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Checklist of the bees (Hymenoptera, Apoidea) of New Caledonia

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Abstract

Background

In a world where insects and notably bees are declining, assessing their distribution over time and space is crucial to evaluate species status and highlight conservation priorities. However, this can be a daunting task, especially in areas such as tropical oceanic islands where exhaustive samplings over time have been lacking. This is the case in New Caledonia, an archipelago located in the Southwest Pacific. Historical records of bee species are piecemeal, and although contemporary samplings have significantly advanced our knowledge of the bee fauna of New Caledonia, the status of several species remains to be elucidated.

New information

Here we provide an updated checklist of the 51 bee species recorded for New Caledonia using previous publications and personal samplings. We documented their distribution, origin (i.e., endemic, native, or alien), and the year and location of their occurrences. Based on the year of their first and last capture, we associated them with an occurrence status. Thus, 10 years after the last checklist of the New Caledonian bee fauna, literature review and recent samplings allowed us to add 6 new species to the list. Half of them are recently introduced species and one is mentioned for the first time in this paper (i.e., *Hylaeus albonitens*). We consider here that 30 species are effectively present on the territory, and the presence of 21 species could not be determined due to a lack of data, which highlights the need to increase sampling efforts across New Caledonia. Given the difficulty of exhaustively sampling the whole archipelago, we would recommend taking as a starting point altitude environments and areas where data deficient species were captured. In a broader perspective, biomolecular analyses are crucial to confirm species identifications. This is also needed to make comparisons between archipelagos and thus clarify the distribution and status of species at the scale of the Southwest Pacific.

Keywords

Bee distribution, occurrences, alien species, island ecosystem

Introduction

Insects and notably bees are declining worldwide (Wagner 2020, Zattara and Aizen 2021). For 50 years, many studies have reported a decrease in their abundance and species richness, even in protected areas (Hallmann et al. 2017, Seibold et al. 2019). The magnitude and rate of this biodiversity loss have urged taxonomists and naturalists around the globe to exhaustively assess species diversity and their distribution over time and space (Orr et al. 2021). This baseline information is crucial to evaluate species status and provide informative tools for conservation such as IUCN Red Lists (Rodrigues et al. 2006, Potts et al. 2010, Cardoso et al. 2011, Fox et al. 2019). While in developed countries, where bee species have been studied for a long time, the status of bee populations is already difficult to assess - as a single example, the European Red List of Bees did not evaluate the status of more than a half of the 2000 species present on the continent due to a lack of data (Nieto et al. 2014) - this issue is all the more relevant in other parts of the world where bee species have been seldomly sampled, notably in oceanic tropical and subtropical islands such as New Caledonia (Orr et al. 2021).

New Caledonia is located in the Southwest Pacific. This French overseas archipelago is part of the Australasian biogeographic realm. Historically, the archipelago went through a total submersion event between 75 and 60 Mya, and various obduction/subduction events with at least partial submersion until Miocene, 25 Mya (Maurizot and Campbell 2020) and is isolated from any continent since, allowing an important species radiation (Grandcolas et al. 2008, Nattier et al. 2017). The archipelago covers 18519 km² with a mosaic of edaphic and topographic conditions supporting a high diversity of habitats. As such, plants growing on ultramafic substrates, that cover a third of the main island, present a very high rate of endemism. Yet, New Caledonia is considered as one of the main biodiversity hotspots at global scale for vascular plants with an endemic rate of 74% up to 96.7% in ultramafic habitats (Morat et al. 2012, Isnard et al. 2016, Munzinger et al. 2022). However, regarding animals, while some groups also display a remarkable diversity and a high rate of endemism such as Squamata for example (Bernstein et al. 2021, Slavenko et al. 2023), others such as bees appear remarkably poor, illustrating a convincing example of island disharmony (Vargas 2012).

From the end of the 19th century to the middle of the 20th century, very few mentions and descriptions of bees were published for New Caledonia (Vachal 1897, Vachal 1907, Vachal 1908, Friese 1905, von Schulthess 1915, Turner 1919, Cockerell 1911, Cockerell 1929, Cockerell 1939, Cheesman 1953, Donovan 1983). These records were fragmentary and mostly based on the examination of old collections. The first review of the bee species of New Caledonia is attributed to Michener in 1965, who listed 9 species (previously

mentioned in the literature) and one new species retrieved from an unexamined collection (Michener 1965). Following this, Donovan (1983) made additional captures between 1979 and 1981 and updated the number of New Caledonian bee species to 28, unfortunately naming only two of them. This number did not change until 2003 when Pauly & Muzinger updated this list to 22 species, based on specimens in previous collections and additional captures realized between 1998 and 1999 (Pauly and Munzinger 2003). An important step in the knowledge of the Caledonian bee fauna was achieved by Donovan et al. (2013), who studied plant-bee interactions using previous collections and additional captures between 1979 and 2008. This substantial work resulted in a two-fold increase in the number of bee species recorded for New Caledonia. However, among the 43 bee species listed, 24 were undetermined species at this stage. Subsequently, the works of Pauly et al. (Pauly et al. 2013a, Pauly et al. 2013b, Pauly et al. 2015) on the description and revision of New Caledonian *Austronomia*, *Lasioglossum*, and *Homalictus* genera allowed to give species name to 15 of them. Since then, no review has provided an updated assessment of the bees of New Caledonia.

For the last ten years, we have realized four bee sampling campaigns in several localities (e.g. Zakardjian et al. 2020, Zakardjian et al. 2023a) and we felt the lack of an updated list clarifying the advances of the last 50 years. For example, many bee species recorded for New Caledonia during the 20th century have not been seen for several decades, if not since their first detection. Conversely, new alien bees species did enter the territory (see below). This is why, in this paper, we provide an updated checklist of the bee fauna of New Caledonia. We provide their status, distribution, and main synonymies. We also provide every occurrence (date and location) found in the literature and in our samplings together with a comprehensive list of the plant species they visit.

Materials and methods

Litterature search

The checklist provided here results from i) the review of existing literature and ii) additional data from recent field samplings.

Reviewed publications were retrieved from two methods. First, we retrieved publications on GoogleScholar using the key words "New Caledonia" and "bees". Then, we retrieved publications of interest (i.e., mentioning New Caledonian bee species) cited in the former publications. In total, we scanned 37 publications. Among them, 23 were of interest and used in this work (Suppl. material 1). In those publications, we looked for mentions of bee species in New Caledonia. For each bee species, we gathered information concerning their taxonomy (i.e., genus, subgenus, species, subspecies, synonymies and past combinations), occurrences in New Caledonia (i.e., localities and dates of capture), plant species visited, distribution outside New Caledonia if not endemic, and status (i.e., endemic, native, alien). In order to increase the reliability of this information, we verified the valid name and synonymies of the species according to the INPN's (French National Inventory of the Natural Patrimony, <https://inpn.mnhn.fr>) taxonomic repository TaxRef (

Gargominy et al. 2022). For example, one species was named *Lasioglossum instabilis* the publications reviewed (Pauly et al. 2013b). However, according to TaxRef this name is a synonym and its valid name is *Lasioglossum instabile*. Therefore, this species appears as *L. instabile* in this checklist. We also systematically verified species distribution outside New Caledonia using GBIF (Global Biodiversity Information Facility, www.gbif.org) and completed the information based on our own expertise (Hervé Jourdan pers. com.). We noted every country in which every species has been observed. Then, those results were used to determine or correct species status. Indeed, for most of the species listed here, their status does not appear in the reviewed publications or may not be valid anymore. For example, *Megachile albomarginata* was mentioned as endemic to New Caledonia in Pauly and Munzinger (2003). However, a subsequent work showed that this species is also present in Fiji (Davies et al. 2013). Thus, *M. albomarginata* appears as native to New Caledonia in the present checklist. Species mentioned as alien in the literature were systematically categorized as alien here. Species present elsewhere than New Caledonia without any mention of an alien origin in the archipelago were categorized as native. Finally, species only present in New Caledonia were categorized as endemic here.

Additional samplings

In addition to the occurrences retrieved from the existing literature, we implemented new occurrences and plant species visited from our personal published (Zakardjian et al. 2020) and unpublished datasets, and opportunist samplings, all realized between 2017 and 2023.

The first data set comes from a sampling conducted in 2017, from March to May, in Ouvéa, Tiga, Koumac and Belep Islands areas. In each area, bees were captured along 24 transects of 50m placed to represent their diversity of environments (e.g., forest, coastal vegetation, fallow lands, shrublands and subsistence agriculture). Each transect was walked for 25min during which bees interacting with flowers were captured using nets. In addition, in each site, 16 pan traps (blue, red, white, and yellow) were disposed during 48h.

The second dataset comes from a sampling conducted in 2019 from February to April, in Nouméa and the Tontouta valley. Nouméa is the main city of the archipelago, with 99,926 inhabitants for an area of 45.7 km². Within the city, three sites were sampled, separated by at least 3 km. These three sites were (i) the park of the French National Research Institute for Sustainable Development (Institut de Recherche pour le Développement) (ii) the Parc Zoologique et Forestier Michel Corbasson, and (iii) the Tjibaou Cultural Centre. The Tontouta valley is located 30 km north of Nouméa (Figure 1). Within the Tontouta valley, three sites were sampled, separated by at least 3 km. In each site, the plant species presenting the most abundant floral resource were sampled. Depending on the number of available flowering species, up to four plant species were observed during each sampling session. For each plant species, bees contacting flowers in a 1 m² quadrat were captured using nets during 10 minutes. In total, each Tontouta valley sites were sampled 10 times and each Nouméa sites 11 times.

The third dataset comes from a sampling realized in 2022, from March to June, in 14 sites along a gradient running from Nouméa to the Col de Mouirange (Suppl. material 2). In

each site, the plant species presenting the most abundant floral resources were sampled. Depending on the number of available flowering species, up to five plant species were observed during each sampling session. For each plant species, bees contacting flowers in a 1 m² quadrat were captured using nets during 10 minutes. Each site was sampled 4 times.

All the new records collected for this study are published through GBIF (Zakardjian et al. 2023b). Information is also provided for each species.

Occurrence status

For each bee species, we determined an occurrence status in New Caledonia based on the years of their captures. Species were determined as "present" if individuals were captured in more than one year including at least one during the last 50 years (i.e., later to 1973), or "data deficient" if individuals were captured in only one year.

