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► **To cite this version:**

Marie Zakardjian, Herve Jourdan, Christophe Diagne, Evelyne Franquet, Benoit Geslin. Exobees, a database of non-eusocial alien bee species in the world. IUSSE 2022, Jul 2022, San Diego, United States. hal-04888563

**HAL Id: hal-04888563**

**<https://hal.science/hal-04888563v1>**

Submitted on 15 Jan 2025

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# Exobees, a database of non-eusocial alien bee species in the world

Marie Zakardjian<sup>1</sup>, Hervé Jourdan<sup>2</sup>, Christophe Diagne<sup>3</sup>, Evelyne Franquet<sup>1</sup>, Benoît Geslin<sup>1</sup>

## INTRODUCTION

Insect species are continuously introduced worldwide (Seebens *et al.* 2017). Once introduced, if they become established, they may have devastating effects on native ecosystems and local economy. Among bee species, alien *Apis* spp. and *Bombus* spp. have been largely studied. However, little is known about many non-eusocial alien bee species. Here we reviewed more than 378 publications (work in progress) to provide an exhaustive list of non-eusocial alien bee species worldwide and gathered information about their distribution and ecology.

## METHODS

Step 1. Literature search of papers published since 2016 using key-words "alien bee", "adventive bee", "introduced bee", "exotic bee". This step was conducted to identify newly introduced bee species since the last review of the subject (Russo 2016).

