



**CESAB**  
CENTRE DE SYNTHÈSE ET D'ANALYSE  
SUR LA BIODIVERSITÉ



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

Tri sur titre, résumé, et texte intégral.  
Importance des critères d'éligibilité

Sylvie Campagne

Sorbonne Université – Station Biologique de Roscoff



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



**Bienvenüe**



*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 screening strategy

---

## The goal:

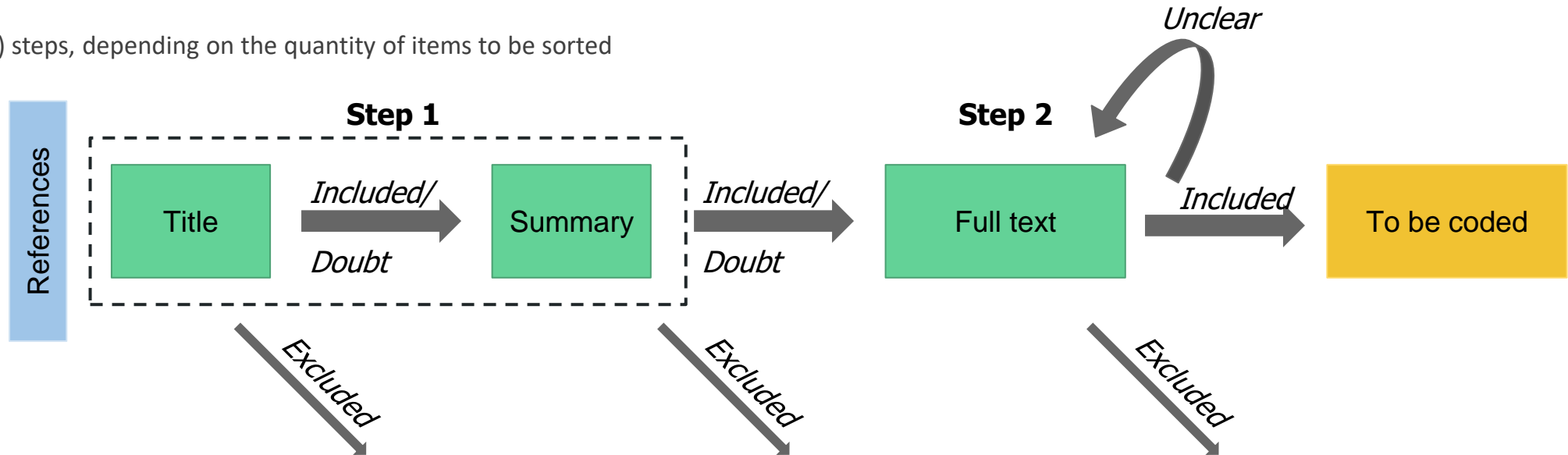
Selection of the relevant references in the corpus resulting from the search string

1. The different screening stages
2. Inclusion and exclusion criteria
3. Existing tools for managing screening
4. Statistical tests between raters (kappa test)