Apidae

Amegilla (*Zonamegilla*) *pulchra* (Smith, 1854)

Nomenclature:

Synonymies: *Anthophora holmesi* Rayment, 1947; *Anthophora parapulchra* Rayment, 1947; *Anthophora perpulchra wallaciella* Rayment, 1947; *Anthophora pulchra townleyella* Rayment, 1947; *Anthophora pulchra* Smith, 1854; *Anthophora salteri* Cockerell, 1905; *Anthophora shafferyella* Rayment, 1947; *Amegilla holmesi* (Rayment, 1947); *Amegilla parapulchra* (Rayment, 1947); *Amegilla salteri* (Cockerell, 1905); *Amegilla shafferyella* (Rayment, 1947); *Amegilla townleyella* (Rayment, 1947); *Amegilla wallaciella* (Rayment, 1947)

Feeds on: Acanthaceae: *Ruellia simplex* (alien); Apocynaceae: *Nerium oleander* (alien); Convolvulaceae: *Evolvulus* sp. (alien), *Ipomoea* sp. (alien); Lamiaceae: *Plectranthus* sp. (alien); Lythraceae: *Cuphea* sp. (alien); Rubiaceae: *Hamelia patens* (alien), Rutaceae: *Murraya paniculata* (alien); Solanaceae: *Solanum lycopersicum* (alien), *Solanum torvum* (alien); Verbenaceae: *Stachytarpheta cayennensis* (alien), *Duranta erecta* (alien) (new records).

Native status: Alien

Distribution: The subgenus *Zonamegilla* - Popov, 1950 - is mostly present in Australia (reviewed by Leijts et al. 2017). This species is therefore present in Australia, but also in Fiji and French Polynesia where it is an alien species (Groom et al. 2017, Groutsch et al. 2018).

Historical data in New Caledonia: Nouméa: Anse Vata, IRD park, 14 mar. 2019, 1 female; 16 mar. 2019, 1 male; 2 apr. 2019, 2 males; Parc Zoologique et Forestier,

6 apr. 2019, 2 males; Rivière Salée, 14 mar. 2022, 1 individual; 16 mar. 2022, 2 individuals; Tuband, 16 mar. 2022, 5 individuals; 25 mar. 2022, 1 individual; Maison Célières, 18 mar. 2022, 5 individuals; Normandie, 18 mar. 2022, 1 individual. Païta: Plaine aux cailloux, Haute Karikoué, pépinière Eriaxis, 05 may 2019. Dumbéa: RM 15, Pépinière Botanea, 05 feb 2020, 2 individuals. Mont Dore: Vallon Dore, 30 mar. 2022, 1 individual; 20 apr. 2022, 1 individual (Zakardjian et al. 2023b).

Notes: First detected in Nouméa in 2016, the species is now established in the city and has started to spread north along the west coast (Hervé Jourdan, pers. com.).

***Apis mellifera* subsp. *mellifera* L., 1758**

Feeds on: A large range of endemic, native and alien plants (including invasive ones).

Native status: Alien

Distribution: Cosmopolitan subspecies. Ubiquitous in New Caledonia, but absent from Belep Islands and Tiga.

Notes: Before the installation of Europeans, there was no social bees nor honey bees in New Caledonia. *Apis mellifera mellifera* was first introduced in 1848 from France by priests in Lifu for wax candles, then subsequently spread on mainland and the isle of Pines in 1853 and Maré during the same period (Lamaignere 2001, Hervé Jourdan, pers. com.). To our knowledge, *Apis mellifera* is still absent from Belep Islands and Tiga and abundant elsewhere in the archipelago.

***Apis mellifera* subsp. *ligustica* Spinola, 1806**

Feeds on: A large range of endemic, native and alien plants (including invasive ones).

Native status: Alien

Distribution: Cosmopolitan subspecies. Ubiquitous in New Caledonia, but absent from Belep islands and Tiga.

Notes: *Apis mellifera ligustica* was introduced punctually by the end of the 19th and the beginning of 20th centuries on the mainland as mentioned by von Schulthess (1915) but most of colonies were brought from Australia and New Zealand in the mid 1980, between 1985 and 1988 on the mainland, following American foulbrood outbreak (Thevenon et al. 1989, Lamaignere 2001).

***Braunsapis puangensis* (Cockerell, 1929)**

Nomenclature:

Synonymies: *Allodape puangensis* Cockerell, 1929

Feeds on: Anacardiaceae: *Schinus aroeira* (ex. *Schinus terebinthifolius*) (alien); Araliaceae: *Polyscias scutellaria* (alien); Asteraceae: *Sphagneticola trilobata* (alien); Lamiaceae: *Ocimum basilicum* (alien), *Plectranthus* sp. (alien); Lythraceae: *Cuphea* sp. (alien); Portulacaceae: *Portulaca umbraticola* (alien); Rubiaceae: *Hamelia patens* (alien); Solanaceae: *Solanum torvum* (alien); Verbenaceae: *Clerodendrum ugandense* (alien), *Duranta erecta* (alien), *Stachytarpheta cayennensis* (alien) (new records).

Native status: Alien

Distribution: Native range: India, Malaysia, Myanmar, Singapore, Thailand. Alien range: Fiji (da Silva et al. 2016), French Polynesia (Groom et al. 2017).

Historical data in New Caledonia: Nouméa: Anse Vata, IRD park, 16 mar. 2019, 1 female; 19 mar. 2019, 1 female; 21 mar. 2019, 1 male; 23 mar. 2019, 1 individual; 2 apr. 2019, 2 females; 10 apr. 2019, 2 females. Rivière Salée, 16 mar. 2022, 2 individuals; Tuband, 16 mar. 2022, 1 individual. Musée de la Ville, 18 mar. 2022, 2 individuals; 24 mar. 2022, 1 individual; 27 apr. 2022, 3 individuals. Magenta Tours, 29 mar. 2022, 4 individuals; 31 mar. 2022, 1 individual. Dumbéa: RM 15, Pépinière Botanea, 05 feb 2020. 4 females. Mont Dore: Saint Michel, 20 apr. 2022, 4 individuals; Vallon Dore, 20 apr. 2022, 7 individuals; 21 apr. 2022, 1 individual; La Conception, 23 mar. 2022, 1 individual (Zakardjian et al. 2023b).

Notes: This species was first detected in New Caledonia in 2019 (Zakardjian et al. 2020). This carpenter bee nests in twigs (Groom et al. 2014b) and displays a casteless sociality (da Silva et al. 2016).

***Ceratina (Neoceratina) dentipes* Friese, 1914**

Feeds on: Verbenaceae: *Stachytarpheta australis* (alien), *S. cayennensis* (alien) (Donovan et al. 2013); Euphorbiaceae: *Euphorbia tannensis* (alien); Goodeniaceae: *Scaevola sericea* (native); Lythraceae: *Cuphea* sp. (alien); Passifloraceae: *Turnera ulmifolia* (alien); Portulacaceae: *Portulaca umbraticola* (alien), *Tribulus repens* (alien) (new records).

Native status: Alien

Distribution: Native range: Hong Kong, Indonesia, Malaysia, Taiwan, Thailand. Alien range: Hawaii, Cook islands, French Polynesia, Mauritius, Vanuatu, Solomon, Fiji, Samoa (Shell and Rehan 2019).

Historical data in New Caledonia: 16km SE La Foa, 20-22 dec. 1991, 1 female. Dec. 1979-sep. 2008, 3 females (Donovan et al. 2013). Tiga, 9 apr. 2017, 4 females. Koumac, 1 may 2017, 1 male and 1 female. Nouméa: Musée de la Ville, 24 mar. 2022, 1 individual; 27 apr. 2022, 1 individual; Magenta Tours, 22 apr. 2022, 1 individual (Zakardjian et al. 2023b).

Notes: This carpenter bee nests in twig. Several individuals may be observed in the same tunnel (i.e., pseudo-social behaviour, see Rehan et al. 2009).

Colletidae

Leioproctus (Lamprocolletes) indet2

Notes:

Occurrences:

Mont Khogis, 1 nov. 1992, 1 male (Donovan et al. 2013).

Occurrence status: data deficient.

Leioproctus (Lamprocolletes) pacificus Michener, 1965

Feeds on: Araliaceae: *Myodocarpus fraxinifolius* (native); Celastraceae: *Peripterygia marginata* (native) (Donovan et al. 2013).

Native status: Endemic

Distribution:

Historical data in New Caledonia: Nepoui Valley, jul. 1940, 1 male (Pauly and Munzinger 2003, Donovan et al. 2013). Dec. 1979-sep. 2008, 1 male and 1 female, no location (Donovan et al. 2013).

Notes: This species has been recorded in forested or maquis areas including in altitude (up to 900 m). The recorded host plants and known localities are restricted to ultramafic substrates.

Euhesma indet1

Feeds on: Cunoniaceae: *Codia albifrons* (native); Dilleniaceae: *Hibbertia heterotricha* (native), *Hibbertia pulchella* (native), *Hibbertia* sp. (native); Myrtaceae: *Syzygium quadrangulare* (native) (Donovan et al. 2013).

Distribution:

Historical data in New Caledonia: Mont Koghi, 4-6 oct. 1967, 1 male. Dec. 1979-sep. 2008, 5 females, no location (Donovan et al. 2013).

Notes: No precise location in Donovan et al. (2013). However, the list of plant species described in the latter and the presence of a male in the Mont Koghi suggests show that the species can be observed in forested or maquis areas on ultramafic substrates.

Euryglossina indet1

Feeds on: Sapindaceae: *Litchi chinensis* (alien) (Donovan et al. 2013).

Distribution:

Historical data in New Caledonia: 3 jul. 1980, 1 male and 1 female. Dec. 1979-sep. 2008, 1 male and 1 female, no location (Donovan et al. 2013).

Euryglossina indet2

Distribution:

Historical data in New Caledonia: Thio: Forêt de Sailles, 9 dec. 2001, 2 females (Donovan et al. 2013).

Notes:

Occurrence status: data deficient.

***Hylaeus (Gnathoprosopis) albonitens* (Cockerell, 1905)**

Nomenclature:

Synonymies: *Prosopis albonitens* Cockerell, 1905; *Prosopis albipes*, 1924

Feeds on: Myrtaceae: *Callistemon* sp. (alien) (new record).

Native status: Alien

Distribution: Native range: Australia.

Alien range: Hawaii.

