



# APPEL A PROJETS FRB-MTE-OFB 2022

## *Pressions anthropiques et impacts sur la biodiversité terrestre*

Axe REVUE SYSTEMATIQUE

## Restitution intermédiaire du projet DESYBEL

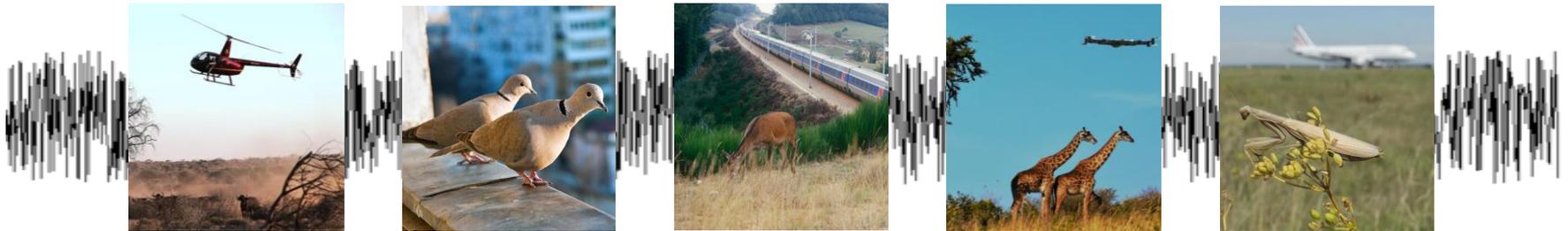
Revue systématique sur l'impact du bruit anthropogénique sur la biodiversité terrestre

Léa Terray, chargée d'étude  
Romain Sordello, Coordinateur de cellule  
Yorick Reyjol, chef d'équipe (Porteur de projet)

Muséum national d'Histoire naturelle, PatriNat



Pourquoi s'intéresser à la pollution sonore ?



### Pourquoi s'intéresser à la pollution sonore ?

**PROCEEDINGS B**  
royalsocietypublishing.org/journal/rspb

Research

**Traffic noise inhibits cognitive performance in a songbird**

Alison Osbrink<sup>1</sup>, Megan A. Meatte, Alan Tran, Katri K. Herranen, Lilliann Meek, May Murakami-Smith, Jacelyn Ito, Some Bhadra, Carrie Nunnenkamp and Christopher N. Templeton

Department of Biology, Pacific University, 2043 College Way, Forest Grove, OR 97116, USA  
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**Cite this article:** Osbrink A et al. 2021 Traffic noise inhibits cognitive performance in a songbird. *Proc. R. Soc. B* **288**: 20202851. <https://doi.org/10.1098/rspb.2020.2851>

Received: 16 November 2020  
Accepted: 8 January 2021



*Conservation Biology*

Contributed Paper

**Effects of traffic noise on tree frog stress levels, immunity, and color signaling**



Mathieu Troianowski, Nathalie Mondy, Adeline Dumet, Caroline Arcanjo, and Thierry Lengagne\*

UMR 5023 Ecologie des Hydrosystèmes Naturels et Anthropisés, Université de Lyon; ENTPE, CNRS, Université Lyon1, 6 Rue Raphaël Dubois 69622 Villeurbanne, France

**Global Change Biology**

Global Change Biology (2016) 22, 3349–3360, doi: 10.1111/gcb.13352

**Repeated exposure reduces the response to impulsive noise in European seabass**



ANDREW N. RADFORD<sup>1</sup>, LAURIE LÈBRE<sup>2</sup>, GILLES LECAILLON<sup>2</sup>, SOPHIE L. NEDELEC<sup>1</sup> and STEPHEN D. SIMPSON<sup>3</sup>

<sup>1</sup>School of Biological Sciences, University of Bristol, Life Sciences Building, 24 Tyn dall Avenue, Bristol BS8 1TQ, UK, <sup>2</sup>Écocéan, 33 rue Chaptal, 34 000 Montpellier, France, <sup>3</sup>Biosciences, College of Life and Environmental Sciences, University of Exeter, Stocker Road, Exeter EX4 4QD, UK

Eur J Wildl Res (2015) 61:871–879  
DOI 10.1007/s10344-015-0964-y

**ORIGINAL ARTICLE**

**Time to leave? Immediate response of roe deer to experimental disturbances using playbacks**



Sophie Padić<sup>1</sup> · Nicolas Morellet<sup>2</sup> · Bruno Cargneltutti<sup>2</sup> · A. J. Mark Hewison<sup>2</sup> · Jean-Louis Martin<sup>1</sup> · Simon Chamaillé-Jammes<sup>1</sup>

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### Objectif de DESYBEL

Anticiper l'importance de la pollution sonore en proposant un état des lieux des connaissances standardisé sur le sujet, afin d'aboutir à la prise en compte de cette nuisance



# Ecosystème/habitat et espèces étudiés

Projet DESYBEL

Biodiversité terrestre



### Biodiversité terrestre

Mammifères



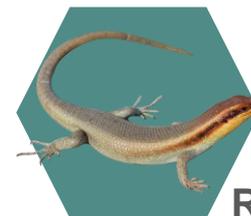
Oiseaux



Arthropodes



Reptiles



Gastéropodes



Amphibiens



### Sources de nuisances sonores



#### **Industriel**

Bruits d'activités industrielles.  
Ex : sites de construction, parcs éoliens, mines.



