



ECOLOGICAL IMPLICATIONS OF *APIS FLOREA* FABRICIUS DETECTION IN THE PHILIPPINES: POTENTIAL IMPACTS AND INTER-SPECIES DYNAMICS

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ABSTRACT

- The red dwarf honey bee, *Apis florea*, was recently introduced to the Philippines, first reported in 2020 and confirmed in 2025.
- Populations are currently limited to Mindanao Island (Davao del Norte, Davao del Sur, Davao de Oro).
- Nests were observed on *Tamarindus indica*, *Theobroma cacao*, *Pinus kesiya*, *Mangifera indica*, *Terminalia catappa* (6–30 ft above ground).
- Combs oriented in varying directions (SSW, WSW, ENE) with angles 5°–60°, suggesting thermoregulatory preferences.
- Ten colonies were recorded; slow expansion indicates limited population growth.
- Pollen analysis showed dominance of *T. catappa* (53.39%) and *Moringa oleifera* (24.90%), with contributions from *M. indica*, *Syzygium* sp., and Poaceae.
- Nesting traits differ from *A. brevilingula*, minimizing nest-site competition.
- Monitoring is recommended to prevent ecological risks, while exploring potential pollination benefits.

INTRODUCTION

- The Philippines is a biodiversity hotspot, rich in plant and pollinator diversity.
- Several honey bee species are present, including *Apis cerana*, *A. dorsata brevilingula*, *A. mellifera*, and stingless bees (*Tetragonula*, *Lepidotrigona*).
- The presence of *A. florea* in the Philippines was confirmed by Baroga-Barbecho et al. (2025) where it was first seen in Davao region in 2020 and is believed to be an introduced species due to the lack of zoological and taxonomic records of the species in the country.
- Key concern: What is the impact of an introduced honey bee on local bee populations and ecosystems?
- In this study, we aimed to: (1) determine the distribution pattern of *A. florea* in Mindanao; (2) assess its nesting behavior and orientation; and (3) identify major foraging resources using pollen analysis.

RESULTS

DISTRIBUTION PATTERN

- Mindanao Island (Davao del Norte, Davao del Sur, Davao de Oro).
- Only 10 nests were recorded
- The absence of colonies outside the Davao region may be temporary and should be closely monitored, as this information forms an important part of the baseline knowledge on the population dynamics of *A. florea* and its potential impact on the ecosystem.

NESTING BEHAVIOR

- Prefers branchy host plants with fine twigs (e.g., *Tamarindus indica*, *Theobroma cacao*, *Pinus kesiya*, *Mangifera indica*, *Terminalia catappa*).
- Nests are small and shielded by leaves—distinct from *A. dorsata* (large canopy combs) and *A. brevilingula* (partially sheltered sites).
- These unique requirements reduce competition among open-nesting honeybees.

POLLEN SOURCES

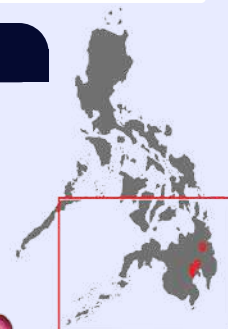
- The pollen spectra of *A. florea* are dominated by *T. catappa* (53.39%), followed by *M. oleifera* (24.90%).
- This indicates that *A. florea* foraged extensively on *T. catappa*, which flowers during multiple periods throughout the year, and on *M. oleifera*, which blooms continuously.

CONCLUSION

The confirmation of *A. florea* in the Philippines updated the database on bee diversity. Its introduction does not appear to threaten native bee populations. Since its first observation in 2020, the population has not expanded, with only ten colonies recorded. Other areas where *A. florea* was not located and should be closely monitored, as this information forms an important part of the baseline knowledge on the population dynamics of *A. florea* and its potential impact on the ecosystem.

METHODOLOGY

- Map the distribution Pattern
- Describe Nesting Behavior
- Identify Pollen and Nectar Sources



Pollen source of *A. florea* (400X)

Syzygium sp. (1-4),
Mangifera indica L. (5),
Terminalia catappa L. (6-8),
Moringa oleifera L. (9),
Unidentified (10-13),
Cocos nucifera L. (14),
Bignoniaceae (15-16),
Ipomoea (17),
Poaceae (18-19)

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Ecological Implications of *Apis florea* Fabricius Detection in the Philippines: Potential Impacts and Inter-Species Dynamics

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The detection of *Apis florea* Fabricius in the Philippines was first reported in 2020, with populations identified in four locations across Mindanao, one of the country's three major islands. Its identity was definitively confirmed in 2024 through morphometric analysis. This species typically constructs its nests on the small branches of various shrubs and small trees, including *Mangifera indica*, *Moringa oleifera*, *Podocarpus* spp., *Tamarindus indica*, *Terminalia catappa*, and *Theobroma cacao*. However, the precise origin of the *A. florea* population in Mindanao remains unclear. Non-native species often spread globally through international trade, and Mindanao's proximity to neighboring Asian countries where *A. florea* is already established—such as China, Laos, Thailand, Vietnam, Cambodia, Malaysia, Singapore, and Taiwan—suggests a potential regional source.

Given the known ecological risks posed by introduced species, this study investigates the impact of *A. florea*'s introduction on local bee populations, particularly honey bees and stingless bees, using palynological analysis. This approach allows for an in-depth assessment of niche overlap and its subsequent effects on species coexistence, pollination dynamics, and overall environmental stability.