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La synthèse des connaissances sur la biodiversité : introduction aux méta-analyses et revues systématiques – 2024

Recherche de littérature : Bases de données & Equation de recherche

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CNRS • SORBONNE UNIVERSITÉ
**Station Biologique
de Roscoff**



Bienvenue



This project has received funding from the European Union's Horizon 2020 research and innovation programme under the Marie Skłodowska-Curie grant agreement No 899546.



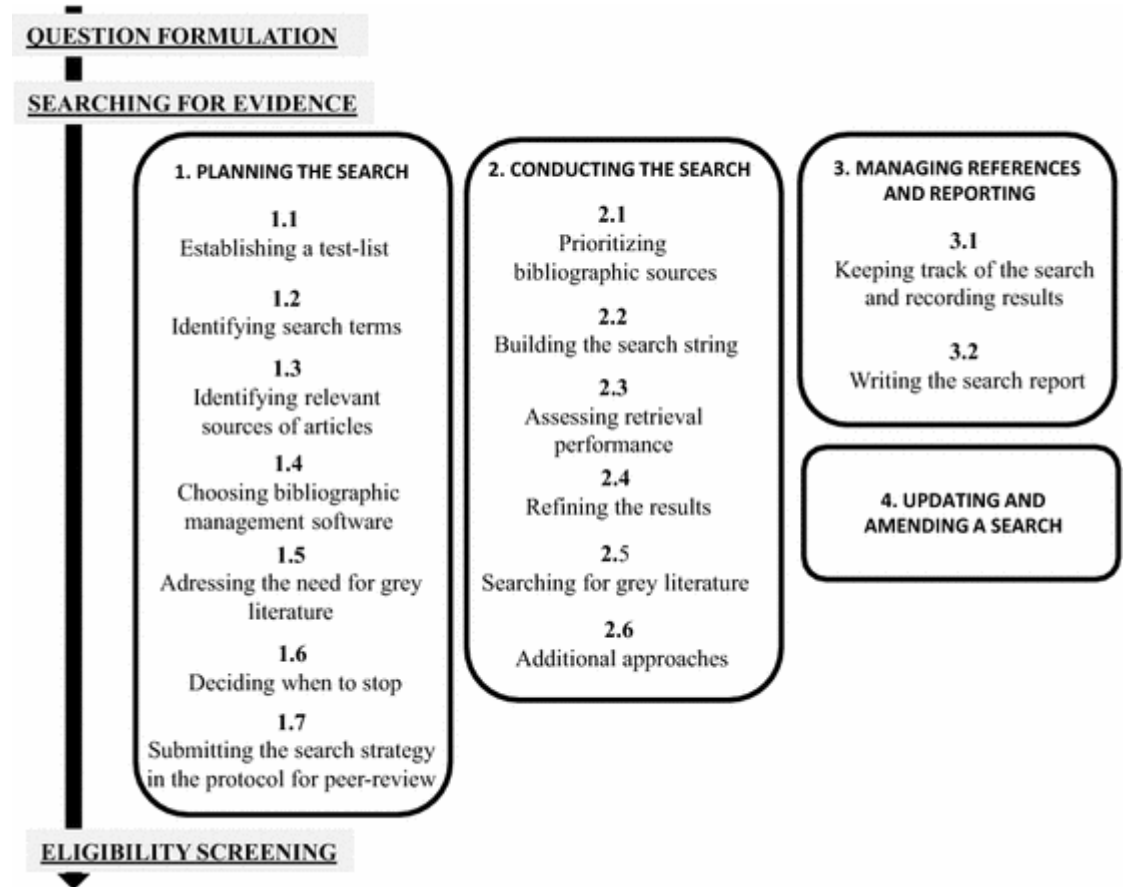
The search strategy

The goal:

Find the relevant bibliographic references !

The search strategy :

1. The search string
2. The bibliographic sources
3. The test-list



A guide to the planning, conduct, management and reporting of the searching phase of systematic reviews and systematic maps (after Livoreil et al. 2017).

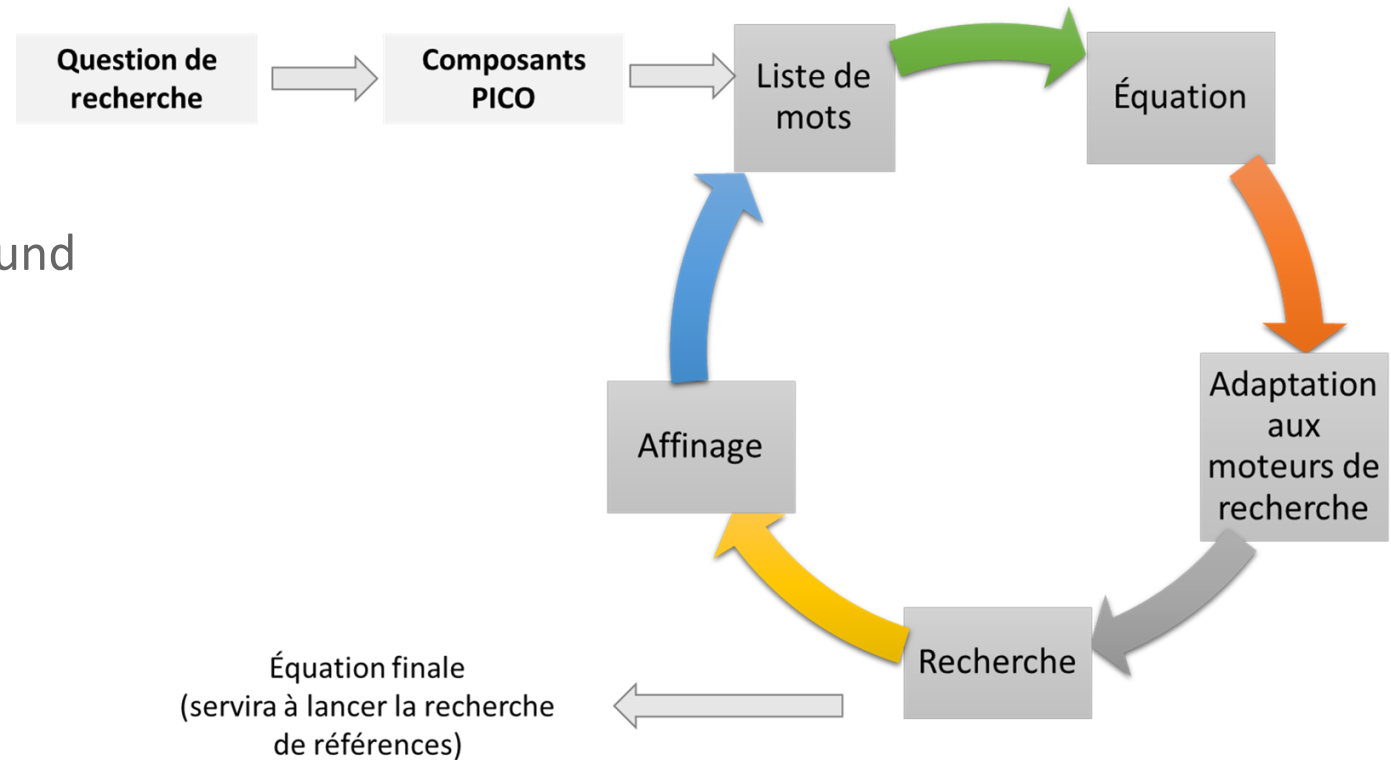
<https://environmentalevidence.org/information-for-authors/4-conducting-a-search/>