#### **Transports**

Bruits de tous les types de transports civils.  
Ex : hélicoptères, trains, voitures.



#### **Urbain**

Bruits des villes et zones urbanisées.  
Ex : trafic citadin, zones résidentielles.



#### **Militaire**

Bruits d'activités militaires  
Ex : explosions, jets, bang soniques.



#### **Récréationnel**

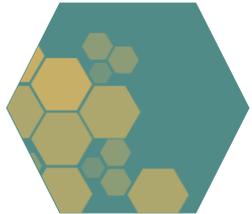
Bruits des activités récréatives.  
Ex : visiteurs de zoo, randonneurs, drones, tourisme.



#### **Autres**

Autres sources de bruits.  
Ex : voix humaines, aboiement de chiens, aération.

## Impacts étudiés



### Utilisation de l'espace

Ex : distribution des espèces,  
délimitation du territoire.



### Communication

Ex : fréquence du chant, chorus,  
cri d'alarme.



### Ecosystème

Ex : abondance, richesse  
spécifique, diversité spécifique.



### Reproduction

Ex: soins parentaux, nombre  
d'œufs, succès reproducteur.



### Comportement

Ex : vigilance, mouvements,  
jeux, prospection alimentaire.



### Physiologie

Ex : rythme cardiaque, masse  
corporelle, taux hormonaux.

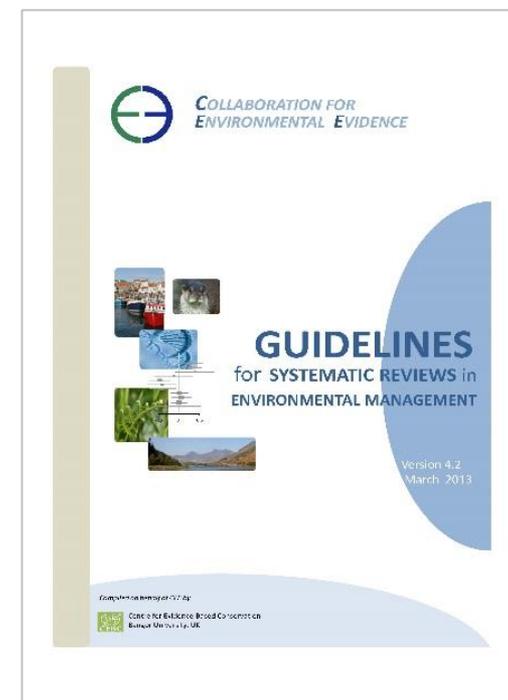
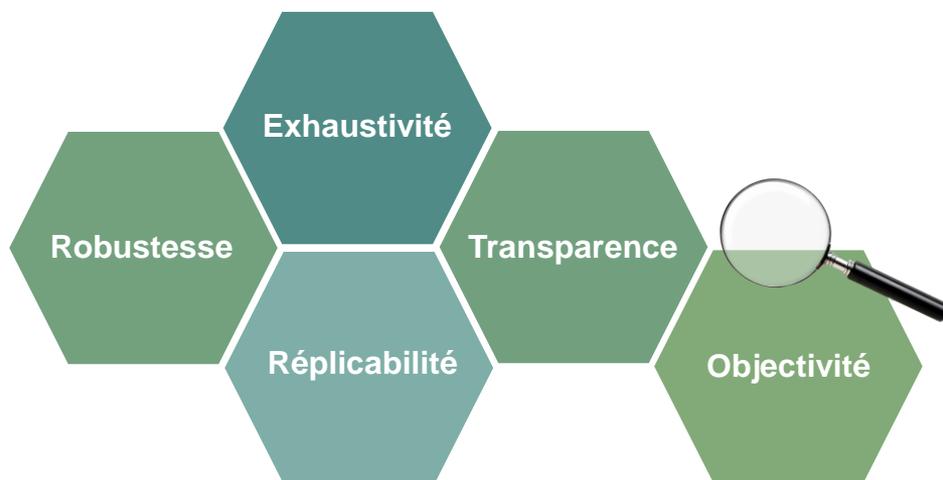


### Autres

Ex : diversité phylogénétique, longueur  
des télomères, taux de capture de proies.