# The screening strategy

## 1. The different screening stages

In 2 (or 3) steps, depending on the quantity of items to be sorted

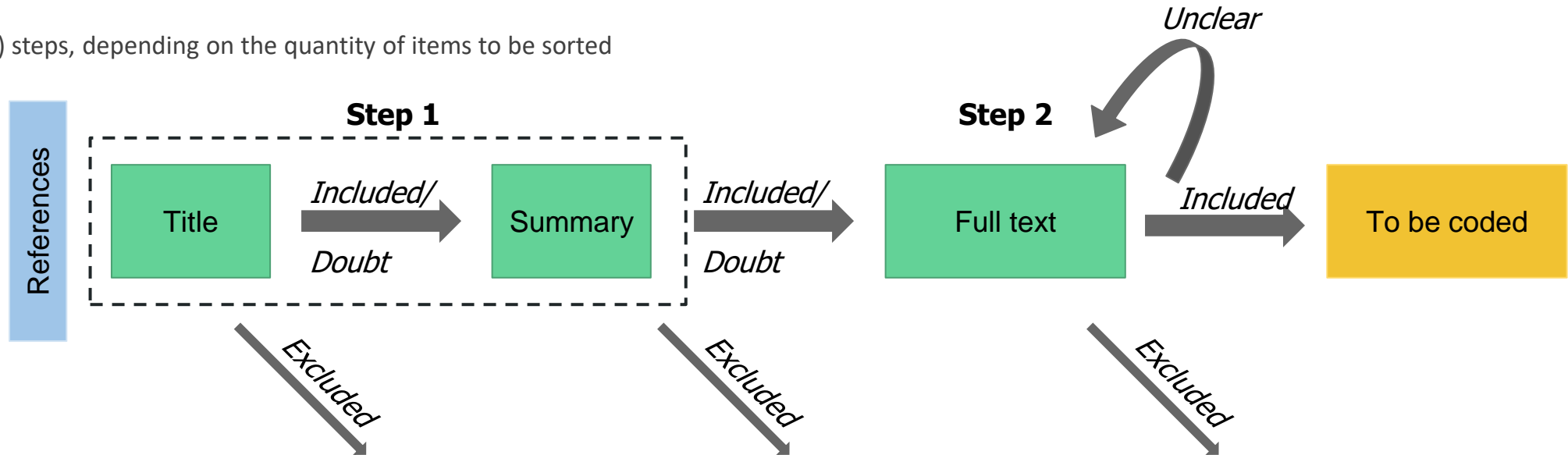


Each step requires the prior establishment of a **decision tree**

# The screening strategy

## 1. The different screening stages

In 2 (or 3) steps, depending on the quantity of items to be sorted

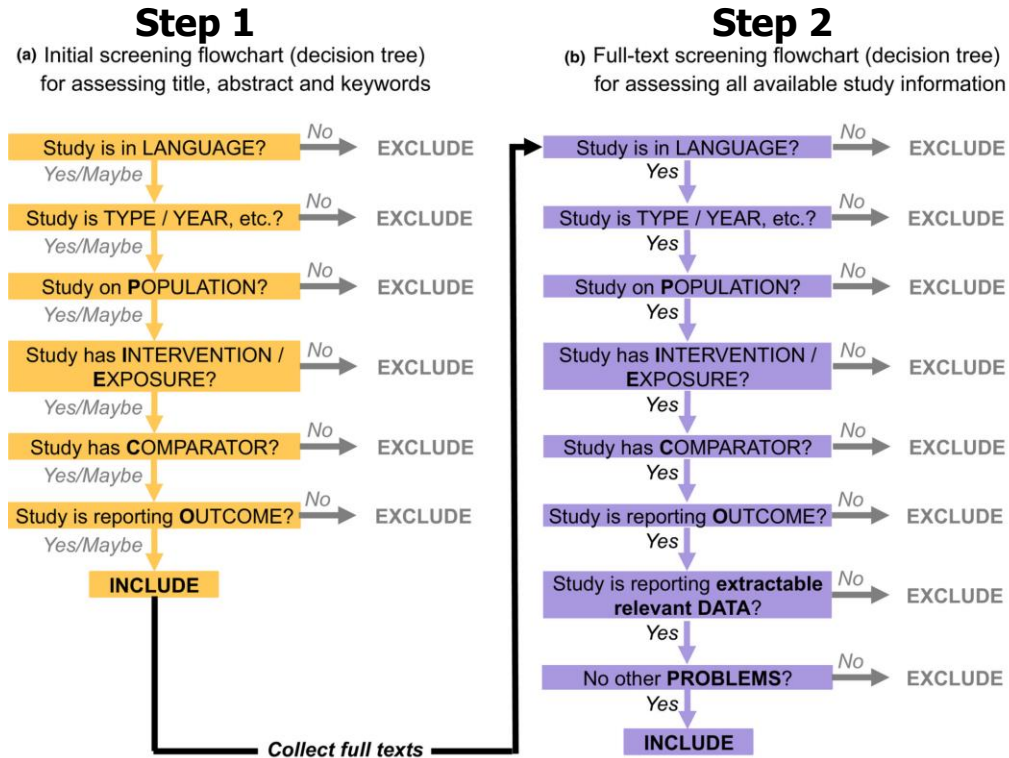


Each step requires the prior establishment of a **decision tree**

# The screening strategy

## 2. Inclusion and exclusion criteria

### Decision trees (Foo et al. 2021)



### Ideally, at each stage :

→ generate the decision tree using **PICO** and **IN/OUT criteria**

→ **discuss** the decision tree (with at least 1 other evaluator)