The search strategy

Starting with the research questions Define the search string

search terms encompasses individual or compound words used in a search to find relevant articles

search string is a combination of search terms combined using Boolean operators



The search string

PICO/PECO elements (Richardson et al. 1995)

Population : effect *on what?*

Intervention / Exposure : effect *of what ?*

Comparator : *compared to what? to what reference?*

Outcome : effect *measured by what?*

(**Context** : *what type of study?*)

Question element	Definition
Population (of subjects)	Unit of study (e.g. ecosystem, species) that should be defined in terms of the statistical populations of subject(s) to which the intervention will be applied.
Intervention/exposure	Proposed management regime, policy, action or the environmental variable to which the subject populations are exposed.
Comparator	Either a control with no intervention/exposure or an alternative intervention or a counterfactual scenario.
Outcome	All relevant outcomes from the proposed intervention or environmental exposure that can be reliably measured

The search string

1

Define the PICO based on the research question

PICO/PECO elements (Richardson et al. 1995)

My PICO

Population : *effect on what?*

Intervention / Exposure : *effect of what ?*

Comparator : *compared to what? to what reference?*

Outcome : *effect measured by what?*

(**Context** : *what type of study?*)



Example with the Agri-TE project:

What is the effect of agricultural practices on biodiversity at the global level?

The search string

1

Define the PICO based on the research question

PICO/PECO elements (Richardson et al. 1995)

Population : effect *on what?*

Intervention / Exposure : effect *of what ?*

Comparator : *compared to what? to what reference?*

Outcome : effect *measured by what?*

(**Context** : *what type of study?*)



My PICO

Any unplanned/uncultivated taxon

Any agricultural practice

Agricultural witness or natural environment of ref.

Effect-size representing a biodiv metric.

Meta-analyses only

Example with the Agri-TE project:
What is the effect of agricultural practices on biodiversity at the global level?

The search string

2

Establish the list of words that will be used to construct the search equation

My search terms

biodiversity, soil fauna, birds, butterflies

tillage, fertilization, pesticides

croplands, forest

species richness, biomass, Shannon's entertainment

meta-analyses

My PICO

Any unplanned/uncultivated taxon

Any agricultural practice

Agricultural witness or natural environment of ref.

Effect-size representing a biodiv metric.

Meta-analyses only



Example with the Agri-TE project:

What is the effect of agricultural practices on biodiversity at the global level?

The search string

3

Building the search string by adapting to search engines (eg: WoS)

My search terms

biodiversity, soil fauna, birds, butterflies

tillage, fertilization, pesticides

croplands, forest

species richness, biomass, Shannon's diversity

meta-analyses



My search string

TS= ((biodiversity OR soil fauna OR birds OR butterflies)

AND (tillage OR fertilizers **OR** pesticides)

AND (croplands OR forest)

AND (species richness OR biomass OR Shannon's diversity)

AND (meta-analyses))

Example with the Agri-TE project:

What is the effect of agricultural practices on biodiversity at the global level?

The search string

My search string

TS= ((biodiversity OR soil fauna OR birds OR butterflies)

AND (tillage OR fertilizers **OR** pesticides)

AND (croplands OR forest)

AND (species richness OR biomass OR Shannon's diversity)

AND (meta-analyses))

Topic (title, abstract,
keywords, keywords plus)

Logical and Boolean
Operators

Both depend on
the bibliographic
sources

Example with the Agri-TE project:
What is the effect of agricultural practices on biodiversity at the global level?

The search string

My search string

TS= ((biodiversity OR soil fauna OR birds OR butterflies)
AND (tillage OR fertilizers **OR** pesticides)
AND (croplands OR forest)
AND (species richness OR biomass OR Shannon's diversity)
AND (meta-analyses))

Exact Expression
"soil fauna"

Truncations
pesticide*, pesticide\$

Exclusion
NOT (medical science OR
economics)

Thematic
soil fauna OR (earthworms
OR spiders OR collembola OR
springtails)

Beware of database variations in the search equation!!!