## Les revues systématiques

### Méthode de synthèse bibliographique standardisée



COPIE



7 experts scientifiques



**INRAE**  
la science pour la vie, l'humain, la terre

**anses**



Institut de Recherche  
pour le Développement  
FRANCE



**Cerema**  
CLIMAT & TERRITOIRES DE DEMAIN



**PATRINAT**  
CENTRE D'EXPERTISE ET DE DONNÉES  
OFB-MNH-CNRS-IRD



**NTNU**

Norwegian University of  
Science and Technology

La carte systématique de Sordello et al., 2020

### Qu'est-ce qu'une carte systématique ?

Etat des lieux « catégorisé » des connaissances

Sordello et al. *Environ Evid* (2020) 9:20  
<https://doi.org/10.1186/s13750-020-00202-y>

Environmental Evidence

SYSTEMATIC MAP

Open Access

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



Romain Sordello<sup>1\*</sup>, Ophélie Ratel<sup>1</sup>, Frédérique Flamerie De Lachapelle<sup>2</sup>, Clément Leger<sup>3</sup>, Alexis Dambry<sup>1</sup> and Sylvie Vanpeene<sup>4</sup>

### Abstract

**Background:** Ecological research now deals increasingly with the effects of noise pollution on biodiversity. Indeed, many studies have shown the impacts of anthropogenic noise and concluded that it is potentially a threat to the persistence of many species. The present work is a systematic map of the evidence of the impacts of all anthropogenic noises (industrial, urban, transportation, etc.) on biodiversity. This report describes the mapping process and the evidence base with summary figures and tables presenting the characteristics of the selected articles.

**Methods:** The method used was published in an a priori protocol. Searches included peer-reviewed and grey literature published in English and French. Two online databases were searched using English terms and search consistency was assessed with a test list. Supplementary searches were also performed (using search engines, a call for

### Actualisation Carte systématique



### Revue systématique



### Actualisation Carte systématique



### Revue systématique



### 1<sup>ère</sup> phase : Actualisation du corpus bibliographique

### Protocole de Sordello et al. 2019



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Systematic Map Protocol | [Open Access](#) | [Published: 12 February 2019](#)

### Evidence of the environmental impact of noise pollution on biodiversity: a systematic map protocol

[Romain Sordello](#)  [Frédérique Flamerie De Lachapelle](#), [Barbara Livoreil](#) & [Sylvie Vanpeene](#)

*Environmental Evidence* **8**, Article number: 8 (2019) | [Cite this article](#)

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#### Abstract

##### Background

For decades, biodiversity has suffered massive losses worldwide. Urbanization is one of the major drivers of extinction because it leads to the physical fragmentation and loss of natural habitats and it is associated with related effects, e.g. pollution and in particular noise pollution given that many man-made sounds are generated in cities (e.g. industrial and traffic noise, etc.). However, all human activities generate sounds, even far from any human habitation (e.g. motor boats on lakes, aircraft in the air, etc.). Ecological research now deals

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Collecte des citations

Clarivate  
**Web of Science™**



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## Protocole de Sordello et al. 2019



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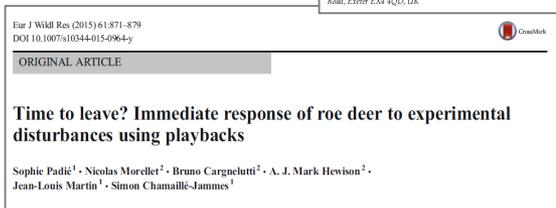
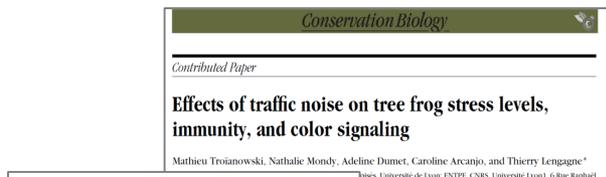
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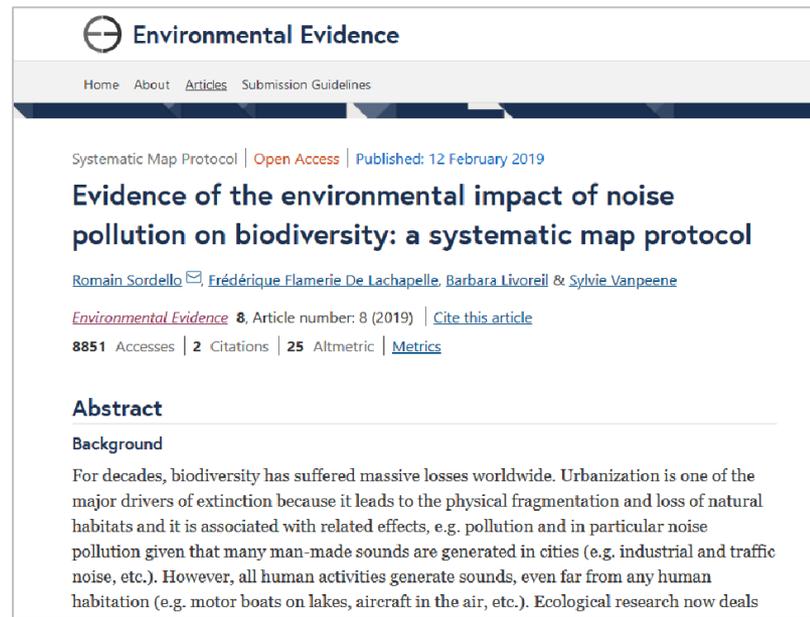
## 1<sup>ère</sup> phase : Actualisation du corpus bibliographique