→ **benchmark** the decision tree (on a few articles, 2+ reviewers, compare results)

→ **refine** the decision tree

**SORTING**

# The importance of inclusion and exclusion criteria

---

- ✓ Increasingly precise criteria at each stage of sorting while maintaining previous criteria
- ✓ A priori criteria preserve transparency and repeatability and minimize bias.
- ✓ When uncertain, be inclusive
- ✓ Decisions to be made according to different situations and must be transcribed for transparency and repeatability
- ✓ There may be criteria not related to PECO, on the language of the article, the type of articles (eg review), the quality or the type of data

# The importance of inclusion and exclusion criteria

- ✓ Increasingly precise criteria at each stage of sorting while maintaining previous criteria
- ✓ A priori criteria preserve transparency and repeatability and minimize bias.
- ✓ When uncertain, be inclusive
- ✓ Decisions to be made according to different situations and must be transcribed for transparency and repeatability
- ✓ There may be criteria not related to PECO, on the language of the article, the type of articles (eg review), the quality or the type of data

## **Tips for efficient sorting**

- Search the library for relevant keywords - filter these articles to sort them together
- Work in blocks of 30-45 minutes
- Work simultaneously with other people (facilitates quick consultation)
- BUT BE CAREFUL of any exclusion without a human reading the article!

## 3. Existing tools for managing screening



### Excel Microsoft / WPI / Office - free

Need to be very organized - difficulty when evaluating with multiple reviewers.

No. of articles	Article title	Sort by title	Abstract sorting	Pdf found	Sort entire text
23	Evaluation of	Yes	NO	-	-
24	Ecosystem...	NO	-	-	-
2X	Mapping...	Yes	Yes	Yes	No



## 3. Existing tools for managing screening



ALL\_references\_with\_duplicates\_10\_05\_2022\_V19\_Sans\_resultat.modSylvie.xlsx - Excel

Fichier Accueil Insertion Mise en page Formules Données Révision Affichage Aide WPS PDF

Partager

	A	B	N	O	P	Q	R	S	T	U	V	W	X
1						Screen_title							
	biblio_int ernal_id	biblio_authors	screen_dup licates	screen_dupl icates_date	screen_ka ppa_test_ title	screen_ti tle_decisi on_SC	screen_title _date_SC	screen_title _who	screen_title_d ecision_ET	screen_title_d ate_ET	screen_ti tle_who	screen_title_ decision_fina l	title_just SC
2													
40651	26329	Hempel, G.	/	16_08_21	No	yes	13/10/2021	Sylvie Campagne				yes	
40652	20329	Calle, Z. and Mur	/	16_08_21	No	no	06/10/2021	Sylvie Campagne				no	
40653	31943	Mootapally, C.S.	/	16_08_21	No	no	18/10/2021	Sylvie Campagne				no	
40654	18692	Barnard, A. and L	/	16_08_21	No	no	01/10/2021	Sylvie Campagne				no	
40655	36310	Sayer, M.D.J. and	/	16_08_21	No	no	20/10/2021	Sylvie Campagne				no	
40656	13678	Sayer, MDJ and E	Duplicates	16_08_21									
40657	14502	Soto-Rojas, RL ar	/	16_08_21	No	no	30/09/2021	Sylvie Campagne				no	
40658	41424	C Torres, N Hanle	/	16_08_21	No	yes	22/10/2021	Sylvie Campagne				yes	
40659	39591	VuÄËÇŽ, L.I. and /	/	16_08_21	No	no	21/10/2021	Sylvie Campagne				no	
40660	27751	KÄËmpf, J. and C	/	16_08_21	No	yes	14/10/2021	Sylvie Campagne				yes	
40661	38895	Tynybekov, A. ar	/	16_08_21	No	no	21/10/2021	Sylvie Campagne				no	
40662	25282	Goudey, C.A. and	/	16_08_21	No	no	11/10/2021	Sylvie Campagne				no	
40663	22704	Diez, J.J.	/	16_08_21	No	yes	07/10/2021	Sylvie Campagne				yes	
40664	23630	Faggi, A. and Per	/	16_08_21	No	no	08/10/2021	Sylvie Campagne				no	

