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A Review of Indian Stingless Bees (Hymenoptera: Apidae: Meliponini) Species Check-List

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ABSTRACT

This review highlights the diversity and distribution of stingless bees in India. Stingless bees are eusocial corbiculate insects commonly referred to as “dammar bees” in India. In Karnataka, they are locally known as “Musare Jenu”. These bees live in perennial colonies and distributed in the tropical and subtropical regions worldwide. Stingless bee colonies are typically found in crevices of both natural and man-made structures and they serve as important pollinator for a wide range of agricultural crops. In India, 31 species of stingless bees have been documented in three genera i.e., *Tetragonula* (20 species), *Lisotrigona* (6 species) and *Lepidotrigona* (5 species) a checklist presented in this paper. According to the available reviews, *Tetragonula* is the most abundant genus among them. Research on the diversity and distribution of stingless bee in different regions of India remains limited, leaving a considerable gap in knowledge. Hence, more focus studies are needed in the future to better understand and document their diversity and distribution of stingless bee in India is necessary.

1. Introduction

Stingless bees exhibit the greatest diversity in tropical, sub-tropical and neo-tropical regions of the world which includes America, Africa, Asia, Indo-Malayan and Australia region except absent in Antarctica regions (Rasmussen and Cameron, 2007). Globally, a total of 605 stingless bee species have been described in 61 genera (Rasmussen and Cameron, 2007; Rasmussen and Cameron, 2010; Lopez-Uribe *et al.,* 2017; Gruter, 2020; Engel *et al.,* 2023 and Vit *et al.,* 2025). In the Neo-tropical region, a total of 461 stingless bee species have been described in 37 genera, in the Indo-Malayan region comprises 90 species in 13 genera, in the Afro-tropical region 50 species described in 11 genera and in the Australasian region has 11 species distributed in two genera (Rasmussen, 2008; Gruter, 2020; Engel *et al.,* 2023 and Vit *et al.,* 2025). Whereas, in China, 11 stingless bees species have been described in four genus (Zheng *et al.,* 2018 and Zheng *et al.,* 2025). In Sri Lanka, three species have been recorded, representing two genera (Silva *et al.,* 2016). However, in India, 31 species of stingless bees have been described and representing three genera (Biesmeijer, 1993; Jobiraj and Narendran, 2004; Rasmussen, 2013; Viraktamath and Jose, 2017; Shanas and Faseeh, 2019; Viraktamath and Shishira, 2020; Viraktamath and Thangjam, 2021; Viraktamath and Roy, 2022; Viraktamath and Thangjam, 2022; Viraktamath *et al.,* 2023; Hadimani and Dey 2025 and Meena *et al.,* 2025).

2. Materials and methods

Secondary data of published reports, articles and book chapters of various authors database used to evaluate the diversity and distribution of stingless bee species in India. This method used to understand the presence of species and their distribution pattern without field work, it makes easier to collect data, which helps to gather the scientific information which is already available on the database, later it can be used for multiple purpose.

3. Results

Table-1. Checklist of stingless bee species present in the Indian subcontinent.

Sl. No.	Genus and species	Distribution	Region	Reference
1.	*Tetragonula iridipennis* (Smith, 1854)	Karnataka, Kerala, Tamil Nadu, West Bengal, Himachal Pradesh, New Delhi, Rajasthan	Parts of North and South India	Biesmeijer, (1993); Mohan and Devasenan (1999); Swaminathan (2000); Danareddi and Shashidhar (2009); Vijaykumar and Jayaraaj (2014); Roopa *et al.,* (2015); Nayak and Prakash (2018); Bhatta *et al.,* (2019); Chauhan (2024); Das *et al.,* (2024); Gouda *et al.,* (2024); Meena *et al.,* (2025); Yadav *et al.,* (2025)
2.	*Lisotrigona mohandasi* (Jobiraj and Narendran, 2004)	Kerala	South India	Jobiraj and Narendran (2004); Rasmussen (2013); Meena *et al.,* (2025)
3.	*Lisotrigona cacciae* (Nurse, 1907)	Madhya Pradesh	Central India	Rasmussen (2013)
4.	*Tetragonula praeterita* (Walker, 1860)	Andhra Pradesh, Tamil Nadu, Kerala, Karnataka	South India	Rasmussen (2013); Rahman *et al.,* (2013)
5.	*Tetragonula ruficornis* (Smith, 1870)	Assam, Arunachal Pradesh, Nagaland, Meghalaya, Punjab, New Delhi	North-east India	Rasmussen (2013); Rahman *et al.,* (2013); Hadimani *et al.,* (2024); Meena *et al.,* (2025)
6.	*Lepidotrigona arciferal* (Cockerell, 1929)	Nagaland	North-east India	Rasmussen (2013); Vijayakumar (2014)
7.	*Lisotrigona revanai* (Viraktamath and Sajan Jose, 2017)	Kerala	South India	Viraktamath and Jose (2017)
8.	*Lisotrigona chandrai* (Viraktamath and Jose, 2017)	Kerala	South India	Viraktamath and Jose (2017)
9.	*Tetragonula cf. fuscobalteata* (Cameron 1908)	Tamil Nadu, Karnataka, Andhra Pradesh	South India	Nayak and Prakash (2018)
10.	*Tetragonula aff. laeviceps* (Smith, 1857)	Tamil Nadu, Karnataka, Andhra Pradesh, Kerala	South India	Nayak and Prakash (2018)
11.	*Tetragonula cf. minor*	Karnataka	South India	Nayak and Prakash (2018)
12.	*Tetragonula bengalensis* (Cameron, 1897)	Karnataka	South India	Nayak and Prakash (2018)
13.	*Tetragonula calophyllae* (Shanas and Faseeh, 2019)	Kerala	South India	Shanas and Faseeh (2019)
14.	*Tetragonula perlucipinnae* (Shanas and Faseeh, 2019)	Kerala	South India	Shanas and Faseeh (2019)
15.	*Tetragonula travancorica* (Shanas and Faseeh, 2019)	Kerala	South India	Shanas and Faseeh (2019)
16.	*Tetragonula nr. pagdeni* (Schwarz, 1939)	Karnataka West Bengal, Maharastra	North and South India, west and Central India	Viraktamatn and Shishira (2020); Shaikh *et al.,* (2023); Layek and Karmakar (2025); Layek *et al.,* (2025); Khandibagur *et al.,* (2025); Meena *et al.,* (2025)