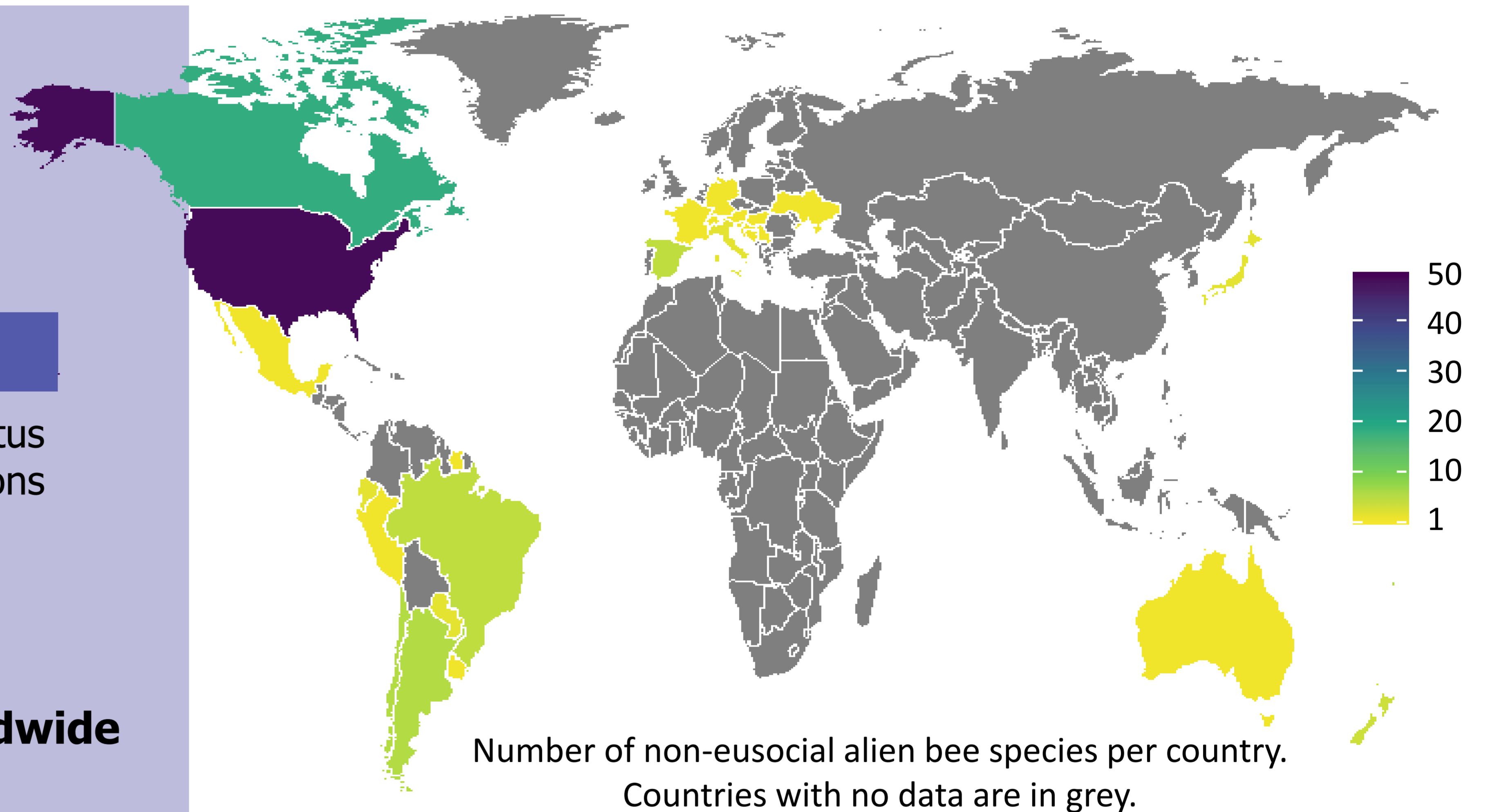
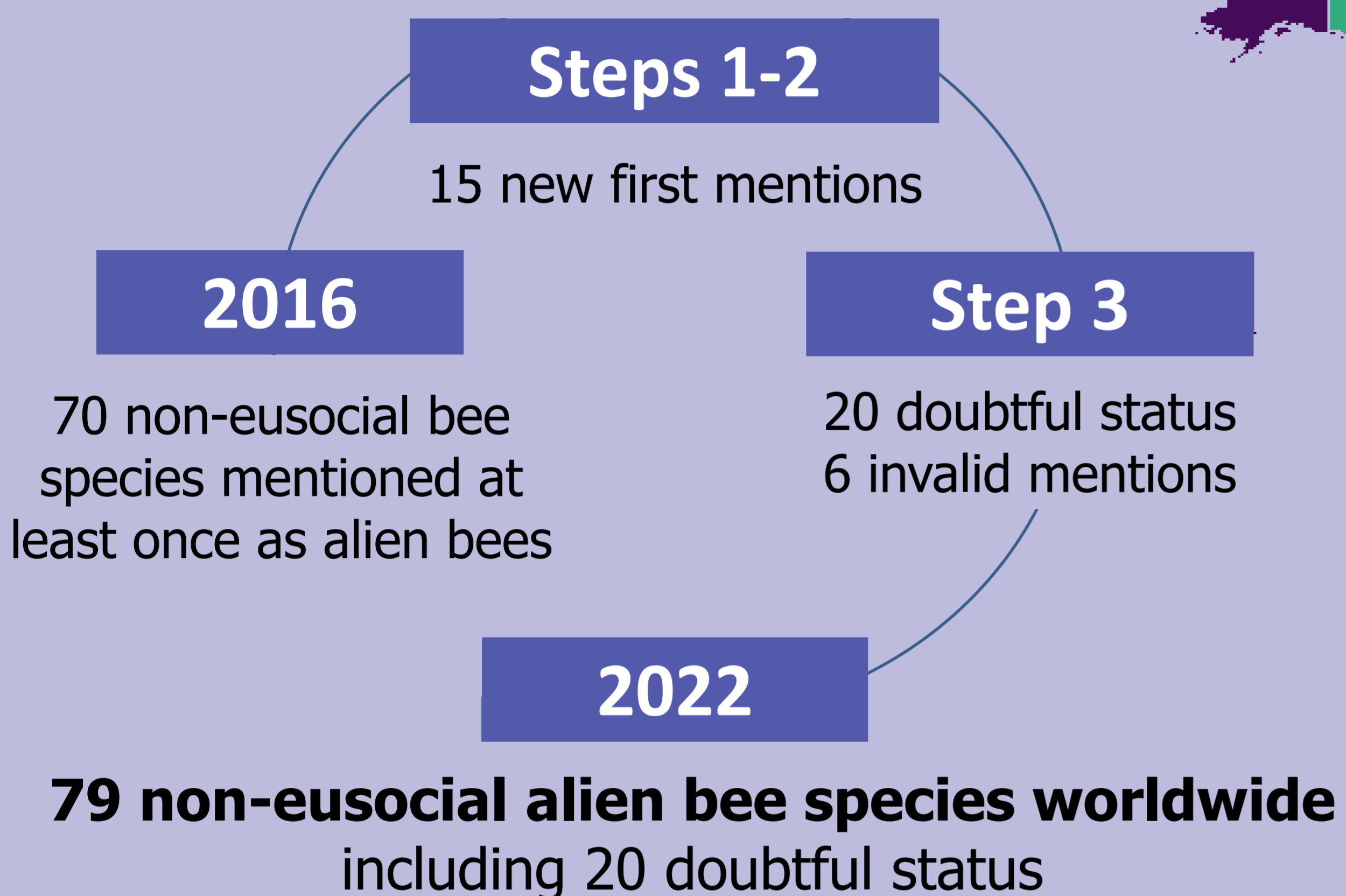
Step 2. Literature review without date limitation using each bee species as key-word. This step was conducted to gather information concerning bees' ecology, distribution and introduction events.

Step 3. Validation of species status

- Doubtful alien species: a bee species for which it could not be determined whether its presence outside its native range is due to a displacement via anthropogenic activities or a natural range extension.
- Invalid/deleted species: bee species recorded at least once as alien bee species in the literature but i) with no published evidence of their presence outside their native range or ii) naturally extending their range.



## RESULTS



- Generalist feeding behaviour (76%)
- Above-ground nesting (81%)
- Univoltine (63%)
- Megachillidae (51%)
- 5-10mm (52%)

## DISCUSSION

### 25% of bee species under doubtful status!

How to discriminate anthropic-driven displacement from natural range expansion ?

### Geographical disparities

- Lack of published data/accessible publications (e.g. due to language filtering)
- Contrasted proportions of alien bees between i) North America (high number of native and alien species), ii) Europe (high number of native species and low number of alien ones), and iii) Southwest Pacific (low number of native species and a relatively high number of alien ones).

To a collaborative monitoring of alien bee species worldwide

Contact me !

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