Historical data in New Caledonia: Voh, near the cemetery, 8 dec. 2022, 1 male and 3 females (Zakardjian et al. 2023b).

Notes: Likely a new alien species, potentially introduced via the Vavouto industrial harbor facility. We nevertheless cannot exclude that one of the three below mentioned *Hylaeus* morphospecies (Donovan et al. 2013) may also fit with *H. albonitens*.

Occurrence status: data deficient.

Hylaeus indet1

Distribution:

Historical data in New Caledonia: Ouen Toro, 15 jan. 1972, 3 females (Donovan et al. 2013).

Notes:

Occurrence status: data deficient.

Hylaeus indet2

Distribution:

Historical data in New Caledonia: Port Laguerre, 11 apr. 2001, 1 female (Donovan et al. 2013).

Notes:

Occurrence status: data deficient.

Hylaeus indet3

Distribution:

Historical data in New Caledonia: Thio: Forêt de Sailles, 3 dec. 2001, 1 female (Donovan et al. 2013).

Notes:

Occurrence status: data deficient.

***Palaeorhiza (Palaeorhiza) flavomellea* Cockerell, 1910**

Feeds on: Anacardiaceae: *Mangifera indica* (alien), *Schinus aoeira* (alien); Arecaceae: *Cocos nucifera* (alien); Combretaceae: *Terminalia catappa* (alien); Elaeocarpaceae: *Elaeocarpus angustifolius* (native); Hernandiceae: *Hernandia nymphaeifolia* (native), *Hernandia ovigera* (native) (Donovan et al. 2013); Hernandiaceae: *Hernandia guianensis* (alien) (Pauly and Munzinger 2003); Anacardiceae: *Schinus aroeira* (ex. *Schinus terebinthifolius*) (alien); Araliaceae: *Polyscias scutellaria* (alien); Rubiaceae: *Hamelia patens* (alien) (new records).

Native status: Alien

Distribution: Australia.

Historical data in New Caledonia: Nouméa, 27 may 1977, 3 males and 2 females (Pauly and Munzinger 2003, Donovan et al. 2013). Nouméa, 17 feb. 1999, 5 males (Pauly and Munzinger 2003). Dec. 1979-sep. 2008, 14 males and 2 females, no location (Donovan et al. 2013). Ouvéa: Hwadrilla, Hotel Beaupré, 9 mar. 2017, 2 males and 1 female. Mont Dore: Rue André Burck, 13 apr. 2022, 2 individuals. Nouméa: Tuband, 19

apr. 2022, 3 individuals; Musée de la Ville, 27 apr. 2022, 1 individual (Zakardjian et al. 2023b).

Notes: The native vs. alien status remains to be confirmed.

Halictidae

Homalictus aponi (Cheesman & Perkins, 1939)

Feeds on: Amaranthaceae: *Achyranthes aspera* (alien); Anacardiaceae: *Schinus terebinthifolia* (alien); Araliaceae: *Polyscias* sp. (native); Asteraceae: *Bidens pilosa* (alien), *Blumea lacera* (native), *Conyza* sp. (alien), *Calendula* sp. (alien), *Emilia sonchifolia* (alien), *Tridax procumbens* (alien), *Tridax* sp. (alien), *Youngia japonica* (alien); Brassicaceae: *Lepidium virginicum* (alien); Caesalpiniaceae: *Crotalaria* sp. (alien); Cunoniaceae: *Geissois* sp. (native), *Pancheria billardiarei* (native); Dilleniaceae: *Hibbertia deplancheana* (native), *Hibbertia lucens* (native), *Hibbertia podocarpifolia* (native), *Hibbertia pulchella* (native), *Hibbertia tontoutensis* (native), *Hibbertia* sp. (native); Ericaceae: *Styphelia* cf. *cymbulae* (native); Euphorbiaceae: *Euphorbia hypericifolia* (alien), *Euphorbia lophogona* (alien), unknown (native); Goodeniaceae: *Scaevola beckii* (native), *Scaevola montana* (native), *Scaevola* sp. (native); Loganiaceae: *Geniostoma densiflora* (native); Malpighiaceae: *Acridocarpus austrocaledonicus* (native); Malvaceae: *Sida acuta* (alien), *Sida rhombifolia* (alien); Mimosaceae: *Acacia spirorbis* (native), *Leucaena leucocephala* (alien), *Mimosa diplotricha* (alien); Myrtaceae: *Melaleuca quinquenervia* (native), *Metrosideros operculata* (native), *Sannantha leratii* (native), *Sannantha virgata* (native), *Xanthostemon* sp. (native); Onagraceae: *Bougainvillea* sp. (alien), *Ludwigia octovalvis* (native); Orchidaceae: *Eriaxis rigida* (native); Papaveraceae: *Argemone mexicana* (alien); Proteaceae: *Stenocarpus phyllodineus* (native); Rubiaceae: *Normandia neocaledonica* (native); Sapotaceae: *Leptostylis petiolata* (native); Solanaceae: *Solanum lycopersicum* (alien), *Solanum torvum* (alien), *Solanum* sp. (alien); Tiliaceae: *Corchorus* sp. (native); Verbenaceae: *Duranta erecta* (alien), *Stachytarpheta indica* (alien), *Verbena* sp. (alien); Violaceae: *Agatea longipedicellata* (native); Zygophyllaceae: *Tribulus cistoides* (alien) (Donovan et al. 2013).

Native status: Native

Distribution: Vanuatu

Notes: This bee appears as the most common native bee in New Caledonia. It has been observed in a wide range of habitats (including ultramafic urban, ultramafic, and altitude environments) in the whole archipelago.

Potential confusion with *Homalictus urbanus* from Australia; Pauly and Villemant (2009) highlighted a slight difference between the specimens of Vanuatu & New Caledonia compared to specimens from Australia. Based on preliminary biomolecular analysis

(unpublished data), we confirm that *H. aponi* is a different species from *H. urbanus* and we confirm its status as a native species from Vanuatu & New Caledonia.

***Homalictus cocos* Pauly & Munzinger, 2003**

Feeds on: Anacardiaceae: *Schinus aroeira* (ex. *Schinus terebinthifolius*) (alien); Araliaceae: *Meryta* sp. (native); Arecaceae: *Cocos nucifera*; Schinus aoeira; Euphorbiaceae: *Euphorbia* sp. (alien); Verbenaceae: *Verbena* sp. (alien) (Donovan et al. 2013); Euphorbiaceae: *Euphorbia* sp. (ex. *Poinsettia* sp.) (alien) (Pauly and Munzinger 2003); Araliaceae: *Meryta* sp. (endemic); Malvaceae: *Hibiscus tiliaceus* (native) (Pauly et al. 2015); Euphorbiaceae: *Erythrina* sp. (alien) (new record).

Native status: Endemic

Distribution:

Historical data in New Caledonia: Saint Louis, 17 aug. 1940, 1 female (Donovan et al. 2013, Pauly et al. 2015). Ile des Pins, 23 oct. 1940, 3 males; 24 oct. 1940, 1 male and 1 female; 25 oct. 1940, 1 male and 2 females; 26 oct. 1980, 12 males and 3 females. Nouméa, feb. 1959, 1 male. Lifou, We, 30-31 jan. 1962, 1 male and 2 females. Tao, 8-10 feb. 1963, 1 male. Anse Vata, 27 feb. 1963, 1 female; 26 mar. 2006, 1 female. Ile des Pins, Point SW Kuto, 17 aug. 1979, 1 male and 1 female. Bourail, plage de Poé, 3 jan. 2006, 6 males and 5 females. Saint Louis, 4 sep. 2007, 1 female. (Pauly et al. 2015). Nouméa, 23 apr. 1965, 1 female; 15 aug. 1966, 1 female; 4 apr. 1969, 1 female; 27 may 1977, 1 female (Pauly and Munzinger 2003). Dec. 1979-sep. 2008, 3 males and 9 females (Donovan et al. 2013). Nouméa: Centre culturel Tjibaou, 21 mar. 2019, 1 male. Anse Vata, IRD Park, 27 mar. 2019, 1 female (Zakardjian et al. 2023b).

***Homalictus curvistris* Donovan & Pauly, 2015**

Feeds on: Asteraceae: undetermined species (alien); Cunoniaceae: *Pancheria robusta* (endemic); Dilleniaceae: *Hibbertia lucens* (native), *Hibbertia trachyphylla* (native); Ericaceae: *Dracophyllum involucreatum* (endemic); Goodeniaceae: *Scaevola beckii* (endemic); Loganiaceae: *Geniostoma densiflorum* (endemic); Myrtaceae: *Metrosideros operculata* (native), *Metrosideros punctata* (endemic); Rubiaceae: *Normandia neocaledonica* (endemic), *Psychotria rupicola* (endemic); Rutaceae: *Zanthoxylum* sp. (endemic) (Donovan et al. 2013); Ericaceae: *Dracophyllum verticillatum* (endemic), *Styphelia* cf. *cymbulae* (endemic); Melastomataceae: *Melastoma malabathricum* (ex. *Melastoma denticulatum*) (native) (Pauly et al. 2015); Goodeniaceae: *Scaevola montana* (endemic) (new records).

Native status: Endemic

Distribution:

Historical data in New Caledonia: Mt Panié, 8-9 feb. 1963, 2 males and 3 females. Rivière Bleue, 14 nov. 1963, 1 female. Tchambouenne 7 km S, 28 jan. 1964, 1 female. Mt Koghi, 23-27 oct. 1967, 1 male. W. of Ponerihouen, 31 jul. 1971, 1 female. Dumbea, 19 dec. 1979, 1 female. Montagne des sources, 29 dec. 1979, 3 males and 1 female. Mont Dzumac, 11 oct. 1980, 1 female. Montagne des Sources, 22 oct. 1980, 1 female. Montagne des Sources, 25 oct. 1980, 7 females. Koum Riv., 23 nov. 2001, 1 female. Haute Vallée de la Ni, 23 oct. 2004, 1 male and 1 female. Col de Yaté, 14 nov. 2004, 1 male. Vallée de la Tchamba, 26 jul. 2005, 1 male. Prony, 21 aug. 2005, 1 female. Haute Kuébuni, 25 mar. 2007, 1 female. Boulinda, 2 sep. 2009, 1 female. Aoupinié, 3 sept. 2010, 1 female (Pauly et al. 2015). Dec. 1979-sep. 2008, 2 males and 12 females (Donovan et al. 2013). Mont Dore, 10 may, 2022, 4 individuals; 17 may 2022, 5 individuals; 18 may 2022, 2 individuals (Zakardjian et al. 2023b).

