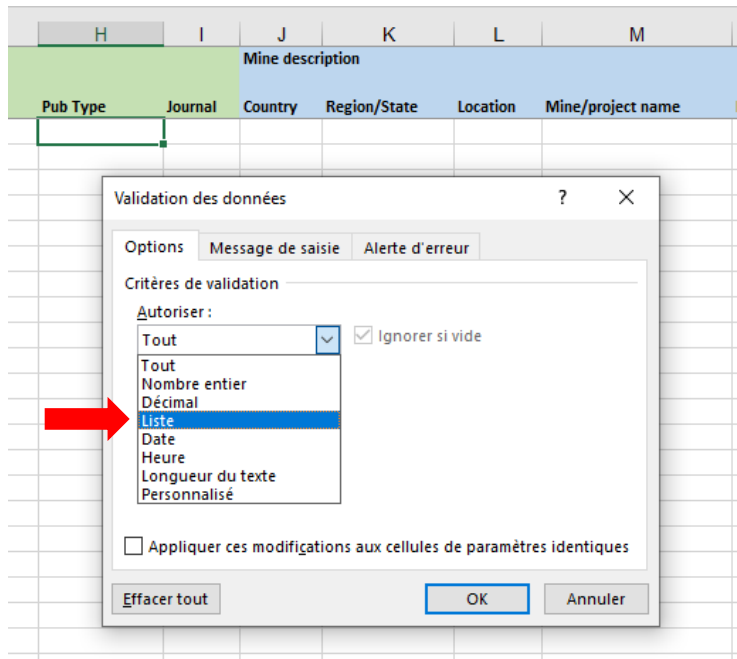
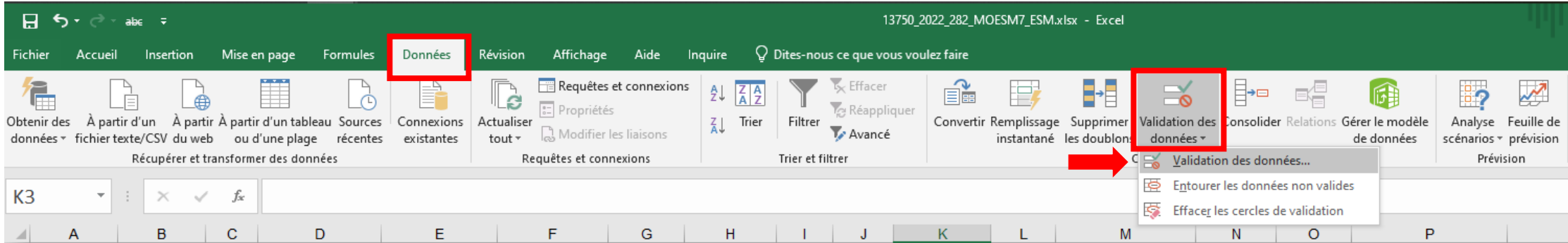
Coding : en pratique avec Excel

Définir des champs constraints / listes déroulantes



Coding : en pratique avec Excel

Définir des champs constraints / listes déroulantes



	A	B	C	D
1	Codes	Notes		Codes
2	Publication Type			Country
3	Article	journal article		
4	Thesis	thesis		
5	Conf	conference		
6	Book	book		Iceland
7	Book Chap	chapter in a book		Norway
8	Report	report (government, consultant)		Sweden
9	Other/Unlcear	e.g., news article, presentation etc.		Finland
10				Russia

Coding : en pratique avec Excel

Définir des champs contraints / listes déroulantes

	A	B	C	D	E	F	G	H	I
1	Publication								
2	Article #	Reviewer ID	EPPI ID	Citation	Authors	Title	Year	Pub Type	Journal
3									
4									
5									
6									
7									
8									
9									

- ▼
- Article
- Thesis
- Conf
- Book
- Book Chap
- Report
- Other/Unlcear

J	K	L	M	N	O	P	
Mine description							
Country	Region/State	Location	Mine/project name	Latitude	Longitude	Key metals/ore extracted	List I

- ▼
- Gold
- Iron
- Copper
- Nickel
- Zinc
- Silver
- Molybdenum
- Lead
- ▲

Consistency check

S'assurer de l'objectivité / robustesse :

- *metacoding* de chaque étude effectué **indépendamment** par 2 personnes
- si plusieurs codeurs se partagent le travail, **vérifier la cohérence de l'extraction** entre les codeurs avant le début du travail sur un échantillon (discuter les désaccords)
- si 1 seul codeur, faire vérifier un échantillon de son *coding* par quelqu'un au début du travail (discuter les désaccords)