Collecte des citations

Tri des articles



## Protocole de Sordello et al. 2019



**Environmental Evidence**  
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Collecte des citations

Tri des articles

Extraction métadonnées

- Observationnelle / Expérimentale
- In-situ / Ex-situ
- Éléments PECO
- ...

### Protocole de Sordello et al. 2019

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**Fusion avec Sordello et al. 2020**

1<sup>ère</sup> phase : Actualisation du corpus bibliographique

### Synthèse bibliométrique

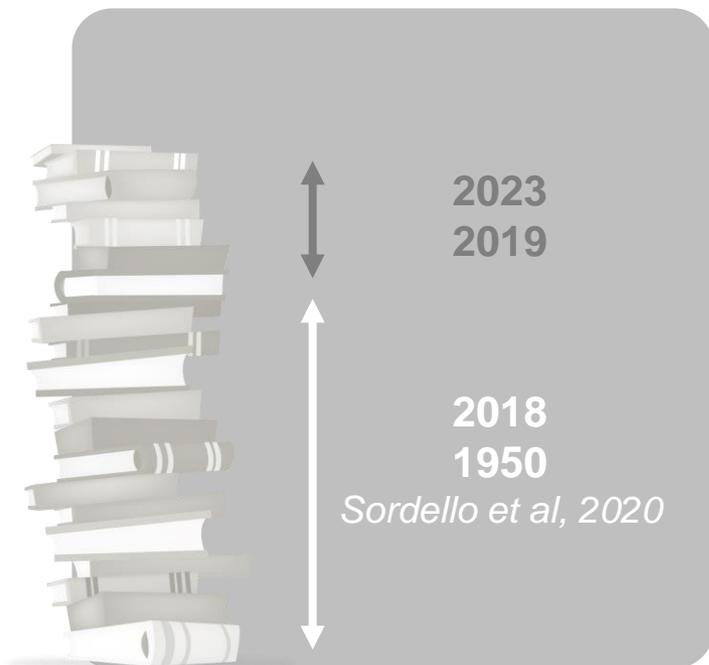


1<sup>ère</sup> phase : Actualisation du corpus bibliographique

### Synthèse bibliométrique



### Actualisation Carte systématique



### Revue systématique



### 2<sup>ème</sup> phase : Revue systématique

Focus sur un cluster outcome



### 2<sup>ème</sup> phase : Revue systématique

Focus sur **un cluster outcome**



### 2<sup>ème</sup> phase : Revue systématique

Focus sur **un cluster outcome**



## 2<sup>ème</sup> phase : Revue systématique



Analyse critique



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Department of Biology, Parks University, 280 College Way, West Grove, OR 97138, USA

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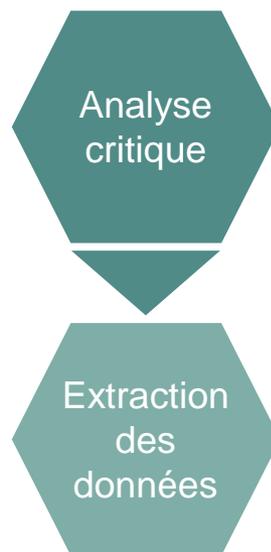
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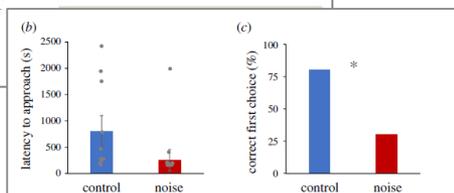
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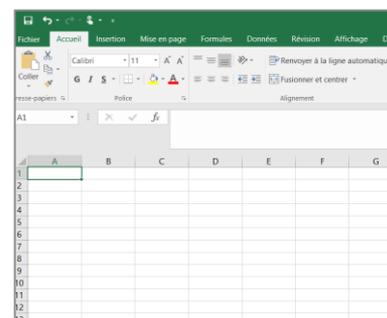