Notes: This species has been observed in forested areas, on ultramafic substrates but also volcano sedimentary substrates, mostly in altitude (>500m).

***Homalictus heliotropiae* Pauly & Donovan, 2015**

Feeds on: Arecaceae: *Cocos nucifera* (alien); Boraginaceae: *Heliotropium foertherianum* (ex. *Argusia argentea*) (native); Myrtaceae: *Sannantha leratii* (native) (Donovan et al. 2013).

Native status: Endemic

Distribution:

Historical data in New Caledonia: Dec. 1979-sep. 2008, 1 male and 2 females. Mou, 25 dec. 1979, 3 females. Houailou, 25 dec. 1979, 1 male (Donovan et al. 2013). Yaté, gîte de Port Boisé, 19 jan. 2006, 1 female (paratype). Presqu'île de Kuébuni, 19 aug. 2007, 1 female (holotype; Pauly et al. 2015).

Notes: According to known host plant species, this species was observed on south and east coastal habitats on calcareous uplifted reefs.

***Homalictus hienghenensis* Donovan & Pauly, 2015**

Native status: Endemic

Distribution:

Historical data in New Caledonia: Hienghène, 25 nov. 1958, 2 females (holotype and paratype; Pauly et al. 2015).

Notes:

Occurrence status: data deficient.

Homalictus indet11

Distribution:

Historical data in New Caledonia: Île Mouac, 19 oct. 1958, 1 male (Donovan et al. 2013)

Notes:

Occurrence status: data deficient.

Homalictus indet7

Distribution:

Historical data in New Caledonia: Monts des Koghis, jan. 1969, 3 males (Donovan et al. 2013).

Notes:

Occurrence status: data deficient.

***Homalictus koghiensis* Donovan & Pauly, 2015**

Native status: Endemic

Distribution:

Historical data in New Caledonia: Mts Koghis, jan. 1969, 3 males (holotype and paratypes; Pauly et al. 2015).

Notes: This species was observed in al (>500m) forested areas on ultramafic substrates.

Occurrence status: data deficient.

***Homalictus mcphersoni* Donovan & Pauly, 2015**

Feeds on: Araliaceae: *Polyscias sessiliflora* (endemic), *Schefflera vieillardii* (endemic); Arecaceae: *Cyphokentia cerifera* (endemic); Cunoniaceae: *Cunonia balansae* (endemic), *Geissois racemosa* (endemic); Myrtaceae: *Metrosideros* sp. (endemic) (Donovan et al. 2013), Myrtaceae: *Longetia buxoides* (Pauly et al. 2015).

Native status: Endemic

Distribution:

Historical data in New Caledonia: Mt Koghi, dec. 1963, 1 female. Yiambi, NE, 14 oct. 1967, 1 female. Mts des Koghis, jan. 1969, 1 female. Col des Roussettes, 3 feb. 1971, 1 female. Mt Dzumac, 24 feb. 1980, 3 females (including holotype). Mandjelia Forest, 12 apr. 1980, 1 female. Mt Khogis, 25 jan. 1996, (no number of individuals). Kaala, 8 dec. 2000, 6 females. Col d'Amos, 16 nov. 2002, 1 female. Dzumac, 27 oct. 2004, 1 female. Forêt Nord, 4 jan. 2005, 1 female. Ponérihouen, forêt de l'Aoupinié, 12-24 jan. 2006, 5 females. Sarraméa, forêt du col d'Amieu, 14-27 jan. 2006, 1 female. Plateau de Boakaine, 27 feb. 2013, 2 females (paratypes; Pauly et al. 2015). Dec. 1979-sep. 2008, 6 females (Donovan et al. 2013).

Notes: This species has been observed in forested areas on both volcano-sedimentary and ultramafic substrates, mostly in altitude (>500m).

***Homalictus melanasiae* Donovan & Pauly, 2015**

Feeds on: Asteraceae: *Argeratum* sp. (alien); Araliaceae: *Polyscias sessiliflora* (endemic), *Polyscias* sp. (endemic); Myodocarpaceae: *Myodocarpus* sp. (endemic); Rhamanaceae: *Alphitonia neocaledonica* (endemic); Sapindaceae: *Guioa villosa* (endemic), *Litchi chinensis* (alien) (Donovan et al. 2013).

Native status: Endemic

Distribution:

Historical data in New Caledonia: Thi River Valley, 6 nov. 1940, 1 female. Mt Koghi, 1 feb. 1961, 1 female; 8 oct. 1969, 4 females. Mt Dzumac, 24 feb. 1980, 1 female. Thy Valley, 18 jun. 1980, 1 female; 3 jul. 1980, 1 female; 5 may 1981, 5 females (including holotype). Col de Mouirange, 10 oct. 1980, 1 female. Mts Koghis, Auberge, 23 jul. 2003, 1 female. Houailou, 30 jul. 2003, 1 female (paratypes). Haute Vallée de la Ni, 29 apr. 2004, 1 female. Piste Ni-Dzumacs, 7 may 2004, 1 female (Pauly et al. 2015). Dec. 1979-sep. 2008, 11 females (Donovan et al. 2013).

Notes: This species has been observed in ultramafic substrates in both maquis and forests.

***Homalictus projectio* Donovan & Pauly, 2015**

Native status: Endemic

Distribution:

Historical data in New Caledonia: Col des Roussettes, 4-6 feb. 1963, 1 female (holotype). Mt Dzumac, 11 oct. 1980, 1 female (paratype; Pauly et al. 2015).

Notes: This species has been observed in forested areas on both ultramafic and volcano sedimentary substrates, in high altitude (450 to 900m).

***Homalictus risbeci* (Cockerell, 1929)**

Nomenclature:

Synonymies: *Halictus crotalariae* Cockerell, 1929; *Halictus risbeci* Cockerell, 1929

Feeds on: *Crotalaria* sp. (alien) (Cockerell 1929); Araliaceae: *Polyscias sessiliflora* (native), *Polyscias* sp. (native), unknown (native); Asteraceae: *Blumea lacera* (native); Cunoniaceae: *Geissois* sp. (native), *Pancheria alaternoides* (native), *Pancheria billardi* (native), *Pancheria phylliraeoides* (native), *Pancheria* sp. (native); Dilleniaceae: *Hibbertia lucens* (native), *Hibbertia pancheri* (native), *Hibbertia* sp. (native); Ericaceae: *Dracophyllum verticillatum* (native); Acacia *spirorbis* (native); Goodeniaceae: *Scaevola beckii* (native), *Scaevola cylindrica* (native), *Scaevola montana* (native), *Scaevola* sp. (native); Laxmanniaceae: *Cordylina* sp. (native); Liliaceae: *Rhuacophila javanica* (native); Linaceae: *Hugonia penicillanthemum* (native); Malpighiaceae: *Tristellateia australasiae* (native); Malvaceae: *Melochia odorata* (native); Melastomataceae: *Melastoma malabathricum* (native); Myrtaceae: *Cloezia floribunda* (native), *Melaleuca quinquenervia* (native), *Metrosideros operculata* (native), *Sannantha leratii* (native), *Syzygium* sp. (native), *Tristanopsis calobuxus* (native); Onagraceae: *Ludwigia octovalvis* (native); Proteaceae: *Grevillea* sp. (native), *Stenocarpus phyllodineus* (native); Rhizophoraceae: *Rhizophora apiculata* (native); Rubiaceae: *Normandia neocaledonica* (native); Sapindaceae: *Cupaniopsis myrmoctona* (native), *Guioa villosa* (native); Surianaceae: *Suriana maritima* (native); Asteraceae: *Cosmos sulphureus* (alien); Brassicaceae: *Brassica* sp. (alien); *Cassia fistula* (alien); *Leucaena leucocephala* (alien); *Mimosa diplotricha* (alien); Lythraceae: *Lagerstroemia indica* (alien); Rutaceae: *Citrus* sp. (alien); Verbenaceae: *Stachytarpheta* sp. (alien) (Donovan et al. 2013); *Babingtonia leratii* (Pauly and Munzinger 2003), *Arytera arcuata*, *Erythrina* sp., *Gymnostoma poissonianum* (new records).

Native status: Endemic

Notes: This species is widespread in the archipelago with a large range of host plants, including endemic, native, and alien ones. It can be found from low to high altitudes on both ultramafic and volcano sedimentary substrates.

***Homalictus risbeci* subsp. *crotalariae* (Cockerell, 1929)**

Feeds on: *Alectryon carinatum*, *Brassica* sp., *Eugenia* cf. *gacognei*, *Rhizophora apiculata*, *Xanthostemon* sp. (Pauly et al. 2015).

Native status: Endemic

Distribution:

Historical data in New Caledonia: Ile de Mouac, 19 oct. 1958, 1 male. Maré, La Roche, mar. 1959, 6 males and 3 females. Lifou, We, 30-31 jan. 1962, 3 males and 1 female;

feb. 1962, 1 male and 9 females; 16-18 feb. 1963, 1 female; 1 aug. 2003, 1 female. Poupou, Golone, 29 jul. 2005, 1 female. Ile Leprédour, 22 jan. 2008, 1 female; 2 females. Poupou, 3 apr. 2012, 1 female (Pauly et al. 2015). Belep: Île Art, 28 fev. 2017, 7 females; 1 mar. 2017, 1 female; 2 mar. 2017, 2 females; 27 apr. 2017, 4 females. Ouvea, 16 mar. 2017, 1 female (Zakardjian et al. 2023b).

Notes: The status of *H. risbesi crotalariae* as a subspecies remains to be confirmed through molecular analysis.

***Lasioglossum (Chilalictus) alticola* Pauly, Walker, Munzinger & Donovan, 2013**

Feeds on: Apocynaceae: *Parsonsia* sp. (endemic); Araliaceae: *Polyscias dioica* (endemic); Dilleniaceae: *Hibbertia nana* (endemic); Ericaceae: *Dracophyllum involucreatum* (endemic); Liliaceae: *Rhuacophila javanica* (native); Phellinaceae: *Phelline lucida* (native) (Donovan et al. 2013); Asphodelaceae: *Rhuacophila javanica* (endemic); Phellinaceae: *Phelline lucida* (endemic); Proteaceae: *Beauprea pancheri* (endemic) (Pauly et al. 2013b). According to pollen analysis, it also visits Arecaceae, Myrsinaceae, Rubiaceae and Eleocarpaceae (Pauly et al. 2013b).