- Some use a different language for searching
- For example, \$ instead of *.
- Additional options (inside or nearby)
- Help files are useful!
- Check the options
- Seek specialist help if necessary
- SAVE EVERYTHING

The search string

4

Test the search string

My search string

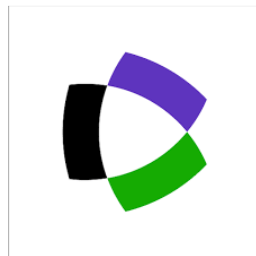
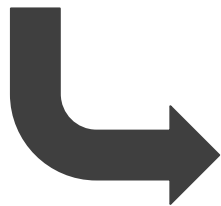
TS= ((biodiversity OR soil fauna OR birds OR butterflies)

AND (tillage OR fertilizers **OR** pesticides)

AND (croplands OR forest)

AND (species richness OR biomass OR Shannon's diversity)

AND (meta-analyses))



200 results is not enough!
20,000 results is too much!
Refinement needed...

The search string

My search string

TS= ((biodiversity OR soil fauna OR birds OR butterflies)
AND (tillage OR fertilizers **OR** pesticides)
AND (croplands OR forest)
AND (species richness OR biomass OR Shannon's diversity)
AND (meta-analyses))

Iterative process that can (must?) be long

Ex: Foo et al. (2021)

5

Refine the search string

Initial search string	1	TS = ((("terminal investment" OR "reproductive effort" OR "fecundity compensation") AND ("immune challeng*" OR "immunochalleng*" OR "infect*")) NOT (load OR human OR people))
159 results		
Add inclusion terms	2	TS = ((("terminal investment" OR "reproductive effort" OR "fecundity compensation" OR "reproductive compensation" OR "fitness") AND ("immune challeng*" OR "immunochalleng*" OR "infect*" OR lipopolysaccharide OR lps OR phytohemagglutinin OR pha OR "sheep red blood cells" OR srbc OR implant OR vaccin*)) NOT (load OR human OR people))
4,360 results		
Edit inclusion term	3	TS = ((("terminal investment" OR "reproductive effort" OR "fecundity compensation" OR "reproductive compensation" OR "reproductive fitness") AND ("immune challeng*" OR "immunochalleng*" OR "infect*" OR lipopolysaccharide OR lps OR phytohemagglutinin OR pha OR "sheep red blood cells" OR srbc OR implant OR vaccin*)) NOT (load OR human OR people))
493 results		
Add inclusion terms	4	TS = ((("terminal investment" OR "reproductive effort" OR "fecundity compensation" OR "reproductive compensation" OR "reproductive fitness" OR "reproductive investment" OR "Life History Trade-Off*" OR "life history") AND ("immune challeng*" OR "immunochalleng*" OR "infect*" OR lipopolysaccharide OR lps OR phytohemagglutinin OR pha OR "sheep red blood cells" OR srbc OR implant OR vaccin*)) NOT (load OR human OR people))
2,489 results		
Change inclusion term	5	TS = ((("terminal investment" OR "reproductive effort" OR "fecundity compensation" OR "reproductive compensation" OR "reproductive fitness" OR "reproductive investment" OR "Life History Trade-Off*" OR "life history" OR "trade off") AND ("immune challeng*" OR "immunochalleng*" OR "infect*" OR lipopolysaccharide OR lps OR phytohemagglutinin OR pha OR "sheep red blood cells" OR srbc OR implant OR vaccin*)) NOT (load OR human OR people))
1,819 results		
Delete inclusion term	6	TS = ((("terminal investment" OR "reproductive effort" OR "fecundity compensation" OR "reproductive compensation" OR "reproductive fitness" OR "reproductive investment" OR "reproductive success" OR "Life History Trade-Off*" OR "trade off") AND ("immune challeng*" OR "immunochalleng*" OR "infect*" OR lipopolysaccharide OR lps OR phytohemagglutinin OR pha OR "sheep red blood cells" OR srbc OR implant OR vaccin*)) NOT (load OR human OR people))
1,155 results		
Add inclusion term	7	TS = ((("terminal investment" OR "reproductive effort" OR "fecundity compensation" OR "reproductive compensation" OR "reproductive fitness" OR "reproductive investment" OR "reproductive success" OR "Life History Trade-Off*" OR "Phenotypic Plasticity") AND ("immune challeng*" OR "immunochalleng*" OR "infect*" OR lipopolysaccharide OR lps OR phytohemagglutinin OR pha OR "sheep red blood cells" OR srbc OR implant OR vaccin*)) NOT (load OR human OR people))
1,429 results		
Add exclusion terms	8	TS = ((("terminal investment" OR "reproductive effort" OR "fecundity compensation" OR "reproductive compensation" OR "reproductive fitness" OR "reproductive investment" OR "reproductive success" OR "Life History Trade-Off*" OR "Phenotypic Plasticity") AND ("immune challeng*" OR "immunochalleng*" OR "infect*" OR lipopolysaccharide OR lps OR phytohemagglutinin OR pha OR "sheep red blood cells" OR srbc OR implant OR vaccin*)) NOT (load OR human OR people OR men OR women OR infant* OR rat OR rats OR mouse OR mice OR pig* OR pork OR beef OR cattle OR sheep OR lamb* OR chicken* OR calf* OR horse*))
1,141 results		
Pilot 100 papers to check hit rate, 6% hit rate. Continue refining.		
Final search string		TS = ((("terminal investment" OR "reproductive effort" OR "fecundity compensation" OR "reproductive compensation" OR "reproductive fitness" OR "reproductive investment" OR "reproductive success" OR "Life History Trade-Off*" OR "Phenotypic Plasticity" OR "pre-copulatory NEAR/5 trait*" OR "sexual NEAR/5 weapon*" OR "sexual NEAR/5 ornament*" OR "post-copulatory NEAR/5 trait*" OR "ejaculate quality" OR "sperm quality" OR "mating effort" OR "parental care") AND ("immune challeng*" OR "immunochalleng*" OR "infect*" OR lipopolysaccharide OR lps OR phytohemagglutinin OR pha OR "sheep red blood cells" OR srbc OR implant* OR vaccin* OR nylon OR sephadex)) NOT (load OR human OR people OR men OR women OR infant* OR rat OR rats OR mouse OR mice OR pig* OR pork OR beef OR cattle OR sheep OR lamb* OR chicken* OR calf* OR horse* OR infective))
1,567 results (~10% hit rate)		