**PROCEEDINGS B**  
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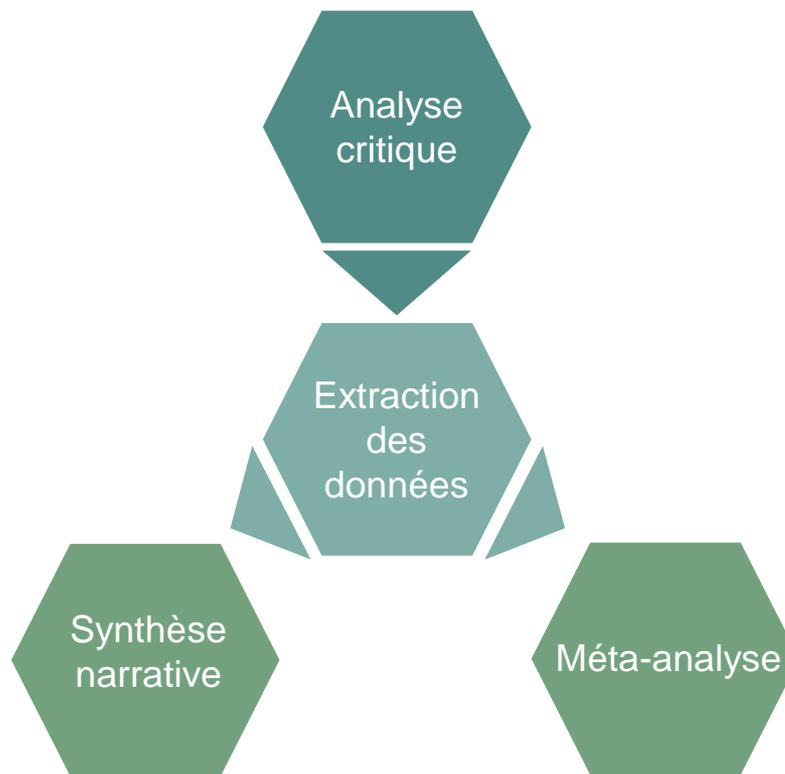
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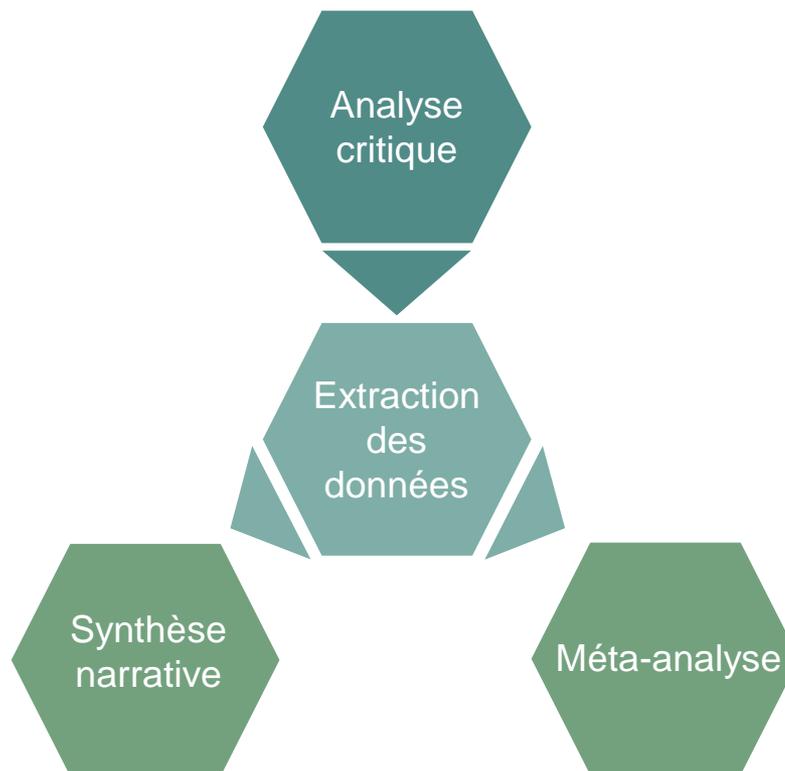
Taille échantillon  
 Moyenne  
 Ecart type