Native status: Endemic

Distribution:

Historical data in New Caledonia: Dec. 1979-sep. 2008, 1 male and 11 females (Donovan et al. 2013). Mt Ouin, 2 dec. 2000 1 female. Aoupinié, 3-23 nov. 2001, 1 male and 8 females. Forêt de Saille, 9 dec. 2001, 1 female (holotype). Mt. Humboldt, 5-8 nov. 2002, 6 females. Mont Kouakoué, 25 nov.-2 dec. 2002, 4 females. Monts Dzumac, 4 dec. 2002, 2 females. Mont Mou, 17 jan. 2004, 3 females. Haute-Ni, 25 oct. 2004, 1 female. Kouakoué, face sud, 13 may 2006, 1 female. Canala, Prokoméo, 17 dec. 2006, 1 male. Pass on mining road from Poro to Kouaoua, one female (no date; Pauly et al. 2013b).

Notes: This species has been observed in high altitude (up to 1350m) forests and maquis on ultramafic substrates and high altitude (up to 850m) forests on volcano sedimentary substrate.

***Lasioglossum (Chilalictus) instabile* (Cockerell, 1914)**

Nomenclature:

Synonymies: *Halictus elliotii* Rayment, 1929; *Lasioglossum instabilis* (Cockerell, 1914)

Native status: Native

Distribution: Australia

Historical data in New Caledonia: Mt Koghis, 22 dec. 1992, 1 male and 1 female (Pauly et al. 2013b).

Notes:

Occurrence status: data deficient.

***Lasioglossum (Chilalictus) lanarium* (Smith, 1853)**

Nomenclature:

Synonymies: *Halictus mitchelli* Cockerell, 1906; *Halictus lanuginosus* Smith, F., 1879

Native status: Native

Distribution: Australia

Historical data in New Caledonia: Upper Vallée La Ni, 2 nov. 1992, 2 females (Pauly et al. 2013b).

Notes:

Occurrence status: data deficient.

***Lasioglossum (Parachilalictus) neocaledonicum* Pauly, Walker, Munzinger & Donovan, 2013**

Feeds on: Ericaceae: *Styphelia* cf *cymbulae* (endemic) (Donovan et al. 2013, Pauly et al. 2013b).

Native status: Endemic

Distribution:

Historical data in New Caledonia: Dec. 1979-sep. 2008, 1 female (Donovan et al. 2013).Plateau de Dogny, 14 nov. 1992, 1 female. Mt Khogis, 25 jan. 1996, 1 female (paratype). Haute-Ni, 23 oct. 2004, 1 female (holotype; Pauly et al. 2013b).

Notes: This species has been observed in forested areas on both volcano-sedimentary and ultramafic substrates, mostly in altitude (400-1000m).

***Lasioglossum (Chilalictus) polygona* (Cockerell, 1929)**

Feeds on: *Polygonum* sp., *Agatea longipedicellata* (Pauly and Munzinger 2003), *Schinus terebinthifolius* (new records).

Native status: Native

Distribution: Australia

Notes: This species was first described from New Caledonia before being discovered in Australia. The status of the 3 subspecies should be confirmed through molecular analysis.

***Lasioglossum (Chilalictus) polygoni* subsp. *polygoni* (Cockerell, 1929)**

Feeds on: Asteraceae: *Blumea lacera* (native); Eleocarpaceae: *Elaeocarpus angustifolius* (native); Malvaceae: *Sida acuta* (alien); Polygonaceae: *Antigonon leptopus* (alien), *Polygonum* sp. (alien); Solanaceae: *Solanum torvum* (alien); Violaceae: *Agatea longipedicellata* (endemic) (Donovan et al. 2013).

Native status: Native

Distribution: Australia

Historical data in New Caledonia: Bourail, 27 may 1927, 1 female; 1929, 1 female. Prony, 10 feb. 1999, 1 female (Pauly and Munzinger 2003). Dec. 1979-sep. 2008, 1 male and 7 females (Donovan et al. 2013). Oua Tom, 29 apr. 1981, 22 females. Koumac, 30 apr. 1981, 1 female. Prony, 10 feb. 1999. Magenta, 26 apr. 2001, 1 male. Païta, 28 may 2005, 2 females (Pauly et al. 2013b). Mont Dore: Rue des Trocas, 13 apr. 2022, 2 individuals; Saint Michel, 20 apr. 2022, 1 individual (Zakardjian et al. 2023b).

***Lasioglossum (Chilalictus) polygoni* subsp. *austrocaledonicum* Pauly, Walker, Munzinger & Donovan, 2013**

Feeds on: Araliaceae: *Polyscias dioica* (native), *Polyscias sessiliflora* (native), *Polyscias* sp. (native); Asteraceae: *Ageratum conyzoides* (alien); Cunoniaceae: *Pancheria sebertii* (native); Dilleniaceae: *Hibbertia nana* (native); Elaeocarpaceae: *Elaeocarpus dognyensis* (native), *Elaeocarpus speciosus* (native); Ericaceae: *Styphelia* cf. *cymbulae* (endemic); Goodeniaceae: *Scaevola beckii* (endemic); Mimosaceae: *Leucaena leucocephala* (alien); Myrtaceae: *Syzygium quadrangulare* (native); Sapindaceae: *Cupaniopsis oedipoda* (endemic), *Cupaniopsis* sp. (native), *Guioa villosa* (native), *Litchi chinensis* (alien) (Donovan et al. 2013); Araliaceae: *Polyscias bracteata*; Cunoniaceae: *Pancheria ternate*; Dilleniaceae: *Hibbertia lucens*, *Hibbertia virotii* (native); Ericaceae: *Dracophyllum ramosum* (endemic); Mimosaceae: *Leucaena leucocephala* (alien); Myrtaceae: *Syzygium tetragonum*; Phellinaceae: *Phelline lucida* (endemic); Sapindaceae: *Ageratum conyzoides*, *Elaeocarpus dognyensis*, *Elaeocarpus speciosus* (Pauly et al. 2013b).

Native status: Native

Distribution: Australia

Historical data in New Caledonia: Thi River Valley, 8 nov. 1940, 1 female. Mt Koghi, 28 nov. 1963, 1 female. Montagne des Sources, 29 dec. 1979, 1 female; 22 oct. 1980, 1

female; 25 oct. 1980, 2 females; 29 jul. 1981, 1 female. Mt Dzumac, 24 feb. 1980, 1 female; 4 dec. 2002, 3 females (including holotype). Thy Valley, 28 may 1980, 2 females; 18 jun. 1980, 3 females; 3 jul. 1980, 6 females; 8 oct. 1980, 1 female; 5 may 1981, 10 females. Thy Valley, Park entrance, 9 oct. 1980, 2 females. 2km E Col de Mouirange, 10 oct. 1980, 1 female. Thy Valley Park, 12 oct. 1980, 2 females. Mt Koghis, 17km NNE Nouméa, 24-26 dec. 1991, 1 female. Upper La Ni Valley, 2 nov. 1992, 1 female. Rivière Bleue Provincial Park, Trail to Upper Rivière Bleue, 5-16 nov. 1992, 1 female. Rivi è re Bleue, 16-17 nov. 1992, 1 female. Rivi è re Bleue Provincial Park, Rivi è re Bleue road, 20-28 nov. 1992, 5 females. Province Sud, Mt Ouin, 2 dec. 2000, 1 female. Mont Koghis, 4 nov. 2002, 1 female. Piste Ni-Dzumac, 7 may 2004, 1 male. Konguaoulou Nord, 27 sep. 2004, 1 female. Haute-Ni, 23 oct. 2004, 2 females; 25 oct. 2004, 2 females. Goro, embouchure de la Ku é buni, 14 oct. 2005, 2 females. Mont Koghis, 13 jan. 2007, 1 female (Pauly et al. 2013b). Dec. 1979-sep. 2008, 25 females. Haute-Ni, 23 Oct. 2004, 1 female (Donovan et al. 2013).

Notes: This species was observed in forested areas on ultramafic substrates including in high altitude (> 500 m).

***Lasioglossum (Chilalictus) polygoni* subsp. *delobeli* Pauly & Munzinger, 2003**

Feeds on: Verbenaceae: *Lantana* sp. (alien) (Pauly & Muzinger 2003); Araliaceae: *Polyscias dioica* (native); Arecaceae: *Cyphokentia cerifera* (endemic); Cunoniaceae: *Geissois racemosa* (native); Dilleniaceae: *Hibbertia lucens* (native); Ericaceae: *Dracophyllum ramosum* (native); Melastomaceae: *Melastoma malabathricum* (native); Myrtaceae: *Myrtastrum rufo-punctatum* (endemic); Phellinaceae: *Phelline lucida* (native); Sapindaceae: *Litchi chinensis* (alien) (Donovan et al. 2013); Sapindaceae: *Litchi chinensis* (alien) (Pauly et al. 2013b).

Native status: Endemic

Distribution:

Historical data in New Caledonia: Col d'Amieu, 21 jul. 1977, 3 females (Pauly and Munzinger 2003, Donovan et al. 2013). Thy Valley, 3 jul. 1980, 1 female. Mt Aoupinie, 12 dec. 1980, 1 female. 6km NW Sarramea, 14-23 nov. 1992, 4 females. Rivière Bleue, 19-28 nov. 1992, 1 female. Col d'Amieu, 27 nov. 1992, 1 female. 9,3km NW Sarraméa, 15 jan. 1996, 1 female. 9,1 km NW Sarraméa, 18-19 jan. 1996, 1 female. Mt Do, 15 dec. 2000, 3 females. Tchingou, 31 mar. 2001, 1 female. Koum River, 23 nov. 2001, 1 female. Haute Tchamba, 9 nov. 2002, 1 female. Col d'Amoss, 16 nov. 2002, 2 females. Townen, tribu de Tiendanite, 17 nov. 2002, 2 females. Mont Goroaté, 18 nov. 2002, 3 females. Pic du Grand Kaori, 21 nov.-29 jan. 2002, 1 female. Aoupinié, 25 jul. 2005, 1 female; Aoupinié, 15 nov. 2007, 8 females; 11 sep. 2008, 8 females. Vallée de la Tchamba, 26 jul. 2005, 4 females. Tchamba, 29 oct. 2005, 1 female. Hienghène Tao Mt Panié East Side, 9-26 jan. 2006, 1 male. Ponérihouen, forêt de l'Aoupinié, 12-13 jan.