The search string

My search string

TS= ((biodiversity OR soil fauna OR birds OR butterflies)
AND (tillage OR fertilizers **OR** pesticides)
AND (croplands OR forest)
AND (species richness OR biomass OR Shannon's diversity)
AND (meta-analyses))

Iterative process that can (must?) be long

Ex: Foo et al. (2021)

13

5

Refine the search string

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Add inclusion terms	2	TS = ((("terminal investment" OR "reproductive effort" OR "fecundity compensation" OR "reproductive compensation" OR "fitness") AND ("immune challeng*" OR "immunochalleng*" OR "infect*" OR lipopolysaccharide OR lps OR phytohemagglutinin OR pha OR "sheep red blood cells" OR srbc OR implant OR vaccin*)) NOT (load OR human OR people))
4,360 results		
Edit inclusion term	3	TS = ((("terminal investment" OR "reproductive effort" OR "fecundity compensation" OR "reproductive compensation" OR "reproductive fitness") AND ("immune challeng*" OR "immunochalleng*" OR "infect*" OR lipopolysaccharide OR lps OR phytohemagglutinin OR pha OR "sheep red blood cells" OR srbc OR implant OR vaccin*)) NOT (load OR human OR people))
493 results		
Add inclusion terms	4	TS = ((("terminal investment" OR "reproductive effort" OR "fecundity compensation" OR "reproductive compensation" OR "reproductive fitness" OR "reproductive investment" OR "Life History Trade-Off*" OR "life history") AND ("immune challeng*" OR "immunochalleng*" OR "infect*" OR lipopolysaccharide OR lps OR phytohemagglutinin OR pha OR "sheep red blood cells" OR srbc OR implant OR vaccin*)) NOT (load OR human OR people))
2,489 results		
Change inclusion term	5	TS = ((("terminal investment" OR "reproductive effort" OR "fecundity compensation" OR "reproductive compensation" OR "reproductive fitness" OR "reproductive investment" OR "Life History Trade-Off*" OR "life history" OR "trade off") AND ("immune challeng*" OR "immunochalleng*" OR "infect*" OR lipopolysaccharide OR lps OR phytohemagglutinin OR pha OR "sheep red blood cells" OR srbc OR implant OR vaccin*)) NOT (load OR human OR people))
1,819 results		
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1,155 results		
Add inclusion term	7	TS = ((("terminal investment" OR "reproductive effort" OR "fecundity compensation" OR "reproductive compensation" OR "reproductive fitness" OR "reproductive investment" OR "reproductive success" OR "Life History Trade-Off*" OR "Phenotypic Plasticity") AND ("immune challeng*" OR "immunochalleng*" OR "infect*" OR lipopolysaccharide OR lps OR phytohemagglutinin OR pha OR "sheep red blood cells" OR srbc OR implant OR vaccin*)) NOT (load OR human OR people))
1,429 results		
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1,141 results		

Pilot 100 papers to check hit rate, 6% hit rate. Continue refining.

**Final
search
string**

**Final
search
string**

1,567 results
(~10% hit rate)

TS = ((("terminal investment" OR "reproductive effort" OR "fecundity compensation" OR "reproductive compensation" OR "reproductive fitness" OR "reproductive investment" OR "reproductive success" OR "Life History Trade-Off*" OR "Phenotypic Plasticity" OR "pre-copulatory NEAR/5 trait*" OR "sexual NEAR/5 weapon*" OR "sexual NEAR/5 ornament*" OR "post-copulatory NEAR/5 trait*" OR "ejaculate quality" OR "sperm quality" OR "mating effort" OR "parental care") AND ("immune challeng*" OR "immunochalleng*" OR "infect*" OR lipopolysaccharide OR lps OR phytohemagglutinin OR pha OR "sheep red blood cells" OR srbc OR implant* OR vaccin* OR nylon OR sephadex)) NOT (load OR human OR people OR men OR women OR infant* OR rat OR rats OR mouse OR mice OR pig* OR pork OR beef OR cattle OR sheep OR lamb* OR chicken* OR calf* OR horse* OR infective))

The bibliographic sources

Bibliographic sources capture any source of references, including electronic bibliographic databases, those sources which would not be classified as databases (e.g. the Internet via search engines), hand searched journals, and personal contacts.

- Bibliographic
 - eg WoS, Scopus, Pubmed
- Web search tools
 - eg Google, Google Scholar
- Grey literature sources
 - Organizational websites
 - Thesis repositories

Scopus® PubMed

WEB OF SCIENCE®



ETHOS
ELECTRONIC THESES ONLINE SERVICE
Opening access to UK theses


The bibliographic sources

Bibliographic databases

- Web of Science
- Scopus
- Agricola
- AGRIS (FAO)
- Academic Search Premier
- Biological Abstracts
- CAB Abstracts
- etc.