### 2<sup>ème</sup> phase : Revue systématique



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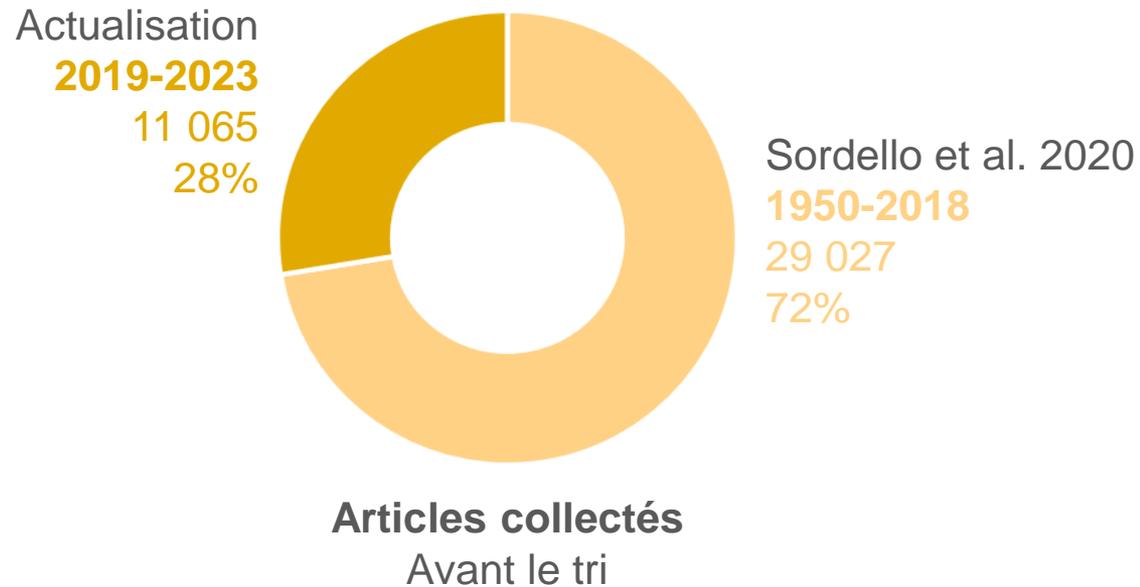
Bilan de l'actualisation

Où en sommes-nous ?