17.	*Tetragonula gressitti* (Sakagami, 1978)	Nagaland	North-east India	Chauhan and Singh (2021)
18.	*Tetragonula kyrdemkulaiensis* (Viraktamath and Rojeet, 2021)	Kyrdemkulai, Meghalaya	North-east India	Viraktamath and Thangjam (2021)
19.	*Tetragonula srikantanathi* (Viraktamath, 2022)	Salema, Tripura	North-east India	Viraktamath and Thangjam (2021)
20.	*Tetragonula vikrami* (Viraktamath, 2022)	Karnataka	South India	Viraktamath and Roy (2022)
21.	*Tetragonula sumae* (Viraktamath, 2022)	Tamil Nadu	South India	Viraktamath and Roy (2022)
22.	*Tetragonula ashishi* (Viraktamath and Jagruti, 2022)	Maharashtra	Central India	Viraktamath and Roy (2022)
23.	*Tetragonula shishirae* (Viraktamath, 2022)	Rajasthan	Western India	Viraktamath and Roy (2022)
24.	*Tetragonula shubhami* (Viraktamath, 2022)	Chhattisgarh	Central India	Viraktamath and Roy (2022)
25.	*Lepidotrigona amruthae* (Viraktamath and Thangjam, 2022)	Mizoram	North-East India	Viraktamath and Thangjam (2022)
26.	*Lepidotrigona rajithae* (Viraktamath and Thangjam, 2022)	Mizoram	North-East India	Viraktamath and Thangjam (2022)
27.	*Lepidotrigona thenzawlensis* (Viraktamath and Thangjam, 2022)	Mizoram	North-East India	Viraktamath and Thangjam (2022)
28.	*Lepidotrigona sikkimensis* (Viraktamath and Thangjam, 2022)	Sikkim	North-East India	Viraktamath and Thangjam (2022)
29.	*Lisotrigona darbhaensis* (Viraktamath, 2023)	Chhattisgarh	Central India	Viraktamath *et al.,* (2023)
30.	*Lisotrigona kosumtaraensis* (Viraktamath, 2023)	Maharashtra	Western and Central part of India	Viraktamath *et al.,* (2023)
31.	*Tetragonula kotagadensis* (Hadimani and Dey, 2025)	Odisha	Eastern part of India	Hadimani and Dey (2025).

4. Discussion

The first stingless bee species reported from Indian region was *Melipona iridipennis* described by Smith and later this genus reclassified under the genus *Trigona.* Details description of *Trigona iridipennis* later done by Sakagami in (1978). Until 2013, only eight stingless bee species was described in India by Rasmussen (2013). Rahman *et al.,* (2013) have studied the diversity and distribution of stingless bees in different states of India. Later in the year 2017, two new species *of the genus Lisotrigona* (*L, revanai* and *L. chandrai*) was described by Viraktamath and Jose (2017). Followed by in the year 2019, three new species of the genus *Tetragonula* (*T. calophyllae, T. perlucipinnae* and *T. travancorica*) was described from Kerala by Shanas and Faseeh (2019). During the year 2021, two new species of *Tetragonula* (*T. kyrdemkulaiensis* and *T. srikantanathi*) was described by Viraktamath and Thangjam (2021). Five new species of the genus *Tetragonula (T. vikrami, T. sumae T. ashishi T. shishirae* and *T. shubhami)* was described by Viraktamath and Roy (2022). Four new species of the genus *Lepidotrigona* (*L. amruthae, L. rajithae, L. thenzawlensis and L. sikkimensis*) was described by Viraktamath and Thangjam (2022). Two new species of the genus *Lisotrigona* (*L. darbhaensis* and *L. kosumtaraensis*) was described by Viraktamath *et al.,* (2023). In the year 2025 a new species of the genus *Tetragonula* (*T. kotagadensis*) was described by Hadimani and

Dey (2025) and these are reported form different geographical regions of the Indian subcontinent, with details mention in the table (refer Table 1.) it leads to raise a total of 31 stingless bees species in India.

5. Conclusion

India is one of the mega-biodiversity hotspots, it is home for variety of flora and fauna. Its diverse ecosystems support a vast range of species, many of which are endemic to the Indian region. While, the Indian subcontinent showed diverse environmental conditions which is suitable for the stingless bees population and is home to several types of stingless bee species exist in it, our understanding of their biology and regional distribution remains incomplete. Hence, to realize the potential of these species, further research must focus on their taxonomic diversity and geographic distribution of stingless bees need to be conduct and complete field surveys are required to document their existence in India's distinct ecological regions.

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