SYSTEMATIC MAP

Open Access



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

Dakis-Yaoba Ouédraogo^{1*}, Mathilde Delaunay², Romain Sordello², Laetitia Hédouin^{3,4}, Magalie Castelin⁵, Olivier Perceval⁶, Isabelle Domart-Coulon⁷, Karen Burga⁸, Christine Ferrier-Pagès⁹, Romane Multon⁸, Mireille M. M. Guillaume^{3,10}, Clément Léger¹¹, Christophe Calvayrac^{12,13}, Pascale Joannot¹⁴ and Yorick Reyjol²

Question : quelles sont les preuves d'impacts des substances chimiques issues des activités humaines sur les coraux constructeurs de récifs tropicaux

P : tous les coraux constructeurs de récifs tropicaux

E : toutes les substances chimiques

C : comparaison exposé / non exposé; avant/après exposition; gradient d'exposition

O : tous les outcomes à toutes les échelles (moléculaire, colonie, communauté)

Une **étude** = combinaison **un taxon** × **une exposition** × **un outcome**


Volume de littérature à métacoder : 908 documents

SYSTEMATIC MAP

Open Access



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

Dakis-Yaoba Ouédraogo^{1*} , Mathilde Delaunay², Romain Sordello², Laetitia Hédouin^{3,4}, Magalie Castelin⁵, Olivier Perceval⁶, Isabelle Domart-Coulon⁷, Karen Burga⁸, Christine Ferrier-Pagès⁹, Romane Multon⁸, Mireille M. M. Guillaume^{3,10}, Clément Léger¹¹, Christophe Calvayrac^{12,13}, Pascale Joannot¹⁴ and Yorick Reyjol²

Echantillon de 3 articles :

1 – Préparer le fichier Excel, définir les variables à extraire/coder et les catégories (15 min)

2 – *metacoding* des 3 articles (30 min)

3 – Discussion (15 min)



Variables à extraire/coder

	Variable	Description	Value(s)
Bibliographic information	map_ID	Unique identifier given by the review team to each study of the map	A code number
	article_ID	Unique identifier given by the review team to each publication	A combinaison of number and letters
	source	Source of the publication	Scopus WOS_CC GS CORE GreenFile Call_for_litterature CoralTraitDatabase ReefBase Ecotox IFRECOR AIMS IFREMER ICRS ICRI LabexCorail OATD theseFR
	author	Author(s) of the publication	Text
	title	Title of the publication	Text
	year	Year of publication	YYYY
	journal	Publication journal	Text
	doi	DOI of the publication	Alphanumeric string of characters
	language	Language of the publication	English French
	document_type	Publication type	Journal_article Conf_proceedings Book_chapter PhD_thesis MSc_thesis BSc_thesis Report
People who coded	metacod_name	Initials of the names of the people who coded the studies	Text

Variables à extraire/coder

Study general description	study_ID	Unique identifier given by the review team to each study within an article or a thesis chapter	
	study_type	Type of study	Field_survey Field_experiment Laboratory_experiment
	country	Name of the country or territory where the study was conducted for in situ study or where samples were collected for ex situ study	ISO 3166 english short name
	region	Region of the country (according to Spalding et al. 2001)	Text
	latitude	Latitude where the study was conducted for in situ study or where samples were collected for ex situ study	Number or alphanumeric string of characters
	longitude	Longitude where the study was conducted for in situ study or where samples were collected for ex situ study	Number or alphanumeric string of characters
	coord_unit	Units of latitude and longitude	Text
	location	Location where the study was conducted for in situ study or where samples were collected for ex situ study (should be recorded when latitude and longitude are unknown)	Text

Variables à extraire/coder

Population description	taxon_init	Name of the taxon studied as described by authors	Text
	taxon	Name of the taxon studied as updated by the review team. Taxon names were checked using the World Register of Marine Species (http://www.marinespecies.org/) and additional references. Please note that <i>Dipsastraea</i> * does not fully match <i>Favia</i> as some <i>Favia</i> species in the Indo-Pacific have been transferred to other genera such as for instance <i>Goniastrea</i> . Also, <i>Pocillopora damicornis</i> has been split into several species including <i>Pocillopora acuta</i> . Thus the name <i>P. acuta</i> appears in the database from 2019. The two names have been combined here for analysis purposes, as there were <i>P. acuta</i> in the past which were called <i>P. damicornis</i> . And, <i>Fungia</i> * includes other genus than <i>Fungia</i> such as <i>Danafungia</i> .	Text
	taxonlevel	Level of the taxon studied. When a study is about a community (several species or genera or families studied together as a group), the taxon level encoded is the closest common level (e.g. if several species of the same genus are studied together, the "Genus" level is indicated; if several species of the same family are studied together, the "Family" level is indicated; if several scleractinian species are studied together, the "Order" level is indicated).	Species Genus Family Order NA