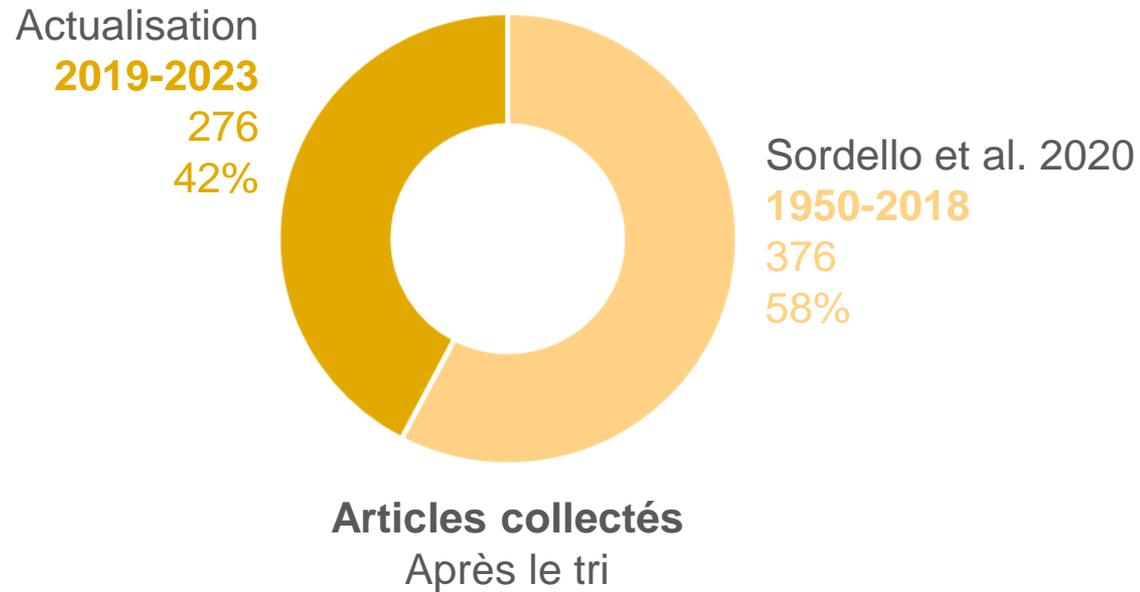




### Bilan de l'actualisation

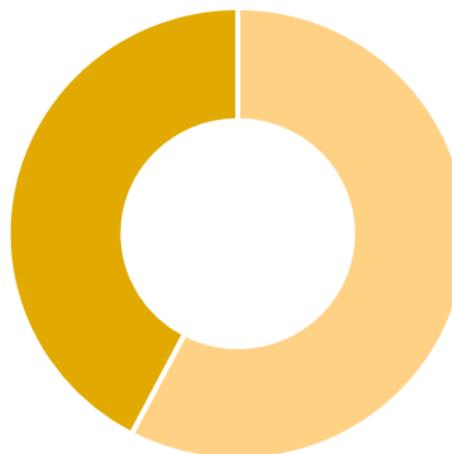


### Bilan de l'actualisation



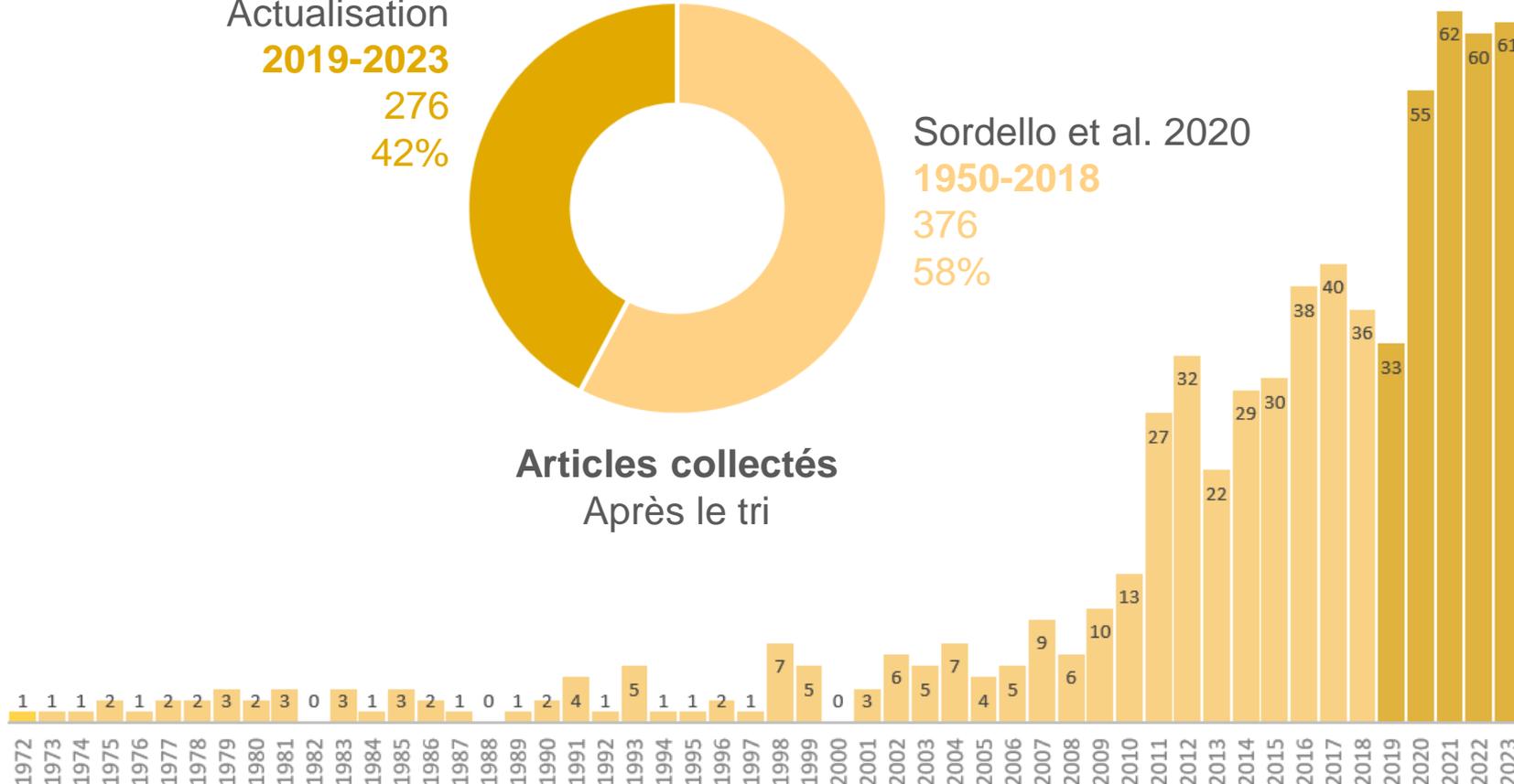
## Bilan de l'actualisation

Actualisation  
**2019-2023**  
 276  
 42%

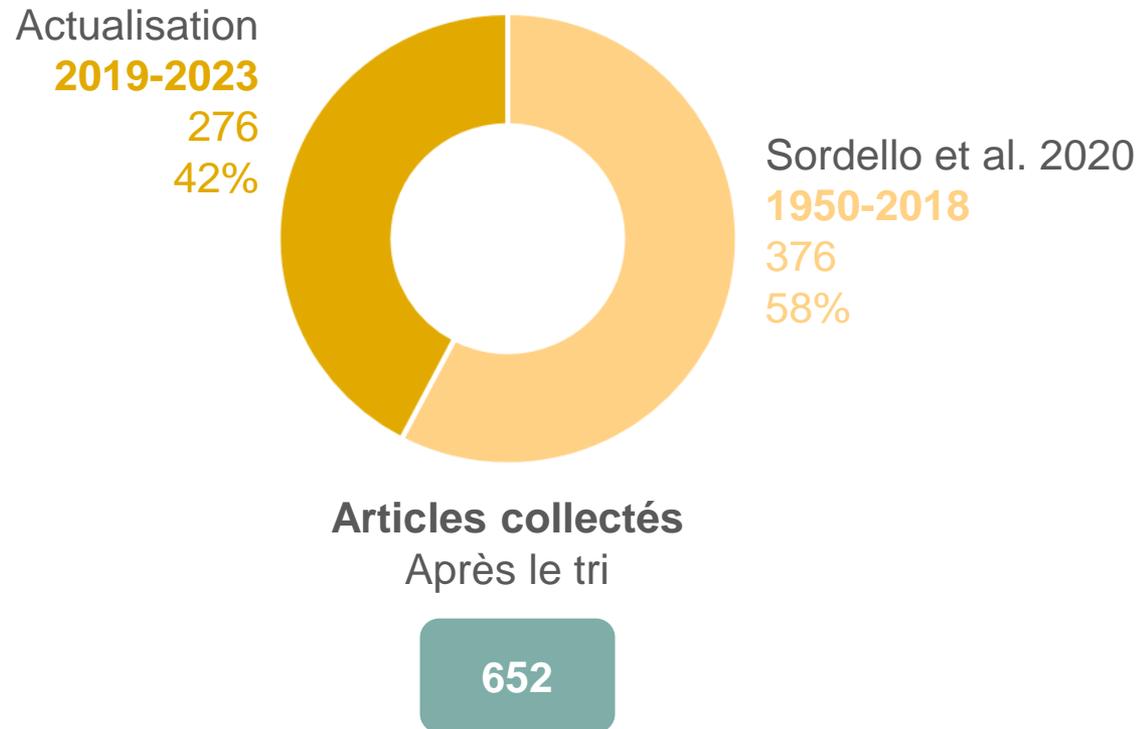


Sordello et al. 2020  