Example with web of science

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THOMSON REUTERS™

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Web of Science™ Core Collection

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Marked List

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Basic Search

Example: oil spill* mediterranean

×

Topic

▼

Search

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[Click here for tips to improve your search.](#)

TIMESPAN

☒ All years

☐ From 1945 to 2017

▼ MORE SETTINGS

Web of Science Core Collection: Citation Indexes

☒ Science Citation Index Expanded (SCI-EXPANDED) –1945-present
 ☒ Social Sciences Citation Index (SSCI) –1956-present
 ☒ Arts & Humanities Citation Index (A&HCI) –1975-present
 ☒ Conference Proceedings Citation Index- Science (CPCI-S) –1990-present
 ☒ Conference Proceedings Citation Index- Social Science & Humanities (CPCI-SSH) –1990-present
 ☒ Book Citation Index– Science (BKCI-S) –2005-present
 ☒ Book Citation Index– Social Sciences & Humanities (BKCI-SSH) –2005-present
 ☒ Emerging Sources Citation Index (ESCI) –2015-present

Data last updated: 2017-02-07

Auto-suggest publication names

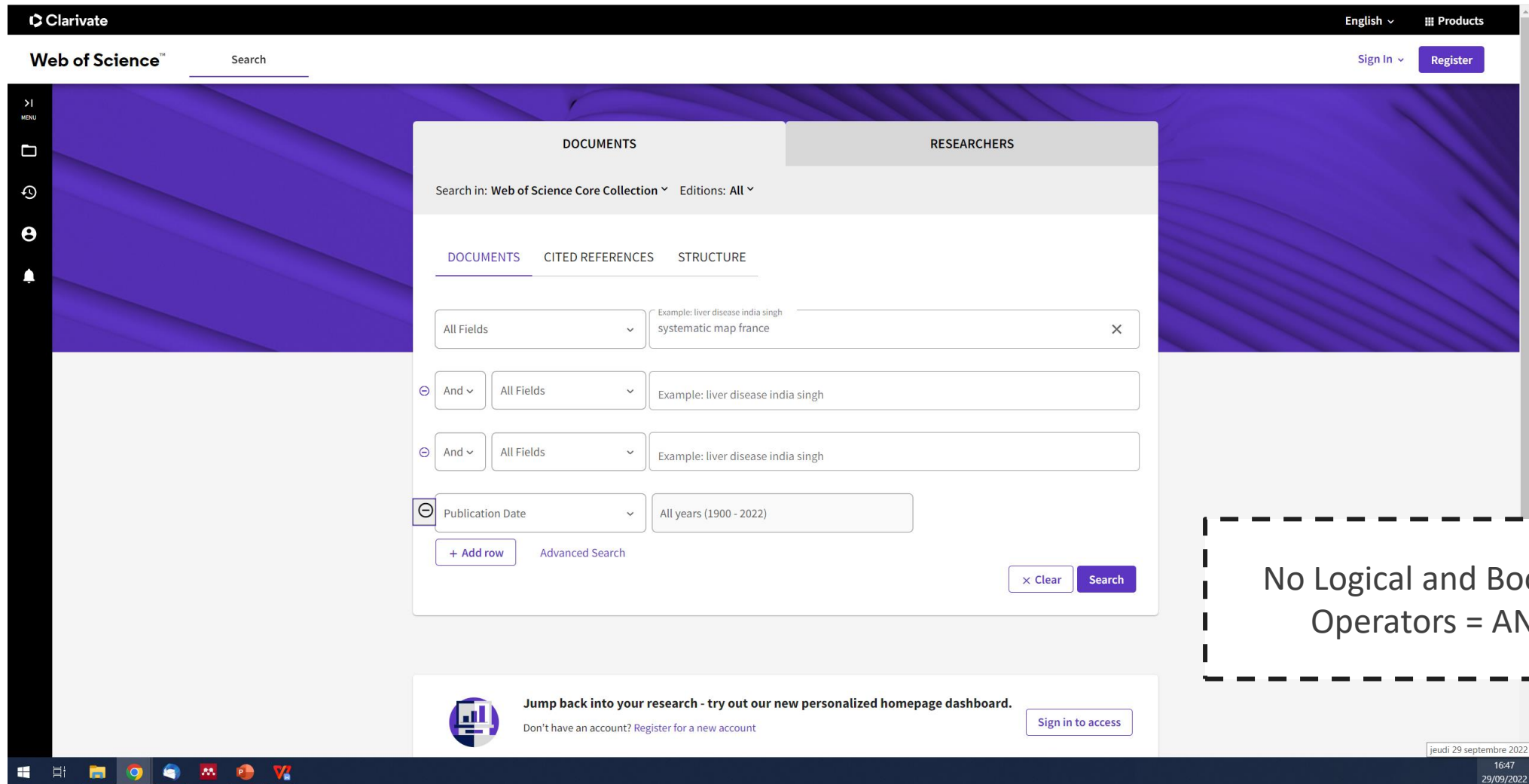
(The Autosuggest service is not available.)

Default Number of Search Fields to Display

1 field (Topic)

Example with web of science

<https://www.webofscience.com/wos/woscc/basic-search>



The screenshot shows the Web of Science search interface. The top navigation bar includes the Clarivate logo, language selection (English), and product links. The main header features the 'Web of Science' logo and a search bar. A sidebar on the left contains navigation icons. The central search area is divided into 'DOCUMENTS' and 'RESEARCHERS' tabs. Under the 'DOCUMENTS' tab, there are options for 'Search in: Web of Science Core Collection' and 'Editions: All'. Below this, there are three tabs: 'DOCUMENTS', 'CITED REFERENCES', and 'STRUCTURE'. The 'DOCUMENTS' tab is active, showing a search form with a dropdown menu set to 'All Fields' and a search input field containing the text 'Example: liver disease india singh systematic map france'. Below the search input, there are three rows of search criteria, each with a dropdown menu set to 'All Fields' and a search input field containing the text 'Example: liver disease india singh'. The first row is selected, and the second and third rows are collapsed. Below the search criteria, there is a dropdown menu set to 'Publication Date' and a search input field containing the text 'All years (1900 - 2022)'. At the bottom of the search form, there is a '+ Add row' button and an 'Advanced Search' link. To the right of the search form, there are 'Clear' and 'Search' buttons. A dashed box on the right side of the interface contains the text 'No Logical and Boolean Operators = AND'. At the bottom of the interface, there is a banner for the personalized homepage dashboard with a 'Sign in to access' button. The bottom status bar shows the date 'jeudi 29 septembre 2022' and the time '16:47'.