Variables à extraire/coder

General rules for coding:	
If applicable, multiple values were delimited with a pipe	
NA was used as a substitute for missing data ("not available")	
N/A means "non applicable"	

Exposure description	exposure_raw	Type(s) of exposure as described by authors	Text
	exposure	Type(s) of exposure as defined by the review team	Detergent Dispersant Eutrophication Hydrocarbon Metal Microplastic Nanoparticle Nutrient Pesticide Pharmaceutical Undefined_pollutants UV filter Other
	combined	Is the exposure combined with other exposures (e.g. other chemicals, other pressures)?	Yes No Unknown No/Unknown
Outcome description	outcome_raw	Type(s) of outcome as described by authors	Text
	outcome	Type(s) of outcome as defined by the review team	Bioaccumulation BioaccumulationF Bleaching Calcification Coral_diversity Cover Disease Distribution Genetic Growth Microbiome Mortality Physiology Recruitment Reproduction Other
	outcome_level	Level of organization concerned by the measured outcome	Community Colony Individual Tissue Cellular Molecular Unknown
	chemical_accumulated	For Accumulation and Bioaccumulation outcomes only, type(s) of chemical	Hydrocarbon Metal Microplastic Nanoparticle Nutrient Pesticide Pharmaceutical UV filter Other N/A
Comments	metacod_comment	Comments (e.g. description of other pressures)	Text
Linked studies	linked_study	Is the study linked with another one in the database?	No unique identifier for linked studies
Knowledge cluster	cluster	Number of the knowledge cluster(s) to which the study belongs (see Figure 1 2 3 4 2&4 N/A	

Tang et al. 2021

1 espèce × 1 exposition × 5 outcomes = 5 études

metacod_name	study_ID	study_type	country	region	latitude	longitude	coord_unit	location
DYO	1	Laboratory_experiment	Taiwan, Province of China	Southeast Asia	NA	NA	NA	Kenting National Park
DYO	2	Laboratory_experiment	Taiwan, Province of China	Southeast Asia	NA	NA	NA	Kenting National Park
DYO	3	Laboratory_experiment	Taiwan, Province of China	Southeast Asia	NA	NA	NA	Kenting National Park
DYO	4	Laboratory_experiment	Taiwan, Province of China	Southeast Asia	NA	NA	NA	Kenting National Park
DYO	5	Laboratory_experiment	Taiwan, Province of China	Southeast Asia	NA	NA	NA	Kenting National Park

taxon_init	taxon	taxonlevel	exposure_raw	exposure	combined	outcome_raw	outcome	outcome_level	chemical_ac	metacod_cor	linked_study
<i>Seriatopora caliendrum</i>	<i>Seriatopora caliendrum</i>	Species	Irgarol 1051	Pesticide	No	Effective and maximum quantum yield	Physiology	Colony	N/A	NA	NA
<i>Seriatopora caliendrum</i>	<i>Seriatopora caliendrum</i>	Species	Irgarol 1051	Pesticide	No	rETR	Physiology	Colony	N/A	NA	NA
<i>Seriatopora caliendrum</i>	<i>Seriatopora caliendrum</i>	Species	Irgarol 1051	Pesticide	No	Chl a content / symbiont	Physiology	Cellular	N/A	NA	NA
<i>Seriatopora caliendrum</i>	<i>Seriatopora caliendrum</i>	Species	Irgarol 1051	Pesticide	No	Oxidative condition of the coral (H2O2 content, H2O2 degradation activity, thiobarbituric acid-reacting substance content, lipid peroxidation, fat-soluble antioxidant capacity)	Physiology	Tissue	N/A	NA	NA
<i>Seriatopora caliendrum</i>	<i>Seriatopora caliendrum</i>	Species	Irgarol 1051	Pesticide	No	Symbiosome lipid profiles (glycerophosphocholine (GPC) profile)	Physiology	Cellular	N/A	NA	NA