2006, 1 female (Pauly et al. 2013b). Dec. 1979-sep. 2008, 1 male and 29 females (Donovan et al. 2013).

Notes: This species has been observed in forested areas on both ultramafic and volcano sedimentary substrates, with altitude ranging from 5 to 1100m.

Lasioglossum (Austrevylaeus) sp.

Notes: This species is mentioned in Donovan (1983) based on a personal communication. Pauly and Munzinger (2003) stated that they did not examine the species which therefore needs confirmation.

Occurrence status: data deficient.

***Lasioglossum (Parasphecodes) sulthicum* (Smith, 1853)**

Native status: Native

Distribution: Australia

Historical data in New Caledonia: Mont Kogis, 30 oct. 1992, 1 female (Donovan et al. 2013, Pauly et al. 2013b).

Notes:

Occurrence status: data deficient.

***Lasioglossum (Chilalictus) tchambae* Pauly, Walker, Munzinger & Donovan, 2013**

Feeds on: Melastomataceae: *Melastoma malabathricum* (native) (Donovan et al. 2013, Pauly et al. 2013b).

Native status: Endemic

Distribution:

Historical data in New Caledonia: Dec. 1979-sep. 2008, 1 male and 1 female (Donovan et al. 2013). Vallée de la Tchamba, 26 jul. 2005, 1 female (holotype). Aoupinié, (no date), 2 females (Pauly et al. 2013b).

Notes: This species has been observed on forested areas mostly in altitude (> 500m), on volcano-sedimentary soils.

***Lasioglossum (Chilalictus) webbi* Pauly, Walker, Munzinger & Donovan, 2013**

Native status: Endemic

Distribution:

Historical data in New Caledonia: Ni Valley, 2 nov. 1992, 1 female (holotype). Mt Koghis, 22 dec. 1992, 1 male (paratype; Pauly et al. 2013b).

Notes:

Occurrence status: data deficient.

***Austronomia cheesmanae* (Michener, 1965)**

Nomenclature:

Synonymies: *Lipotriches cheesmanae* (Michener, 1965); *Nomia cheesmanae* Michener, 1965; *Nomia nuda* Cheesman, 1953

Feeds on: Myoporaceae: *Myoporum crassifolium* (native) (Donovan et al. 2013);
 Areaceae: *Cocos nucifera* (alien) (new record).

Native status: Endemic

Distribution:

Historical data in New Caledonia: Lifou, Cap des Pins, 18 nov. 1949-18 jan. 1950, 1 female. Lifou, We, 30-31 jan. 1962, 1 female; feb. 1962, 2 males; 16-18 feb 1963, 2 males and 3 females. Ouvéa, Fayaoué, jan. 1969, 2 males. Maré, 13 nov. 2002, 1 female. Lifou, 2006, 4 females. Lifou, Koumo, 7 dec. 2006, 2 males and 2 females (Pauly et al. 2013a). Lifou, 18 nov. 1950, 1 female. Dec. 1979-sep. 2008, 1 female (Donovan et al. 2013). Ouvéa: Hwadriila 7 mar. 2017, 1 female (Zakardjian et al. 2023b).

***Austronomia doensis* Donovan, Pauly & Munzinger, 2013**

Feeds on: *Senna occidentalis* (alien) (Donovan et al. 2013); *Senna* sp. (Pauly et al. 2013a); Polygonaceae: *Antigonum leptotus* (alien) (new records).

Native status: Endemic

Distribution:

Historical data in New Caledonia: Dec. 1979-sep. 2008, 1 female (Donovan et al. 2013). Mt Do, 15 dec. 2000, 1 female (holotype). Sarraméa, forêt du col d'Amieu, 30-31 dec. 2005, 4 males and 1 female (paratype; Pauly et al. 2013a). Koumac, 1 may 2017, 1 female (Zakardjian et al. 2023b).

Austronomia loyali* Donovan, Pauly & Munzinger, 2013*Native status:** Native**Distribution:** Vanuatu

Historical data in New Caledonia: Lifou, Cap des Pins, 18 nov. 1949-18 jan. 1950, 2 males. Lifou, We, 30-31 jan. 1962, 32 females; feb. 1962, 2 males and 5 females; 16-18 feb. 1963, 2 females; 1 aug 2003, 2 females. Ouvea, Fayaoué, feb. 1963, 1 female. Lifou, 26-27 mar. 1968, 1 female (holotype; Pauly et al. 2013a).

Austronomia neocaledonica* Donovan, Pauly & Munzinger, 2013*Native status:** Endemic**Distribution:**

Historical data in New Caledonia: Rivière Bleue, 3 nov. 1992, 1 male and 1 female (paratypes). Mt Koghis, 17km NE Nouméa, 22 dec. 1992, 1 male (holotype; Pauly et al. 2013a).

Notes:**Occurrence status:** data deficient.***Austronomia sicheli* (Vachal, 1897)****Nomenclature:**

Synonymies: *Nomia sicheli* Vachal, 1897; *Nomia wilmattae* Cockerell, 1929

Feeds on: *Polyscias pancheri* (Schlessman et al. 1990); Melastomataceae: *Melastoma denticulatum* (native); Violaceae: *Agatea longipedicellata* (native); *Babingtonia* sp., *Myoporum crassifolium*, *Poinsettia* sp., *Eugenia* sp., *Scaevola* sp., *Styphelia pancheri* (native) (Pauly & Munzinger 2003); Anacardiaceae: *Schinus terebinthifolia* (alien); Apocynaceae: *Parsonsia crebriflora* (native); Araliaceae: *Polyscias sessiliflora* (native), *Polyscias* sp. (native), unknown (native); Asteraceae: *Ageratum conyzoides* (alien); Celastraceae: *Peripterygia marginata* (native); Combretaceae: *Lumnitzera racemosa* (native); Connaraceae: unknown (native); Cunoniaceae: *Codia discolor* (native); Dilleniaceae: *Hibbertia bouletii* (native), *Hibbertia lucens* (native), *Hibbertia pancheri* (native), *Hibbertia pulchella* (native), *Hibbertia* sp. (native); Ericaceae: *Dracophyllum verticillatum* (native), *Styphelia* cf. *cymbulae* (native); Escalloniaceae: *Argophyllum montanum* (native); NA: *Cassia fistula* (native), *Cassia* sp. (native), *Storckiaella pancheri* (native), *Storckiaella* sp. (native); Euphorbiaceae: *Euphorbia* sp. (alien); Goodeniaceae: *Scaevola beekii* (native), *Scaevola cylindrica* (native), *Scaevola erosa* (native), *Scaevola montana* (native); Joinvilleaceae: *Joinvillea* sp. (native); Lamiaceae: *Mentha* sp. (alien); Loganiaceae: *Geniostoma densiflorum* (native); Malpighiaceae: *Tristellateia*

australasiae (native); Melastomataceae: *Melastoma malabathricum* (native); Mimosaceae: *Acacia spirorbis* (native); *Leucaena leucocephala* (alien), *Mimosa diplotricha* (alien); Myodocarpaceae: *Myodocarpus fraxinifolius* (native); Myrsinaceae: *Tapeinosperma oblongifolium* (native); Myrtaceae: *Cloezia artensis* (native), *Cloezia* sp. (native), *Melaleuca gnidioides* (native), *Melaleuca quinquenervia* (native), *Myrtastrum rufopunctatum* (native), *Myrtus* sp. (native), *Psidium guajava* (alien), *Sannantha leratii* (native), *Sannantha* sp. (native), *Syzygium jambolanum* (alien), *Syzygium lateriflorum* (native), *Syzygium quadrangulare* (native), *Tristaniopsis calobuxus* (native), *Tristaniopsis glauca* (native), *Tristaniopsis vieillardii* (native), *Uromyrtus emarginata* (native), unknown 1 (native), unknown 2 (native); Phrymaceae: *Mimulus* sp. (alien); Proteaceae: *Grevillea exul* (native), *Stenocarpus milnei* (native), *Stenocarpus umbelliferus* (native), *Stenocarpus* sp. (native); Rhamnaceae: *Alphitonia neocaledonica* (native); Rubiaceae: *Normandia neocaledonica* (native); Sapindaceae: *Guioa villosa* (native), *Litchi chinensis* (alien), *Storthocalyx pancheri* (native); *Senna occidentalis* (alien); Solanaceae: *Solanum torvum* (alien), unknown (alien); Verbenaceae: *Stachytarpheta indica* (alien); Convolvulaceae: *Ipomoea* sp. (Donovan et al. 2013); *Antigonum leptotus*, *Arytera arcuata*, *Croton*, *Euphorbia cyathophora*, *Gymnostoma poissonianum*, *Myrtopsis* sp., *Xanthostemon* sp. (new records).

Native status: Endemic

Distribution:

Historical data in New Caledonia: Nouméa, 23 jan. 1914. Baie Ngo, 10 feb. 1914. Baie Ouemo, 28 mar. 1914 (Turner 1919). Plum Farm, 30 may 1927, 1 female; 4 jun. 1927, 2 females. Rivière Bleue, 10 jan. 1999, 7 males and 13 females; 11 jan. 1999, 3 males and 8 females. Mandjelia, 28 jan. 1999, 1 female. Prony, 10 feb. 1999, 2 females. Paagoumene, 12 mar. 1999, 1 male (Pauly and Munzinger 2003). Mt Tinchialit, sep. 1945, 3 females. Puébo, 2 females. Cap des Pins, 18 nov. 1950, 2 males and 2 females (Cheesman 1953). Near Yaté, 30 dec. 1979, 1 individual (Donovan 1983). Dec. 1979-sep. 2008, 42 males and 147 females (Donovan et al. 2013). Rivière Bleue, nov.-dec. 1985 (Schlessman et al. 1990). Belep: Île Art, 28 fev. 2017, 2 males and 3 females; 25 apr. 2017, 1 male, 2 females and 1 individual; 27 apr. 2017, 3 females; (no date), 1 male and 1 female. Ouvéa, 7 mar. 2017, 1 male; 8 mar. 2017, 1 individual. Tiga, 8 apr. 2017, 4 females; 9 apr. 2017, 2 females; 11 apr. 2017, 1 male. Koumac, 30 apr. 2017, 1 male; 1 may 2017, 1 female. Païta - La Tontouta: Tontouta Valley, 15 mar. 2019, 1 female; 29 mar. 2019, 1 female; 1 apr. 2019, 1 female. Nouméa: Parc Zoologique et Forestier, 30 mar. 2019, 1 male and 2 females; 06 apr. 2019, 2 females; Anse Vata, IRD Park, 21 mar. 2019, 1 female. (Zakardjian et al. 2023b).