Clarivate English Products Sign In Register

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DOCUMENTS RESEARCHERS

Search in: Web of Science Core Collection Editions: All

DOCUMENTS CITED REFERENCES STRUCTURE

All Fields Example: liver disease india singh systematic map france

And All Fields Example: liver disease india singh

And All Fields Example: liver disease india singh

Publication Date All years (1900 - 2022)

+ Add row Advanced Search

Clear Search

Jump back into your research - try out our new personalized homepage dashboard. Don't have an account? Register for a new account Sign in to access

jeudi 29 septembre 2022 16:47 29/09/2022



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MENU

DOCUMENTS

RESEARCHERS

Search in: Web of Science Core Collection ▾ Editions: All ▾

DOCUMENTS

CITED REFERENCES

STRUCTURE

All Fields ▾

Example: liver disease india singh
systematic map france

×

+ Add row

+ Add date range

Advanced Search

×

Clear

Search

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Institution Image

Example with web of science

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Search > Results for systematic map france (All Fields)

2,139 results from Web of Science Core Collection for:

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Authors

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Ade, Peter

Natoli, P.

Polenta, G.

Baccigalupi, C.

Piacentini, F.

☐ 0/2,139Add To Marked ListExport ▾

Sort by: Relevance▾< 1 of 43 >

☐ 1

Mapping of Soils and Land-Related Environmental Attributes in France: Analysis of End-Users' Needs

[Richer-de-Forges, AC; Arrouays, D; \(...\) ; Voltz, M](#)

May 2 2019 | SUSTAINABILITY 11 (10)

The 1:250,000 soil mapping program of France is nearly complete. Although mapping has been conducted using conventional methods, there is a discernible need to obtain more precise soil data using other methods, and this is attracting considerable attention. However, it is currently not possible to implement a conventional and systematic program throughout the French territory, as the cost of ac ... Show more

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10 Citations41 ReferencesRelated records

☐ 2

KPIs for Software Ecosystems: A Systematic Mapping Study

[Fotrousi, F; Fricker, SA; \(...\) ; Le-Gall, F](#)

5th International Conference on Software Business (ICSOB)
2014 | SOFTWARE BUSINESS: TOWARDS CONTINUOUS VALUE DELIVERY 182 , pp.194+

To create value with a software ecosystem (SECO), a platform owner has to ensure that the SECO is healthy and sustainable. Key Performance Indicators (KPI) are used to assess whether and how well such objectives are met and what the platform owner can do to improve. This paper gives an overview of existing research on KPI-based SECO assessment using a systematic mapping of research publications ... Show more

[Context Sensitive Links](#) ...

12 Citations44 ReferencesRelated records

WindowsTaskbarIcons

16:4729/09/2023

Example with web of science

DOCUMENTS

CITED REFERENCES

STRUCTURE

Title

Example: water consum*
systematic map france

+ Add row

+ Add date range

Advanced Search

× Clear

Search

Clarivate

Web of Science™

Search

Results for systematic map ... Results for systematic map france (Title)

3 results from Web of Science Core Collection for:

systematic map france (Title)

Copy query link

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Bispo, Antonio

Saby, Nicolas P. A.

Moncel, Marie-Helene

Briand, Olivier

Boulio, Yves

See all >

Publication Years

0/3

Add To Marked List

Export

Sort by: Relevance

1 of 1

1

Systematic surveys of a valley between Rhone and Loire Rivers (France). Mapping of the human occupation at the end of the Acheulean?

Moncel, MH; Arzarello, M and Boulio, Y

Nov-dec 2017 | ANTHROPOLOGIE 121 (5) , pp.428-450

Systematic surveys on the Rhins Valley, a little tributary of the Loire River (South East France), have yielded lithic assemblages for more than 20 years. The number of open-air localities totals at that moment 28. The assemblages are composed for the most of bifaces, cores, including many Levallois cores, and flakes. Although the number of pieces varies in localities, data recorded for more th

Context Sensitive Links Full Text at Publisher

40

References

2

The Early Stage of the COVID-19 Outbreak in Tunisia, France, and Germany: A Systematic Mapping Review of the Different National Strategies

Laffet, K; Haboubi, E; (...); Rothan-Tondeur, M

Aug 2021 | INTERNATIONAL JOURNAL OF ENVIRONMENTAL RESEARCH AND PUBLIC HEALTH 18 (16)

The multitude of national strategies used against the COVID-19 pandemic makes it necessary to review and synthesize them in order to identify potential gaps and shortcomings, and to help prioritize future control efforts. This systematic mapping review is aimed at identifying the coronavirus pandemic management strategies adopted by France, Tunisia, and Germany during the early stage of the COV

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1

Citation

59

References

16:50

29/09/2022

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- Ecosia
- Bing
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....

!!! Depend of connection
parameters!!!!

Grey literature sources

- 'File drawer' research / unpublished research results
 - Unfinished/published/accepted articles
 - The theses
 - The “uninteresting” results
 - Non-academic studies
 - Technical reports
 - Government documents
 - Internal reports
- all results not intended for academic publication

The bibliographic sources

Grey literature sources

- 'File drawer' research / unpublished research results

- Unfinished/published/accepted articles
- The theses
- The “uninteresting” results

- Non-academic studies

- Technical reports
- Government documents
- Internal reports

all results not intended for academic publication

How to find them?