WOS\_Scopus\_GS Sht 1. Bibliographic Coding Sht 2. Meta-data Coding for Map test.kap ...

Prêt Paramètres d'affichage 100 %

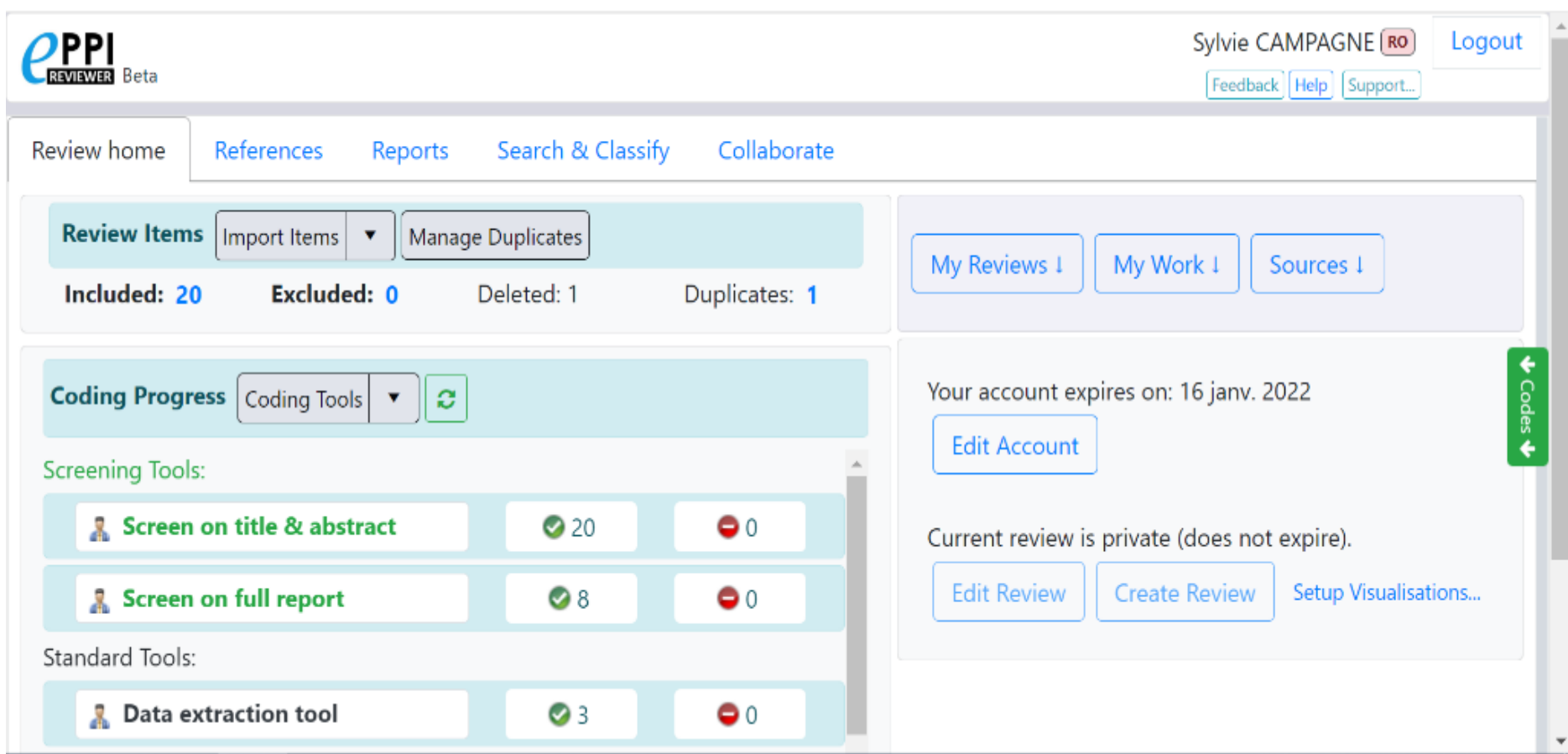
## 3. Existing tools for managing screening