**1950-2018**  
 376  
 58%

Articles collectés  
 Après le tri



### Bilan de l'actualisation



# Conclusion

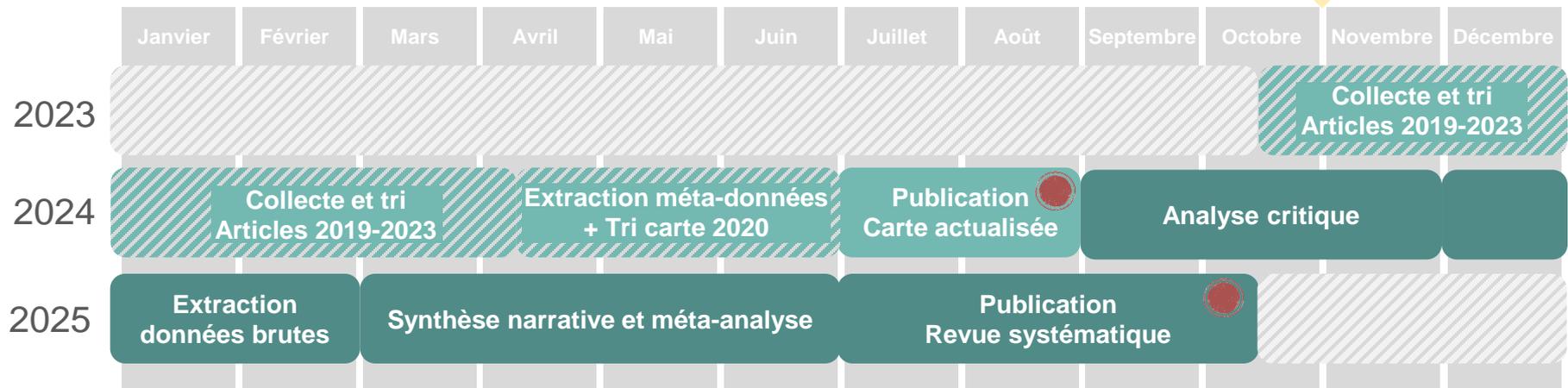
# Projet DESYBEL



## Calendrier



2 ans



- 1<sup>ère</sup> phase : Carte systématique actualisée
- 2<sup>ème</sup> phase : Revue systématique



Merci pour votre  
attention