- *Calls for evidence (social media, networks)*
- *Thesis databases (eg eThOS)*
 - *Google Scholar, Google*
- *Pre-print servers (eg ArchivX)*
 - *Organizational websites*

Example with Publish or Perish





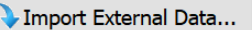
Harzing's Publish or Perish (Windows GUI Edition) 8.2.3883.8074



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My searches	Search terms	Source	Papers	Cites	Cites/year	h	g	hI,norm	hI,annual	hA	acc10
Trash	(marine OR coastal OR ocean) A...	Google Scho...	500	132703	5529.29	155	361	92	3.83	55	278



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Citation years:
Papers:
Citations:
Cites/year:
Cites/paper:
Authors/paper:
h-index:
g-index:
hI,norm:
hI,annual:
hA-index:
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Example with Publish or Perish



Harzing's Publish or Perish (Windows GUI Edition) 8.2.3883.8074

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My searches	Search terms	Source	Papers	Cites	Cites/year	h	g	hI,norm	hI,annual	hA	acc10
Trash	(marine OR coastal OR ocean) A...	Google Scho...	500	132703	5529.29	155	361	92	3.83	55	278

Google Scholar search

Authors: Years: 0 - 0 [Search](#)

Publication name: ISSN: [Search Direct](#)

Title words: [Clear All](#)

Keywords: (marine OR coastal OR ocean) AND (species OR biodiversity OR ecosystem) AND "ecosystem services" AND char [Revert](#)

Maximum number of results: 500 Include: ☒ CITATION records ☒ Patents [New](#)

Citation metrics

Publication years: 1997-2021
Citation years: 24 (1997-2021)
Papers: 500
Citations: 132703
Cites/year: 5529.29
Cites/paper: 265.41
Authors/paper: 3.65
h-index: 155
g-index: 361
hI,norm: 92
hI,annual: 3.83
hA-index: 55
Papers with ACC >= 1,2,5,10,20:
493,476,396,278,168

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Cites	Per year	Rank	Authors	Title	Year	Publication	Publish
<input checked="" type="checkbox"/> h 184	15.33	1	SR Cooley, HL Kite...	Ocean acidification's potential to ...	2009	Oceanography	JSTOR
<input checked="" type="checkbox"/> h 417	34.75	2	H Mooney, A Larig...	Biodiversity, climate change, and e...	2009	Current opinion in ...	Elsevi
<input checked="" type="checkbox"/> h 413	19.67	3	CM Duarte	Marine biodiversity and ecosystem...	2000	Journal of experimental m...	Elsevi
<input checked="" type="checkbox"/> 51	4.64	4	KMA Chan, M Ruck...	Characterizing changes in marine ...	2010	F1000 biology reports	ncbi.n
<input checked="" type="checkbox"/> h 200	33.33	5	C Hattam, JP Atkin...	Marine ecosystem services: linking...	2015	Ecological ...	Elsevi
<input checked="" type="checkbox"/> 56	9.33	6	RK Turner, M Scha...	Coastal zones ecosystem services	2015	Valuation of Ecosystem Ser...	Spring
<input checked="" type="checkbox"/> h 272	22.67	7	SR Palumbi, PA San...	Managing for ocean biodiversity t...	2009	Frontiers in Ecology ...	Wiley
<input checked="" type="checkbox"/> h 319	29.00	8	EF Granek, S Polask...	Ecosystem services as a common l...	2010	Conservation ...	Wiley
<input checked="" type="checkbox"/> 42	21.50	9	ID Lou, CC Hicks, G...	What matters to whom and why?	2019	Ecosystem services	Elsevi

Example of search strings depending on the bibliographic sources

	Name	Search field	Search string	Search hits	Date of search (DD/MM/YYYY)
LITERATURE DATABASES	Web of science	TS	((marine OR coast* OR ocean OR sea OR littoral OR maritime) AND (species OR biodiversity OR ecosystem OR ecological) AND ("ecosystem service\$" OR "contribution to people" OR "ecosystem function\$" OR "ecosystem process" OR "landscape service\$" OR disservice\$ OR "provisioning service\$" OR ((provision OR production OR exploitation) AND (food OR fisher* OR macroalgae\$ OR molecules)) OR "biomass for nutrition" OR "biomass for materials" OR "genetic materials" OR "raw materials" OR "maintain* food webs" OR "life cycle maintenance and habitat protection" OR "habitat provision" OR "nursery function" OR "regulation service\$" OR "climate regulation" OR "carbon sequestration" OR "weather regulation" OR "atmospheric composition and conditions" OR "air quality regulation" OR "coastal protection" OR "water retention" OR "nutrient regulation" OR "nutrient cycling" OR "pathogen regulation" OR "pest and disease control" OR "mediation of waste" OR "mediation of mass" OR "cultural service\$" OR "intellectual interaction" OR "physical interaction" OR "experiential interaction\$" OR tourism OR recreation OR amenity OR aesthetic OR heritage OR symbolic OR "cognitive effect\$" OR "knowledge production" OR education) AND (dynamic\$ OR impact\$ OR effect\$ OR variation\$ OR interaction\$ OR evolution OR change\$)).	17329	20/07/2021
	Scopus	TITLE-ABS-KEY	((marine OR coast* OR ocean OR sea OR littoral OR maritime) AND (species OR biodiversity OR ecosystem OR ecological) AND ("ecosystem service\$" OR "contribution to people" OR "ecosystem function\$" OR "ecosystem process" OR "landscape service\$" OR disservice\$ OR "provisioning service\$" OR ((provision OR production OR exploitation) AND (food OR fisher* OR macroalgae\$ OR molecules)) OR "biomass for nutrition" OR "biomass for materials" OR "genetic materials" OR "raw materials" OR "maintain* food webs" OR "life cycle maintenance and habitat protection" OR "habitat provision" OR "nursery function" OR "regulation service\$" OR "climate regulation" OR "carbon sequestration" OR "weather regulation" OR "atmospheric composition and conditions" OR "air quality regulation" OR "coastal protection" OR "water retention" OR "nutrient regulation" OR "nutrient cycling" OR "pathogen regulation" OR "pest and disease control" OR "mediation of waste" OR "mediation of mass" OR "cultural service\$" OR "intellectual interaction" OR "physical interaction" OR "experiential interaction\$" OR tourism OR recreation OR amenity OR aesthetic OR heritage OR symbolic OR "cognitive effect\$" OR "knowledge production" OR education) AND (dynamic\$ OR impact\$ OR effect\$ OR variation\$ OR interaction\$ OR evolution OR change\$)).	24051	20/07/2021
ONLINE SEARCH ENGINE	Google Scholar	keywords	(marine OR coastal OR ocean) AND (species OR biodiversity OR ecosystem) AND "ecosystem services" AND change	300	22/07/2021
ORGANIZATIONAL WEBSITES	FAO	Language: "English"	fishery	50	27/08/2021
	UNESCO	Filter: language: "English" - source: "UNESCO" - AuthoCorporate-en-s: "Intergovernmental Oceanographic Commission" - nature of content: "guide" AND "manuals and handbooks"	marine ecosystem service	50	19/08/2021
	UNEP	Filters: "Reports and publications" AND "Publication" AND "Report", "Ecosystems and biodiversity" AND "oceans and seas"	marine ecosystem service	50	19/08/2021
	US NOAA		ecosystem service	15	19/08/2021
	EEA		marine ecosystem service	7	19/08/2021
	IUCN		ecosystem service	32	27/08/2021

