

Order Hymenoptera

Carlos Henrique Marchiori¹

¹ Instituto Federal Goiano

Potential competing interests: No potential competing interests to declare.

Order Hymenoptera

The order Hymenoptera is one of the largest insect orders and includes bees, wasps, ants, and other social insects. These insects play a crucial role in ecology, plant pollination, pest control, and recycling of organic matter and have relevance in terms of agricultural production and beekeeping. Membranous wings Hymenoptera have membranous wings and a mouthpart adapted for biting and licking. Ovipositor: Many females have an elongated ovipositor, which can be used to deposit eggs or as a stinger for defense or attack. Complete metamorphosis: Hymenoptera undergoes complete metamorphosis, including four stages of development: egg, larva, pupa, and adult [1-3].

Suborder Symphyta

It is a suborder of insects, being the most recent group in the evolutionary history of Hymenoptera. It groups adults who can be easily recognized because they do not present basal constriction in the abdomen and propodeum and the larvae are eruciforms, being very similar to typical larvae of Lepidoptera. They feed externally or internally on living tissues of lower or higher plants, some are galling, and others feed on plant debris or even fungi [3-5].

Apocrite Suborder - Parasitic Division

Parasitoids are abundant in all terrestrial ecosystems and use many insect species as hosts. They are an important component of fauna neotropical because they play a regulatory role in the population of other insects. The term Aculeata is used to refer to a monophyletic lineage of Hymenoptera. The word "Aculeata" is a reference to the group's distinctive characteristic, the modification of the ovipositor into a stinger [5-8].

Apocrita (Aculeata) (Stinging predatory and provisioning wasps, bees, and ants)

Its main representatives are bees, wasps, wasps, bumblebees, and ants. It is considered the most beneficial order among insects [9].

References

- [1] Gadau J, Fevolden SE. The Honeybee Genome. Springer. 2013.
- [2] Boraschi D, Peruquetti RC, Lama MAD. Biology, social behavior, and sexual allocation of *Digelasinus diversipes* (Kirby, 1882) (Hymenoptera, Argidae). Brazilian Journal of Entomology. 2005; 49(2): 253-263.

- [3] Souza L, Braga SMP, Campos MJO. Parasitoid Hymenoptera (Insecta, Hymenoptera) in agricultural area of Rio Claro, SP, Brazil. *Archives of the Biological Institute*. 2006; 73(4): 465-469, 2006.
- [4] Gilbert F. *Social Insects*. 1st ed. Oxford: Oxford University Press. 2010.
- [5] Branstetter MG, Danforth BN, Pitts JP, Faircloth BC, Ward PS, Buffington ML, Gates MW, Kula RR, Brady SG. Phylogenomic insights into the evolution of stinging wasps and the origins of ants and bees. *Current Biology*. 2017; 27: 1019-1025.
- [6] Branstetter MG, Childers AK, Cox-Foster D, Hopper KR, Kapheim KM, Toth AL, Worley KC. Genomes of the Hymenoptera. *Current Opinion in Insect Science*. 2018; 25: 65-75.
- [7] Burks R, et al. From hell's heart, I stab at you! A determined approach to rendering Pteromalidae (Hymenoptera) monophyletic. *Journal of Hymenoptera Research*. 2022; 94:13-88.
- [8] Sann M, Niehuis O, Peters R, Mayer C, Kozlov A, Podsiadlowski L, Bank S, Meusemann K, Misof B, Bleidorn C, Ohl M. Phylogenomic analysis of Apoidea sheds new light on the sister group of bees. *BMC Evolutionary Biology*. 2018; 18:71.
- [9] Waldren GC, Sadler EA, Murray EA, Bossert S, Danforth B, Pitts JP. Phylogenomic inference of the higher classification of velvet ants (Hymenoptera: Mutillidae). *Systematic Entomology*. 2023; 1–25.