Megachilidae

Lithurgus (Lithurgus) scabrosus (Smith, 1859)

Nomenclature:

Synonymies: *Lithurgus albofimbriatus froggatti* Cockerell, 1914; *Lithurgus albofimbriatus* Sichel, 1867; *Lithurgus guamensis* Cockerell, 1914; *Megachile scabrosus* Smith, 1859

Feeds on: Convolvulaceae: *Ipomoea* sp. (native) (Cockerell 1929), *Ipomoea pescaprae* (native) (Pauly and Munzinger 2003); Convolvulaceae: *Ipomoea* sp. (Donovan et al. 2013).

Native status: Alien

Distribution: Nativerange: Indonesia, Malaysia.

Alien range: Cook Islands, Fiji, French Polynesia, Guam, Hawaiï, Micronesia, Northern Mariana Islands, Papua New Guinea, Solomon Islands, Vanuatu.

Historical data in New Caledonia: Nouméa, jul. 1900. Dec. 1979-sep. 2008, 3 males and 4 females (Donovan et al. 2013). Bourail, 26 may 1927, 8 males and 2 females. Dge, Ile Uen, 6 jun. 1927, 1 female (Cockerell 1929). Koumac: Paagoumene, 12 mar. 1999, 2 males and 1 female (Pauly and Munzinger 2003). Ouvea, 9 mar. 2017, 1 male. Koumac, 2 may 2017, 2 females (Zakardjian et al. 2023b).

Megachile (Eutricharaea) albomarginata Smith, 1879

Feeds on: Violaceae: *Agatea longipedicellata* (native), *Agatea rufotomentosa* (native); Verbenaceae: *Duranta erecta* (alien) (Pauly and Munzinger 2003); Apocynaceae: *Parsonsia crebriflora* (native), *Rauvolfia semperflorens* (native), unknown (native); Araliaceae: *Tieghemopanax* sp. (native); Asteraceae: *Ageratum* sp. (alien), *Bidens* sp. (alien), *Cosmos* sp. (alien), *Tridax procumbens* (alien); Connaraceae: unknown (native); Dilleniaceae: *Hibbertia podocarpifolia* (native), *Hibbertia lucens* (native), *Hibbertia* sp. (native); Goodeniaceae: *Scaevola beckii* (native), *Scaevola erosa* (native), *Scaevola montana* (native); Lamiaceae: *Ocimum gratissimum* (alien); Mimosaceae: *Albizia* sp. (alien), *Leucaena leucocephala* (alien), *Mimosa diplotricha* (alien); Myrtaceae: *Callistemon* sp. (alien), *Psidium guajava* (alien), *Syzygium lateriflorum* (native); Proteaceae: *Stenocarpus* sp. (native); Tiliaceae: *Triumfetta rhomboidea* (alien); Verbenaceae: *Stachytarpheta indica* (alien) (Donovan et al. 2013); Apocynaceae: *Polygala paniculata* (new records).

Native status: Native

Distribution: Fiji

Historical data in New Caledonia: Nouméa, 22 jan.-1 feb. 1914, 2 females. Mt Mou, 12 mar. 1914, 1 female. Baie Ouemo, 28 mar. 1914, 3 males and 7 females (Turner 1919). Houailou, 28 oct. 1925, 2 females (Cockerell 1939). Bourail, may 1927, 2 males and 14 females (Cockerell 1929). Dec. 1979-sep. 2008, 14 males and 38 females (Donovan et al. 2013). Mont Koghi, 24 feb. 1986, 1 female. Rivière Bleue, 10 jan. 1999, 4 females; 11 jan. 1999, 3 females. Mandjelia, 27 jan. 1999, 1 female; 28 jan. 1999, 1 female. Nouméa, 7 feb. 1999, 1 male. Prony, 10 feb. 1999, 1 female and 1 male (Pauly and Munzinger 2003). Belep: Art island 28 fev. 2017, 2 females. Païta - La Tontouta - La Tontouta, 22 mar. 2019, 1 female (Zakardjian et al. 2023b).

Megachile (Hackeriapis) aurantiaca Friese, 1905

Nomenclature:

Synonymies: *Chalicodoma aurantiaca* (Friese, 1905); *Megachile quodi* Vachal, 1907

Feeds on: Violaceae: *Agatea rufotomentosa* (endemic) (Pauly and Munzinger 2003); Apocynaceae: unknown (native); *Nephrodesmus ferrugineus* (native); Flacourtiaceae: *Homalium betulifolium* (native); Liliaceae: *Dianella* sp. (native) (Donovan et al. 2013); *Acacia spirorbis*, *Polygala paniculata* (new records).

Native status: Endemic

Distribution:

Historical data in New Caledonia: Dumbéa, 19 dec. 1979, 1 male. Dec. 1979-sep. 2008, 2 males and 6 females (Donovan et al. 2013). Mandjelia, 27 jan. 1999, 1 male and 2 females on; 28 jan. 1999, 1 female (Pauly and Munzinger 2003). Belep: Île Art, 28 fev. 2017, 1 male and 2 females; 1 mar. 2017, 1 female. (Zakardjian et al. 2023b).

Megachile (Eutricharaea) australasiae Dalla-Torre, 1896

Native status: Native

Distribution: Its presence in Australia and Papua New Guinea remains to be confirmed.

Historical data in New Caledonia: Coinde, 12 jan. 1912, 3 males and 1 female. Bourail, 23 jan. 1912, 3 females (von Schulthess 1915).

Notes: Presence of the species is doubtful in New Caledonia as it was only mentioned by von Schulthess (1915) who spent one year of field trip in new Caledonia between 1911 & 1912. As pointed out by Cockerell (1929), it is hard to understand how Sarasin and Roux could have collected this, and yet failed to find the common endemic species (*Megachile australis* or *Megachile albomarginata*). It is then considered as a misidentification presumably *M. albomarginata*.

Occurrence status: data deficient.

***Megachile (Eutricharaea) australis* Lucas, 1876**

Feeds on: Aizoaceae: *Sesuvium portulacastrum* (native); *Wedelia trilobata* (Pauly and Munzinger 2003); Amaranthaceae: *Achyranthes aspera* (alien); Apocynaceae: *Melodinus* sp. (native), *Rauvolfia semperflorens* (native); Asteraceae: *Bidens* sp. (alien), *Cosmos sulphureus* (alien), *Cosmos* sp. (alien), *Sphagneticola trilobata* (alien), *Tridax procumbens* (alien); Convolvulaceae: *Ipomoea pes-caprae* (native); Dilleniaceae: *Tetracera billardieri* (native); Euphorbiaceae: *Cleistanthus stipitatus* (native), *Euphorbia* sp. (alien); Goodeniaceae: *Scaevola sericea* (native); Labiatae: *Premna serratifolia* (native); Mimosaceae: *Leucaena leucocephala* (alien), *Mimosa diplotricha* (alien); Myrtaceae: *Melaleuca quinquenervia* (native), *Metrosideros operculata* (native), *Psidium guajava* (alien), *Sannantha* sp. (native); Onagraceae: *Ludwigia octovalvis* (native); Poaceae: *Stenotaphrum secundatum* (alien); Santalaceae: *Santalum austrocaledonicum* (native); Surianaceae: *Suriana maritima* (native); Tiliaceae: *Triumfetta rhomboidea* (alien); Verbenaceae: *Stachytarpheta australis* (alien); Zygophyllaceae: *Tribulus cistoides* (alien); *Desmodium incanum* (native) (Donovan et al. 2013); *Poinsettia* sp. (Cockerell 1929), *Antigonum leptotus*, Orchidaceae, *Scaevola* sp. (new records).

Native status: Endemic

Distribution:

Historical data in New Caledonia: Nouméa, jun. 1900, 1 female. Dec. 1979-sep. 2008, 23 males and 32 females (Donovan et al. 2013). Nouméa, 23 jan. 1914, 1 male. Mt Canala, 12 jun. 1914, 1 female (Turner 1919). Bourail, may-jun. 1927, 1 male and 3 females. Mueo, may-jun. 1927, 1 male and 4 females. Tontouta, 28 may. 1927, 2 males. Plum Farm, 4 jun. 1927, 2 males. Ile Nou, 10 jun. 1927, 1 female (Cockerell 1929). Plage du Mont Dore, 6 feb. 1999, 1 male, 1 female (Pauly and Munzinger 2003). Belep: Île Art, 2 mar. 2017, 1 female; 26 apr. 2017, 1 female; 27 apr. 2017, 1 female. Ouvéa: 9 mar. 2017, 1 female. Tiga, 13 apr. 2017, 1 female. Koumac, 2 may 2017, 2 females. Nouméa: Petite Normandie, 31 mar. 2022, 1 individual; 12 apr. 2022, 1 individual (Zakardjian et al. 2023b).

***Megachile (Eutricharaea) fullawayi* Cockerell, 1914**

Native status: Native

Distribution: Guam, Hawai

Historical data in New Caledonia: Nouméa, jul. 1914, 1 male (Donovan et al. 2013).

Notes:

Occurrence status: data deficient.

***Megachile (Aethomegachile) laticeps* Smith, 1853**

Nomenclature:

Synonymies: *Megachile gadara* Cameron, 1903; *Megachile mcgregori* Cockerell, 1918; *Megachile metallescens* Cockerell, 1918; *Megachile otriades* Cameron, 1902; *Megachile penangensis* Cockerell, 1918; *Megachile robbii* Ashmead, 1904; *Megachile semperi* Friese, 1905; *Megachile subignita* Cockerell, 1918; *Megachile varidens* Cameron, 1905; *Megachile caecina* Cameron, 1903; *Megachile cinyras* Cameron, 1902

Feeds on: *Duranta repens* (Pauly and Munzinger 2003); Convolvulaceae: *Ipomoea pes-caprae* (native); Myrtaceae: *Sannantha pinifolia* (native); Verbenaceae: *Duranta erecta* (alien) (Donovan et al. 2013); *Antigonon leptopus*, *Cosmos* sp., *Cuphea hyssopifolia*, *Duranta erecta*, *Ossinum basilicum*, *Schinus terebinthifolius*, *Tridax* sp. (new records).