### EPPI reviewer

- Online tool – not free
- Very practical if several reviewers
- One place for every data

= Free version  
CADIMA



The screenshot shows the ePPI REVIEWER Beta web interface. At the top right, the user is logged in as Sylvie CAMPAGNE (RO) with a Logout button and links for Feedback, Help, and Support. The main navigation bar includes Review home, References, Reports, Search & Classify, and Collaborate. Below this, there are sections for Review Items (Import Items, Manage Duplicates) showing counts: Included: 20, Excluded: 0, Deleted: 1, Duplicates: 1. On the right, there are buttons for My Reviews, My Work, and Sources. The Coding Progress section shows Coding Tools and a refresh button. The Screening Tools section lists: Screen on title & abstract (20/0), Screen on full report (8/0), and Standard Tools: Data extraction tool (3/0). On the right side of the interface, there is a notification that the account expires on 16 janv. 2022 with an Edit Account button, and a message that the current review is private (does not expire) with buttons for Edit Review, Create Review, and Setup Visualisations... A vertical green button labeled 'Codes' is on the far right.

# Agreement between different evaluators

## Cohen's Kappa test for 2 raters

(see also Light's Kappa, Fleiss's Kappa)

→ Sorting results +/- disparate despite IN/OUT criteria

→ Perform assessment counts and gather them in a contingency table

Example: out of 110 articles



Damien

Jon

	YES	NO	DOUBT
YES	15	2	3
NO	0	69	8
DOUBT	0	4	9

# Agreement between different evaluators

## Cohen's Kappa test for 2 raters

(see also Light's Kappa, Fleiss's Kappa)

→ Calculation of Kappa

$$\kappa = \frac{P_o - P_e}{1 - P_e}$$

N: the total sum of all cells in the table

P<sub>o</sub>: *proportion of observed agreement*, the sum of the diagonal proportions, which corresponds to the proportion of cases where the two raters assigned the same categories

P<sub>e</sub>: *proportion of random agreement*, the sum of the products of the marginal proportions of the rows and columns

Example: Round 1 (Jon, Damien)

k = 0.68

```
# Tableau de contingence
xtab <- as.table(rbind(c(15, 2, 3), c(0, 69, 8), c(0, 4, 9)))
# Statistiques descriptives
diagonal.counts <- diag(xtab)
N <- sum(xtab)
row.marginal.props <- rowSums(xtab)/N
col.marginal.props <- colSums(xtab)/N
# Calculer kappa (k)
Po <- sum(diagonal.counts)/N
Pe <- sum(row.marginal.props*col.marginal.props)
k <- (Po - Pe)/(1 - Pe)
k
```

# Agreement between different evaluators

## Cohen's Kappa test for 2 raters

(see also Light's Kappa, Fleiss's Kappa)

→ Interpretation

Example: we had to discuss before a second round... :)

Less punitive: % agreement, in our case

$93/110 = 85\%$

Value of k	Strength of the agreement
< 0	Poor
0.01 - 0.20	Light
0.21 - 0.40	Fair
0.41 - 0.60	Moderate
0.61 - 0.80	Substantial
0.81 - 1	Almost perfect



**CESAB**  
CENTRE DE SYNTHÈSE ET D'ANALYSE  
SUR LA BIODIVERSITÉ



# Thank you for your attention !!!

Sylvie Campagne  
Sorbonne Université – Station Biologique de Roscoff  
sylviecampagne@gmail.com



**Bienvenüe**



*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.*



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