The test list

Test-list : studies that you wish to include in your systematic review and which you know meet the inclusion criteria.

- Discuss the list (involve partners/co-authors/colleagues) to construct it and then consolidate it
- Extract metadata
- Order of magnitude, ca. 30 items

Interest : verify the capacity of a research equation to capture studies corresponding to the aim of our systematic review.

- Calculate the miss rate = the % of items belonging to the test list not captured by the equation

It must be minimized, ie the equation must approach 100% of the captured test-list... Refinement possible.

The test list

Example of test list

Campagne et al. (2023)

DOI	References		Retrieved by WOS	Retrieved by Scopus	Retrieved by google scholar
10.3389/fevc	Belgrano et al	Mapping and evaluating marine p	1	oui	
10.3389/fma	Cavanagh et al	Future risk for Southern Ocean Ec	2	oui	
10.3354/mef	Cheung, W.W	Application of macroecological th	3	oui	
10.1093/ices	Cheung, W.W	Integrating ecophysiology and pla	4	non	oui
10.1016/j.glo	Cinner et al.	Vulnerability of coastal communi	5	oui	
10.1016/j.eco	Cook et al. (2	Towards marine ecosystem based	6	oui	
10.5670/ocea	Cooley et al.	Ocean acidification's potential to	7	oui	
10.1088/174	Cooley, S.R.	Anticipating ocean acidification's	8	oui	
10.1111/gcb	Fernandes, J.	Modelling the effects of climate c	9	oui	
10.1007/978	Marcos et al.	Reviewing the ecosystem service	10	oui	
10.1002/Ino	Orcutt et al.	Impacts of deep-sea mining on m	11	oui	
10.1890/070	Palumbi, S.R.	Managing for ocean biodiversity t	12	oui	
10.1007/s11	Roessig et al.	Effects of global climate change o	13	non	non
10.1016/j.jnc	Roncin, N., A	Uses of ecosystem services provid	14	oui	
10.1126/scie	Worm B., E.B	Impacts of biodiversity loss on oc	15	oui	
10.1016/j.occ	Kermagoret,	How does eutrophication impact	16	oui	
10.17159/saj	Arabi, S., Nah	Impacts of marine plastic on ecos	17	oui	
10.2307/234	Depellegrin, I	Integrating ecosystem service val	18	oui	
10.1016/j.eco	Broszeit, S., E	What can indicators of good envi	19	oui	
10.1371/jour	Pendleton, L.	Estimating global "Blue Carbon" e	20	oui	
10.1042/ETLS	Hall-Spencer,	Ocean acidification impacts on co	21	oui	
10.1016/j.ma	Potts, T., Bur	Do marine protected areas delive	22	oui	
10.1016/j.jen	Lemasson, A.	Linking the biological impacts of c	23	oui	
10.3389/fma	Pouso, S., Bo	An Interdisciplinary Approach for	24	oui	
10.1016/j.occ	Song, J., Zhar	Changes in ecosystem services va	25	oui	
10.1016/j.en	Yim, J., Kwon	Analysis of forty years long chang	26	oui	
http://www.	Hicks, C.C., M	Trade-offs in values assigned to e	27	oui	
10.1016/B97	Leenhardt, P.	The Role of Marine Protected Are	28	NOT in WoS	non
10.1007/s10	Selim, S.A., B	Direct and indirect effects of clim	29	NOT in WoS	oui
10.3391/ai.2	Katsanevakis,	Impacts of invasive alien species c	30	NOT in WoS	oui
			25 out of 30	28 out of 30	29 out of 30
			83,3%	93,3%	96,7%
			Only in WOS		
			25 out of 27		
			92,6%		

Complementary measures of the efficiency of the equation

- **Miss-rate** : thanks to the test-list, must be minimized
- **Hit-rate** : Percentage of relevant articles, calculated on a sample (for example, on 100 randomly selected results)
→ aim for at least 10%
- **Number of results** : Aim for between 1000 and 3000.

Adapt depending on the search engine used and/or the strategy employed.



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Thank you for your attention !!!

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Bienvenue



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