Native status: Alien

Distribution: Native range: India to Malaysia, Nepal, Vietnam.

Alien range: Singapore, Maldives, South Africa (remains to be confirmed), widely distributed in the Pacific region (Vanuatu, Fiji, French Polynesia).

Historical data in New Caledonia: Nouméa, jul. 1957, 1 female. Dec. 1979-sep. 2008, 1 male and 1 female (Donovan et al. 2013). Nouméa, 5 feb. 1999 1 male and 1 female (Pauly and Munzinger 2003). Nouméa: Parc Zoologique et Forestier, 27 feb. 2019, 1 individual; 23 mar. 2019, 1 female; 04 apr. 2022, 1 individual; 22 apr. 2022, 1 individual; Centre culturel Tjibaou, 23 mar. 2019, 2 females; Rivière Salée, 14 mar. 2022, 1 individual; 16 mar. 2022, 1 individual; Petite Normandie, 29 mar. 2022, 2 individuals; 14 apr. 2022, 1 individual; Magenta Tours, 31 mar. 2022, 4 individuals; 12 apr. 2022, 1 individual; Tuband, 19 apr. 2022, 1 individual. Païta - La Tontouta: La Tontouta, 5 apr. 2019, 1 female. Mont Dore: La Conception, 23 mar. 2022, 1 individual; Rue André Burck, 1 apr. 2022, 1 individual; Vallon Dore, 20 apr. 2022, 1 individual (Zakardjian et al. 2023b).

***Megachile (Callomegachile) rambutwan* Cheesman, 1936**

Nomenclature:

Synonymies: *Chalicodoma rambutwan* (Cheesman, 1936)

Native status: Native

Distribution: Vanuatu

Historical data in New Caledonia: Nouméa, aug. 1900, 1 male (Donovan et al. 2013).

Notes:

Occurrence status: data deficient.

***Megachile (Callomegachile) umbripennis* Smith, 1853**

Nomenclature:

Synonymies: *Megachile domesticum* Perkins, 1899; *Megachile lerma* Cameron, 1908; *Megachile schauinslandi* Alfken, 1898; *Megachile umbripennis* var. *atriventris* Friese, 1903; *Chalicodoma umbripenne* (Smith, 1853); *Megachile aureobasis* Cockerell, 1919

Feeds on: *Duranta repens* (Pauly and Munzinger 2003); Asteraceae: *Bidens pilosa* (alien); Polygonaceae: *Antigonon leptotus* (alien); Protaceae: *Stenocarpus* sp. (native); *Cytisus cajan* (alien) (Donovan et al. 2013).

Native status: Alien

Distribution: Native range: China, India, Malaysia, Myanmar, Nepal, Laos.

Alien range: United States, Singapore, Sri Lanka, Thailand, many Pacific islands including Cook Islands, Fiji, French Polynesia, Northern Mariana Islands, Tonga, Hawaii (Ascher et al. 2016).

Historical data in New Caledonia: Dec. 1979-sep. 2008, 8 males and 2 females. Noumea, 15 oct. 1980, 2 females (Donovan et al. 2013). Nouméa, 7 feb. 1999, 2 males (Pauly and Munzinger 2003). Koumac, 30 apr. 2017, 2 females. Mont Dore: La Conception, 23 mar. 2022, 1 individual (Zakardjian et al. 2023b).

***Megachile ventralis* Smith, 1861**

Native status: Native

Distribution: Solomon Islands, Indonesia

Historical data in New Caledonia: Canala, 2 jan. 1912, 1 female (von Schulthess 1915).

Notes:

Occurrence status: data deficient.

***Megachile (Eutricharea) similis* Smith, 1879**

Nomenclature:

Synonymies: *Megachile zingowli* Cheesman, 1936; *Megachile similis zingowli* Cheesman, 1936

Native status: Native

Distribution: Vanuatu (Pauly and Villemant 2009).

Historical data in New Caledonia: Belep, Île Art, 2 mar. 2017, 1 male (Zakardjian et al. 2023b).

Notes: This species was previously considered as endemic to Vanuatu (Pauly and Villemant 2009). At this stage, it is difficult to know if it is native to New Caledonia and it has remain undetected since 2017, or if its presence is due to a recent human-induced displacement or a natural range expansion.

Occurrence status: data deficient.

Discussion

We found 23 publications, dated from 1897 to 2019, mentioning bee species in New Caledonia (Suppl. material 1). From the first published mention of New Caledonian bees to present day, 51 bee species have been recorded, including 10 undetermined ones. Halictidae is the most represented family (26 species), followed by Megachilidae (11 species), Colletidae (10 species) and Apidae (4 species).

Occurrence status

Based on their first and last year of capture, we applied occurrence status to each species. Thus, we can confirm the presence of 30 species in the archipelago, and we lack data to do so for the remaining 21 species (data deficient species).

Among the 21 data deficient species, 17 have been captured only once, 1 have been captured twice during the same year (i.e., *Lasioglossum webbi* in 1992), and 1 is recorded for New Caledonia based on personal communication with no specimen reported (i.e., *Lasioglossum (Austrevylaeus)* sp.). As bee samplings in New Caledonia prior to the 21st century have been piecemeal and far from exhaustive, it is difficult to adjudicate on their current presence. Several hypotheses may explain why those species went unrecorded during recent samplings. First, several species have been likely misidentified. For example, *Megachile australasiae* may be in fact a misidentification of *Megachile albomarginata* (Cockerell 1929). Thus, this species should no longer be considered as present in New Caledonia. Then, some species may be cryptic, and contemporary samplings may have not covered their period of activity and/or their New Caledonian range. Finally, we cannot exclude the possibility that some species may have become extinct. However, the lack of exhaustive samplings of the New Caledonian bee fauna does not allow us to discriminate between the two last hypotheses.

A significant part of the bee fauna of New Caledonia needs clarification (41%). An exhaustive sampling of the entire territory at different times of the year would provide a more precise picture of the bee fauna of New Caledonia, with the potential for new detections. A starting point to such a project could be to realize further samplings at periods and locations where the data deficient species were captured. This first step could provide additional information to support the presence or absence of these species. Moreover, it

seems crucial to apply biomolecular analysis to the New Caledonian bee fauna. Bee species recorded from the archipelago have been described and identified exclusively based on morphological criteria. This may have induced an over or underestimation of the number of species (e.g. Praz et al. 2022).

Origin status

Among the 41 identified bee species recorded in New Caledonia, 20 were categorized as endemic, 12 as native, and 9 as alien species. However, the status of endemic and native species may evolve over time. First, it is possible that some species considered endemic to date have in fact a wider distribution across the Pacific. For example, *Megachile albomarginata* was considered endemic in Pauly and Munzinger (2003), but a later work showed that the species was also present in Fiji (Davies et al. 2013). Part of the Southwest Pacific bee fauna remains unrecognised, as shown by the checklist of the bees of Vanuatu, in which 5 on 21 species are undetermined (Pauly and Villemant 2009). Thus, it would not be surprising if future studies reveal a wider distribution of certain species.

Concerning native bee species, biomolecular analysis could clarify the origin of certain species, notably megachilid bees. Biomolecular analysis suggested that Fijian megachilid bees are mostly, if not entirely, the result of anthropogenic displacements (Davies et al. 2013). Thus, the number of alien bee species in New Caledonia could be underestimated.

For now, alien bee species account for almost 20% of the New Caledonian bee fauna. In the last 7 years, 3 new alien bee species have entered and established on the territory (i.e., *Amegilla pulchra* in 2016, *Braunsapis puangensis* in 2019, and *Hylaeus albonitens* in 2022). New arrivals of alien bee species will likely continue in the years to come (Seebens et al. 2017), and their establishment raises serious concerns for native species. Alien bees may negatively impact native pollinators in a multitude of ways (i.e., competition for food and nesting resources, transmission of diseases and parasites, hybridation; Zakardjian et al. 2022). Moreover, they may disrupt plant-pollinator interactions and impact native and alien plant reproductive success (Dohzono and Yokoyama 2010). While most native bees in New Caledonia are short-tongued species, almost all alien ones (except *Hylaeus albonitens*) are long-tongued species. This morphological trait may allow alien bees to effectively pollinate alien plants that were poorly pollinated by native bees (i.e., awakening of sleeper weeds; Groom et al. 2014, Groom et al. 2017). Also, if alien bees show morphological mismatch with native plant flowers, they may visit them without effectively transporting pollen, potentially disrupting their reproductive success.

Conclusion

As in other Pacific islands (see Pauly and Villemant 2009 for Vanuatu, and Naaz et al. 2021 for Fiji), the New Caledonian bee fauna is relatively poor, despite a remarkable plant diversity highly endemic. Among the 51 species recorded through previous publications and recent samplings, only 30 are certainly or likely present. In order to have a more accurate picture of the New Caledonian bee fauna, there is a need to perform biomolecular

analysis to confirm species identifications and their origin status. Also, further samplings, covering wider periods and areas, are crucial to detect cryptic species and to potentially highlight local extinctions.

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Supplementary materials

Suppl. material 1: Database of the bee species recorded for New Caledonia and references associated.

Authors: Zakardjian M, Jourdan H, Cochenille T, Mahé P, Geslin B

Data type: Taxonomy, occurrences, origin status, references

Brief description: This table contains 2 sheets. In the first one are listed bee species recorded for New Caledonia, several information on their taxonomy and occurrences together as the ID number of publications used to fulfill the database. "first_occ" and "last_occ" respectively refer to the first and last known date of capture of a species.

The second sheet contains the list of publications reviewed to produce the checklist of the bees of New Caledonia. The ID number of the publications allows to link them to the bee species concerned in the first sheet. Publications without ID number are those that were reviewed but not used to fulfill the database.

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Suppl. material 2: The 14 sites sampled to produce the third dataset distributed from Nouméa (delimited by the bold black line) to the Col de Mouirange at the extreme East of the map. Ultramafic substrates appear in brown and non-ultramafic substrates in beige.

Authors: Zakardjian M, Jourdan H, Cochenille T, Mahé P, Geslin B

Data type: Sampled sites

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