Hédouin et al. 2016

1 espèce × 2 expositions × 9 outcomes = **18 études**

metacod_name	study_ID	study_type	country	region	latitude	longitude	coord_unit	location
DYO	1	Laboratory_experiment	United States of America	Polynesia	21°26'1.97"N	157°47'20.10"W	degrees-minutes-seconds	Coconut Island, Oahu, Hawaii
DYO	2	Laboratory_experiment	United States of America	Polynesia	21°26'1.97"N	157°47'20.10"W	degrees-minutes-seconds	Coconut Island, Oahu, Hawaii
DYO	3	Laboratory_experiment	United States of America	Polynesia	21°26'1.97"N	157°47'20.10"W	degrees-minutes-seconds	Coconut Island, Oahu, Hawaii
DYO	4	Laboratory_experiment	United States of America	Polynesia	21°26'1.97"N	157°47'20.10"W	degrees-minutes-seconds	Coconut Island, Oahu, Hawaii
DYO	5	Laboratory_experiment	United States of America	Polynesia	21°26'1.97"N	157°47'20.10"W	degrees-minutes-seconds	Coconut Island, Oahu, Hawaii
DYO	6	Laboratory_experiment	United States of America	Polynesia	21°26'1.97"N	157°47'20.10"W	degrees-minutes-seconds	Coconut Island, Oahu, Hawaii
DYO	7	Laboratory_experiment	United States of America	Polynesia	21°26'1.97"N	157°47'20.10"W	degrees-minutes-seconds	Coconut Island, Oahu, Hawaii
DYO	8	Laboratory_experiment	United States of America	Polynesia	21°26'1.97"N	157°47'20.10"W	degrees-minutes-seconds	Coconut Island, Oahu, Hawaii
DYO	9	Laboratory_experiment	United States of America	Polynesia	21°26'1.97"N	157°47'20.10"W	degrees-minutes-seconds	Coconut Island, Oahu, Hawaii
DYO	10	Laboratory_experiment	United States of America	Polynesia	21°26'1.97"N	157°47'20.10"W	degrees-minutes-seconds	Coconut Island, Oahu, Hawaii
DYO	11	Laboratory_experiment	United States of America	Polynesia	21°26'1.97"N	157°47'20.10"W	degrees-minutes-seconds	Coconut Island, Oahu, Hawaii
DYO	12	Laboratory_experiment	United States of America	Polynesia	21°26'1.97"N	157°47'20.10"W	degrees-minutes-seconds	Coconut Island, Oahu, Hawaii
DYO	13	Laboratory_experiment	United States of America	Polynesia	21°26'1.97"N	157°47'20.10"W	degrees-minutes-seconds	Coconut Island, Oahu, Hawaii
DYO	14	Laboratory_experiment	United States of America	Polynesia	21°26'1.97"N	157°47'20.10"W	degrees-minutes-seconds	Coconut Island, Oahu, Hawaii
DYO	15	Laboratory_experiment	United States of America	Polynesia	21°26'1.97"N	157°47'20.10"W	degrees-minutes-seconds	Coconut Island, Oahu, Hawaii
DYO	16	Laboratory_experiment	United States of America	Polynesia	21°26'1.97"N	157°47'20.10"W	degrees-minutes-seconds	Coconut Island, Oahu, Hawaii
DYO	17	Laboratory_experiment	United States of America	Polynesia	21°26'1.97"N	157°47'20.10"W	degrees-minutes-seconds	Coconut Island, Oahu, Hawaii
DYO	18	Laboratory_experiment	United States of America	Polynesia	21°26'1.97"N	157°47'20.10"W	degrees-minutes-seconds	Coconut Island, Oahu, Hawaii

Hédouin et al. 2016

1 espèce × 2 expositions × 9 outcomes = **18 études**

taxon_init	taxon	taxonlevel	exposure_raw	exposure	combined	outcome_raw	outcome	outcome_level	chemical_ac	metacod_cor	linked_study
<i>Pocillopora damicornis</i>	<i>Pocillopora damicornis</i>	Species	Copper (Cu)	Metal	No	Polyp contraction	Other	Individual	N/A	NA	No
<i>Pocillopora damicornis</i>	<i>Pocillopora damicornis</i>	Species	Copper (Cu)	Metal	No	Expulsion larvae	Reproduction	Colony	N/A	NA	No
<i>Pocillopora damicornis</i>	<i>Pocillopora damicornis</i>	Species	Copper (Cu)	Metal	No	Change in colour	Other	Colony	N/A	NA	No
<i>Pocillopora damicornis</i>	<i>Pocillopora damicornis</i>	Species	Copper (Cu)	Metal	No	Survival rate (adult, larvae)	Mortality	Colony	N/A	NA	No
<i>Pocillopora damicornis</i>	<i>Pocillopora damicornis</i>	Species	Copper (Cu)	Metal	No	Cu concentration in tissue	BioaccumulationF	Tissue	Metal	NA	No
<i>Pocillopora damicornis</i>	<i>Pocillopora damicornis</i>	Species	Copper (Cu)	Metal	No	Cu concentration in skeleton	BioaccumulationF	Colony	Metal	NA	No
<i>Pocillopora damicornis</i>	<i>Pocillopora damicornis</i>	Species	Copper (Cu)	Metal	No	Symbiodinium density	Microbiome	Tissue	N/A	NA	No
<i>Pocillopora damicornis</i>	<i>Pocillopora damicornis</i>	Species	Copper (Cu)	Metal	No	Chlorophyll a+c2 content	Physiology	Cellular	N/A	NA	No
<i>Pocillopora damicornis</i>	<i>Pocillopora damicornis</i>	Species	Copper (Cu)	Metal	No	Fv/Fm (Maximum dark-adapted quantum yield of the photosystem II)	Physiology	Colony	N/A	NA	No
<i>Pocillopora damicornis</i>	<i>Pocillopora damicornis</i>	Species	Lead (Pb)	Metal	No	Polyp contraction	Other	Individual	N/A	NA	No
<i>Pocillopora damicornis</i>	<i>Pocillopora damicornis</i>	Species	Lead (Pb)	Metal	No	Expulsion larvae	Reproduction	Colony	N/A	NA	No
<i>Pocillopora damicornis</i>	<i>Pocillopora damicornis</i>	Species	Lead (Pb)	Metal	No	Change in colour	Other	Colony	N/A	NA	No
<i>Pocillopora damicornis</i>	<i>Pocillopora damicornis</i>	Species	Lead (Pb)	Metal	No	Survival rate (adult, larvae)	Mortality	Colony	N/A	NA	No
<i>Pocillopora damicornis</i>	<i>Pocillopora damicornis</i>	Species	Lead (Pb)	Metal	No	Pb concentration in tissue	BioaccumulationF	Tissue	Metal	NA	No
<i>Pocillopora damicornis</i>	<i>Pocillopora damicornis</i>	Species	Lead (Pb)	Metal	No	Pb concentration in skeleton	BioaccumulationF	Colony	Metal	NA	No
<i>Pocillopora damicornis</i>	<i>Pocillopora damicornis</i>	Species	Lead (Pb)	Metal	No	Symbiodinium density	Microbiome	Tissue	N/A	NA	No
<i>Pocillopora damicornis</i>	<i>Pocillopora damicornis</i>	Species	Lead (Pb)	Metal	No	Chlorophyll a+c2 content	Physiology	Cellular	N/A	NA	No
<i>Pocillopora damicornis</i>	<i>Pocillopora damicornis</i>	Species	Lead (Pb)	Metal	No	Fv/Fm (Maximum dark-adapted quantum yield of the photosystem II)	Physiology	Colony	N/A	NA	No

Kegler et al. 2015

1 espèce × [(2 exposition × 4 outcomes) + (2 exposition × 2 outcomes)]= **12 études**

metacod_name	study_ID	study_type	country	region	latitude	longitude	coord_unit	location
DYO	1	Laboratory_experiment	Indonesia	Southeast Asia	08°20.259'S 08°21.768'S	116°02.260'E 116°01.897'E	degrees-decimal minutes	Lombok
DYO	2	Laboratory_experiment	Indonesia	Southeast Asia	08°20.259'S 08°21.768'S	116°02.260'E 116°01.897'E	degrees-decimal minutes	Lombok
DYO	3	Laboratory_experiment	Indonesia	Southeast Asia	08°20.259'S 08°21.768'S	116°02.260'E 116°01.897'E	degrees-decimal minutes	Lombok
DYO	4	Laboratory_experiment	Indonesia	Southeast Asia	08°20.259'S 08°21.768'S	116°02.260'E 116°01.897'E	degrees-decimal minutes	Lombok
DYO	5	Laboratory_experiment	Indonesia	Southeast Asia	08°20.259'S 08°21.768'S	116°02.260'E 116°01.897'E	degrees-decimal minutes	Lombok
DYO	6	Laboratory_experiment	Indonesia	Southeast Asia	08°20.259'S 08°21.768'S	116°02.260'E 116°01.897'E	degrees-decimal minutes	Lombok
DYO	7	Laboratory_experiment	Indonesia	Southeast Asia	08°20.259'S 08°21.768'S	116°02.260'E 116°01.897'E	degrees-decimal minutes	Lombok
DYO	8	Laboratory_experiment	Indonesia	Southeast Asia	08°20.259'S 08°21.768'S	116°02.260'E 116°01.897'E	degrees-decimal minutes	Lombok
DYO	9	Laboratory_experiment	Indonesia	Southeast Asia	08°20.259'S 08°21.768'S	116°02.260'E 116°01.897'E	degrees-decimal minutes	Lombok
DYO	10	Laboratory_experiment	Indonesia	Southeast Asia	08°20.259'S 08°21.768'S	116°02.260'E 116°01.897'E	degrees-decimal minutes	Lombok
DYO	11	Laboratory_experiment	Indonesia	Southeast Asia	08°20.259'S 08°21.768'S	116°02.260'E 116°01.897'E	degrees-decimal minutes	Lombok
DYO	12	Laboratory_experiment	Indonesia	Southeast Asia	08°20.259'S 08°21.768'S	116°02.260'E 116°01.897'E	degrees-decimal minutes	Lombok

Kegler et al. 2015

1 espèce × [(2 exposition × 4 outcomes) + (2 exposition × 2 outcomes)]= **12 études**

taxon_init	taxon	taxonlevel	exposure_raw	exposure	combined	outcome_raw	outcome	outcome_level	chemical_ac	metacod_comment	linked_study
<i>Pocillopora verrucosa</i>	<i>Pocillopora verrucosa</i>	Species	Diesel	Hydrocarbon	Yes	Respiration rates	Physiology	Colony	N/A	NA	No
<i>Pocillopora verrucosa</i>	<i>Pocillopora verrucosa</i>	Species	Diesel	Hydrocarbon	Yes	Photosynthetic rates	Physiology	Colony	N/A	NA	No
<i>Pocillopora verrucosa</i>	<i>Pocillopora verrucosa</i>	Species	Diesel	Hydrocarbon	Yes	Maximum quantum yield (Fv/Fm)	Physiology	Colony	N/A	NA	No
<i>Pocillopora verrucosa</i>	<i>Pocillopora verrucosa</i>	Species	Diesel	Hydrocarbon	Yes	% tissue loss	Mortality	Colony	N/A	NA	No
<i>Pocillopora verrucosa</i>	<i>Pocillopora verrucosa</i>	Species	Diesel	Hydrocarbon	Yes	Respiration rates	Physiology	Colony	N/A	Combined with temperature	No
<i>Pocillopora verrucosa</i>	<i>Pocillopora verrucosa</i>	Species	Diesel	Hydrocarbon	Yes	Photosynthetic rates	Physiology	Colony	N/A	Combined with temperature	No
<i>Pocillopora verrucosa</i>	<i>Pocillopora verrucosa</i>	Species	Diesel	Hydrocarbon	Yes	Maximum quantum yield (Fv/Fm)	Physiology	Colony	N/A	Combined with temperature	No
<i>Pocillopora verrucosa</i>	<i>Pocillopora verrucosa</i>	Species	Diesel	Hydrocarbon	Yes	% tissue loss	Mortality	Colony	N/A	Combined with temperature	No
<i>Pocillopora verrucosa</i>	<i>Pocillopora verrucosa</i>	Species	surfactant LAS (linear alkylbenzene sulfonate)	Detergent	No	Maximum quantum yield (Fv/Fm)	Physiology	Colony	N/A	NA	No
<i>Pocillopora verrucosa</i>	<i>Pocillopora verrucosa</i>	Species	surfactant LAS (linear alkylbenzene sulfonate)	Detergent	No	% tissue loss	Mortality	Colony	N/A	NA	No
<i>Pocillopora verrucosa</i>	<i>Pocillopora verrucosa</i>	Species	surfactant LAS (linear alkylbenzene sulfonate)	Detergent	Yes	Maximum quantum yield (Fv/Fm)	Physiology	Colony	N/A	Combined with temperature	No
<i>Pocillopora verrucosa</i>	<i>Pocillopora verrucosa</i>	Species	surfactant LAS (linear alkylbenzene sulfonate)	Detergent	Yes	% tissue loss	Mortality	Colony	N/A	Combined with temperature	No